Debunking Doomsday

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I get an average of three comments a day on my Science20 articles and often several pm's a day by scared people asking for help with the many doomsday news stories they read online. I find that I often copy and paste the same reply to many people each day, especially after some fake news story "breaks" and lots of people are asking me the same question.

I can't do Science20 articles for them all - that would overwhelm my science blog. So thought maybe I should start a new "Debunking Doomsday" blog here instead, so here it is.

North Korea Update

Robert Walker

First this is not a risk of global nuclear war. It's nothing like the Cuban missile crisis. There we had two major powers facing each other on a hair-trigger. And each had the capability of destroying the other's military capabilities.

North Korea obviously has no chance at all of destroying the US military capabilities and "winning" a war against the US. Also it has no ambitions for taking over other countries. Russia has invaded many countries, and so has China and the US (the US doesn't claim the countries it invades as its own territory but it has done a lot of invading too, I don't see how you can call the Iraq war anything else but an invasion for instance).

North Korea has not done this and hasn't threatened to do so.

I don't think it's at all likely they will really try to drop a nuclear weapon on the US; it would be crazy for them to do that. They just want to threaten to do so.

As for the US, despite what Trump says, surely, they aren't going to start a war imminently. If that was the plan, the first thing they'd do is to order an evacuation of all US civilians form South Korea. They haven't done that.

North Korea's motivation is very different from Russia and China. They have this strange religion Cheondoism, which is a variety of Confucianism. Though they are allies with China, they are not an ordinary communist country at all.

Then, they have had a past during which they were very badly harmed by the US airforce, who in spring 1953 after an already devastating war, destroyed dams that were responsible for 75% of the controlled water supply for North Korea's rice production.

That is a big thing to do for a country that relies on rice as a staple for survival, as Noam

other socialist countries. The Destruction and Reconstruction of North Korea, 1950 - 1960

With that background they now see that the US have invaded many countries such as Iraq, Afghanistan, Lybia etc.

So they have a perspective on this that few of us in the West will appreciate. They are developing this nuclear and military power as a way to defend themselves. They don't want to attack, but want to be able to threaten to do so if a foreign government tries to invade them.

Trump surely won't want to start a nuclear war. And it would of course be an utter disaster for North Korea. China also doesn't want a nuclear war. Nobody wants it.

Both Trump and Kim Jong-un say very over the top things in this war of words. You might like to try to guess who said what in this online quiz:

> Donald Trump or Kim Jong-un: Who said what? - BBC News

A lot of it is bravado and bluster.

The threat to Guam is that North Korea plans to fire a missile test to land in the sea 60 km from Guam. They have not threatened to drop a nuclear weapon. The missile would fly over Japan. Japan have said they will shoot it down if necessary, in collaboration with the US.

> "Elleman expects the missile to be accurate only within 6 miles , but points out that even a small misstep during the firing process could lead to a wide miss. Also, the missiles would fly over Japan, which endangers aviation and huge civilian populations on the ground.
>
> "Luckily, the US and Japan have tremendous missile defense capabilities, to include US and Japanese guided-missile destroyers, an Aegis rader missile defense site on Japan, and finally a Terminal High Altitude Area Defense system in Guam."

> states may well look to let them fly past without incident.””
>
> “If the US and Japan decide the missiles pose a threat, then US and Japanese Navy ships equipped with Aegis radars, the best radar ever put to sea, will head out to optimal spots along the trajectory of the missiles, according to Baker.”
>
> “"THAAD and Aegis have the capacity to intercept the HS-12," Elleman told Business Insider. If the US has two interceptors fired at each North Korean threat "the odds of success are good," said Elleman, who said the US has a 96% chance of downing each individual missile.”
>
> How the US and Japan could shoot down North Korean missiles headed for Guam

Here is a video of a Japanese ship destroying an incoming ballistic missile in a 2010 test.

Meanwhile, diplomacy continues behind the scenes.

North Korea: US diplomacy is gaining results, says Mattis - BBC News

CAN DONALD TRUMP START A WAR WITH NORTH KOREA

There's been a fair bit of discussion about the legal situation. Can Trump declare war with North Korea without support of Congress? Technically he can't, according to the US constitution. But that hasn't stopped the US presidents starting many wars. None of them have been authorized by Congress, not since the second world war. This is about the legal situation War Powers and an article about it in Politico .

With that background, then it doesn't seem likely he can be stopped by the courts. But Congress may dig its heels in and say that he can't start a war with North Korea without their authorization.

> "More than 60 Members of Congress, working from their home districts during recess, came together to write an urgent letter to Secretary of State Rex Tillerson to express "profound concern" over "irresponsible and dangerous" statements made by President Trump and to urge Tillerson to do everything in his power "to ensure that President Trump and other Administration officials understand the importance of speaking and acting with the utmost caution and restraint on this delicate issue.""

At any rate it hasn't come to that yet, with all the US civilians in South Korea. As Matt Novak says in Gizmodo .

> "It should be noted that even the most hawkish American observers believe one of the most important things that should happen before any possible military engagement in North Korea would be an evacuation of American civilians in South Korea. And that hasn't

COULD TRUMP JUST LAUNCH A STRIKE ON A WHIM

Legally yes. He can launch a strike within 4 minutes without any consultation if he considers the US to be under attack. But it's only meant for situations where they believe that another country has already launched nuclear weapons towards the US.

Legally he could invoke that right in any situation. But he would surely be ignored. It’s not a literal button he can press. There are many people in the chain of command who have to carry out his orders.

> "The NCA consists only of the President and the Secretary of Defense or their duly deputized alternates or successors. The chain of command runs from the President to the Secretary of Defense and through the Joint Chiefs of Staff to the Commanders of the Unified and Specified Commands."
>
> World-Wide Military Command and Control System, DoD Directive S-5100.30

They might well judge him as being in a state of diminished responsibility if he did that, and refuse to carry out his orders.

This actually happened to president Nixon, not that he ordered an attack, but that towards the end of his presidency they no longer trusted him with the nuclear button, because of drink problems etc.

So, though it was not legal for them to do it and probably mutinous considered from a legal point of view, the secretary of defense James R. Schlesinger instructed the military to divert all emergency orders especially any involving nuclear weapons, to him. In the circumstances nobody was likely to challenge this.

> "Hopefully, it will all work out," Mr Trump said earlier, striking an upbeat tone after a day of rhetorical brinkmanship."
>
> ""Nobody loves a peaceful solution better than President Trump, that I can tell you.""
>
> Trump threatens North Korea with "big trouble" over Guam - BBC News

And China all the way through is urging restraint. It also has supported the very tough sanctions on North Korea. Though they value North Korea as a neighbour and buffer state, they are not keen on North Korea having nuclear weapons. So in that respect, unusually, the US and China are together in their aims here.

> "President Xi called on "relevant parties" to exercise restraint and avoid words and actions that would exacerbate tension, state TV reported, adding that it was in the interests of both China and the US to pursue the denuclearisation of the Korean peninsula."

Here is my previous article on North Korea

- Tense situation concerning North Korea

See also

- Debunking: a president of the US could order a nuclear attack at a moments notice on a whim
- Debunked: A nuclear war would make Earth uninhabitable - and humans extinct
- List of the articles in my Debunking Doomsday blog to date

77 views · 2 upvotes · Posted 9h ago

Why the eclipse this August is a wonder of nature and not something to be scared of

Robert Walker

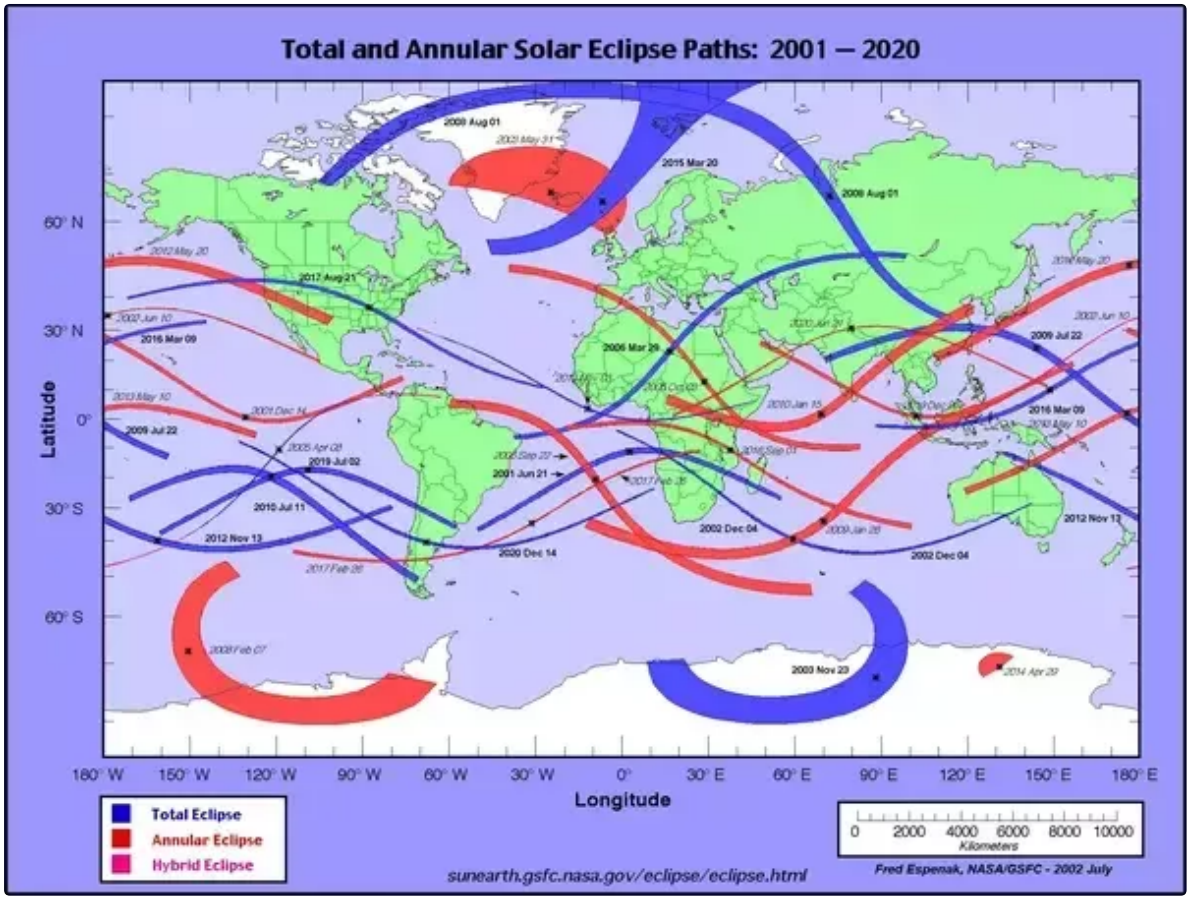
I've been getting messages from people who are scared of the eclipse this August. It's totally normal. We get an eclipse of the sun every year or two. Many of them are total. It is very common for the eclipse to span midday at some point along its track too. ~An eclipse of the sun is just the small shadow of our Moon moving over the surface of Earth. Sometimes the shadow cone doesn't quite touch Earth and we get an annular eclipse. And sometimes it does touch it and we get a total eclipse. But it will only go dark for at most a minute or two, and you have to be inside the shadow when it passes by to see the total eclipse.

It's a small shadow 70 miles across and travels across the US at supersonic speeds, over Mach 3 at times. It is just a shadow and can't harm you, but is a spectacular natural event. "Eclipse chasers" will travel hundreds of miles to see one.

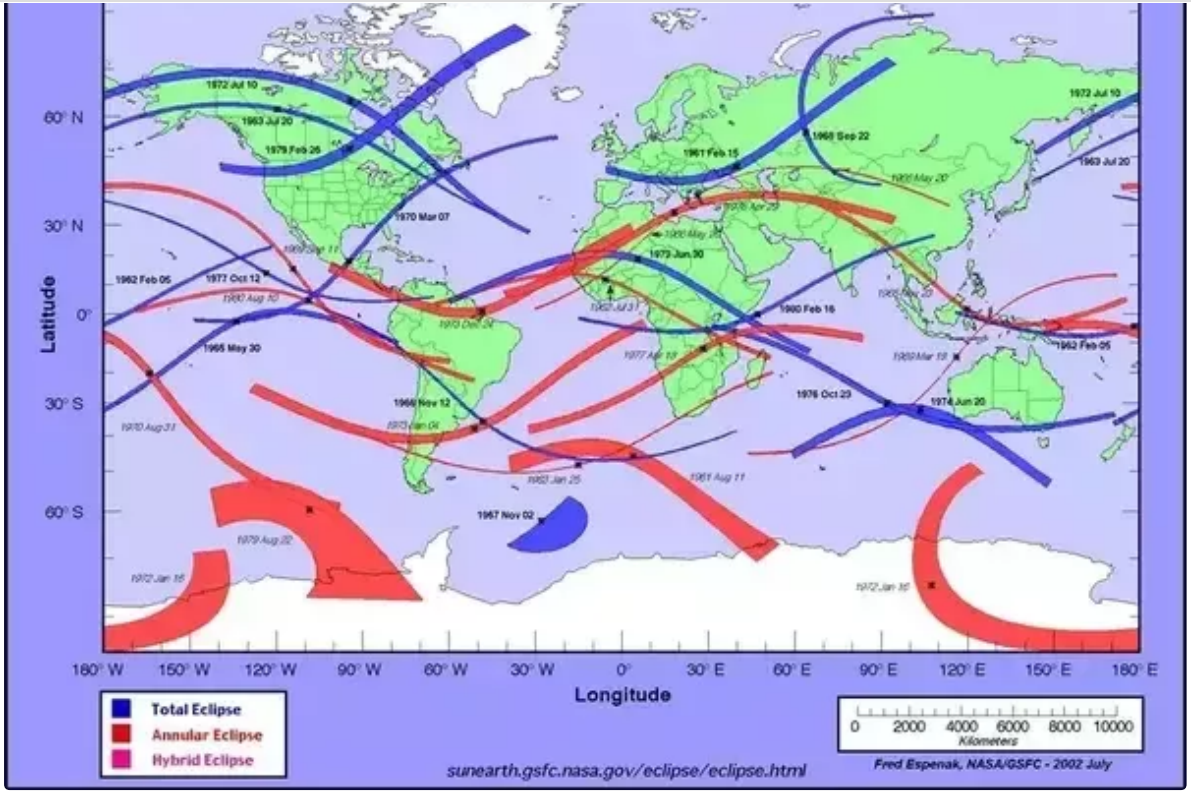
Meanwhile half the Earth is plunged into shadow for half a day on average, once a day, we call it night. It causes us no harm at all, so I hope you can understand that you can't be harmed by experiencing two minutes and 40 seconds of darkness in the middle of the day.

If you watch the eclipse - be sure to get eclipse glasses. Only cost of the order of dollars. You may also be able to get them on the cover of astronomy magazines. You don't sense any pain even when the back of your eye is burning - or more likely - getting bleached by UV light. You can lose your eyesight in the center of your vision temporarily, and in rare cases, permanently,

Though they are common, because the shadow is small, then it's rare to see an eclipse anywhere particularly. You have to be standing within the blue eclipse track shown on the map here: this shows the eclipses from 2001 to 2020 including the US one.



The last total eclipses in the US were back in the 1960s and 1970s so young people will not have seen one. Even older people won't have seen it unless you traveled to the eclipse track. Here is the map for those US eclipses. All the blue lines here are total eclipses. The red ones are



This is NASA's eclipse page, with lots of maps like that in the map section. Solar Eclipse Page

Because they always happen at new moon, you won't see the moon until it starts to take a bite out of the sun. It's lit up from behind. In the same way if you stand in the shadow of anything, you will see the darker side of it, not the sunlit side. There's no scattered light in space, apart from a bit of light from the Earth, so the shaded side of the Moon is pitch black. It is, quite literally, behind the blue sky, so you don't see anything of it until it passes between you and the sun.

Some people worry because there will be a total eclipse around midday - because of some Bible

This eclipse was maximum at 11 am in Romania but was still total over India around midday.
This was the last total eclipse in the UK

> Photograph of the 1999 solar eclipse by Luc Viatour

That photograph shows the corona - white rays radiating out from the Sun which you only see at times of total eclipse. If you are lucky enough to have a clear sky, you may see this awesome

sun, you get "Bailey's beads" when light shines between gaps in the mountains around the Moon often ending with a single "diamond ring" when just a tiny patch of sun is left. Then it goes dark and the sun's corona shows and you may see the brightest stars.

And yes, if you stand in just the right place, it turns dark in the middle of the day but only for a minute or so and you have to be exactly on the eclipse track to see this too.

Second example: Solar eclipse of June 21, 2001

This one had greatest eclipse at 12:04:46 so as close to noon as makes no difference - that's when the eclipse lasted the longest for this one.

Wikipedia has lists of eclipses, so you can follow through to find any other eclipses that you are interested in: Lists of solar eclipses

This is what an eclipse looks like from space - the dark patch here includes some of the area of partial eclipse - it's only seen as total from the very center and darkest part of the shadow.

You have to be on the narrow path of the Moon's shadow - the Moon is small and the Sun is huge, and the Moon's shadow is shaped like a cone and only just touches the Earth which is why it is so tiny. You have to be positioned within that tiny shadow to see an eclipse.

This example Solar eclipse of August 21, 2017

The maximum possible eclipse is 2 minutes 40 seconds for this one.

It's tricky to find a place that experiences the eclipse at midday. Grand Island, Nebraska, USA Nebraska has an eclipse that starts at 12:58 and finishes at 13:01. Further east you get eclipses that start and end before midday.

But because of the transition from mountain daylight time to central daylight time, I don't think there is anywhere that experiences a total eclipse at noon in their local time as they measure it.

If you count midday as the time of day when the sun is highest in the sky, irrespective of your time zone, then there will be a place that experiences the eclipse at that time of day though the clock may not say midday, or 1 pm or any exact time like that because of the large regions spanned by the time zones.

Here is an animated eclipse map. Notice how tiny the shadow is

And map of entire eclipse across the US

There the dark strip is the strip of totality. More detailed maps for states along the track here Total Solar Eclipse 2017 including an interactive map you can zoom into

Total Solar Eclipse of 2017 Aug 21

Ecliptic Conjunction = 18:31:19.6 TD (= 18:30:11.2 UT)
Greatest Eclipse = 18:26:40.3 TD (= 18:25:31.8 UT)

Eclipse Magnitude = 1.0306 Gamma = 0.4367

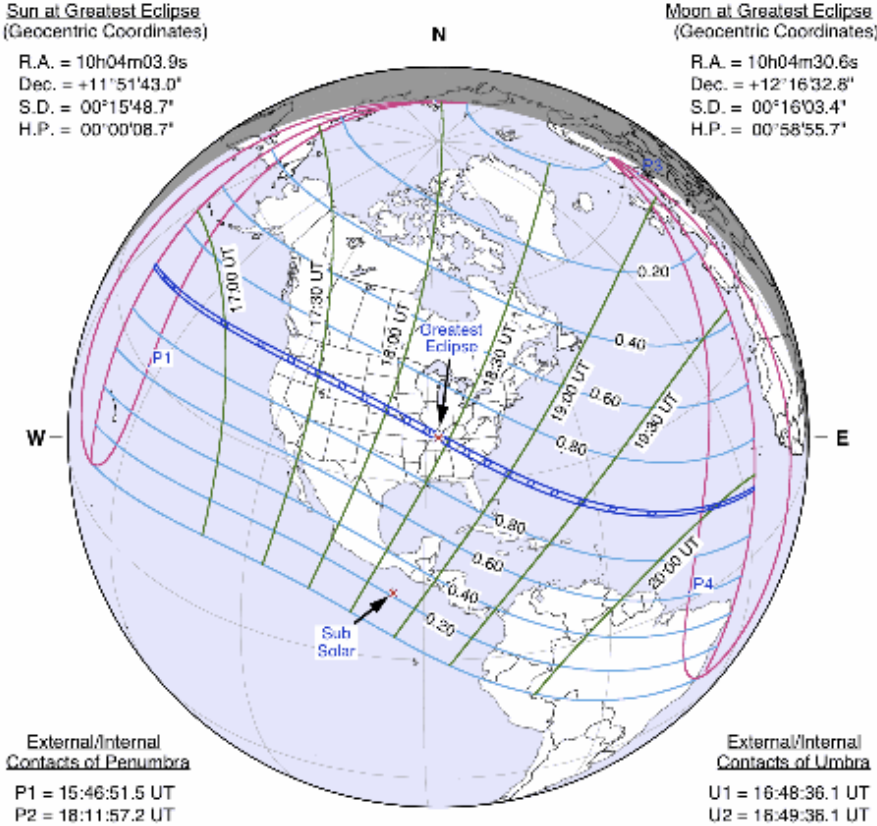
Saros Series = 145 Member = 22 of 77

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 10h04m03.9s
Dec. = +11°51'43.0"
S.D. = 00°15'48.7"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 10h04m30.6s
Dec. = +12°16'32.8"
S.D. = 00°16'03.4"
H.P. = 00°58'55.7"



External/Internal Contacts of Penumbra

P1 = 15:46:51.5 UT
P2 = 18:11:57.2 UT
P3 = 18:39:24.9 UT
P4 = 21:04:23.5 UT

External/Internal Contacts of Umbra

U1 = 16:48:36.1 UT
U2 = 16:49:36.1 UT
U3 = 20:01:39.6 UT
U4 = 20:02:34.4 UT

Constants & Ephemeris

ΔT = 68.4 s
k1 = 0.2725076
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"
Ephem. = JPL DE406

Circumstances at Greatest Eclipse: 18:25:31.8 UT

Lat. = 36°58.0'N Sun Alt. = 63.9°
Long. = 087°40.3'W Sun Azm. = 197.9°
Path Width = 114.7 km Duration = 02m40.1s

Circumstances at Greatest Duration: 18:21:49.2 UT

Lat. = 37°35'N Sun Alt. = 63.8°

Geocentric Libration
(Optical + Physical)

l = 4.64°
b = -0.57°
c = 21.90°
Brown Lun. No. = 1171

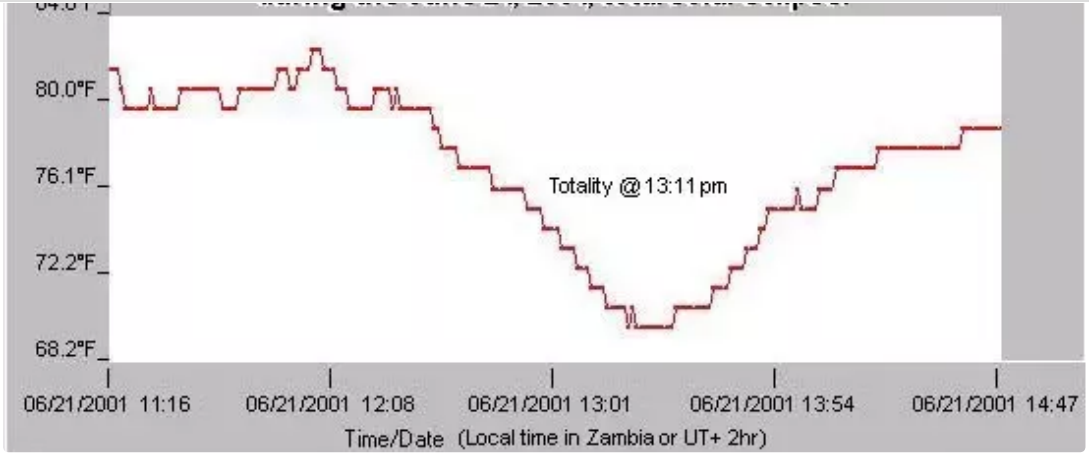
Details here Total Solar Eclipse of 2017 Aug 21 - they warn: “The eclipse predictions presented here *DO NOT* include the effects of mountains and valleys along the edge of the Moon. Such corrections for the *lunar limb profile* may shift the limits of the eclipse path north or south by ~1-3 kilometers, and change the eclipse duration by ~1-3 seconds.”

So, yes, if you stand in just the right place, it turns dark in the middle of the day in this astronomical sense but only for a minute or two, and you have to be exactly on the eclipse track to see this, and your local clocks probably won’t say midday or an exact hour of the day either.

You have to travel to the eclipse track to see a total eclipse (unless you are already on it). Most people in the US will only see the sun partly covered - a partial eclipse. But if you are on the eclipse track, you will see a total eclipse.

DOES IT GET COLD?

Perhaps rather surprisingly, it can get a fair bit cooler, a bit like night falling, but only for a short while. Here is an example from Zambia, the temperature dropped by 15 F or about 8 C. Similar to the change from day to night. That’s the air temperature not the ground temperature.



> Temperature Change During Totality

HOW BIG IS THE SHADOW AND HOW FAST DOES IT MOVE?

The central shadow is about 70 miles wide (see Total Solar Eclipse 2017) and crosses the USA at the speed of Concorde, at varying speed.

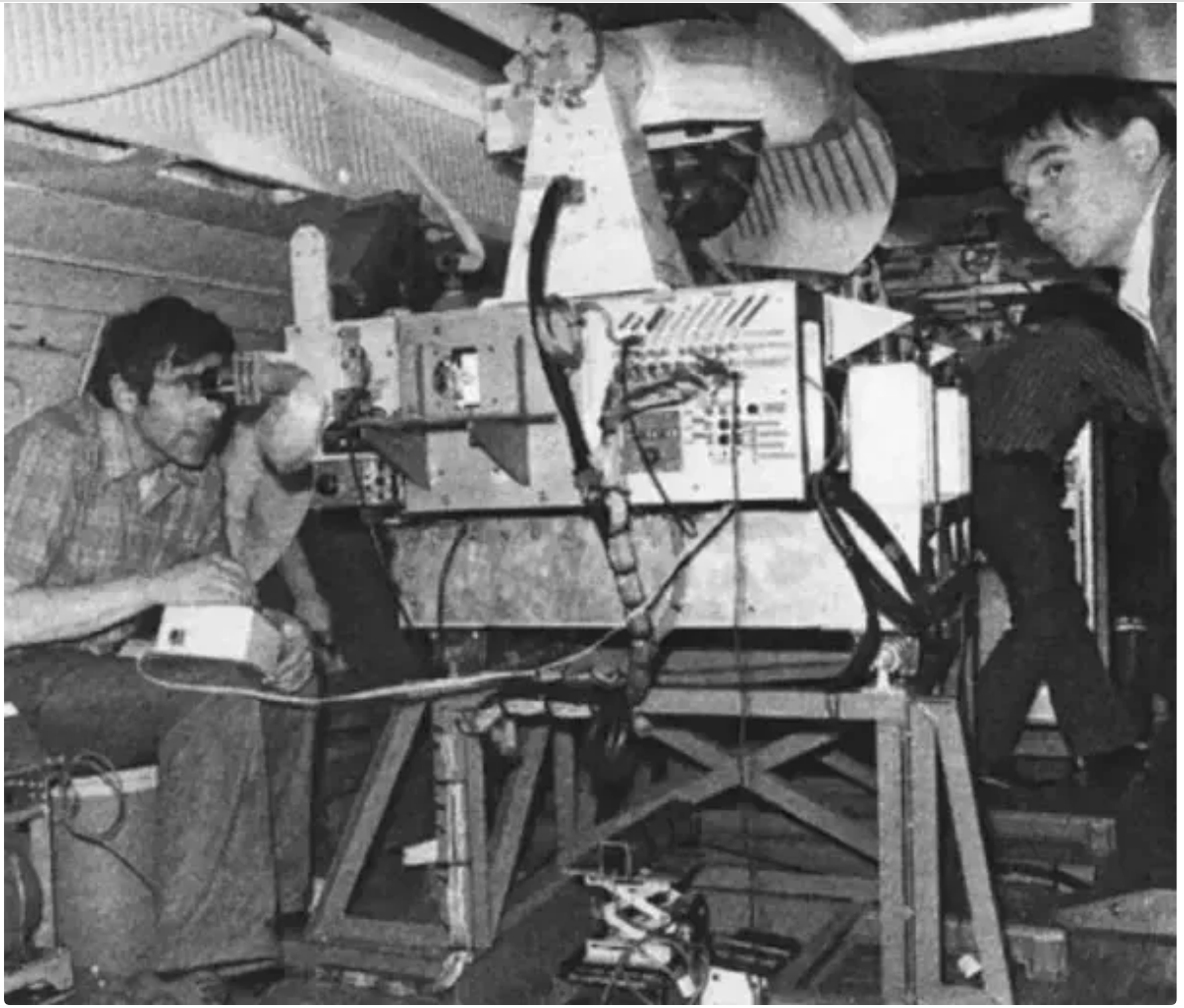
This is one of the best interactive online calculators - you can click on your location to find extra details such as the path width where you are, and the speed the shadow is moving. USA - 2017 August 21 Total Solar Eclipse - Interactive Google Map - Xavier Jubier

So for instance, its speed is 2410 mph or Mach 3.14 in Western Oregon and 1402 mph or Mach 1.83 near Charleston SC. (from How fast is the shadow moving across the US during the eclipse?)

NASA will send some jets to observe the eclipse, because it's a chance for scientists to study the solar corona for faint details that are otherwise hard to spot. NASA has a brilliant plan to make the total solar eclipse last nearly 3 times as long

aircraft in 1973 When Astronomers Chased a Total Eclipse in a Concorde

> The French prototype Concorde 001 - which at that point was an experimental aircraft doing test flights, taking off for its 1973 eclipse mission. It flew at Mach 2.05, more than twice the speed of sound. This is Concorde 001 on its last flight on June 30th before it was retired on October 19th to the Air and Space Museum at Le Bourget Airport, Paris.
>
> It was the first Concorde to fly (on March 2nd 1969) and did 249 supersonic flights in total and had 245 hours 49 minutes of supersonic flight hours in total. See Heritage Concorde . The British prototype was 002.
>
> Photo: Jim Lesurf



One of the specially-designed instruments for observing the composition of the sun's corona. Photo: Pierre Léna

Pierre Léna wrote a book about the mission, Racing the Moon's Shadow with Concorde 001 (Astronomers' Universe)

> Interviewed by motherboard vice, Léna says: "There's no aircraft flying today that would let us do what we did, nothing that can fly that fast for that long. There are military jets that can fly faster, but not with the endurance of Concorde—and of course they couldn't carry the instruments. Our record is safe for the foreseeable future."

Here is a video about their experience

So, yes, if you stand in just the right place, it turns dark in the middle of the day in this astronomical sense but only for a minute or two, and you have to be exactly on the eclipse track to see this, and your local clocks probably won't say midday or an exact hour of the day either.

You have to travel to the eclipse track to see a total eclipse (unless you are already on it). Most people in the US will only see the sun partly covered - a partial eclipse. But if you are on the eclipse track, you will see a total eclipse.

don't see anything much else.

If you do see it, then the sun gets blocked out by the moon and then you see white rays emanating from the shadow. That's the solar corona. So not totally black, you see the corona and you may see the brightest stars. If you are lucky enough to have a clear sky that is.

This can help you find the best place to see it. You need to be inside the shadow. You also need to have clear skies. So best if you can go to a place that has clear skies more often.

See also List of the articles in my Debunking Doomsday blog to date

1,045 views · 2 upvotes · Posted Jul 23

Debunked: Nemesis is Nibiru - updated

Robert Walker

The idea is still circulating that we are due a mass extinction in the very near future because of a distant companion star called Nemesis at a distance of 1.5 light years. This is nonsense.

Short summary: The theory never predicted a mass extinction in the near future. And anyway, it is pretty disproved now. Most stars like our sun are single, as we now know. The WISE infrared search ruled out any companion expect a very low chance of an extremely cold, unusually cold brown dwarf - it would have spotted a normal brown dwarf at a distance of ten light years. The periodicity was very approximate. If true, the next mass extinction would be 15 million years into our future, but give or take many millions of years. At any rate it's not due in the near future as at the moment there are very few comets passing close to Earth (only 1 in 155 of objects that pass close to us is a comet).

More details

Here is an example video that might scare you. It's a clip from a longer BBC documentary - not a news program.

> I've added a comment to the youtube video clip here

Here are the most recent extinction events - including very minor ones:

Extinction event - List of extinction events - Wikipedia

Holocene extinction : 12,000 years ago through to the present— Ongoing- caused by Humans

Quaternary extinction event 640,000, 74,000, and 13,000 years ago -Unknown; may include climate changes and human overhunting

Pliocene–Pleistocene boundary extinction - 2 Million years ago - Supernova ? or Eltanin impact ?

Middle Miocene disruption - 14.5 Million years ago - climate change due to change of ocean circulation patterns and perhaps related to the Milankovitch cycles ?

Eocene–Oligocene extinction event - 33.9 Million years ago - Popigai impactor ?

Cretaceous–Paleogene extinction event - 66 million years ago, Chicxulub

66, 39 and 12 million years ago and the next one to happen 15 million years into the future.

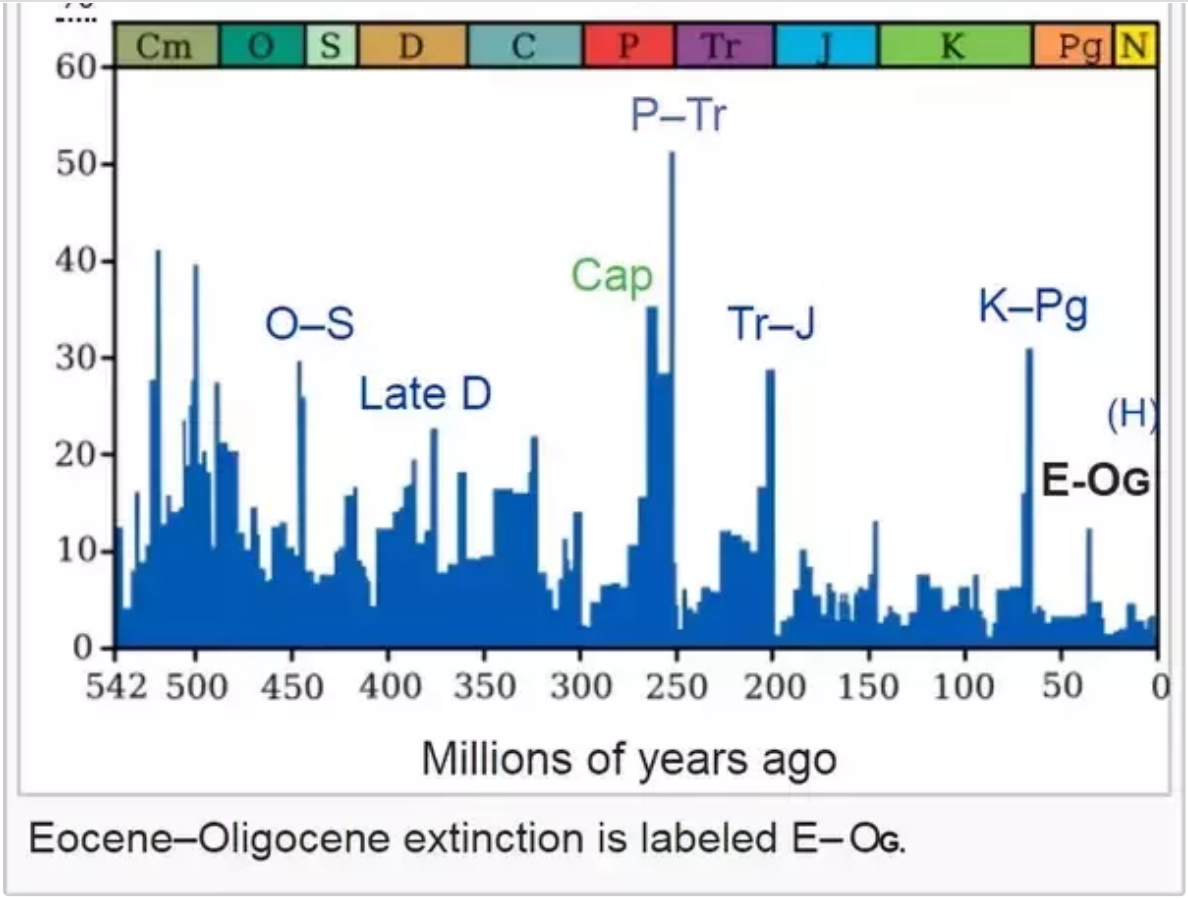
I suppose you could include the Middle Miocene disruption to try to explain why there is nothing in the record 12 million years ago though it's not thought to be due to an impactor. The one 2 million years ago is a very minor event, and it would be a bit of a stretch to say that it is the 12 million years ago event delayed by 10 million years.

Perhaps you could say that the one 12 million years ago got skipped for some reason - if the theory is valid, it's obviously a very irregular pattern, no surprise - if the theory was true you'd expect the numbers of comets disturbed to vary, and the number that get into the inner solar system to vary too, and probably sometimes very few get anywhere near Earth.

At any rate we are not "due" another one for many millions of years.

In a bit more detail:

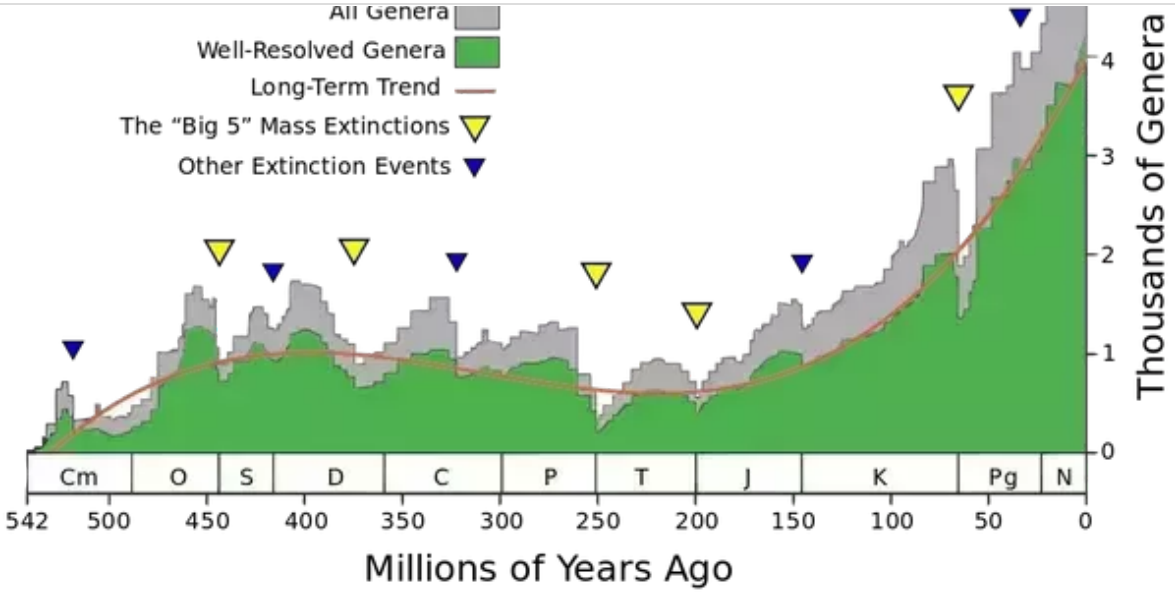
This is shows the most recent mass extinctions in terms of extinction of marine species



Eocene–Oligocene extinction is labeled E–OG.

> From wikipedia, labelled version of Extinction intensity with the Eocene–Oligocene extinction event labelled in black

This shows the effect on biodiversity generally of the extinctions



> Phanerozoic Biodiversity

If the theory was true it would be very approximately periodic. If you suppose an exact cycle with the huge spike at 66 million years ago as a starting point, there would be two events, 39 million years ago and 12 million years ago with the next one due 15 million years into the future. Either way, you wouldn't expect the next one for at least many millions of years.

They have gone back 250 million years and found what seems to be a statistically significant correlation with a period of 27 million years, but obviously not an exact periodicity. It's always been a controversial theory. However, their theory of the influence of a second star is pretty much ruled out now by the WISE infrared survey. It would have spotted a red dwarf easily and most brown dwarfs too unless very very cold (which is unusual). It would have spotted most brown dwarfs 10 light years away. The Nemesis hypothesis is a star orbiting 1.5 light years away. That's a bit closer though it is still much of the way to our nearest star Proxima Centauri,

If there was a comet mass extinction on its way you'd expect to see an increase in comets passing close to Earth - but at the moment only 1 in 147 of the objects that do close flybys of Earth are comets so we are certainly not yet in much danger of comets, whatever the future may bring millions of years into the future.

As of writing this, there are 16396 known Near Earth Objects of which 16290 are asteroids and 106 are comets. The comets are rare - the last time one was discovered was in June 2016, and that number is increasing very slowly as they discover more objects of all types including very faint comets. See Discovery Statistics

That makes it 1 in 155 of the currently known NEOs that are comets. So we certainly aren't in the middle of a big influx of comets right now.

WISE SURVEY FOR A COMPANION STAR, BROWN DWARF OR DISTANT LARGE PLANETS

In any case the WISE infrared survey has pretty much ruled out the Nemesis and the Tyche theories. It does leave open the possibility of very distant large planets, but any ones as close to the Sun as several times the distance to Neptune would be spotted easy.

> Artist's impression of the NASA Wide-field Infrared Survey Explorer. Researchers proved that Nemesis and Tyche can't exist in results published in 2014, using data that it collected in 2010 to 2011.

It was an all sky survey and has ruled out the possibility of a Saturn sized object out to 10,000 times the Earth - Sun distance (33 times distance to Neptune), and a Jupiter size or larger object out to 26,000 times that distance. (I.e. 26,000 AU, 867 times distance to Neptune)

There could easily be Mars or Neptune sized objects closer than that but they would still need

(sunlight hitting it is 100 times fainter, but as seen from Earth it seems 100 times smaller too in terms of the area of the patch it occupies in the sky, so combining those effects, it would be 100,000 times fainter in our telescopes). If 100 times further way, it would be 100 million times fainter. So you can see how, though it's easy to miss distant planets, we can't possibly miss nearby planets, even if they only shine by reflected light.

If they are warm, like brown dwarfs or stars, they are much easier to spot because then if 100 times further away they are only 100 times fainter.

Warming something up of course doesn't make it invisible, so anything that's warm like a brown dwarf is as easy to spot visually as a planet, but in addition is rather easier to spot in infrared than a planet, especially if it is a very long way away from the nearest star and so doesn't shine much by reflected light. This is something that the Nibiru conspiracy theorists often get wrong - they assume for some reason that brown dwarfs are invisible. They aren't. They can of course be dark in colour, like our Moon - its rocks are dark in colour like worn asphalt (approximately same brightness as the lunar rocks) but its bright in our night sky because it is close to the sun and close to us. The darkest brown dwarf, at the distance of Jupiter would be as bright as Betelgeuse, the bright star which forms one of the shoulders of Orion.

See also

- Debunked: Nemesis or Tyche is Nibiru
- my answer to Is Nibiru a real place that will hit Earth? I'm very scared, is the BBC lying?
- Nibiru Bullshit Tester
- Debunked: Nibiru will hit Earth on [Insert Date here]

Debunked: hidden asteroids in new branch of Taurid stream will devastate Earth

Robert Walker

SUMMARY

This is a discovery of a clumping of one of the meteor showers we get every year. We are in no more danger of being hit by space rocks than we were before this discovery, but the new discovery gives astronomers a place to look to search for asteroids that could potentially hit Earth. These asteroids are fragments of a comet so they are made of ice and the more common smaller chunks in this stream will burn up in the upper atmosphere harmlessly.

IN DETAIL

This is an example of one of the stories that have worried people:

- (Daily Mail) Czech experts warn Taurids meteor shower is hiding doomsday asteroids

And this is an example of a story that gets it right - an article in the reputable online astronomy

So what is the truth behind this story?

Every year Earth passes through the debris of comet 2P/Encke in November. It's one of the many times of the year when we get more shooting stars than usual in what's called a "meteor shower". The Taurids shower is one of the showers that is noted for its fireballs - larger meteorites that can become as bright as the Moon or brighter. Here is an example, a Taurids fireball videoed from Thailand in November 2015:

The overall risk hasn't changed - Earth passes through this extra branch of the Taurids every few years. So - the distribution of asteroids is not uniform but is a bit clumpy, and this is one of the clumps, so if you look in this clump maybe you have a better chance of spotting the smaller asteroids.

Earth only every few years. The say the objects are weak, like comets, easily broken up, but can be large with one confirmed fireball of 1 meter and another probable one of 2–3 meters in diameter.

The astronomers used a network of observation stations in Czechoslovakia to study the fireballs in 2015. Many of them were very bright, some brighter than a full Moon and one that was widely photographed, they estimated to have weighed a metric ton and been about one meter in diameter. They got more reports of that one than any before, and all 15 of their fireball observation stations photographed it. See page 7 of their paper . They had one other fireball of similar brightness. This is an earlier paper they did about those two fireballs published in May 2016 .

They think that a 10 meter diameter fireball seen the same day over the Pacific Ocean may belong to the same branch. See discussion on page 16

Their network of 15 observation stations let them work out the orbits of the Taurids more precisely than ever before.

The Taurid stream is already divided into two branches, the Northern and the Southern branch. Based on their data, they propose a new sub-branch of the southern branch.

So, they then did a search in the database for asteroids that could match the properties of their new sub branch of the southern branch of the Taurids. They found two of them, 2015 TX24 and 2005 UR. These are hundreds of meters in diameter.

They think there probably are many asteroids still to be discovered in this branch that are tens of meters in diameter. They would be fragile, easily broken up in the atmosphere, but the largest ones could be large enough to cause “significant regional and even continental damage”.

The paper in full is here

SO WHAT DOES THIS MEAN?

It doesn't mean an increased risk of asteroids overall. It's just that they think that there might be more chance of them on those particular years - so less on other years. Something to focus attention on.

The Taurids stream follow the orbit of Encke, a comet. It's debris from a comet so rather fragile, and so most of it would just break up in the upper atmosphere.

If they are right, it's nothing new. If they are right, this has been happening every few years for centuries. The overall risk is not changed, it's just that they are saying we need to pay attention to a particular group of asteroids as worth looking at closely, and the risk may be higher in those years, but if so, it is lower in other years.

Our asteroid searches are complete for objects like this for 10 km upwards, and nearly everything of 1 km or larger has been found as well, but we are missing many of around 100 meters or so and smaller ones. So we could be surprised by one of those, but for those also we'd expect to see them do close flybys of Earth many times before they hit, if there are any due to hit us any time soon.

We could be hit by one of them unexpectedly but the chance is very low, as it is for all 100 meter diameter meteorites. Perhaps this paper will help them to direct observations in a way to find them more quickly or help motivate new telescopes and more observations to find them?

A 100 meter asteroid could devastate a small country, and if it hit London it would cause gale force winds and smash windows as far as Edinburgh. It might be able to create a tsunami if it

But large asteroids impacts are very rare, after all there have been none that killed large numbers of people in recorded history - and many large earthquakes, volcanic eruptions and tsunami.

If anything the risk from asteroids is much lower in this century than any other previous one, because we've found most of the ones down to 1 km and many smaller ones too. So we know that none of those can hit us (which we didn't know before).

Also, we now have the ability to predict and evacuate the impact zone in any of the larger ones which we couldn't do before so the risk of loss of life is much lower now than it was in the past.

So, as far as asteroids are concerned, right now is the safest humans have ever been in recorded history. They've found all the 10 km asteroids and we know none of them are headed to Earth in the next few centuries - even in the twentieth century astronomers didn't know that. They've found 90% of the 1 km asteroids and none of those are headed our way either.

As for the smaller ones, they remain a risk, but so also are earthquakes, tsunamis, volcanic eruptions etc. But with asteroids it's a risk we can do something about. By the 2030s we should have found just about all of the asteroids even the smaller ones. The aim is to find 99% of the asteroids down to 130 meters by the end of the 2020s, I'm not sure if they will succeed by then, but surely by the 2030s.

Once we know them that well then we can deflect any that are headed our way, or evacuate the impact zone. But they are very rare - through all of recorded history there's no example of an asteroid like that hitting a populated area. Most of Earth is unpopulated still, desert or ocean. So if we do get such an asteroid it's likely to land in a remote desert place. And we would expect at least a few weeks of warning for something as large as 100 meters, enough time to evacuate the impact zone.

And there is nothing that's increasing our risk.

That Taurids result, if it is confirmed, is actually helping to reduce the risk by telling astronomers that a particular direction in space is a good place to look to try to find the asteroids we haven't found yet.

See also List of the articles in my Debunking Doomsday blog to date

Debunked: Asteroid called 3BC2017 will kill millions in June

Robert Walker

This is a particularly bizarre one as 3BC2017 is not even an asteroid name - asteroids start with the year, then two letters, then a number. They got it back to front, and put the year last. So it's totally made up. The story was published in the Express, and it's all based off some amateur video an anonymous uploader uplaoded to youtube. It's quoted to "An unnamed video narrator" and they explain throughout that it is actually a hoax, if you read it in detail.

> This is the image the Express uploaded, captioned “the hoax video warns that it is not a hoax.”. We can’t be hit by an asteroid that big - that’s an artist’s impression of one of the planetesimals that hit Early Earth not long after the formation of the Moon. They are all gone from the inner solar system now, or in stable orbits like Ceres or Vesta.x

'This is NOT a hoax' Asteroid strike will kill millions in JUNE, shocking video claims

The article ends:

> *“The asteroid the video names as 3BC2017 is not a name used by NASA in any of its official asteroid databases, so does not exist.”*
>
> *“Many hoax apocalypse prediction videos are placed on YouTube just to raise advertising revenue due to the large number of views they attract.”*

There is nothing at all to worry about here.

IN YET MORE DETAIL - ASTRONOMICALLY IMPOSSIBLE - NO ASTEROIDS THAT LARGE COULD HIT US

What he describes is astronomically impossible and reads like a bad B movie plot script. It is possible for an asteroid to hit Earth with very little warning, but it would have to be very small to do that. We've already found all the ones of 10 km or larger and 90% of the ones of 1 km diameter and a comet would be spotted years in advance and is very very unlikely since only 1 in 147 of the flybys of Earth are by comets.

A tiny 20 - 40 meter diameter asteroid could hit Earth with very little warning, and though our advance warning system is improved since Chelyabinsk, still, if one of those came from close to the direction of the sun then we might not spot it until it hit. They now think we get hit by one of those every 80 years, but most of Earth is ocean and what isn't ocean is mainly desert or ice caps, and the inhabited area is mainly lightly populated agricultural land outside cities. These are far more common than the larger meteorites so the next impact is most likely to be one of those. It could be predicted in advance - we've already had two impacts that were predicted in advance, of tiny asteroids too small to be of any danger to anyone, hitting one in a desert, one in the sea. If you were directly hit by a small meteorite you could be injured, even killed, and there are some examples of people killed by small meteorites in the literature. But this is very rare indeed, only a few per century reported world wide - many people are reported as killed by lightning every year so you can see the difference there.

So from an astronomical point of view, small asteroid impacts could happen at any time, including that date of course, so it would be foolish in the extreme to say we can't be hit by a small asteroid on that date.

ASTEROID LARGE ENOUGH TO STOP EARTH ROTATING - IMPOSSIBLE IN PRESENT DAY SOLAR SYSTEM

If you had a really huge asteroid, as large as the Moon perhaps, which hit Earth in just the right place, maybe it could stop it rotating. But that would be the least of our worries as the entire surface would be molten after an impact like that, seas and atmosphere gone. And the only way to start it rotating again would be a second impact just as large in the opposite direction. It makes no sense astronomically.

If there were large Moon sized objects in our solar system on random orbits that took them past Earth frequently, that would be a major risk. And there were objects like that in the early solar system, when an even large object the size of Mars hit early Earth and the Moon formed from the debris - at least that's the current leading theory for the formation of the Moon.

So back then 4.6 billion years ago, soon after the formation of the Moon, this scenario was possible though incredibly unlikely. But the solar system has settled down - those orbits were unstable, and eventually all those "planetary embryos" as they were called hit other planets or were ejected from the solar system or hit the Sun. So they are all gone now, and what's left is orbiting in stable orbits in the asteroid belt or in orbits in the outer solar system in resonances with Neptune and further out.

There isn't any stable orbit for an object like that in the inner solar system. So if there ever were objects like that, they are long gone.

And from time to time they may come into the inner solar system from beyond Neptune, but Jupiter is the big target and protects us from them, in simulations. We can see that from the cratering record. All the really big craters on the Moon, Mars, Mercury and what we have of the surface history of Earth come from well over three billion years ago (Venus had a global

impossible at present.

So that's the astronomy. And this is someone just saying it, with no cites, no evidence, no explanation, the papers don't know his name, he's just like an anonymous stranger buttonholing you in the street.

They have already found all the asteroids of 10 km in diameter or larger that do flybys of Earth (and so potentially could hit it). That's the size of New York. Compared to Earth, it's tiny. And none of them are going to hit Earth in the next several centuries. There is no way we are going to be hit by an asteroid the size of the Moon. There are comets that big way out in the outermost reaches of the solar system around the orbit of Neptune - but they are in reasonably stable orbits too, all the ones known, for at least thousands of years into the future - and we have Jupiter in between to protect us from them if there was any object headed our way. But we'd spot something like that decades before it got here. That's totally impossible that something that big could hit us. And it's never happened in the last 3 billion years because Jupiter protects us.

RED TOP TABLOID HOAXES

The red top tabloids publish hoaxes. You know that they know no more about this person who uploaded the video than the readers. Anyone can upload a video to youtube and there is no check on what they upload by anyone and they can say anything in the video. Why pay any attention to it?

The name is just made up. There is nothing in the video to suggest that the author knows anything about astronomy. The one thing he does say about the Earth's rotation stopping for 3 days then restarting shows a complete ignorance of the most basic ideas in astronomy.

It's just a waste of ink. Why also do people buy these stories? I mean - they write these stories

Do check out my petition:

Plea to Journalists: Please Debunk Rather than Dramatize "Doomsday" Stories - The Vulnerable Get Suicidal

It seems to be legal to write these fake doomsday stories. But maybe we can somehow put pressure on them. I had the idea to try to get an op ed published on this, if I could get it into one of the main newspapers it might help perhaps but I think that would be hard to do. I don't think they understand really how worried these stories make some people.

LATER VIDEO WITH ASTEROID NAME RE-ARRANGED TO 2017 3BC

In a later video , the rearranged the letters and numbers in the asteroid name to "2017 3BC" but it's still not a bona fide asteroid name; It should be 2017 BC3. But there is no 2017 BC3. The list jumps from 2017 AB to 2017 BQ13

List of minor planets: 495001–496000 - Wikipedia

This is how the provisional asteroid names are worked out

New- And Old-Style Minor Planet Designations

Also the only predicted flyby around that date is on 24th June at a distance of 7.9 times the distance of the Moon, see for the details 2010NY65 :

So obviously NASA hasn't predicted it, what's more of course any asteroid with a path predicted to hit Earth that would be added to the sentry tables as a red entry. See near future predicted flybys - published on the website of the ESA - European Space Agency

And it still says the same impossible thing that it would stop the Earth rotating. It is just BS.

See also List of the articles in my Debunking Doomsday blog to date

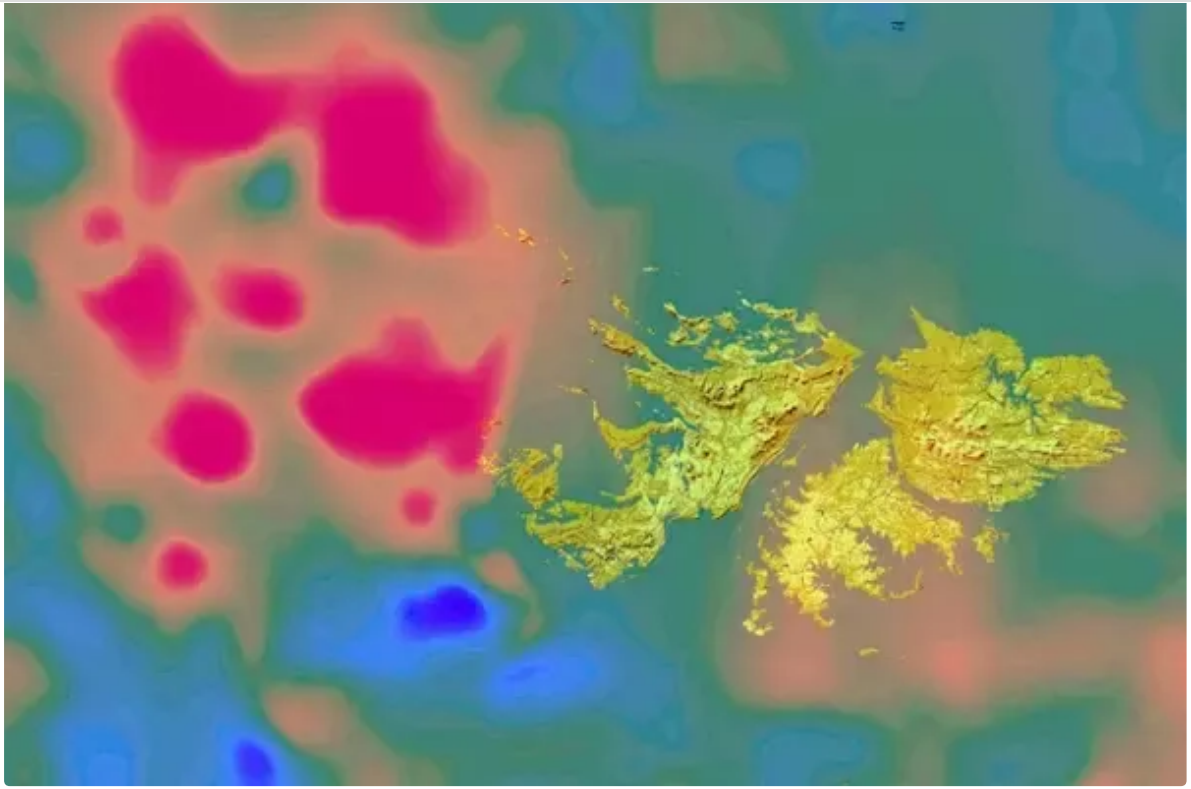
Debunked: Mysterious 'anomaly' linked to ancient apocalyse mass extinction discovered in The Falklands

Robert Walker

This is actually true, even though it's published in the Sun, but it's nothing to be alarmed about today. Shows that they do sometimes do reasonably accurate science articles on asteroid impacts. This one is genuine science but not something we need to worry about at present. If accurate it helps fill in the missing link in a "cold case" 252 million years old.

The article in the Sun is here: Mysterious 'anomaly' linked to ancient apocalyse mass extinction discovered in The Falklands

The press release is here



> Falkland islands in yellow overlaying image of the strength of Earth's magnetism in red, courtesy of the National Centers for Environmental Information.

The basin is also visible in seismic reflection profiles and gravity surveys as well as magnetic ones. It "has traits that are consistent with impact craters".

If this is confirmed, then it might explain the Permian-Triassic mass extinction which happened 252 million years ago as they estimate its age as 250 to 270 million years ago.

The crater is around 150 miles in diameter, or around 250 km in diameter. At that size, the

the 1 km asteroids too.

That only leaves comets. We'd spot such a large comet many years in advance, but comets are very rare at least at present, only 1 in 147 of the objects that do close flybys of us are comets. That makes it a 1 in 147 million the chance of a large comet hitting Earth this century, which is so unlikely that it's not something to be concerned about. We might get quite a large comet come past Earth, as has happened in the past, and happened recently with Mars with Siding Spring - a half kilometer diameter comet that had a tiny chance of hitting Mars but in the end missed by quite a distance - planets are a tiny target so if we do spot a largish comet heading towards Earth it's almost bound to miss.

See also List of the articles in my Debunking Doomsday blog to date

386 views · Posted Jun 16

Upvotes 0 Comment

Debunked: Our sun was born with an “evil twin” which may have wiped out the dinosaurs

Robert Walker

Here the paper it’s all based on is genuine science. The paper suggests that all stars are born as

The press release does mention “Nemesis” in a remark by one of the authors. One of the authors Steven Stahler, is quoted by Berkeley university in their press release as saying

> “We are saying, yes, there probably was a Nemesis, a long time ago,”

But by “a long time ago”, it’s clear from the paper that they mean in the first few million years after the Sun formed. That would be long long before the dinosaurs, before the formation of the Moon even, over 4.5 billion years ago.

The popular science articles and news stories go on to add as journalistic elaboration that this supports the Nemesis theory. That’s the theory of a distant star that sends comets towards the inner solar system every 26 million years. But that theory was disproved by the Wise results some years back.

Example stories which get it wrong:

- Science Alert: Our Sun Could Have Been Born With an Evil Twin Called "Nemesis"
- The Sun (red top tabloid): Our sun had an 'evil twin' called NEMESIS which may have wiped out the dinosaurs, boffins claim
- Futurism Astronomers Discover That Our Sun Likely Had an "Evil" Twin That Killed the Dinosaurs

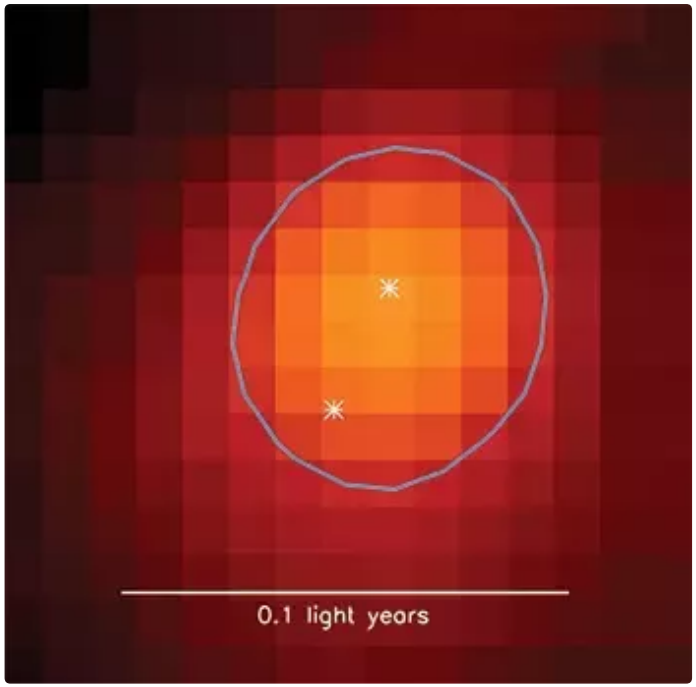
Example that gets it right

- Popular Science magazine: Our sun might have been born with an evil twin called 'Nemesis'. It ends the article correctly:

IN DETAIL

The original techy article is here: [1705.00049] Embedded Binaries and Their Dense Cores

It puts forward the thesis that most stars are born in very wide binary systems with the stars around 500 au apart. So far, that's the same as what the papers are saying.



> Image from press release of a very young binary star system in the Perseus molecular cloud, less than 1 million years old. The dense core is outlined in oval, and the image is from the SCUBA-2 survey image by Sarah Sadavoy, CfA.

However after that it differs.

> *"(5) Our model further predicts that most wide binaries break apart, although some shrink to become tighter systems. We have considered two modes of binary breakup - core splitting and stellar ejection. Under either mode, we obtain equally good fits to the observed populations of embedded stars. Deeper and higher-resolution studies of more evolved stars may help decide which picture is correct."*

So they have two hypotheses to explain how the binaries split up:

- The two stars remain embedded in separate cores of gas and dust which then breaks apart from the other core
- One star is ejected from the core of gas and dust that originally contained them both.
- Either way, most binaries break up one way or the other, but in some cases the distant stars spiral inwards towards each other to form close binaries.

This makes no difference at all to the question of whether our Sun has a companion star. We now know it doesn't from the WISE results. It does however suggest that somewhere in our galaxy there is another star that was originally born not just in the same nebula as us, but also in the same dust / gas core as us. But it's probably thousands or tens of thousands of light years away now.

> Artist's impression of the NASA Wide-field Infrared Survey Explorer. Researchers proved that Nemesis and Tyche can't exist in results published in 2014, using data that it collected in 2010 to 2011.

It was an all sky survey and has ruled out the possibility of a Saturn sized object out to 10,000 times the Earth - Sun distance, and a Jupiter size or larger object out to 26,000 times that distance. (I.e. 26,000 AU.)

It ruled out a red dwarf star completely and it ruled out even brown dwarfs, unless very

See also List of the articles in my Debunking Doomsday blog to date

319 views · 2 upvotes · Posted Jun 16

Upvotes 2 Comment

Review of End Day (2005 BBC docudrama) - Megatsunamis, Asteroid Impacts, Particle accelerator strangelets / black holes / vacuum bubble

Robert Walker

SPOILER ALERT This review contains spoilers. I gave this a 1 point on IMDb for awful, for the science. I'd give it an 8 perhaps for the science fiction, special effects and story line as I did thoroughly enjoy watching it, though those who find such things scary probably wouldn't. But I'm judging it for its science as it is presented as a docudrama to present science.

- The only scenario that had some accuracy was the 100 meter asteroid impact, but that had many scientific booboos in it, is very improbable, and astronomy has moved on since this film so we would have warning of weeks, probably months for a 100 meter diameter asteroid.

particles of far higher energies hit the Earth's atmosphere and the Moon. Indeed on most of the scenarios, Earth, the Moon, and our Sun would have disappeared long ago, and neutron stars wouldn't last long even if the collisions produced neutral uncharged stable black holes, and as for the strangelets, our Sun would have turned into strange matter long ago even if you took the rather implausible scenario that only colliding gold nuclei cause strangelets.

- The megatsunami is based on a single controversial paper from 1999 which is now pretty much debunked. It is not likely in the near future and we'd have weeks of warning and plenty of time to evacuate.
- A disease outbreak can happen, after all it already has, just way over exaggerated again. That scenario was so thin on details that it's hard to know what to say about it.

So let's look at the other scenarios (apart from the disease outbreak) in more detail

My IMDb review is here .

MEGATSUNAMI

The BBC site itself has a page about this: Mega-tsunami: Wave of Destruction

The main inaccuracies are that

- We'd have weeks of warning of a megatsunami.
- La Palma erupts every 200 years on average, and most eruptions won't cause megatsunamis.
- This is all based on a single scientific paper from 1999. Although peer reviewed, scientific papers are often controversial when new ideas are published, and this one

did them as a series of smaller subunits. So they would not have caused a tsunami.

Here is a quote from Dave Petley who researches landslides:

> New Acquaintance: "So what do you do?"
>
> Me: "I research natural hazards, and in particular landslides"
>
> NA: "Oh – is it true that one of the Canary Islands volcanoes is going to collapse in a giant landslide? I was told that it'll cause a tsunami that'll devastate the coasts of Europe and America"
>
> Me: "Excuse me – I'm just going to bang my head on the table..." [thump!]

That's by Dave Petley, Pro-Vice-Chancellor (Research and Innovation) at the University of Sheffield and researcher into landslides. Quote from The Canary Islands landslide-induced tsunami scare

ASTEROID IMPACT

This is the only scenario that was reasonably accurate. Except that such space rocks are very rare.

It's true that a 100 meter rock could hit us with not much warning. They have found all the rocks larger than 10 km, more than 90% of the ones above 1 km, but the ones above 100 meters are far more numerous. It's very unlikely though that it would hit a city - most of the Earth is ocean and desert.

Also we'd have more warning than they suggest in the docudrama. We missed the Chelyabinsk meteorite but if it had been just 40 meters in diameter instead of 20 meters we'd have spotted

100 meter asteroid hit Earth, bearing in mind also that 80% of the Earth is ocean, then the chance of it hitting a city, is surely under 0.12%. It would have large scale effects - storms and broken windows for hundreds of kilometers, but with warning we'd be prepared, evacuate the impact zone, and those far from it would be told to keep away from windows etc.

Asteroids are the one natural disaster we can predict exactly, to the minute, with enough advance warning to track them. Back in 2003 when this film was published, we'd not have much warning at all and that part of this section was reasonably accurate. But now we'd have much more warning.

We could still get one of those with only weeks or months of warning, but by the end of the 2020s the risk of this should be reduced to a tiny level, or certainly by the 2030s.


NOVOTEL
NOVOTEL
ITALIA

- It would be a huge coincidence for it to be so close to the ISS that they can see it as a big rock, remember it's only 100 meters across. They don't have especially good telescopes on the ISS as it's not designed as an observatory.
- They claim to be unsure whether it will hit Earth and in the same broadcast say that if it hit Earth it will hit Berlin. This doesn't make any sense. If you know it is headed for Berlin you know it will hit Earth. If you don't know if it will hit Earth, then you have a line of length thousands of kilometers, more likely tens of thousands of kilometers that has to have points that miss Earth - and diameter probably tens or hundreds of kilometers for your possible impact region.
- The story has precursor impacts hours earlier in the middle East. But in a time period of an hour the Earth moves 108,000 kilometers. If you get precursor debris, you'd get it within seconds to minutes at most - in a minute Earth moves 1,800 km. Not hours. You can see why they made it hours for dramatic interest but this is not scientifically plausible.

BLACK HOLES / STRANGELETS

In this section they mention the RHIC study, but only the list of scenarios they looked into, not their conclusions.

It uses the cosmic rays evidence for the mini black holes and vacuum decay - that there are much more energetic collisions happen all the time in the upper atmosphere, a million times a year. It uses a slightly different argument for the strangelets:

STRANGELETS

here here

There was a similar review for the LHC by an independent group of scientists in 2003 which is here: [0806.3414] Review of the Safety of LHC Collisions Conclusions summarized here: The safety of the LHC

LHC REVIEW

The LHC review doesn't bother to go into details for the RHIC arguments against strangelets as, the RHIC of course has validated those argumentsalready by being run without creating strangelets.

> "It is difficult for strange matter to stick together in the high temperatures produced by such colliders, rather as ice does not form in hot water. In addition, quarks will be more dilute at the LHC than at RHIC, making it more difficult to assemble strange matter. Strangelet production at the LHC is therefore less likely than at RHIC, and experience there has already validated the arguments that strangelets cannot be produced."

VACUUM BUBBLE

It's the same for both, and the LHC summary is:

On the vacuum bubble, they say

> "There have been speculations that the Universe is not in its most stable configuration, and that perturbations caused by the LHC could tip it into a more stable state, called a vacuum bubble, in which we could not exist. If the LHC could do this, then so could cosmic-ray collisions. Since such vacuum bubbles have not been produced anywhere in the visible Universe, they will not be made by the LHC."

than can ever be produced now in the first tiny fraction of a second of the Big Bang, before inflation, which is when it is supposed to have fallen into a false vacuum. How could it get through that without going into a true vacuum state? Surely that's evidence that we are in a true vacuum state? And if it were true, it's so vastly unlikely that there's no real chance of a vacuum bubble forming until a number of years in the future so vast you need 1 followed by 100 zeroes to express it.

For more about this see Debunking: Stephen Hawking Says Universe is on the brink of instability and could collapse - metastable, in a false vacuum state.

MINI BLACK HOLES

Again, it's the same for both, and the LHC summary is:

For black holes:

> "Whilst collisions at the LHC differ from cosmic-ray collisions with astronomical bodies like the Earth in that new particles produced in LHC collisions tend to move more slowly than those produced by cosmic rays, one can still demonstrate their safety. The specific reasons for this depend whether the black holes are electrically charged, or neutral. Many stable black holes would be expected to be electrically charged, since they are created by charged particles. In this case they would interact with ordinary matter and be stopped while traversing the Earth or Sun, whether produced by cosmic rays or the LHC. The fact that the Earth and Sun are still here rules out the possibility that cosmic rays or the LHC could produce dangerous charged microscopic black holes. If stable microscopic black holes had no electric charge, their interactions with the Earth would be very weak. Those produced by cosmic rays would pass harmlessly through the Earth into space, whereas those produced by the LHC could remain on Earth. However, there are much larger and denser astronomical

So all those scenarios are ruled out - and remember that in the case of the LHC review, this is a review by independent scientists.

NEED PARTICLE ACCELERATOR AS LARGE AS THE SOLAR SYSTEM

To produce collisions with similar energy to the ones with cosmic radiation particles, we'd need to build particle accelerators as large as a solar system, so it's not something we are going to do any time soon.

Though they don't cover these, it's the same for other astronomical "doomsday scenarios". Astronomy has moved on hugely in the last decade or so and we know our stellar neighbourhood very well now. There are no stars able to go supernova close enough to harm Earth. The only gamma ray burst candidate we know of close enough to harm us is now known to be angled away from us.

DOCUDRAMA SELECTION OF MATERIAL TO CONTRIBUTE TO THE STORY LINE ONLY

Although the BBC does produce many good documentaries, they often will take a particular story line, and anything not contributing to the story they want to tell is left out. That can work very well. I've just watched an excellent documentary on Horizon about volcanism in the solar system. But sometimes it is seriously flawed, especially if it presents a minority view and only presents the reasons for that view as in this case.

For instance, in this docudrama, they only present clips from scientists that support their story line. Nothing from anyone explaining why the particle accelerator was safe for instance. Just saying that it is without explanation. Hopefully from this review you can see that they had good reason for saying that it was safe.

As a drama, it's kind of interesting, like Ground Hog Day, it could be a basis for an episode of Doctor Who or Star Trek etc. But as science, it's absolutely awful, and as it is presented as science I give it the lowest score available for a review of 1.

You can't say that a science documentary, because it is on the BBC, is okay. Many of them are great but you get a few rotten tomatoes like this one. It's basically written by a good script writer with scant regard to anything scientific that doesn't support and advance their story line.

For more about this see also

- Debunked: Earth could be struck by a huge asteroid hundreds of kilometers across
- How did we miss the Chelyabinsk asteroid?
- Debunked: NASA researcher says humans face possible future extinction from asteroid impacts - 96% of species extinct equates to 0% chance of humans extinct
- Debunked: the Large Hadron Collider will create mini black holes that will destroy the world
- Debunking: Stephen Hawking Says Universe is on the brink of instability and could collapse - metastable, in a false vacuum state.

List of articles here: List of the articles in my Debunking Doomsday blog to date

have only 100 years left on this planet

Robert Walker

Summary - that is indeed what he says. The details are sketchy and it's about a program series to be aired on the BBC in the future. However if you look at the list of things mentioned in the program description, none of them would make us extinct in the next century.

First the story itself is true - but about a future program series that will air on the BBC called "**Expedition New Earth". Details here**

All we know about what he will say is this short paragraph:

> "Professor Stephen Hawking thinks the human species will have to populate a new planet within 100 years if it is to survive. With climate change, overdue asteroid strikes, epidemics and population growth, our own planet is increasingly precarious."
>
> "In this landmark series, Expedition New Earth, he enlists engineering expert Prof Danielle George and his own former student, Christophe Galfard, to find out if and how humans can reach for the stars and move to different planets."

So he lists

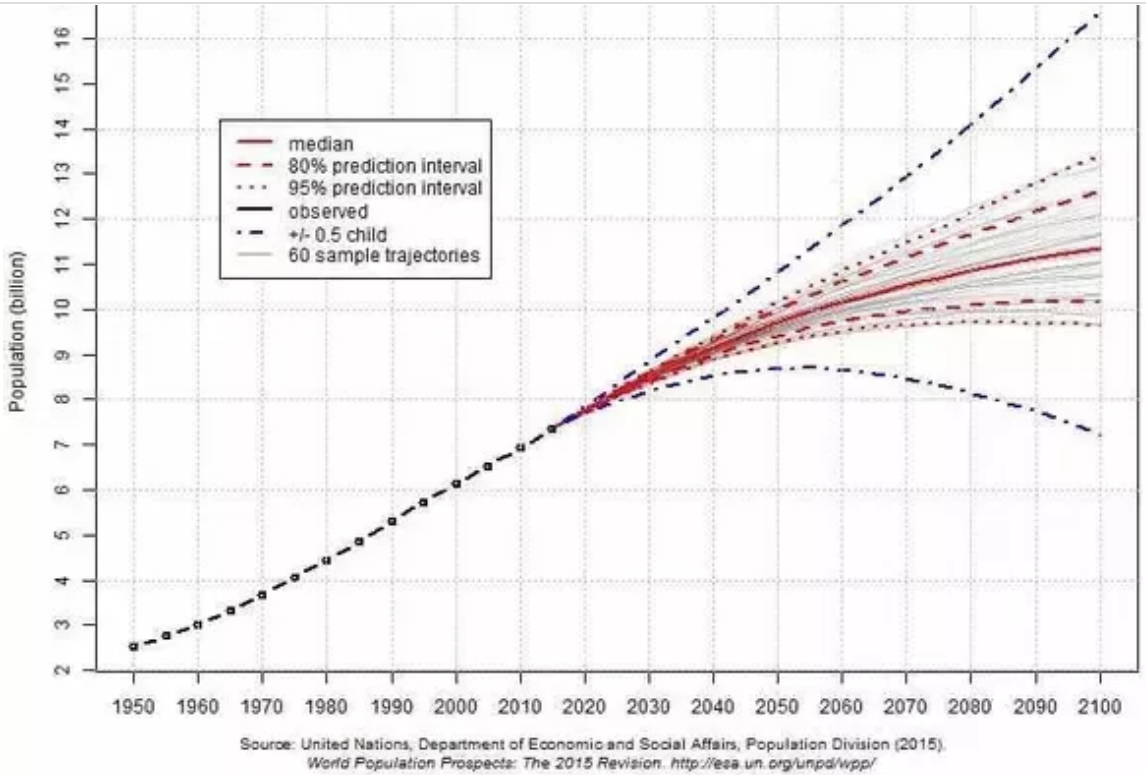
- climate change
- asteroid strikes
- epidemics
- population growth

lower numbers, but populations don't go extinct as a result of growth. A famous example is the boom / bust of lemmings. After a boom you get some years with very few lemmings, but they don't go extinct.

Also our population is actually leveling off at ten to eleven billion by 2100 with the middle of the road projections. And we aren't running out of the capability to feed ourselves.

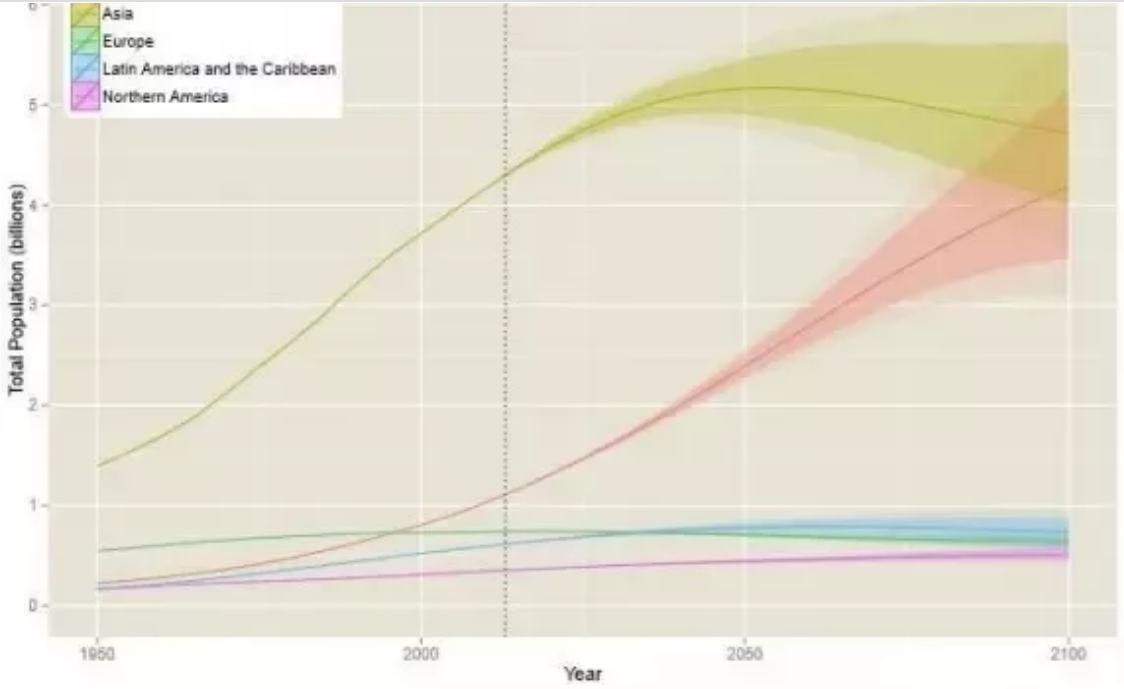
We have already reached peak child, and most areas of the world now have fertility levels at or below replacement, and feature a slowly growing, steady or declining population. Our world population continues to grow only because with better health world wide, people on average live longer each year.

The middle of the range projections have the Earth's population trending towards 11 billion by 2100 while lower projections have it level off at ten billion or even start to decline towards the end of the century.



> So whatever happens, we aren't headed for Malthusian type exponential growth because we have reached peak child already. In the graph above, the red dotted lines show the upper and lower limits for the 95% prediction interval. The blue lines are for +- 0.5 children per couple average. You can look up the data here, the graphs page for the UN population division .

Though we may not reach peak population this century, most parts of the world have a good chance of stabilizing before then, especially the more developed countries. The least developed countries are the ones that would get most population growth. The most rapid growth is in Africa in the projections. You can see a break down for each region of the world here,



> Older figures from 2014. Most of the population growth is in Africa by the end of the century by these figures, with everywhere else leveling off by then, the least developed countries are the ones that grow most rapidly, so that's a reflection of the situation in Africa

So, things are actually looking brighter than one might think. Which isn't to say it will be easy, but there is no reason why we have to ruin ecosystems on Earth.

EPIDEMICS

An epidemic doesn't normally make a population extinct unless it is reduced to a small population already. We have a huge and genetically diverse population.

OVERDUE ASTEROID STRIKES

regular intervals. But they don't.

If buses go past a bus stop every hour in the daytime, and it's been over an hour since the last one, you can say that it is overdue. If swallows arrive in your region every spring, and they haven't arrived yet at their usual time, again you can say they are overdue.

But if you get rain on average every other day and you have a sunny spell of a week, you can't say that rain is "overdue". Even before weather forecasts, then if you had no other basis for your prediction, you'd still say the chance is 1 in 2 of a rainy day.

Now that we have good weather forecasts. It depends on the weather forecast. Perhaps you get another week of sunshine. You may even be just about certain you will have another week of sunshine as our weather forecasts are getting to be very good over short time periods like that. So it's not a case of "overdue rain" but of "rain is likely if the forecast says rain".

And we do have a "giant asteroid weather forecast" for the next several centuries. Our current forecast is "no giant asteroid impacts".

They can say that because of a major program to search for asteroids that could hit Earth. They have completed their survey of all the asteroids larger than 10 km in diameter, that do regular flybys of Earth. None can hit us for several centuries. This only leaves comets. But - though these numbers can vary - at present only 1 in 147 of the objects that do close flybys of Earth are comets. So a large comet impact is extraordinarily unlikely. They usually say that the chance of an asteroid impact of 10 km or above is 1 in a million per century - though it is 0 of course for the next few centuries. For comets then, it would be 1 in 147 million that we are hit by a 10 km or larger comet this century. That figure is so low that you can forget about it.

Smaller asteroids are possible. They have found 90% of the 1 km ones - but these would not make us extinct. The large ones wouldn't either. See my

But we don't need to worry about those anyway because there are no 10 km or larger asteroids headed our way for the next several centuries. If we find one that large, and find that it is headed our way, then they are easy to deflect if you have decades of warning. The longer the time before the impact, the smaller the nudge. You need a tenth of the nudge to deflect with a decade warning than with a one year warning. But not only that. If you have decades of warning, the asteroid will do close flybys before it hits and has to pass through a tiny "keyhole" region to hit Earth next time around. In that case a tiny fraction of the usual nudge is enough to deflect it away in that case.

So if we continue to have space technology, there's no reason why we can't prevent Earth from being hit by these large asteroids indefinitely into the future.

Also sometimes you get the impression we could be hit by truly huge asteroids, hundreds of kilometers across. That's not possible. See my Debunked: Earth could be struck by a huge asteroid hundreds of kilometers across

CLIMATE CHANGE

Our planet is actually cooler than it was in the distant past. For most of Earth's history our planet is so warm that it has no ice at all except at the top of high mountains. Geologically speaking we are in an "ice age" in an interglacial of an ice age, for as long as there is ice at the poles. And Antarctica particularly will have ice for thousands of years into the future even on the warmest of the projections.

Some areas of our planet in the tropical regions could get too hot for humans to live easily. They could become as hot as Death Valley. But the planet as a whole will not do that in any of the climate change predictions. It will continue even to have large ice sheets for the foreseeable future. So, a planet with ice at the poles pretty obviously won't be too hot for humans to live in

> *"A billion years will give us four more orbits of the Milky Way galaxy, any one of which could bring us into collision with another star, or a supernova shockwave, or the incinerating beam of a gamma ray burst. We could swing into the path of a rogue planet, one of the billions that roam our galaxy darkly, like cosmic wrecking balls. Planet Earth could be edging up to the end of an unusually fortunate run."*

So if we look at those:

- Supernova - see Debunked: Earth is threatened by a supernova
- Gamma ray burst: Debunked: A gamma ray burst could make humans extinct
- Hit by a black hole: Debunked: Our Sun or Earth could be hit by a rogue planet, neutron star, black hole or star

So I don't see any basis for his prediction at all if this is what it is based on.

SPACE COLONIZATION ENTHUSIASTS "WE NEED TO BACKUP EARTH"

We will have to see if he has anything more to say when the program airs. But it is part of a general narrative by some space enthusiasts. They desperately want us to send humans into space to try to colonize Mars, most of all. And they have taken this idea that we need to "backup Earth" as their reason for doing it. But I don't think the idea stands muster at all.

There is no way you could make Earth anything like as uninhabitable as Mars. It will have an atmosphere, oceans, some kind of animals and fish, and plants, even with the worst possible disaster. Most of all it will have air to breathe. It will have a comfortable range of temperatures for humans to live in, except for the coldest and hottest places. We will be able to live almost anywhere on Earth with only minimal technology. As omnivores then it's just not possible to

- No oxygen to breathe
- Nothing edible of any description there
- So cold at night that carbon dioxide often freezes out as dry ice

Here is the US comedian Bill Maher poking fun at the idea of Mars as a "backup planet" and talking about the importance of looking after Earth.

EARTH BEST FOR A BACKUP

In my Case for Moon First, I argue that the only kind of a "backup" that could be worth doing in space is a backup of knowledge and seeds etc in a repository on the Moon - that Earth for better or worse is the place we call home and have to look after.

- Earth is the best place for a backup
- Backup on the Moon - seed banks, libraries, and a small colony

I do see a possibility of large O'Neil type colonies and habitats in lunar caves becoming eventually as easy to maintain as houses on Earth if there is a reason to set them up in the first place and depending how easy the maintenance is. But I don't see setting up a backup in space as a good motivation for these. Indeed if not done carefully, if done too quickly, then it could lead to the likes of N. Korea in space, millions of people with strange ideologies (to us) and with all the technology of space travel.

EARTH HAS THE EQUIVALENT OF FOUR "OCEAN WORLD" PLANETS HERE ALREADY

Earth has four times it's land area as oceans. That's the equivalent of four "ocean worlds" each of which could sustain our entire population using Mars colonization technology, easily.

Using those methods, we could provide all the food for four times the population of Earth, from only 0.5% of the Pacific ocean. I'm talking here about minimal impact sea steading, in tethered floating sea cities that feed themselves by growing crops in floating farms, and only use the sea water as a source of water for the crops and for salt etc and the sunlight as a source of power.

That may seem far fetched but it is far far easier than trying to survive on Mars or anywhere else, which is Stephen Hawking's plan, if he hopes to feed those 11 billion people from crops grown on Mars. I go into it in detail with calculations here:

- What about Earth deserts?
- Seasteading
- Fertility of lunar and Mars soil

- Debunked: Climate change will make the world too hot for humans
- Debunked: NASA researcher says humans face possible future extinction from asteroid impacts - 96% of species extinct equates to 0% chance of humans extinct
- Debunked: Earth could be struck by a huge asteroid hundreds of kilometers across

List of articles here: List of the articles in my Debunking Doomsday blog to date

Debunked: 'This is NOT a hoax' Asteroid strike will kill millions in JUNE, shocking video claims

Robert Walker

Summary: This is fake news.

Detail: This is a new Doomsday story on the Express website, a UK red top tabloid. Despite the article title it's a blatant hoax. The newspaper itself says this at the end, so I don't know why they run this BS which they themselves know is nonsense. 3BC2017 is not even a genuine

This channel is not running ads so they aren't doing it for money which shows you get some people who do these videos for other reasons - just for clicks or to get in the papers? YouTube Stats, Channel Statistics

Genuine asteroid identifiers start with the date first, then two letters then numbers. See Astronomical naming conventions

The video is here

You can check here to see if there are any risks

Sentry: Earth Impact Monitoring

precisely. Orange means there is a high enough probability of impact to be a matter needing public attention and red means certainty. So far it has never got into orange.

Right now the top entry is white. This means there is nothing currently known with any significant chance of an impact in the next century. They have completed the survey for 10 km asteroids, so apart from comets which are very rare at present (and also detectable years in advance), only 1 in 147 flybys is a comet - then there are no 10 km asteroids that can hit us in the next 100 years. They have nearly finished the survey for 1 km asteroids too. They expect to reach 99% coverage of those some time in the 2020s.

The article is here: This is NOT a hoax' Asteroid strike will kill millions in JUNE, shocking video claims

They use this image:

We don't get asteroids this big hitting Earth any more. The asteroid that made the dinosaurs extinct was around the size of New York - too small to see at this resolution - and we also know all the asteroids of that size that do regular flybys of Earth and none will hit us in the next several centuries. We know nearly all the asteroids of 1 km size also.

While a comet even of 1 km size would be easy to spot for several years before it comes past Earth, would be far more likely to do a close flyby than to hit, because Earth is such a tiny target - and only 1 in 147 of the asteroids that come close to Earth are comets.

So basically a 10 km diameter comet can't happen just now, in any practical sense, is so unlikely, only a 1 in 147 million chance over the next century. We could get a large comet fly past but the chance of that is so tiny, and the chance of a hit is so small again that it's just about impossible.

It may have been possible in the past at times with more comets than we have today.

So in short, it's just fake news.

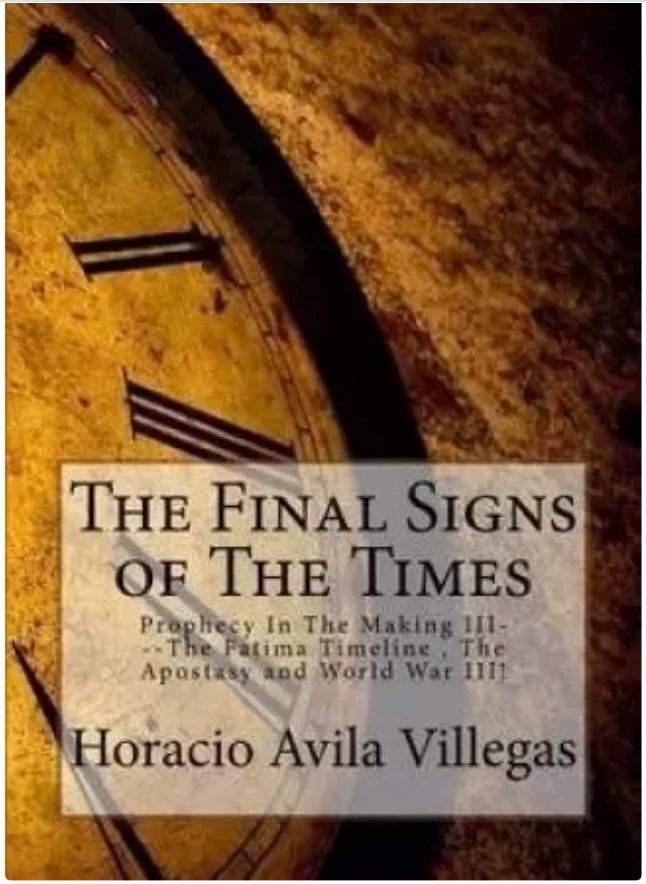
See also: List of the articles in my Debunking Doomsday blog to date

Debunked: Horacio Avila Villegas prophecy

a century ago

Robert Walker

Summary: yet another doomsday prophecy that hit the news, and is getting some people very anxious. There is nothing to worry about here. So, yes, it is true that Horacio Villegas did predict Trump's presidency in a book published in November 2015. And he did predict nuclear war - though not in May, rather in October 2017. However there are many people prophesying. Several of those hit the tabloid news every year, and there are many more that don't. We don't notice all the ones that made false predictions while the few that get something "right" get all the publicity and attention. And - there is no evidence at all that humans can predict wars and disasters.



IN DETAIL

This has recently hit all the red top tabloid news. Titles like: Mystic who foretold Trump presidency predicts exact date of WW3 - and it's SOON

It is true that he did foretell that something would happen at this time in 2015. And claimed "Trump is being set up to win" at the end of 2015. So quite early on I suppose. And predicts a nuclear war with Russia. That's all true.

His blog itself is here, though it is hard to navigate: Prophecy In The Making.

Remember however, there are dozens of people prophesying things, having visions, writing books. So from time to time they are going to prophecy something that has a resemblance to real events.

The idea that we might have a nuclear war with Russia is a natural thing for someone to predict, and trouble in Syria also, they are the most obvious things for anyone to think of back then as now. So that's hardly convincingly prophetic.

So it really amounts to the Trump prophecy as the main unlikely thing he predicted that actually happened. So I'm not sure I can say more than that. It probably seems striking to him but for every person like this who predicts something unusual that actually happens there are probably a dozen or a hundred or more who predict unlikely things that don't happen.

When something striking happens you get plenty of people predicting it, but where were all the people predicting Trump to win in 2015? Well they did exist, after all he had predicted it - but there were many people predicting all sorts of other futures that didn't happen. Also predicting him to win is the sort of idea that would tend to occur to someone drawn towards ideas that we might have an unpredictable president.

So there are many false predictions and - some turn out to be true, but we can’t decide in advance which of those many predictions is correct, so they aren’t really helpful in predicting the future. And previous success in prediction doesn’t seem to correlate to continuing success.

And - bottom line is there's no evidence that the future can be prophecied in such a way.

When debunking things like this, there is no astronomy or science to debunk. It is all about

It's hard to debunk that as it isn't based on science or astronomy or indeed even ordinary reasoning but some kind of blind belief that prophesy of this type works despite all the evidence to the contrary.

I can look at particular prophesies in this case the Fatama sisters and show that first you have to be a deeply devout Catholic because otherwise why believe there is anything in it? And that they didn't prophesy the things attributed to them anyway. That's about all I can do.

WHAT ABOUT THE THREE SISTERS OF FATIMA?

These sisters saw visions and made visionary statements that could be interpreted in many ways. Some think they refer to things that have already happened by now - that is if they are prophetic. The Catholic church has a belief in modern saints, miracles and prophecies, and even has the Pope recognizing miracles, but other Christian churches don't think like that.

There is no real evidence at all that anyone can successfully make such kinds of predictions. But Catholics, even if you are a devout catholic and believe in holy miracles and believe they still happen to this day, and believe that the visions of the three sisters of Fatima were an example of a prophetic holy miracle - still - there is nothing to link them to a particular date or a particular event like a nuclear war.

The third vision, revealed in 2000 which is his basis of a prediction of WWIII this year was this:

> ‘At the left of Our Lady and a little above, we saw an Angel with a flaming sword; it gave out flames that looked as though they would set the world on fire; but they died out in contact with the splendour Our Lady radiated towards him from her right hand: pointing to the earth with his right hand, the Angel cried out in a loud voice:
> “Penance, Penance, Penance!” ‘

> Other Bishops, Priests, men and women Religious going up a steep mountain, at the top of which there was a big cross; before reaching there the Holy Father passed through a big city half in ruins, and half trembling with halting step, afflicted with pain and sorrow, he prayed for the souls of corpses he met on his way; having reached the top of the mountain, on his knees at the foot of the big cross he was killed by a group of soldiers who fired bullets and arrows at him, and in the same way there died the other Bishops, Priests, men and women Religious, and various lay people of different ranks.'
>
> (The third scene depicts the return of humanity to God.)
> 'Beneath the two arms of the Cross there were two Angels, each with a crystal aspersorium in which they gathered up the blood of the Martyrs and with it sprinkled the souls that were making their way to God.'

As you can see, it is very enigmatic. No date mentioned. There are many specific interpretations which put the predicted events in our past, if you read how the catholic church has interpreted it What were the 3 secrets of Fatima? Are they against Catholicism?

So even if you are a devout Catholic, believe in holy miracles, believe in prophetic visions, still, there is absolutely no reason at all to take it as a prediction of WWIII.

See Debunked: Have these three sisters predicted the Apocalypse

Three Secrets of Fátima - Wikipedia

And of course I have debunked the idea that a nuclear war, even an all out nuclear war, would have the effects described. See

- Debunked: A nuclear war would make Earth uninhabitable - and humans extinct

- List of the articles in my Debunking Doomsday blog to date

See also: List of the articles in my Debunking Doomsday blog to date

Tense situation concerning North Korea

Robert Walker

This obviously is not my specialty but I feel I need to say something to help those who are scared about it. It is quite a serious situation. It's similar to the situation at the height of the Cold War in Europe, though with the focus on Asia rather than Europe. Trump surely won't want to start a nuclear war., that much I'm sure of. Even if you are totally cynical about him, obviously his hotels and golf courses and businesses matter a lot to him and a nuclear war would be a disaster for them :). And it would of course be an utter disaster for North Korea. So neither of them want a nuclear war to start. So the main thing is, could it start "by accident"? It's much the same as the situation for the Cold war but for different reasons.

So first, thare a few things to bear in mind.

When reading statements by the Chinese, like this one by Chinese Foreign Minister Wang Yi :

> a conflict could break out at any moment.
>
> "I think that all relevant parties should be highly vigilant with regards to this situation."
>
> "We call on all parties to refrain from provoking and threatening each other, whether in words or actions, and not let the situation get to an irreversible and unmanageable stage."

Do bear in mind that first, they are making this statement because China also doesn't want a nuclear war. Nobody wants it. It is just like the cold war in that respect.

Also, they have always been trying to stop the West from sanctioning North Korea too much because they are concerned about the effects on their border if the regime their collapses. It is a buffer state for them. China are the only ones supporting North Korea, and in a modern world, North Korea couldn't last that long without support from outside its borders.

So, it is in their interest to make it seem even tenser than it actually is, as they are uncomfortable with too much by way of diplomatic and economic pressure on North Korea.

But it is a tense situation,

Also another remark on the statements from North Korea. When you read about the nuclear bomb and missile tests, then North Korea frequently does these, about once or twice a year and makes provocative statements. So North Korea posturing and being belligerent, launching test missiles and exploding nuclear weapons also doesn't mean they are going to carry out a nuclear attack.

I think myself that the best response in event of a nuclear attack by a nuclear power is not to respond. If North Korea was to drop a nuclear bomb on South Korea, say, then it is no solution at all to bomb North Korea and kill millions of innocent civilians - there are of course lots of

But - that might not be what happens of course.

I don't think it is going to lead to a nuclear war, chance must be small at present. Nobody wants that, not even North Korea.

NORTH KOREA'S PERSPECTIVE

You don't hear much about their own perspective on this. I watched a news section on the BBC last night which helped. So part of this is from that story plus a bit of research to confirm. They do of course have their own perspective. They don't think "we are evil people threatening the free world". They think what they are doing has good reasons behind it. And their main interest of courses is to preserve their own country.

The reason the North Koreans developed the nuclear bomb is to prevent their country from being overridden by others. They see the example of the US invading Iraq, many countries bombing Syria, Russia taking over the Crimea etc - and they don't want that to happen to them.

They think that if they have nuclear bombs then other countries will leave them alone.

They don't seem to have expansionist plans to take over the rest of the world as far as I know. Don't try to draw comparisons with Hitler - they don't want to do that.

It is rather that they look at these examples of other places in the world that have been invaded by military superpowers, and say that "but for our nuclear bombs, there we would be also".

Given that motivation then why would they actually launch a bomb? Their main asset is as a threat, to prevent anyone bombing them. They are not useful as offensive weapons, because of the political fallout, or if there is retaliation, the devastating effects on their own country.

> Cheondoism flag

This is a modern twentieth century religion founded from Confucianism, which is to do with developing a pattern on Earth of a heavenly nature, with agnosticism about an afterlife.

I Asked Noam Chomsky His Thoughts on the North Korea/ US Situation. He Sent This

> "This "object lesson in air power to all the Communist world" was an attack in the major irrigation dam – a crime that led to the death sentence at Nuremberg. It was highly successful, causing a flash flood that "scooped clear 27 miles of valley below. Along with other attacks on dams, this devastated 75% of the controlled water supply for North Korea's rice production. It sent the commissars "scurrying to the press and radio centers to blare to the world the most severe hate-filled harangues to come from the Communist propaganda mill in the three years of warfare." To the Communists, "the smashing of the dams meant primarily the destruction of their chief sustenance – rice. Westerners can little conceive the awesome meaning which the loss of this staple food commodity has for the Asians – starvation and slow death. Hence the show of rage, the flare of violent tempers, and the threats of reprisals when bombs fell on five irrigation dams."

They also have the example of Vietnam, devastated by the war with the US. Again, they know of th effects of the defoliants of the Vietnam war on Vietnamese agriculture

And more recently

> "In 1993 North Korea was about to strike a deal with Israel to end missile exports to the Middle East in return for diplomatic recognition. The US pressured Israel to reject it, and North Korea retaliated by carrying out its first test of a medium-range missile. A US-North Korean "framework agreement" was then signed. Neither side observed it completely, but they mostly kept to it. When President Bush took office, "the North Koreans had stopped testing longer-range missiles. It had one or two bombs' worth of plutonium and was verifiably not making more," according to Leon Sigal, one of the leading US specialists on the topic. Bush's aggressive militarism quickly led to a revival of NK's missile and nuclear programs. By

> international inspections, in return for international aid and a non-aggression pledge from the U.S., along with commitments by the two sides to “respect each other’s sovereignty, exist peacefully together and take steps to normalize relations.” The Bush administration immediately undermined the accord, disbanding the international consortium set up to provide the promised light-water reactor, renewing the threat of force, and pressuring banks to freeze North Korea’s hard currency accounts, including proceeds from legitimate foreign trade. North Korea reacted predictably, in their own strange ways.”

This is something their school children will all learn at school and the older people will remember their parents talking about those 1950s events, and some very old people there will have lived through those 1950s events themselves.

RANGE AND CAPABILITIES OF NORTH KOREAN NUCLEAR WEAPONS

They can in principle hit Alaska and part of Canada I believe with their longest range missiles, but not the US. They can hit Scandinavia, Germany, some of the Balkan states, but not the UK, France, Spain or Italy,

They have put a satellite into orbit, but that's not the same as a ballistic missile though it is the same basic technology, it doesn't mean they could make it descend again anywhere particular, except to eventually burn up in the atmosphere.

Also though they have tested nuclear weapons, there is a lot of international skepticism about whether they have mastered the much more difficult feat of miniaturizing a nuclear bomb to put it inside a ballistic missile.

They have got solid fuel rockets, which are harder to counteract as they can be launched more quickly, instead of needing lots of preparation first (similar to a conventional space launch)

But some experts are concerned that they may be able to target the US in the not so distant future perhaps four years from now, if they continue this line of development, and that eventually, though probably they haven't yet, they will learn to miniaturize their nuclear weapons.

N Korean nuke could hit US west coast by 2021: former CIA officer

North Korea's nuclear programme: How advanced is it? - BBC News

North Korea's missile programme - BBC News

North Korea missile test: What's changed? - BBC News

TRUMP'S TWEET

Trump tweeted three days ago:

This lead to a lot of speculations that he is threatening military action against North Korea. But it turns out that actually, he was threatening increased sanctions, not military action. His administration has completed an internal review and come to that conclusion. See Opinion | Trump's North Korea policy is 'maximum pressure' but not 'regime change'

Then a little later, he met the Chinese president Xi Jinping and this is what happened:

> "In an interview with The Wall Street Journal, Mr Trump said he told Mr Xi he believed Beijing could easily take care of the threat of North Korea.
>
> "The US President said Mr Xi then explained the history of China and Korea to him.
>
> ""After listening for 10 minutes, I realised it's not so easy," Mr Trump said."

Trump was given a 10 minute history lesson by the Chinese President. This is what he was told

So, the whole thing is in the balance, but it's about sanctions, not about military action, if I understand right. North Korea is doing its usual nuclear weapons tests. But it's meant as a signal "don't mess with me", and not as "I'm out to get you".

OTHER DEBUNKING ARTICLES HERE

- Debunked: A nuclear war would make Earth uninhabitable - and humans extinct
- Debunking: a president of the US could order a nuclear attack at a moments notice on a whim

See also: List of the articles in my Debunking Doomsday blog to date

1,053 views · 5 upvotes · Posted Apr 14

Upvotes 5 Comments 2+

Analogy of an African elephant with Planet X / Nibiru

Robert Walker

explain the idea to them of a planet that could fly past or hit Earth in the near future then if they answer at all, they will say “No, that’s ridiculous and impossible”.

It’s like the difference between asking if there are elephants in Africa and asking if there is an enraged elephant charging for the front door of a tenth floor apartment in New York. There are many elephants still in Africa. But unless you live in Africa, or India, or some place that has elephants, you are at no danger of being trampled by elephants :). And they can’t fit into lifts or get through our tiny doors and climb winding stairs. Even if one escaped from a zoo it could never get into a tenth floor apartment.

> African Bush Elephant - an African elephant is a formidable beast, and if it runs at you in Musth, then you'd better get out of its way. You need to watch out for elephants in Africa. But if you live in London or New York they are not a hazard. In the same way an undiscovered planet could be something to watch out for if you live beyond Neptune but such a planet can't come into the inner solar system so there is no way it ca nharm us here on Earth.
>
> That's why astronomers will just LOL if you say you are worried about being hit by a planet beyond Neptune - until they realize you really mean what you say.
>
> If they take you seriously and realize you really are scared, then it's like trying to comfort someone in an apartment in New York who is scared they are going to be killed by an African Elephant because they have read about them in a book. You aren't for an instant scared that an elephant is about to charge through the door and kill you :). But you realize that this person is so you try to explain to them why it is impossible.

In the same way unless you live in the outer reaches of our solar system, way beyond Neptune, you are at no risk at all from any newly discovered planets out there. They can't even get into the inner solar system because in an orbit like that they'd hit one of the other planets or be ejected from the solar system or hit the sun within a million years - if a planet ever was in such an orbit, say at the time of formation of the Moon, it is long gone, more than 4.5 billion years ago.

without colliding with it.

See also my

- Who else says Nibiru is nonsense?
- Debunked: Planet 9 is Nibiru (Again)
- Debunked: TRAPPIST 1 is Nibiru
- Debunked: Nibiru will hit or fly past Earth in September (or October or November) 2017 - David Meade's "prophecy"
- Nibiru Bullshit Tester - How to check if they know anything about astronomy
- Debunked: Nibiru will hit Earth on [Insert Date here]
- Debunked: Dire predictions for 2017 by Nostradamus

And list of all these posts: List of the articles in my Debunking Doomsday blog to date

910 views · 2 upvotes · Posted Apr 2

Upvotes 2 Comment

Debunked: NASA or other organizations have huge mirrors in space that hides Nibiru and

This is a conspiracy theory that's going the rounds on youtube. It's nuts, there is no way to hide the sun. It would need mirrors the same diameter as the Earth. They use as evidence for their conspiracy such things as sun halos which they claim have something to do with these mirrors, and say the dark circle inside the sun halo is the planet that they are attempting to hide with the mirror. This idea is scaring some people who genuinely think there is a huge planet in the sky being hidden from view by gigantic space mirrors. The whole thing is total nuts for anyone with basic astronomy or physics.

This is an example of a sun halo, do you see how it is much darker inside the halo? They are always like that. It's the same also for rainbows, they are always darker inside, because of the way the ice crystals (in this case) and water droplets (for rainbows) refract / reflect light from the sun:

> Halo in the Himalayas , photo by Anton Yankovyi taken from Anapurna base camp on 20 April 2014

For more about this and how it works, Halo (optical phenomenon) and for more photos again all showing it dark inside see Why a halo around the sun or moon? | EarthSky.org

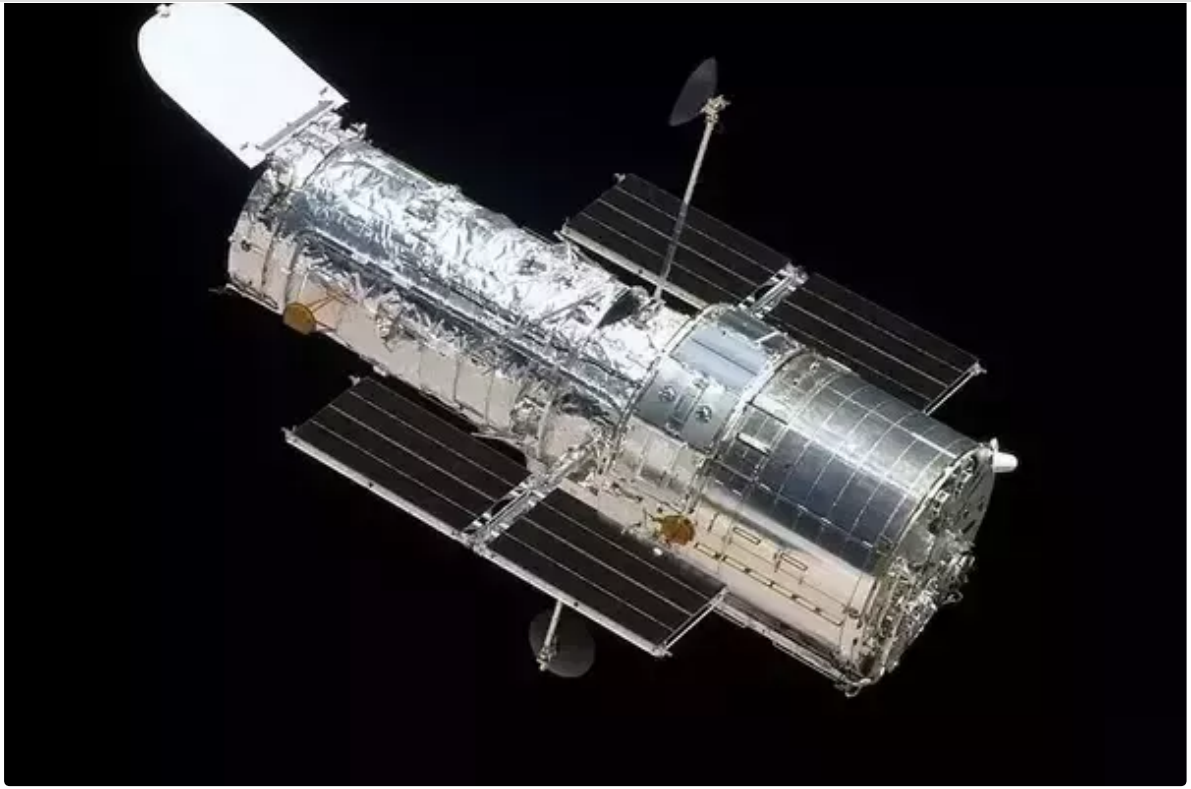
Here is an example video using sun halos as “evidence” that we have huge mirrors and lenses in space blocking out Nibiru and projecting a fake sun in some way to Earth.

a sun dog :).

The Sun is larger than the Earth so the closer the shade is to Earth the smaller it is but the smallest it can be is the diameter of the Earth.

Also anything in orbit around the Earth in LEO orbits the Earth once every 90 minutes or so. To continuously shade the Sun it is no good even to be at GEO. Because that would be stationary relative to the Earth as it spins, but the sun doesn't stay at the same point in the sky either relative to someone standing on its surface. As the Earth spins, of course the sun rises and sets. So, to block out the Sun for everyone living on Earth you are talking about a mirror or lens the diameter of the Earth, so a mirror 12,000 kilometers in diameter at the Sun Earth L1 position, a long way away, further away than the Moon.

By comparison, the Hubble Space Telescope mirror is 2.4 meters in diameter



Spy satellite mirrors are similar in diameter. It is possible to put mirrors into space and lenses too (if there was any point) that are meters in diameter. But thousands of kilometers in diameter - no, we don't have that capability yet. And think what an astronomical spectacle it would be, with thousands of spaceships going up there to ferry all the materials up to make it, and the lens or mirror gradually unfolding in a space construction project millions of times more ambitious than the ISS.

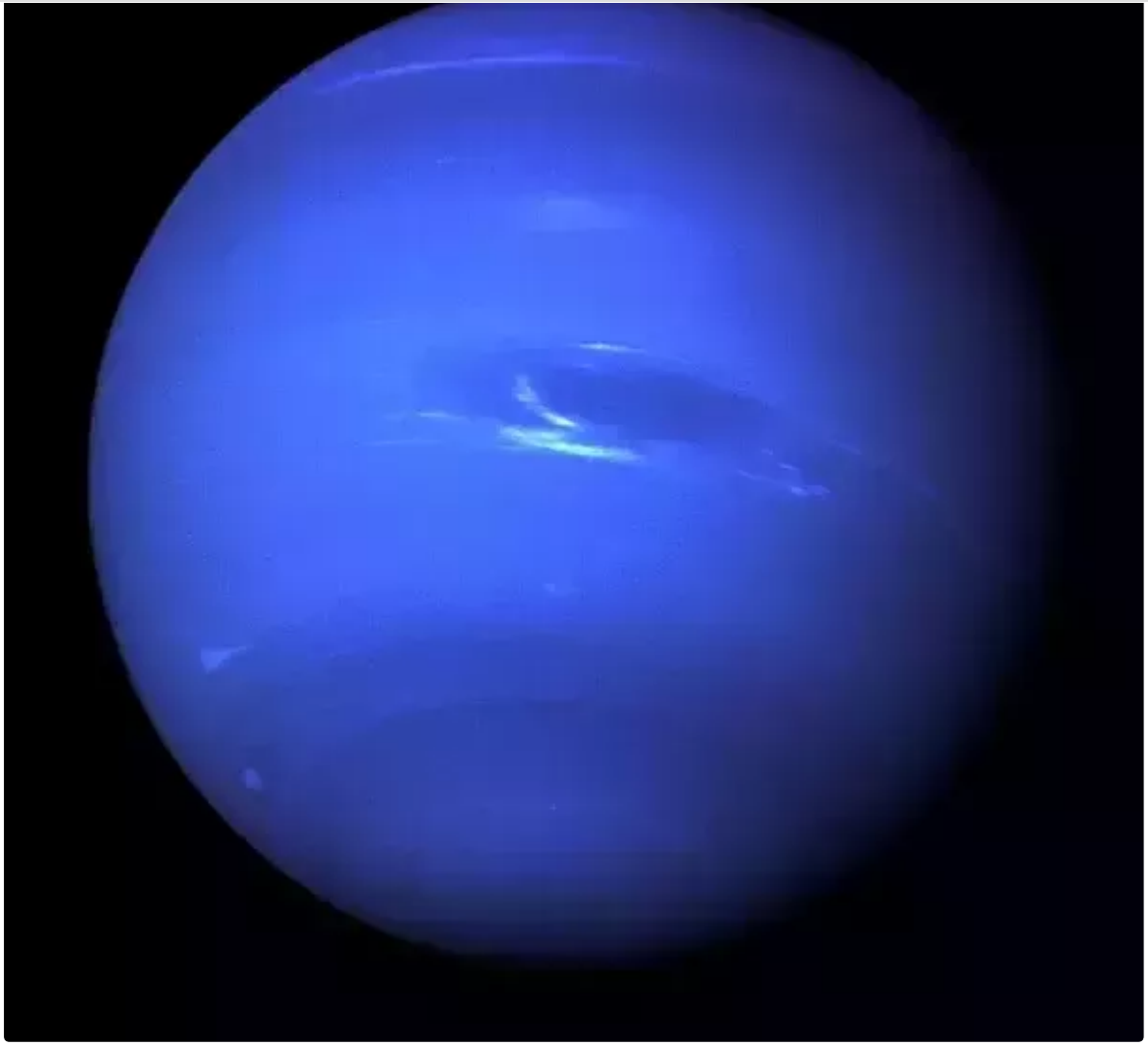
It's just an absurd idea.

Debunked: Planet 9 is Nibiru (Again)

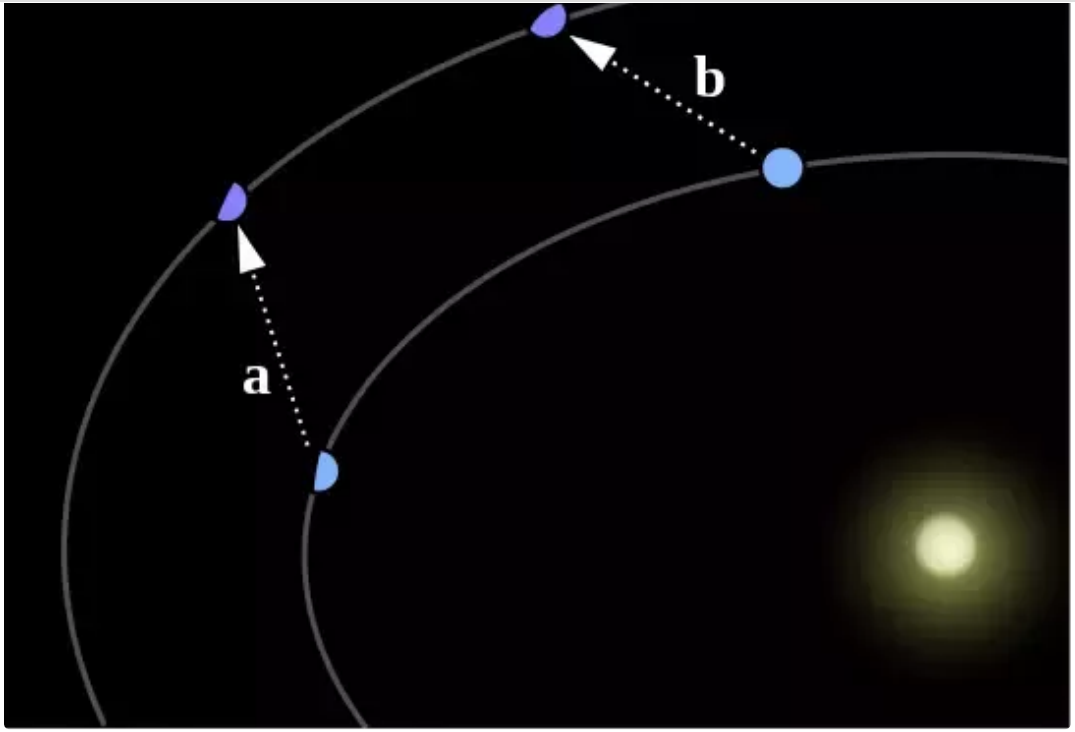
Robert Walker

Apparently the Nibiru / Planet X groups are in a frenzy after tonight's Star Gazing live episode about "Planet 9". So I thought I'd do another debunking post about it. The only point of resemblance is that it is in an elliptical orbit. But all planets are in elliptical orbits, even Earth is. The two ideas are about as similar as a frog is similar to a giraffe.

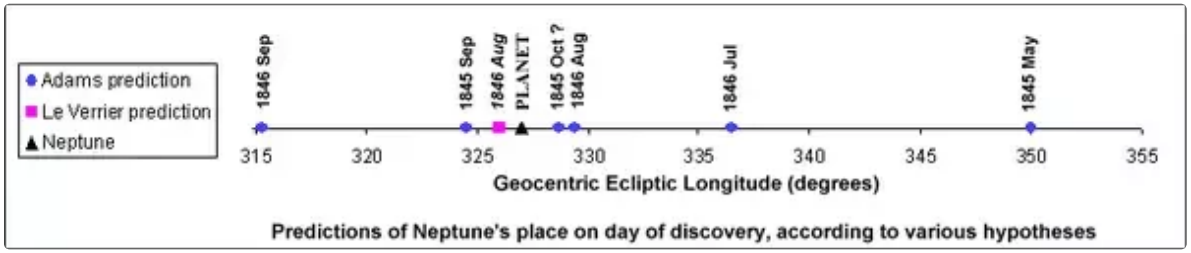
First though, perhaps it may help to say a bit about the discovery of Neptune. Here is a photo of it taken by Voyager 2. It's so far away that the astronomers at the time could see no detail from Earth, and this was our first, and so far, only close up view of it:



So, Neptune was discovered in the nineteenth century by noticing perturbations in the orbit of Uranus - which had been discovered earlier by



This is how it was found - when Neptune is ahead of Uranus, it pulls it forward in its orbit slightly. When behind, it drags it back. Two mathematicians, the UK John Couch Adams and the French Urbain Le Verrier both predicted its position and they got it pretty much right:



So - that's very much like the present situation. They didn't for a moment expect it to be

So it's like that. Now they are using the orbits,, not of Neptune but of much smaller dwarf planets that are in orbits that take them way way beyond Neptune to predict a possible even more distant planet.

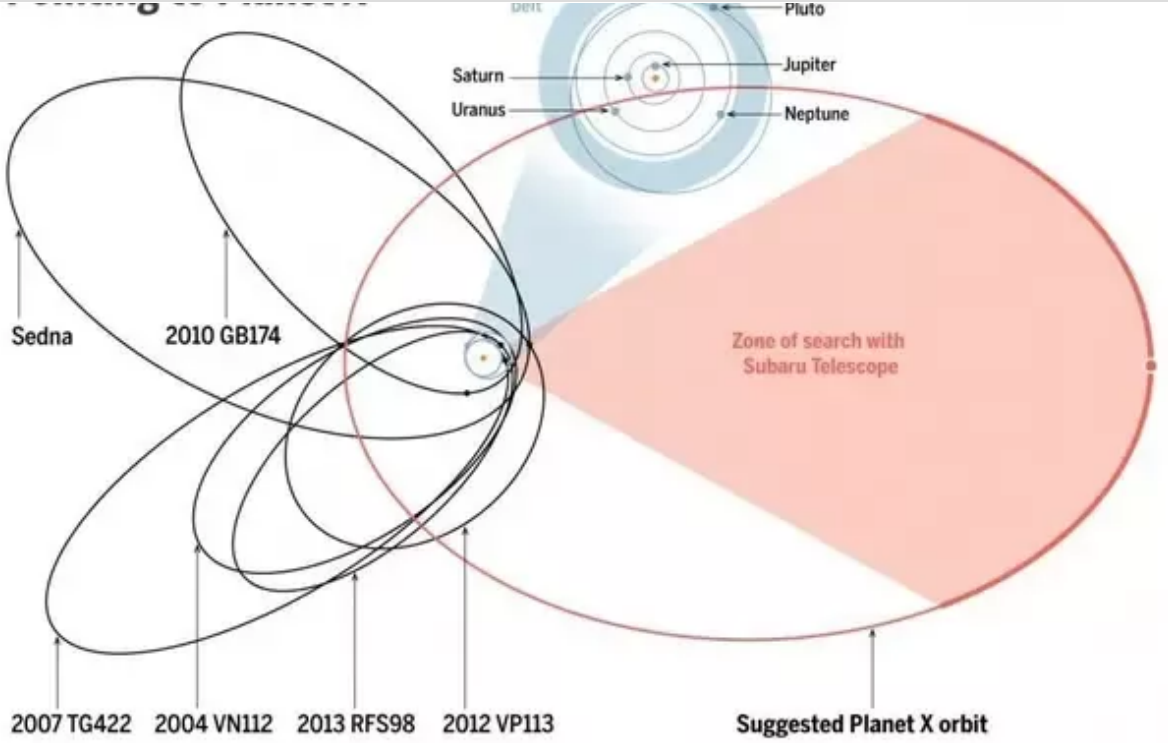
So, planet 9 if it exists:

- Always orbits way beyond Neptune, between 200 and 600 times the distance to the Sun from Earth
- Must currently be towards the most distant part of its orbit or we would have seen it already.

Nibiru, which is BS and can't exist

- They say is in a 3600 year orbit
- They say is about to hit Earth or fly past Earth in the next few months or year.

Do you see a difference? You can check this for yourself whether these ideas are at all similar. This is the suggested orbit for Planet 9 if it exists



It's that big red oval. Now do you see the blue circle in the middle? That's the orbit for Pluto and Neptune. All the planets the ancients knew about, Mercury, Venus, Earth, Mars, Jupiter, and Saturn are inside that circle and so are the more recently discovered Uranus, Neptune and Pluto.

So the proposed orbit does not go anywhere near Earth, it doesn't even go anywhere near Neptune, the most distant of the gas giants from Earth. Its closest point is around 200 au so over six times the distance to Neptune (of 30 au) and its furthest point is 1200 au or 40 times the distance to Neptune from the Sun.

Earth :).

To get an idea of how far away Neptune is see Bill Nye's video here:

After watching that video, can you see that something that is many times the distance to Neptune is no threat to Earth?

So, the people saying that this is Nibiru are wrong.

Nibiru's orbit is unstable anyway. It would have to cross the orbits of four gas giants Jupiter, Saturn, Uranus and Neptune.

It is possible to cross one gas giant by being in a resonance with it. Pluto is in a 2:3 resonance

That way, Pluto keeps missing Neptune over and over. The first time it's closest to the Sun, Neptune is more than 50° behind Pluto and the second time it is more than 50° ahead of it, and so in that way they keep missing each other, over and over, for billions of years. This is a stable configuration - gravity actually helps to keep the planets in this resonance.

However, Uranus' orbital period is 84 years . That's not in any simple relation with Neptune or Pluto's orbit. So there is no way that a planet can keep missing Neptune in each orbit and also keep missing Uranus as well. Saturn's orbit is 29.5 years And Jupiter's orbit is 11.9 years .

There is just no way that another planet in an orbit crossing all four gas giants could keep missing them. It would hit one or other of them, or be perturbed to hit the Sun or be ejected from our solar system within a million years. Our Moon is 4.51 billion years old . Supposing there was a planet in an orbit like the one they say Nibiru is in, crossing all four gas giants, at the time the Moon formed. It would have either hit one of the other planets, hit the Sun, or been ejected from the solar system 4.5 billion years ago.

That's why astronomers never hypothesis a planet in an orbit like Nibiru. It's just not a possible orbit for a planet to be in.

The Nibiru conspiracy theorists often say that Nemesis was Nibiru. Nemesis is a genuine astronomical hypothesis though it was pretty much disproved by the WISE infrared astronomy search.

Nemesis if it existed - which it now seems it doesn't

- Was a red dwarf or brown dwarf - far heavier than Jupiter
- Orbited 1.7 light years away

Again - do you see how that is different from “Planet 9” and also different from this Nibiru idea which is just utter piffle all the way through.

If you got this far and you still don’t see any difference between these ideas and Nibiru, well, if those ideas seem so similar to you, that they all seem to be describing the same thing, then why is Jupiter any different from Nibiru? Or Neptune?

Most astronomers probably haven’t heard of “Nibiru”. Those who have just LOL at the idea until they realize, sadly, that it is making people feel suicidal. It’s such a shame for such a BS idea.

See also

- Nibiru Bullshit Tester - How to check if they know anything about astronomy
- Who else says Nibiru is nonsense?
- Debunked: Nibiru will hit Earth on [Insert Date here]

592 views · 2 upvotes · Posted Mar 28

Upvotes 2 Comment

Debunked: A huge black hole 8 billion light years away endangers Earth

This is a dramatic story that's recently been published about a supremassive black hole in a very distant galaxy. I've been told that many Nibiru people in comments, pms etc are getting scared of this. They think it endangers Earth. So, no, it does not, not remotely.

As an analogy to understand why it is so harmless to us - suppose that you are crossing a road in London. Meanwhile you are on your mobile phone to a friend in New York. They are watching a New York taxi, which is traveling East. You panic and say "Oh, I don't want to be hit by a New York taxi and it is traveling in my general direction".

> New York yellow taxi . Being scared of a black hole in a distant galaxy, or at the center of

direction of London.

That's what it is like, to be scared of something that is happening around a distant galaxy. Indeed it was the same thing when they said that TRAPPIST-1 threatens Earth. This is 39.1 light years away. It's actually far more absurd, the idea that it would threaten Earth than the idea that a New York taxi risks running you over in London.

Here is a typical story. A 3 billion solar mass black hole rockets out of a galaxy at 8 million kilometers per hour. Yes, seriously.

This galaxy is 8 billion light years away. We are seeing an event that happened eight billion years ago. We see it because light travels at the speed of light. But the black hole is traveling at **8 million kilometers per hours -** not even in our direction. That may seem an impressive speed. But it's only 0.0074 light hours per hour. It's traveling at 0.74% of the speed of light.

That's the case generally. When we see violent activity in distant galaxies, then whatever we see traveling, even if it is very fast - we see it by light. The light takes a long time to get here and whatever it is that we see moving is traveling at a tiny fraction of the speed of light. So, if we see something that's millions of light years away, it just can't harm us. Even if it traveled at 1% of the speed of light directly towards us, it would take 100 million years to get here. Anything that was any danger to us would already be in our galaxy, and what's more to get to us within a century would have to be within a 100 light years, Probably within 1 light year assuming it travels at a hundredth of the speed of light. There's nothing within one light year of us, no massive black hole, no core of a galaxy, nothing. Not even got any of those things within a million light years except the supermassive black hole at the center of our galaxy (our nearest neighbour large galaxy, the Andromeda galaxy, is more than two million light years away). And our sun orbits the center of the galaxy much as our Earth orbits the Sun. We are in no danger at all of going anywhere near it, no more than we are in any danger of hitting our Sun. Because

We just aren't traveling in that direction, but rather, we orbit it slowly.

As for light from a distant galaxy - even though they have violent events, gamma rays, X-rays etc - well they are also far away and the energy drops off as the inverse square, very quickly. We don't need to worry about those either.

We just have nothing at all to worry about with respect to galaxies or supermassive black holes. They can't harm us.

Debunked: TRAPPIST 1 is Nibiru

Robert Walker

Trappist 1 is a system of seven planets located 39.1 light years from us. It was not found by NASA. The first three planets were found by TRAPPIST in 2015 (hence the name). This is the name for a pair of small telescopes in Chile operated by a team in Belgium. You can tell its size from this photograph

Look!

It consists of two 60cm (0.60 m or 23.5″) reflecting robotic telescopes They are similar in size to many largish amateur telescopes. A 30″ Dobsonian will set you back about $25,000 WEBSTER TELESCOPES - SCOPE PRICES . Of course that has got none of the sophisticated robotics of this telescope - but it shows that it's not a huge mirror. It's quite modest, large for an amateur telescope but tiny for a professional.

So this is not a big telescope. Here is another view on it

It only tracks 60 stars. Very modest goal. But it tracks ultra cool nearby dwarf stars. Just 0.05 percent the brightness of the Sun. Kepler, which discovers most of the exoplanets doesn't bother looking at those.

It discovers them in the same way by looking for a faint dip in light as the planet passes in front of the star. Because the parent star is very cool (for a star) then the planets are easy to spot.

It's just a prototype - another telescope TRAPPIST-North in Morocco will survey the Northern hemisphere. And eventually they want to build a whole new observatory in Chile to search for planets eclipsing ultra cool stars called SPECULOOS. See The Little Telescope That Just Discovered Three Exoplanets and One-Upped Kepler

So if you try to make this into a conspriacy - it's a world wide conspiracy involving the University of Liège in Belgium, NASA, ESA, and many other astronomers - to what end?

Here is one of those conspiracy theory videos about TRAPPIST-1. I've just debunked the first thing they say, as usual. It takes ages to debunk all the many things in a video like this. I normally go as far as the first absurd BS thing they say, debunk that, and leave it at that.

These planets are also more than 39 light years away. The only connection at all with all the ideas about Nibiru is that it has seven known planets. Previously it had three. They may well find more in the future.

That's like saying "a Dachshundis a dog, a Great Dane is also a dog, so a Great Dane of course is a Dachshund".

That's the most common argument the Nibiru people use. They use it time and again. No, a Great Dane is not a Daschund and TRAPPIST-1 is not the nuts BS Nibiru.

(The video also ignores the fact that there are about as many ideas about "Nibiru" as there are people who write about it, and as for scriptures, you can probably find almost any small number less than ten somewhere in a scripture)

TRAPPIST-1 is nowhere near Earth. It cannot harm or threaten us in any way at all.

582 views · 1 upvote · Posted Mar 23

Upvotes 1 Comment

Debunked: Galactic superwave theory

Robert Walker

Summary: This is hard to debunk because it's by someone who is trained as a scientist. It is "minority view science" rather than just out and out BS. But his ideas are so far fetched, making tenuous connections , that most other scientists just ignore him. They don't try to debunk him

The "superwave theory" is minority view science. It claims that our galaxy is related to a "Seyfert galaxy". These are genuine things, but ours is not a Seyfert galaxy. So that's an eccentric thing to claim.

I think it is fair to say that probably most astronomers have never heard of a "superwave". I've been interested in astronomy all my life and only heard the term last autumn. It's just one scientist saying this, Dr. Paul LaViolette. Nobody else is studying it as far as I can tell.

LIfe is too short to try to figure out what he is talking about, with lots of bizarre seeming ideas, tenuous connections, and with the grand aim to rewrite most of modern astronomy. I just skimmed his ideas but enough to get a flavour and a few of his main lines of thought.

His papers are long and complex, but he claims that every 5,000 to 15,000 years we get mass extinctions saying that the megafauna extinctions in the last ice age were due to this. E.g. extinction of mammoths etc. Most people would say they were due to a combination of climate changes and human hunting. See for instance Why did the wooolly mammoth die out?

> Woolly mammoth - model at the Royal BC Museum in Victoria (Canada). The display is from 1979, and the fur is musk ox hair

Most people say that the large mammals that died out at the end of the last ice age died because of changes of climate exacerbated by humans hunting them. The Earth's climate was much more variable during the ice ages than it is now and it was easy for species to go extinct. The mammoths lived on great plains of grassland which disappeared, turned into the Siberian tundra and they must have needed to eat a lot of grass to survive

It's the abrupt warmings that caused the extinctions, at least some scientists think. Megafauna extinction: DNA evidence pins blame on climate change . That's going back through previous extinctions not just the most recent one. During the ice ages large animals often go extinct.

However perhaps humans had something to do with it as well, hunting already vulnerable large animals to extinction. In one particular place, Australia, there's good evidence that humans caused th eextinction according to this paper: Climate change not to blame for late Quaternary megafauna extinctions in Australia .

Also, clearly humans survived fine. So whatever happened back then harmed mammoths,

These are not the same as the mass extinctions which happen on average every few tens of millions of years. Many are at least partially caused by asteroid impacts, the most recent one definitely.

I haven't tried to understand his work in detail. I just skimmed through his papers and got a rough idea, it is very "way out" stuff. Huge extrapolations, waving his hands in the air, saying that things would happen based on the flimsiest of reasons.

There are violent galaxies called Seyfert galaxies and there are stars a bit like our sun with more violent flares called T-Tauri stars. Based on nothing except the flimsiest of extrapolations and a lot of hand waving, he says that our galaxy turns into a sort of Syefert galaxy briefly every few thousand years and somehow this causes our sun to turn briefly into a T-Tauri star, then it all reverts to normal again.

At least I think that is approximately what he says. That's just looking at the abstracts and conclusions of a couple of his articles.

Honestly I wouldn't worry about it at all, it is indeed astronomy after a fashion, by someone who has studied astronomy but it is so far-fetched.

It happens from time to time in astronomy that someone gets a "bee in their bonnet" and everything they hear about seems to them to fit into a grand pattern that nobody else can see in

Chandra Wickramasinghe's strangest idea perhaps is that flu is caused by viruses brought to Earth on comets. Hard to see how a scientist could think such a thing. He has some good ideas though so it's a mix of almost mad way out ideas with a few blips of brilliance. Fred Hoyle who collaborated with him thought the same way. They were very early pioneers of the idea of Panspermia - that life can be transferred between planets and solar systems - long before anyone else thought it was possible. But the idea that flu comes from comets is really quite strange to most scientists, how could a virus - keyed to human beings, somehow come to us from comets? I read their book in the 1970s I think it was and I couldn't make head or tail of it, why they'd think this was possible.

Then, Robert Shawyer, inventor of the EM Drive has really bizarre ideas of how it works, publishes papers full of maths that don't make any sense at all to other mathematicians / scientists. They just seem incoherent. The drive itself might or might not work, the jury is out on that, but I don't think anyone much apart from himself thinks he is right about how it works (if it does). See my Suggestion: The EM Drive Is Getting The Appropriate Level Of Attention From The Science Community

These are all professional trained scientists with degrees, PhDs etc.

Paul Lavoilette has many other unconventional views. He doesn't think there are such things as black holes. But he thinks our galaxy periodically has large bursts of cosmic radiation. He has a theory that he thinks solves just about all the fundamental outstanding problems in modern physics. He thinks that 10 to 15 percent of the solar output comes from "photon blueshifting" whatever that is. He is a self proclaimed expert on Electrogravitics . He doesn't think there was a Big Bang.

Basically he is saying that just about all of modern ideas about stars, galaxies and the universe

out lots of more data and develop a theory that really worked. The original continental drift theory wasn't convincing at all. But it turned out that he was onto something.

Most of the time they don't win anyone else over to their views, or just one or two, they work away most of their life on these ideas, like Charles Hapgood, and eventually they are shown to be completely wrong. So - you shouldn't dismiss eccentric scientists like this out of hand, but the chances of them being really onto something are low, most of the time they are wrong.

Paul LaViolette is CEO of the The Starburst Foundation which is a website which summarizes his theory. His papers include: The Cause of the Megafaunal Extinction: Supernova or Galactic Core Outburst? and Cosmic ray volleys from the galactic center and their recent impact on the Earth environment.

It's hard to find anything debunking him, basically because it is crackpot stuff. Like someone says here :

> "There are any number of crackpot theories out there and it's just not possible to rebut them all. As I said, life's too short."

Many "doomsday scenarios" are easy to debunk. The difficulty with debunking something like this is that because he is a trained scientist, then he knows how to put things together, but he's threading a story in a fantastical way picking up genuine astronomy here, there and everywhere and tying it together with coincidences and very tenuous similarities and connections.

So, to debunk well you can go through all those things saying "this looks tenuous", "that does", "the next does". He is not going to say a single out and out outrageous thing such as that brown dwarfs are invisible. It's rather the way he connects all the ideas together that is far fetched in the extreme.

why it is far fetched, they'll have lost their audience anyway. It's like a big tangle of strings with everything tied to everythign else in a jumble.

This is the video I was asked to debunk. It makes many incorrect claims. However I expect they are not quoted correctly. If they are correct then Paul LaViolette is no longer doing even minority science.

With videos like this normally I just go as far as the first incorrect claim and debunk it, because it takes so long to debunk them all.

He claims that our Sun orbits the galaxy every 26,000 years so that's completely wrong. That's the period of precession of our Earth's axis. Nothing even to do with our Sun at all. Axial

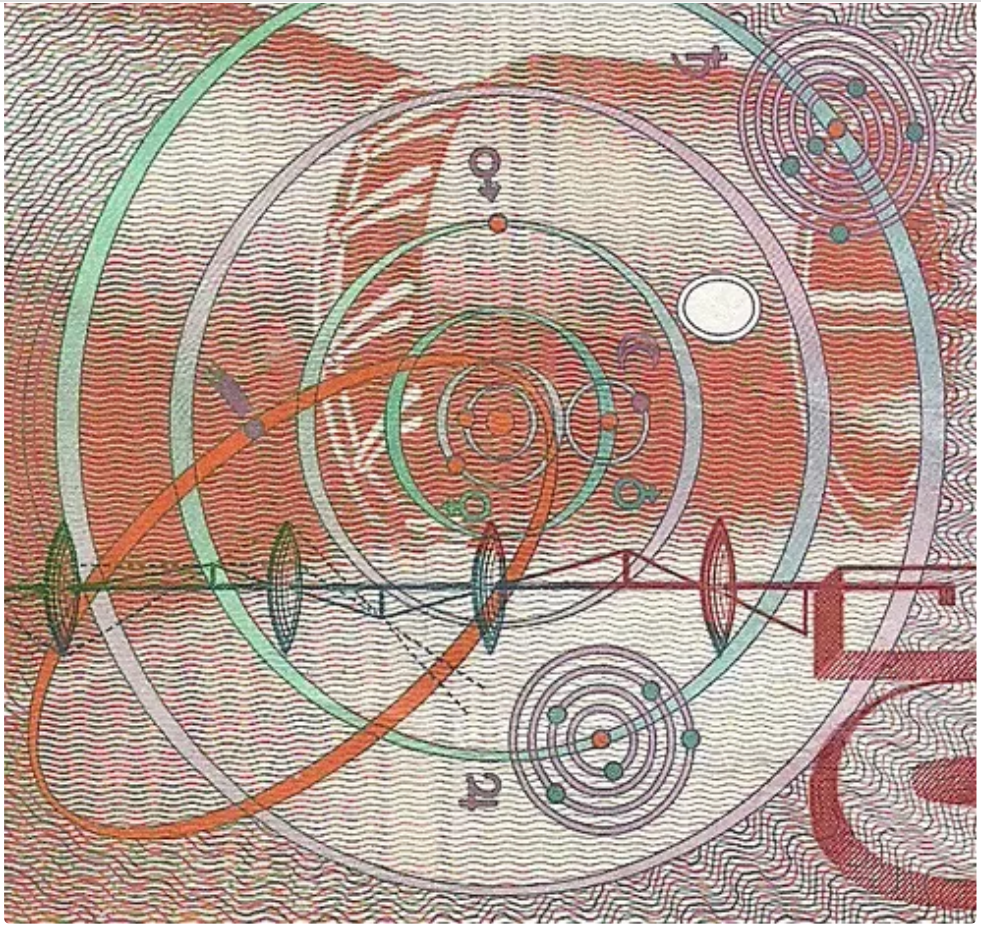
Simultaneously our Sun bobs up and down above the galactic plane in a cycle which it completes every 70 million years. It is currently above the plane moving upwards and will cross the plane again 30 million years from now. What causes our Sun to oscillate around its mean Galactic orbit?

There is no 26,000 year period at all. There are many other rookie mistakes in it, which, for all his eccentricity, I don't think Paul Lavoilette would make. I suspect this video is by someone who took elements of the already minority view eccentric "Superwave" theory and mixed it up with other elements in a big incoherent hodge podge.

Debunked: this bank note shows the orbit of "Nibiru"

Robert Walker

This is the bank note, it's a Swiss banknote



It shows the planets Mercury, Venus, Earth, Mars, Jupiter and Saturn with their symbols. For some reason Mars is shown without any moons, Jupiter with five (it has four large moons and numerous smaller ones), Saturn with five moons and it shows a comet like elliptical orbit as well as a mysterious white ellipose in the middle of the asteroid belt between Mars and Jupiter.

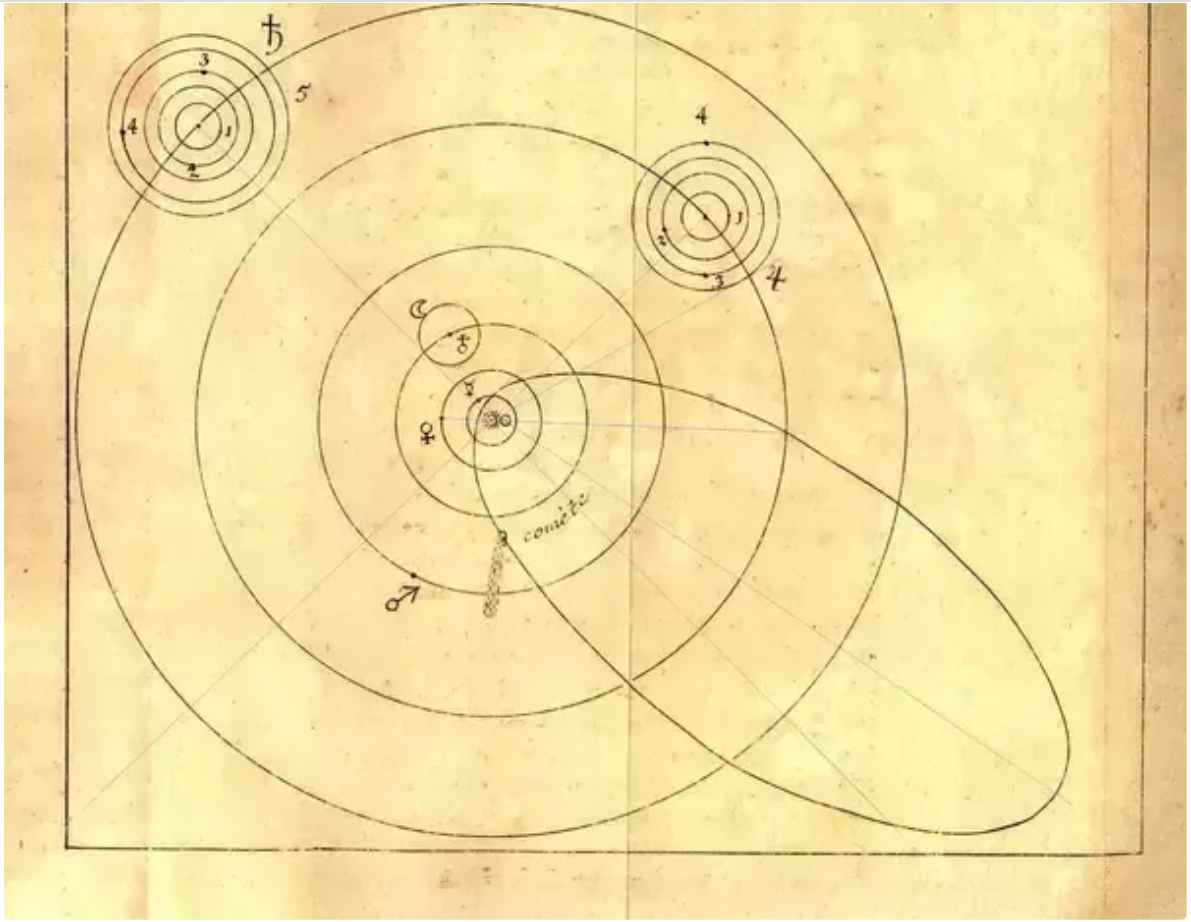
This shows the complete note

So of course the big question is, what is that ellipse? Some online pages say it is Comet Elenin. But this note predates its discovery as it dates back to 1990. C/2010 X1 (Elenin) was discovered in 2010, as the name shows.

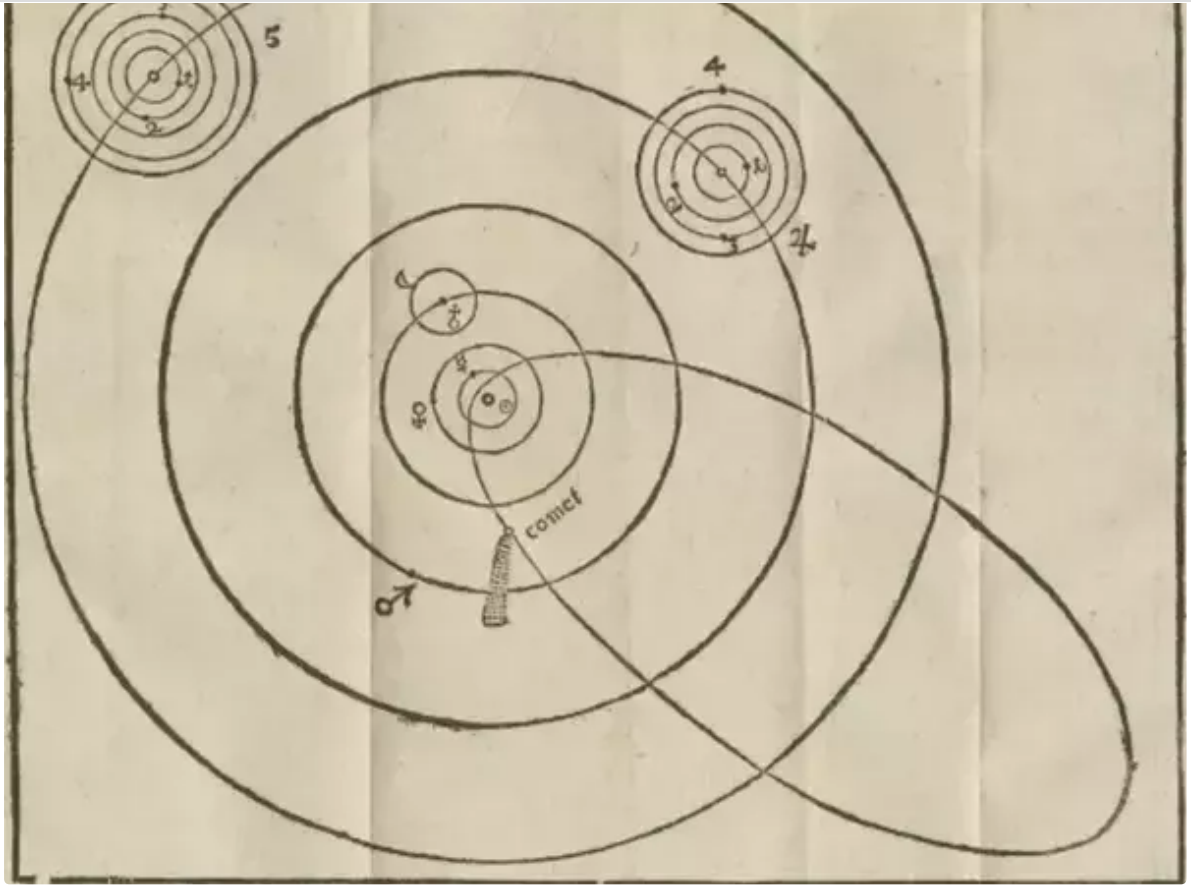
Well, I found the most detailed explanation on this site by an enthusiast collector of bank notes who has this note in their collection: 10 Franken 1990 Switzerland

The banknote was issued to commemorate the great Swiss mathematician Euler.

Anyway he explains that it is based on this diagram by Euler

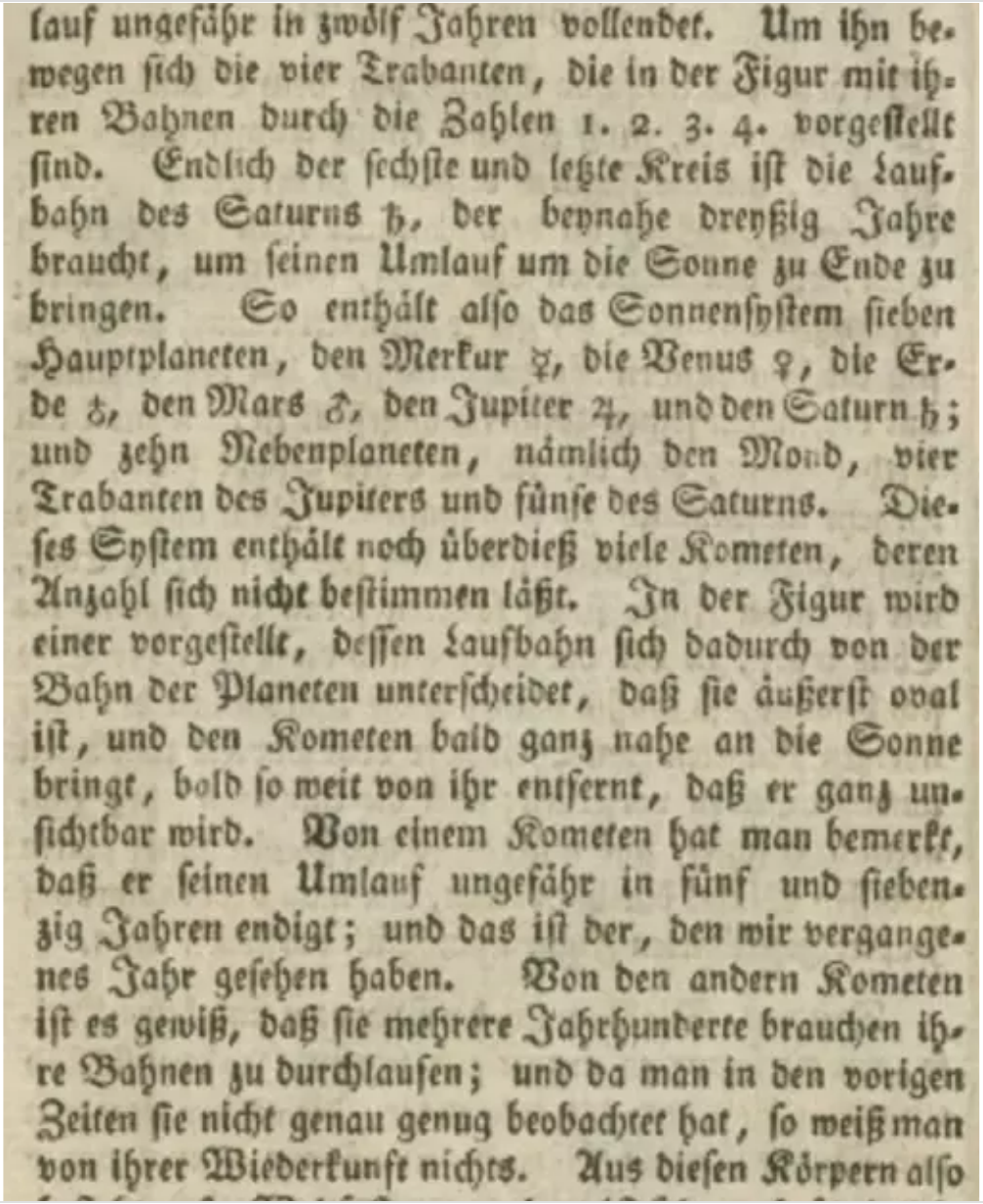


Here is another image of the same page



So then the main question is, what was Euler drawing in this diagram?

This is what it says on the facing page, if any of you can read it:



lauf ungefähr in zwölf Jahren vollendet. Um ihn bewegen sich die vier Trabanten, die in der Figur mit ihren Bahnen durch die Zahlen 1. 2. 3. 4. vorgestellt sind. Endlich der sechste und letzte Kreis ist die Laufbahn des Saturns ♄, der beynahe dreyßig Jahre braucht, um seinen Umlauf um die Sonne zu Ende zu bringen. So enthält also das Sonnensystem sieben Hauptplaneten, den Merkur ☿, die Venus ♀, die Erde ♁, den Mars ♂, den Jupiter ♃, und den Saturn ♄; und zehn Nebenplaneten, nämlich den Mond, vier Trabanten des Jupiters und fünfe des Saturns. Dieses System enthält noch überdieß viele Kometen, deren Anzahl sich nicht bestimmen läßt. In der Figur wird einer vorgestellt, dessen Laufbahn sich dadurch von der Bahn der Planeten unterscheidet, daß sie äußerst oval ist, und den Kometen bald ganz nahe an die Sonne bringt, bald so weit von ihr entfernt, daß er ganz unsichtbar wird. Von einem Kometen hat man bemerkt, daß er seinen Umlauf ungefähr in fünf und siebenzig Jahren endigt; und das ist der, den wir vergangenes Jahr gesehen haben. Von den andern Kometen ist es gewiß, daß sie mehrere Jahrhunderte brauchen ihre Bahnen zu durchlaufen; und da man in den vorigen Zeiten sie nicht genau genug beobachtet hat, so weiß man von ihrer Wiederkunft nichts. Aus diesen Körpern also

This is just from a scan I found on the internet and I don't know where it comes from, which page of which book. I'll update this if I found out.

Leonhard Euler - Wikipedia lived from 1707 to 1783.

Halley's Comet was discovered in 1758.

So anyway, the note collector author of the site says it is comet Halley, and it seems it must be because the second comet to be given a short period orbit, Comet Encke didn't have its orbit calculated until 1819 after Euler died.

But Euler did work out other comet orbits, at any rate he found the orbit of Messier's "Great comet" of 1769 to have an orbital period of 449 to 519 years from three observations (page 24 of this article)

So, if it's meant to be Halley, it's puzzling because Halley has an orbital period of 75 years. If so, the longest line through the ellipse (which determines its orbital period) should be much longer than the diameter of Saturn's orbit with a period of 29 years.

Reading from the diagram, It seems to be a shorter period comet with a period of between 12 and 29 years (the orbital periods of Jupiter and Saturn). Around 20 years perhaps.

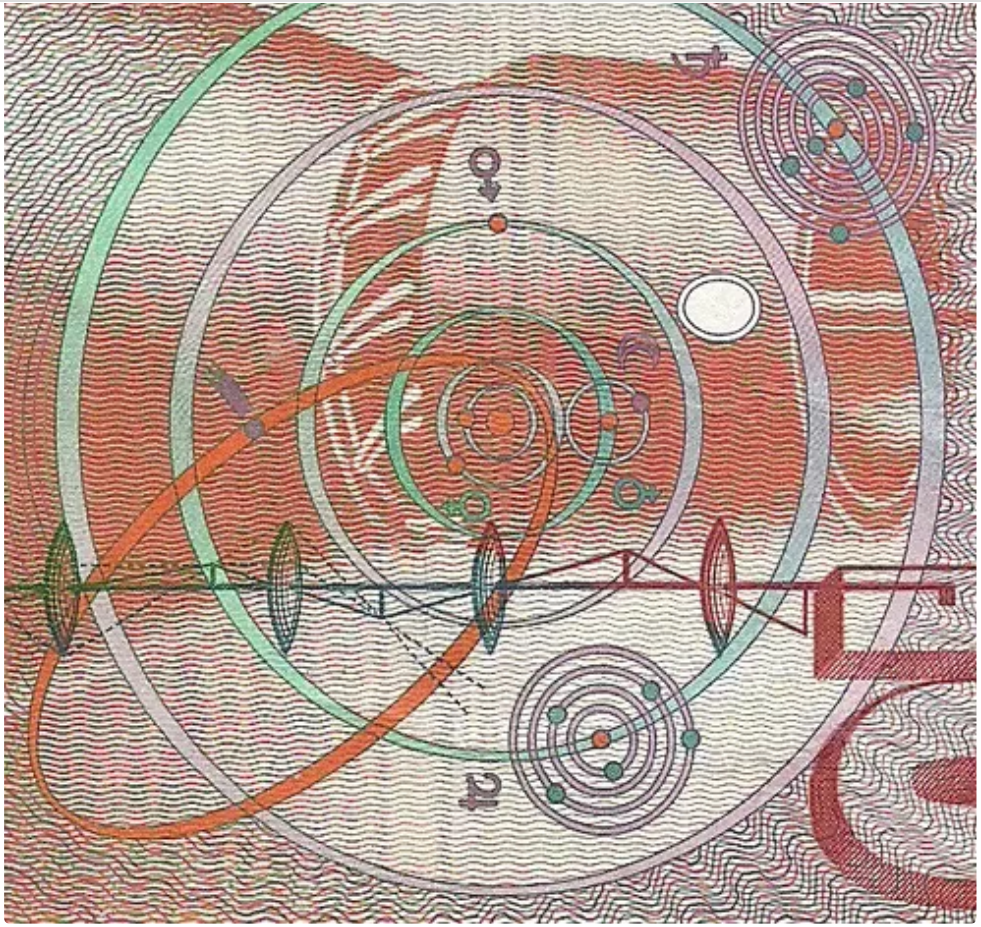
Euler would have known Kepler's laws of orbits so not sure how he could have made a mistake like that so my main guesses would be

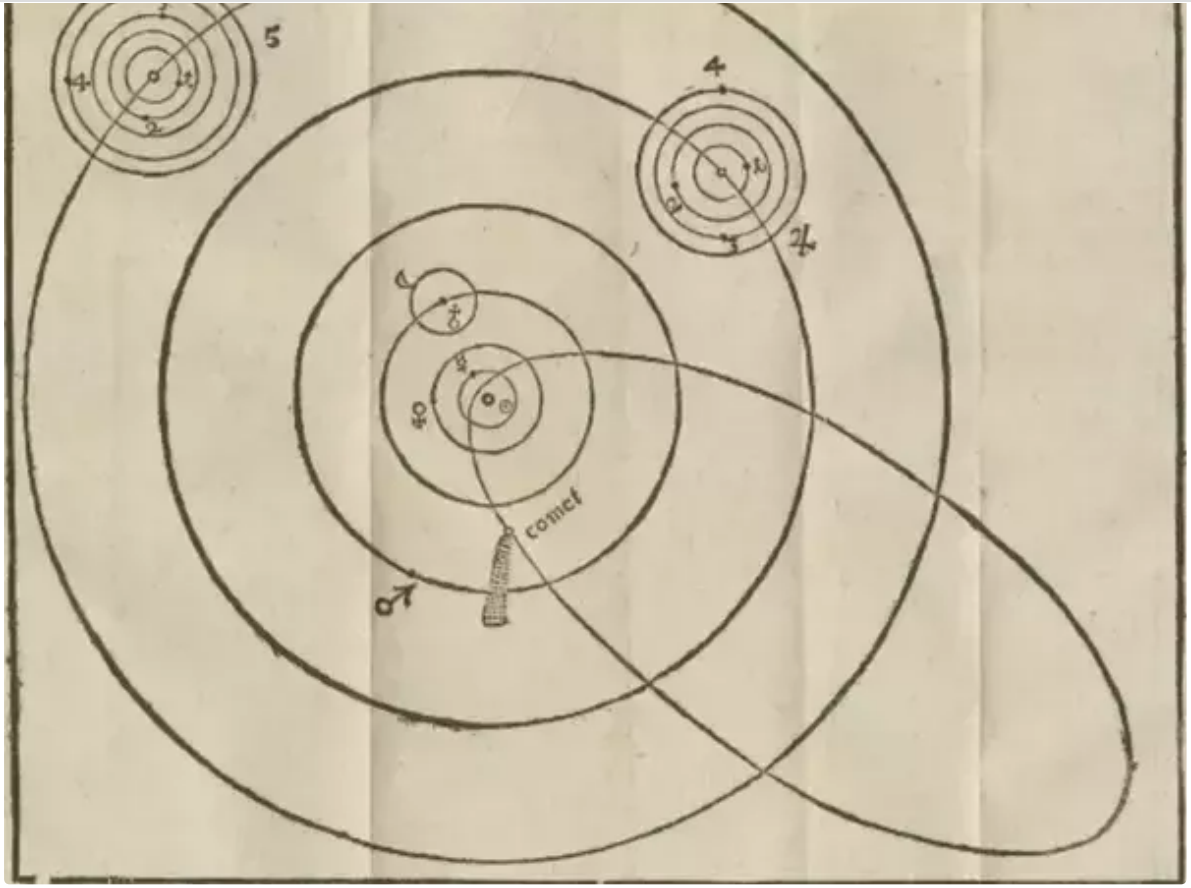
- That it's not meant as an illustration of a particular comet but rather a general idea of what a comet's orbit is like
- It is Halley's orbit, but not meant as an exact drawing. Halley's orbit is so large you couldn't fit it in the same diagram easily.

It could easily have been a hypothetical comet orbit, or some comet other than Halley, with its orbit not well known yet perhaps, because Euler did know of several.

So if any of you can read the text above, or you know whether it is Halley's comet or a hypothetical comet or some other particular comet that he didn't know the orbit to for sure, or whatever it is, let me know.

Anyway let's repeat the banknote image again:





The note is basically a rotated version of Euler's diagram. But the engraver has made a mistake. It shows Jupiter with five moons instead of four. The original diagram shows the four moons known to Euler. Io, Europa, Ganymede and Callisto.

Saturn shows the five moons of Saturn known to Euler, Tethys, Dione, Rhea, Titan, and Iapetus

Mars is shown without any moons because its two moons are so tiny, and weren't known in Euler's time. The Moons of Mars were discovered by Asaph Hall in August 1877. Moons of Mars

astronomy.

So, there you have it. More details here: 10 Franken 1990 Switzerland

Debunked: NASA do all the asteroid tracking and hide information about Nibiru

Robert Walker

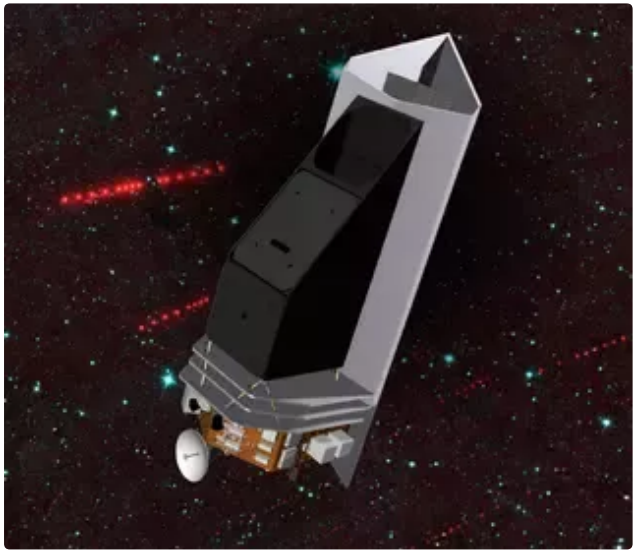
This is a common myth in the conspiracy sites. But it could hardly be further form the truth. NASA have almost nothing to do with asteroid tracking. The tracking itself is organized by the Minor Planet Center. They are involved with finding asteroids, mainly through funding. But the search for asteroids is a world wide effort with many telescopes and organizations involved. The whole thing is done in a totally “open source” way with no possibility of hiding anything.

IN DETAIL

NASA manage spacecraft and space missions, and most of the ones they have launched so far are not much use for day to day asteroid finding and tracking.

NEOWISE

NASA are considering possibly sending up a mission to do this called NEOcam. But this so far is just a mission proposal.

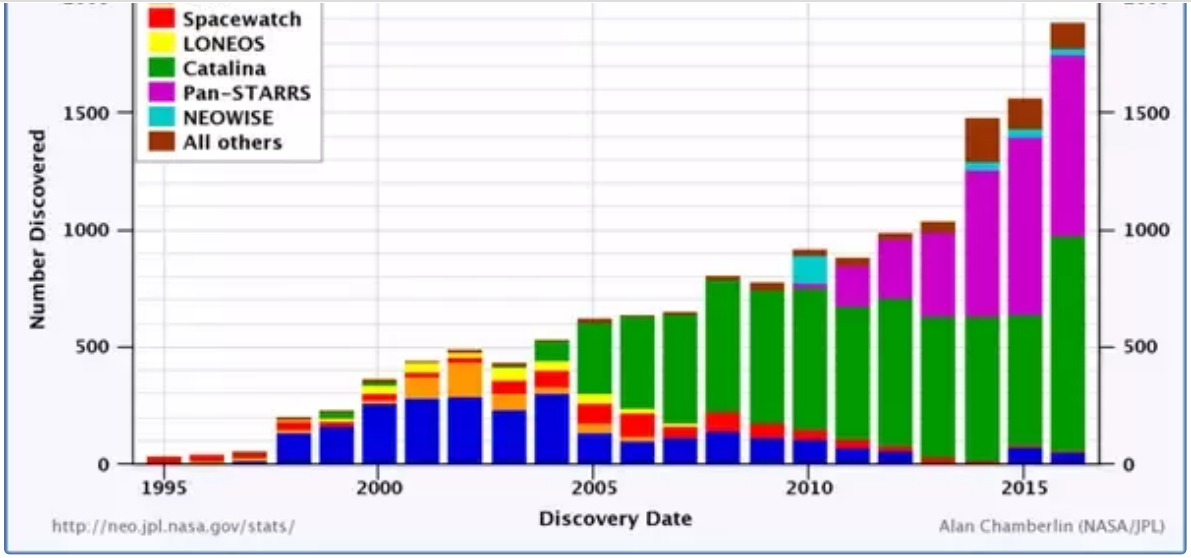


> NEOcam - a proposed future mission for NASA that would help with tracking small asteroids.

The main thing NASA do is provide co-ordination of asteroid searches and funding for projects. They spend $40 million a year.

Planetary Defense Coordination Office

The US Airforce Research Laboratory funded construction of the Pan-STARRS telescope.



> Pan-STARRS is one of the top observatories for finding asteroids at present. Construction was funded by the US Airforce Research Laboratory, but they don't run it. It is run by an international consortium of astronomical bodies.

Pan-STARRS operations are funded by fourteen institutions in six countries, in the PS1 Science Consortium in exchange for right to analyse the data for astronomical purposes.

It is one of many projects to find asteroids, though one of the most prolific.

Once one of these projects finds an asteroid - that's just the start. At that point they don't know the orbit. The Minor Planet Center then alerts observers world wide to track it and co-ordinates their observations. Pan-STARRS does do some follow up observations too but amateurs are very much involved as well.

The main ones involved are listed here:

> A substantial number of faint follow-up observations are also made at the Magdalena Ridge Observatory in New Mexico (Bill and Eileen Ryan). Explicit mention should also be made of the prolific number of follow-up observations provided by the Astronomical Research Institute (ARI) under the direction of Robert Holmes and the amateur group at the New Millennium Observatory in Northern Italy."
>
> (from: Follow-up Observing Programs)

This shows the new millennium observatory in Italy - run by amateur astronomers - one of the many groups of observers who are involved in the Follow-up Observing Programs to refine the orbits of NEOs. This was built by Luca Cozzi, an engineer, brother of Dr. Elia Cozzi , Italian amateur astronomer and astrophysicist whose idea it was.

Robert Holmes, amateur astronomer, one of the most prolific follow up observers for the NEO program.

For an idea of some of the other amateur groups involved in the NEO follow up observations see the Planetary Society grants, which they give regularly - to amateur groups who are doing especially good work in this area. See:

Leaders in Asteroid Tracking/Observing Awarded Through Global Grant Program

> Society. Bob Holmes of the Astronomical Research Institute in Illinois, USA

So, NASA are part of a big global program, and it is all interconnected.

- **The sensitive telescopes with a wide field of view** that find the asteroids originally (this used to involve amateurs also but is now largely automated) - run by many teams of astronomers from many different countries
- **Those telescopes together with amateurs that track them after that** to get the long baseline of measurements for the accuracy you need to assess probabilities properly.
- **The big telescopes that occasionally take images of them** for instance during close flybys of Earth.
- **The computing / math geeks who are expert at working out the orbits and dynamics**.
- And many others. They all have to work together, it's a big international effort.

Teams currently searching for asteroids include

- Spacewatch, University of Arizona - originally used for detection, now for follow up as other surveys got more sensitive
- Catalina Sky Survey (CSS), University of Arizona - focused on detecting Near Earth Asteroids. High detection rate, also excels at finding small objects close to Earth.
- Pan-STARRS, University of Hawaii - faintest limiting magnitude, of about 22 under good conditions. Also able to survey close to the sun. Wide field of view, gigantic 1.4 gigapixels digital camera.

Amateurs used to detect them but now, only rarely, by accident, as these professional telescopes do the job so much more quickly. Amateur astronomers mainly help with the very important follow up observations now.

So, the discovery is normally done by professional telescopes run by many international groups of astronomical organizations. The asteroid tracking is done by amateur and professional astronomers world wide. Once you find an asteroid with one of these big telescopes anyone with even a medium sized telescope within the range of enthusiastic amateurs can then get involved in tracking. And the observations are shared in an open way. There is no way to hide anything.

Debunked: We are headed towards a new ice age

Robert Walker

Summary: Professor Zhakarov predicted a “mini ice age” which was reported as far more dramatic than the original idea. It's just a theory, not established fact. And if it does happen,

years.

Another idea is from 1970s that we are headed towards a new ice age some time soon, maybe even this century. That was just based on the average time between ice ages, and assuming that our interglacial (gap between ice ages) was average in length. However the gaps between ice ages vary hugely in length and we now understand why that is. Ours is predicted to be a much longer gap than usual - and the amount of carbon dioxide added to the atmosphere already probably means we won't get our next ice age for 100,000 years, and possibly not at all for the foreseeable future

Example story to debunk: The Controversial Files: According To A Math Professor's Solar Cycle Mode, An ICE AGE Is Near

IN DETAIL

Profressor Zharkova's prediction is similar to the Maunder Minimum when there were no sunspots and the sun was a bit cooler than usual with the Thames freezing over in London. It's just a prediction and hypothesis, she's not saying that the sun has started to cool down yet. Also it's for a much shorter time than the Maunder minimum.

If we do get a mini ice age of that type - which depends on the sun not on Earth, then the global warming that we've had would offset it. But it"s quite a small effect, they say a reduction of average temperatures by 0.1 C, small compared with the global warming of 1 C we've had already. Of course local effects could be more than that, that's global average. Still, don't expect ice sheets to start advancing. With all the CO2 in the atmosphere, it's more like a short period of 30 years when maybe the Earth doesn't warm up quite as much as it would otherwise.

The Sun goes through a sunspot cycle every 11 years. Sometimes has lots of sunspots, sometimes few. And occasionally it goes for decades with no sunspots at all. The last time that

When there are no sunspots, like that, it may be very slightly cooler. So that's the basis of her prediction that the world might get a cooling of 0.1 C. But the warming from global warming is already around 1 C since pre-industrial. So a cooling of 0.1 C is not going to take us back even to the nineteenth century temperatures never mind the Maunder minimum.

If it does happen it is just a brief pause in warming, not even a cooling. And then three decades later the world would heat up again to whatever temperature it would have been anyway without this brief cooling event.

You can read what Zharkova herself says about her theory and it's relevance to climate change here: Is a Mini Ice Age Coming? 'Maunder Minimum' Spurs Controversy

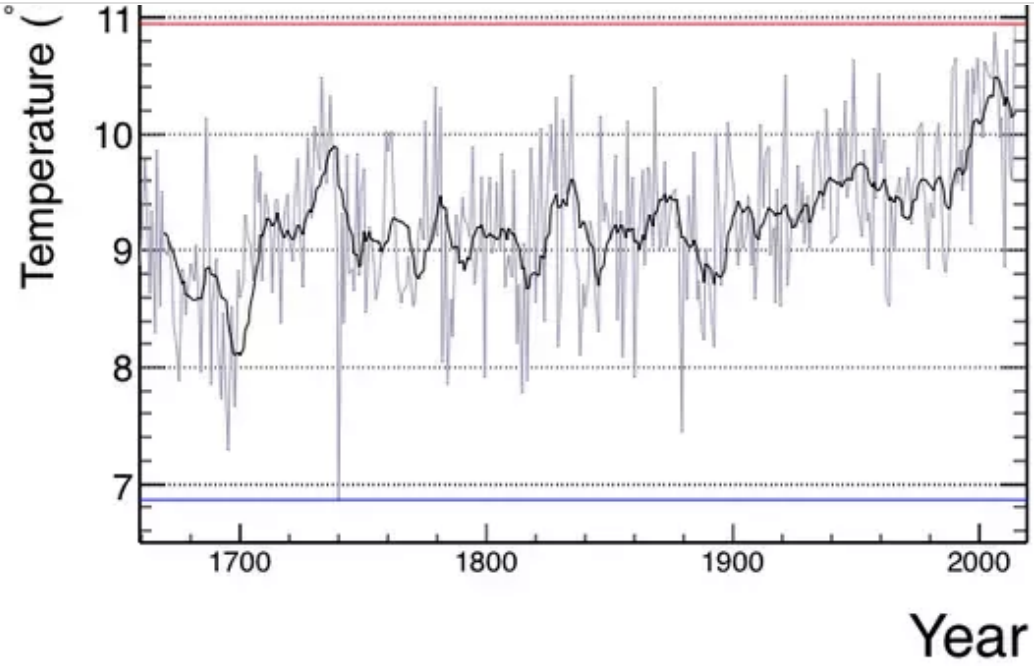
See also There Probably Won't Be A "Mini Ice Age" In 15 Years

And - from the UK met office: Scientists show a decline in solar activity could not halt global warming

WAS THE MAUNDER MINIMUM AN ICE AGE

Also there's some question about whether the Maunder minimum was a global mini ice age or caused by the Sun. It might have been local to Northern Europe. It might also have been caused by volcanoes. It started before the reduction of hot spots.

Oh, is one thing new. On the Maunder minimum, yes it was a sunspot minimum. Yes it was colder in Europe. But that doesn't mean it was a global reduction in temperature. The reduction in solar intensity was probably no more of a reduction than you get during the 11 years sunspot cycle. The cold period started before the sunspot minimum started. It was not uniformly cold, just on average. Had some very hot summers.



> Temperatures in England midlands area - the longest continuous temperature series from a single spot, note these are not global temperatures. Black line is a rolling ten year average. Blue is the year mean. Red and blue lines are max and min for the period. Note that even during the mini ice age period there were occasional very warm years.

There has been a long discussion in the academic literature about whether it is volcanic in origin, or due to decreased solar output or a mixture of both. This 2012 paper suggests that it was volcanic in origin. "UNUSUAL VOLCANIC EPISODE RAPIDLY TRIGGERED LITTLE ICE AGE, RESEARCHERS FIND" .

It was a time of increased volcanic activity. The correlation with the sunspot minimum is not a strong one due to the onset of colder temperatures before onset of the reduced sunspot

Seems there were cold events in other parts of the world at around the same time, but not necessarily closely correlated with the cold weather in northern Europe. The final effects of it had cleared away by the twentieth century, whatever the cause was.

NO ICE AGE FOR 100,000 YEARS

There is a theory from the 1970s which suggested that there could be an ice age headed our way in the next few thousand years, or sooner -, but that theory is no longer accepted. Even without global warming, the next ice age is expected to be 50,000 years into the future. An Exceptionally Long Interglacial Ahead?

The 1970s theory was simply based on looking at the duration of previous interglacials, which usually last for 10,000 years. They just assumed ours would be the same duration as the previous ones.

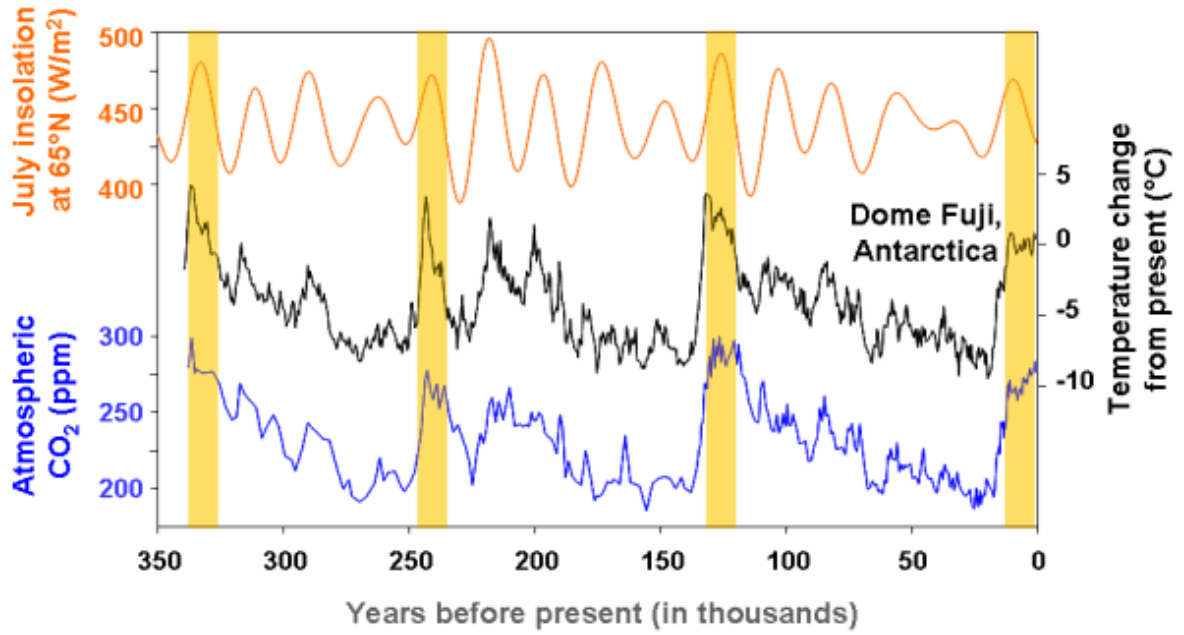
Their theory for ice ages back then was based on the idea of a “random walk”. What if the climate just randomly wobbles a bit warmer then a bit colder? And maybe if it shifts a bit warmer by chance, then it has more of a tendency to keep going that way? Then the entire process of moving in and out of the ice ages could be a result of random processes. This is one such paper from 1976 . This is a later paper from 1990 though by then most climatologists had moved on to new ideas

So the idea was that the climate of the Earth itself was just moving randomly like that. We can predict it short term they thought, but it gets chaotic beyond a few days - and then beyond that, it is just not possible to predict the climate very exactly. Sometimes it gets a bit warmer, sometimes a bit colder, and if it keeps randomly getting colder for long enough we hit an ice age.

another ice age just about now. And that's how they reasoned back then, see The Future of the World's Climate .

However far from it, the Earth is warming up slightly even without global warming. Back then they didn't have any detailed theory, as the theory of Milankovitch cycles which is now accepted widely was only finally established as valid in the late 1970s through study of ice cores (though first put forward as a theory in the 1920s). The ice ages depend on interaction of many different cycles involving slight variations in the Earth's tilt, how circular the orbit is (eccentricity) and the precession of the equinoxes. See Milankovitch Cycles and Glaciation

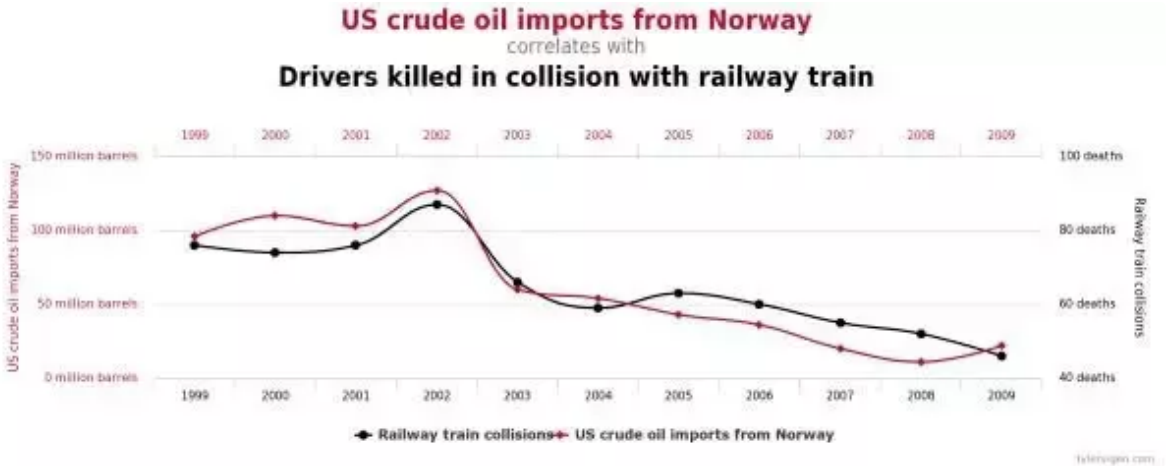
He found out that the ice ages end at times when we get particularly high levels of sunlight at northerly latitudes.



> There's a strong cycle there every 23,000 years due to the precession of the Earth's axis. Interglacials like the one we are in now happen when the weather is warmer in the northern hemisphere, though not every time. As you see, it has happened every five cycles for the last fifteen cycles.
>
> The bottom line in blue shows the CO_2 concentration in the atmosphere which is nowadays thought to play an important role in the warming, though Milankovitch didn't realize that. (Calculated from bubbles of atmosphere in the Dome Fuji ice core)
>
> The middle line shows the temperature in Antarctica (calculated from hydrogen isotope ratios in the Dome Fuji ice core). The temperature in Antarctica is higher at times when the northern hemisphere gets most sunlight, even though at those times Antarctica gets least sunlight, because of global warming.

This theory was first put forward by Milankovitch . Here he is as a student with a pocket watch.

Milankovitch as a student, Vienna, late nineteenth century



> Correlations of railway train collisions with US crude oil imports from Norway - from spurious correlations

At best a correlation like that might lead you to consider a hypothesis to investigate further.

Is it a real effect or is it just a coincidence like that? The scientists needed to find out more to check this out. And they did. Though his original explanation wasn't quite right - carbon dioxide plays more of a role than he realized - his theory once updated with new ideas passed all their tests.

As a result, nowadays, based on a much better understanding of how it works, the scientists predict that ours would be a longer duration interglacial even without global warming, lasting about 50,000 years.

Then, there's new research that suggests that the next ice age could be postponed from 50,000 to 100,000 years in the future due to the effects of the CO2. See: Fossil fuel burning 'postponing next ice age You can click through the link in that article to get to the nature

they ran the models with CO2 levels of 240 ppm, similar to the Halocene (the previous interglacial, last time the world was this warm), then the next ice age would be as soon as 1500 years into the future.

But if they used the pre-industrial levels of CO2 of 280 ppm, then the next ice ages should be 50,000 and 90,000 years from now (with a possibility of a slowly approaching ice age 20,000 years from now). Just that extra 40 ppm made all the difference. They are unsure why we had more CO2 this time around. Perhaps human activity even in pre-industrial society was enough to raise the levels by 40 ppm, which isn't very much, or at least contributed to the levels.

They found that with 500 Gt of emissions, not far off what we have already reached, we may already have enough CO2 in the atmosphere to make a difference to the ice sheets over thousands of years. If it reaches 1000 GT then the chance of an ice age in the next 100,000 years is notably reduced and with 1500 GT of emissions then it is very unlikely that we get an ice age in the next 100,000 years. And with higher levels of emissions, then we will end the pattern of ice ages altogether. You can read it in full under Nature's sharing initiative if you click on the link " published in the journal Nature" in the article in the Guardian here: Fossil fuel burning 'postponing next ice age

In that paper, they say

> " Using an ensemble of simulations generated by an Earth system model of intermediate complexity constrained by palaeoclimatic data, we suggest that glacial inception was narrowly missed before the beginning of the Industrial Revolution. The missed inception can be accounted for by the combined effect of relatively high late-Holocene CO2 concentrations and the low orbital eccentricity of the Earth7. Additionally, our analysis suggests that even in the absence of human perturbations no substantial build-up of ice sheets would occur within the next several thousand years and that the current interglacial would probably last for

factors interacting and their analysis suggests that this time around the interglacial would have lasted 50,000 years anyway.

Their crucial graph is this one on page 203 of the paper.

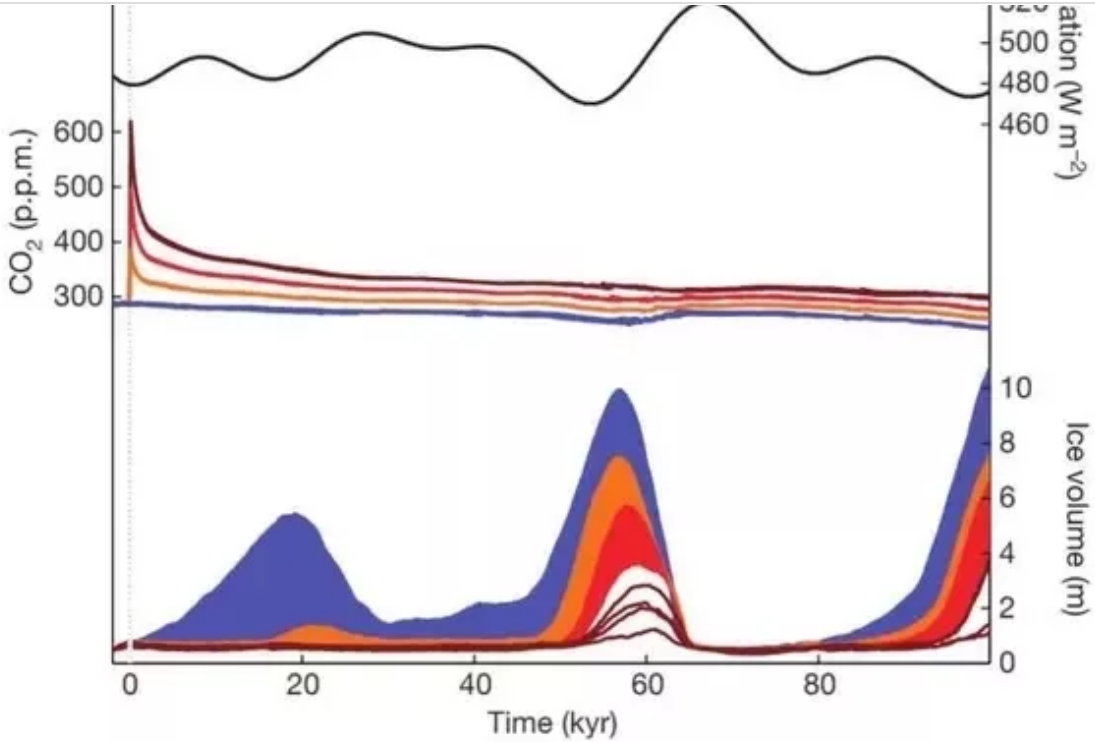


Figure 4 | The next glacial inception. The top panel shows the temporal evolution of the maximum summer insolation at 65° N. The middle panel shows the simulated CO_2 concentration during the next 100,000 years for different cumulative CO_2 emission scenarios: 0 Gt C anthropogenic emissions (blue), 500 Gt C (orange), 1,000 Gt C (red) and 1,500 Gt C (dark red line). The bottom panel shows simulated ice volume corresponding to the different CO_2 emission scenarios. Individual simulations are shown for the 1,500 Gt C scenario; for the other scenarios, the range is given as shading.

The graph at the top shows the effects of different levels of CO2 now over the next 100,000 years plus in black, variations in amount of sunlight. The graph at the bottom shows the

With all the scenarios, there is much less CO2 of course 100,000 years in the future, but you still see differences because the amount you have then if we get to 1000 gigatons this century is still double the amount you get if we don't go above 500 gigatons. Apparently even that small amount of CO2 is enough to be significant. The reason is that the way carbon dioxide behaves in the atmosphere is very complex.

- The average lifetime of a CO2 molecule is around 4 years in the atmosphere. But that's for the more rapid processes such as plant growth, and absorption in the surface water of the ocean. Much of that gets circulated back into the atmosphere again.
- The slower cycle of removal of CO2 from the atmosphere is complex and behaves in surprising ways.

(see . CLIMATE CHANGE - the IPCC scientific assessment)

For instance after adding a pulse of CO2 to the atmosphere,

- Half is removed in 50 years. You might think, half would be removed again in the next 50 years, but no
- It takes 250 years to get down to a quarter of the original concentration.
- Around 15 percent of the original pulse remains in the atmosphere pretty much permanently, for thousands of years
- The long term half life is 35,000 years. Fossil fuel burning 'postponing next ice age'

So for example, of the roughly 32 billion tons of CO2 that humans added to the atmosphere in 2010

That 15% which is left after thousands of years with a long term half life of 13,500 years is enough to prevent the next ice age and possibly, depending how much CO2 we add in total, end the cycle of ice ages altogether.

That of course is not necessarily a bad thing. The climate is much more stable between ice ages. During an ice age much of the world is covered in ice and can't be cultivated and the climate also varies very rapidly over time periods of decades. The main problem with global warming is not that it is making Earth a bit warmer, it's just the speed of the change. And that's not a doomsday scenario either.

See also my Debunked: Climate change will make the world too hot for humans

Techy background: Order Patterned With Chaos - How Climate Is Predicted For Decades - With Exact Forecasts Only For Days

509 views · 1 upvote · Posted Feb 13

Upvotes 1 Comment

Why a bright light shining on clouds during a sunset is not a passing planet

Robert Walker

Entsminger and here is another one

From 14 minutes into this video . I just see a gap in the clouds and a patch of sunlight from a sunset.

Maybe you live in a place with few dramatic sunsets. It's often like this where I live, though this is not one of my photos.

> Dreaming by Moyan Brenn on Flickr

Just this evening before writing this, I saw the clouds lit up all across the sky around my house to the North - that's the opposite side of the sky from the Sun. We often get these "wrap around the horizon sunsets" here. Some day I must try to get a photograph of one of these sunsets and upload it.

By comparison, these sunsets that they claim are "Nibiru" are really tame. You wouldn't give them a second glance, just think that the sunset was rather clouded over that day.

- Why would a second Sun only appear at sunset?
- What happens to it in daytime?

midday right at the same time you see the sunset.)

And anyway suns don’t blink in and out, or hide in bushes like a bittern! How could a sun suddenly appear at sunset and then disappear by night time?

It doesn't make any sense if you try to think it through as an idea. If we had two suns, we'd get two sunsets, with the sun everyone knows about setting first, then the second sun staying in the sky - for hours if they were as far apart as in this video.

And you'd just need to hold your finger in front of the first sun to see the second sun. Though with them as far apart as this, you wouldn't need even to do that, as it would be plain to view to everyone that we have two suns.

Here is a video, an artist's impression, to show what the sunset would be like if we really had two suns, or three in this case.

Debunked: Scared because the Sun and Moon rise at different times in different places each day, and sometimes the Moon is visible in daytime.

Robert Walker

Summary: If you have got scared of “Nibiru” you may start to pay more attention to the sky than you ever did before. You may notice that the Sun and Moon sometimes rise and set in different places, and the Moon also rises at different times each day. and is often visible in the daytime sky along with the Sun. This scares some people, who think it is a sign that the world is about to end. It is totally normal. The Sun and Moon have been doing this all your life. You just didn’t notice before.

IN DETAIL - RISING OF SUN AND MOON

The Sun and Moon follow each other across the sky. Sometimes they are both higher in the sky

summer back to winter.

This video shows how it works at Calgary - it is similar where I live on West coast of Scotland.

If you live north of the arctic circle then the sun never sets in the middle of the summer and never rises in the middle of winter.

That's how we have a difference between summer and winter. People who have got scared of Nibiru start noticing the sun and moon for the first itme in their lives, notice that they rise and set at different times each day, and then get scared of this.

It is nothing to be scared of at all. The sun and moon have done this all your life.

The Moon orbits Earth very slowly, once a month. At full Moon then the Moon is the other side of Earth from the Sun - has to be because it is fully lit up by the Sun. So the Moon rises as the Sun sets, is visible all night as a full Moon and sets as the Sun rises.

At New Moon then the Moon rises with the Sun. It's lit from behind as we look towards the Sun so we don't see it at all unless it happens to pass between us and the Sun and causes an eclipse. So at New Moon the Moon is in the sky all day and is not in the night time sky at all.

In between the Full and New Moon the Moon is in the night sky for part of the time and in the daytime sky for part of the time. It is also partly lit - in between a full and a new Moon - and so is visible too.

You can see the Moon in daylight at any time of the month except at Full Moon. It rises and sets an hour later each day. For instance the day after full Moon it will rise an hour after sun set and set an hour after sunrise, so already has some overlap into the daytime sky.

So it is normal to see the Moon in daytime.

> Daytime Moon over Monument 8.3 - photo by Alana Sise

You can look up your moon rise and set times here: Moonrise, Moonset, and Moon Phase in London

Note, the time the Moon rises or sets depends on your latitude. For instance if you live far north in winter, just south of the Arctic circle, the Moon will only appear above the horizon for a short time in winter, while if you live far south, on the same day, just north of the Antarctic circle it will be above the horizon nearly all day and only dip below it for a short time.

See also When can you see a daytime moon? | EarthSky.org

438 views · 1 upvote · Posted Feb 9

Upvotes 1 Comment

What it would be like if we really had two suns (or three in this case)

Robert Walker

This is what it would be like if we really had two suns, or three suns as the case is for this movie. This is an artist's impression of an imagined moon orbiting a real exoplanet around a very distant star. It is no threat to us at all.

And it would be like that day after day.

If you believe the “Nibiru” photos then we have a second sun that keeps disappearing and reappearing and is sometimes due North, sometimes due South, sometimes even is in the West when the sun sets but somehow mysteriously is no longer there when night falls. Then sometimes is tiny and sometimes huge, as big as the Sun. - and most of the time is invisible. And then they are visible momentarily but only to one person who is photographing from a beach somewhere.

That is how bird watching works. That is not how astronomy works.

They’d always be there every day. Slowly moving relative to each other in the sky, not always in exactly the same patterns each day, but those changes too would be continuous and gradual.

FINGER TEST FOR NAKED EYE VIEWING

It is easy to check that we only have one sun with your naked eye.

- **Go out any sunny day** with clear blue skies.
- **Hold your finger in front of the sun to block it,** so you don't harm your eyes. It is very important not to stare at the Sun as you can damage your eyes and not know that you have done it until hours later - because we have no pain receptors in the retina

But some planets do have two or more Suns. We just happen to be one of the planets with only one sun.

LENS FLARE TEST

Most of the photos and videos you see of a “second sun” (apart from hoaxes and jokes) are the result of lens flares and other strange things that can happen in a camera lens when it is overwhelmed with a very bright light like the Sun.

A modern lens is a complex thing with numerous layers of transparent materials of different types joined together. Normally this works fine but if you point it straight at the sun, the strong light from the sun bounces around inside the complex optics of your camera and causes all sorts of strange effects your the photos.

When people say they have “I have seen a second Sun with my own eyes” they nearly always mean “I have taken a photo or video and while looking through the digital camera pointed at the Sun I saw what looked like a second sun”.

This video helps you understand what is really going on in that situation.

Jeff Niddler explaining how you can distiguish various lens anomalies from the real thing. With good equipment and careful photography you can get that shot of the Sun “as is” without the lens flares and other effects that create those images of “extra suns” but it’s quite tricky to do that.

THINGS YOU CAN SEE IN DAYTIME

You can see the Moon in daytime of course. This depends on the phase of the Moon. At full Moon the Moon rises when the Sun sets. At all other times the Moon is in the daytime sky at least for part of the day. At new Moon it rises and sets with the Sun but is hidden from view because it is lit up from behind.

It is actually possible to see Venus in the daytime sky. It’s not the bright object you see at night, because the sky is so bright. Just a white dot against a bright blue sky which may “pop out” when you notice it looking in the right direction.

This photo is taken in excellent viewing conditions:

> Moon and Venus in daylight via Martin Powell at nakedeyeplanets.com

10 surprising space objects to see in the daytime sky | EarthSky.org

You can even see Jupiter in the daytime sky - it's much fainter than Venus and not much brighter than the sky itself. But white ,rather than blue. You need to know exactly where to look. And you need to block out the Sun - better behind a building or something quite large and distant - and if you know exactly where to look, with clear viewing.

It doesn't look spectacular though. You just see a white point that is only a little brighter than the sky itself, but white instead of blue.

Debunked: the Large Hadron Collider will create mini black holes that will destroy the world

Robert Walker

Short summary: it is very unlikely that the LHC can create mini black holes. If it can then the mini black holes are expected to disintegrate immediately in a burst of Hawking radiation. Whether or not that's true, our universe has natural particle accelerators larger than our solar system, which accelerate particles to immense energies and fire them in all directions including towards the Earth. There is no way that our tiny accelerators on Earth can match their energies.

The reason for building the LHC is not to create new kinds of collisions. Whatever happens there also happens in nature. It's because the natural collisions at this energy scale occur high in the atmosphere and typically long distances away from the experimenter, up to kilometers away. To study them properly we need to look at them close up from a distance of a few meters. So we have to replicate these natural collisions in an accelerator. That's all it is doing.

The current situation is that first, the collisions probably don't produce black holes - as the energy levels are far too low accprding to most theories of how it happens. If they do produce black holes, they almost certainly disintegrate right away. If this doesn't happen, they still must be harmless because if the LHC can make mini black holes, then the cosmic particles hitting

The first time I came across this was a prediction for someone predicted that 23rd of September, 2015, the LHC will create a mini black hole and that Earth will be whisked through a portal to the "Abyss".

Other stories at the time said that a mini black hole will swallow first France, then the entire Earth in seconds, and then soon after, the entire solar system. I don't want to add to their credibility in google with a link, but they are easy to find with a google search.

It's not the first time someone has prophesied something like this. When CERN was first turned on, there was a similar worry amongst many that the Earth would get swallowed up by a mini black hole.

And the stories are still running. Here are a few from the last week

- Large Hadron Collider could bring asteroid to Earth and spark ICE AGE - shock claims
- The Large Hadron Collider 'is opening a gateway into Hell', Christian claims
- Will Large Hadron Collider destroy Earth? CERN admits experiments could create black holes

All of those actually include some debunking as well which is something.

WHAT'S THE TRUTH?

It is true indeed that the LHC (Large Hadron Collider), operated by CERN, could create mini black holes according to some theories. Those sound alarming if you don't know the background.

And, unlike some of these doomsday stories, this was a real scientific possibility. The risk was

THE LHC COLLISIONS HAPPEN NATURALLY

The thing is that CERN is reproducing collisions that happen naturally in the upper atmosphere - indeed at energies we can't reach on the Earth.

The LHC with its reboot can now reach **13 TeV**.

The highest energy cosmic radiation protons reach energies of **around a hundred million TeV**. Those particles reach Earth at a rate of one per square kilometer per century. Which means that the Earth is hit by about five million of them every year. Five million particles each **more than seven million times more energetic** than the highest levels that LHC can produce.

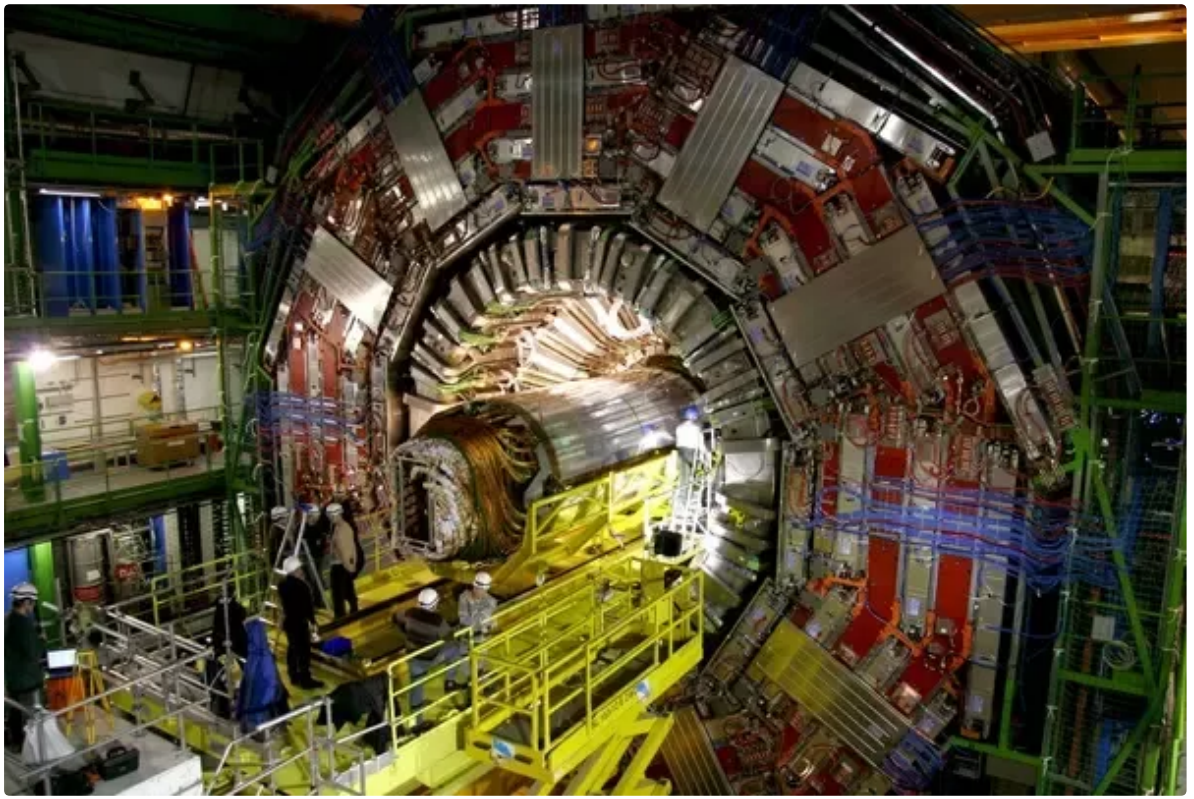
They'd dearly love to find out more about the highest energy collisions. But our atmosphere is in the way and these collisions happen high up in the upper atmosphere - and one per square kilometer per century still means that you have to wait a century to have a decent chance of spotting one that is even as close as half a kilometer away from your detection. And then it's also high up in the upper atmosphere as well.

A collision at a hundred million TeV in the upper atmosphere produces around a billion particles in the debris, and you only catch a few of them. There's not much chance of us ever getting a detailed close up view of these collisions.

So - they do continue to study the high energy ones indirectly like that. It's the only way we have to find out anything about them at all. Gradually they are finding out more but it's a slow process.

So the idea of the LHC is to study much lower energy collisions. For those ones, they reproduce those conditions on the ground in such a way that they can arrange for the collisions to happen

hundreds of meters away.



> One of the huge detectors in the LHC.
>
> There's not much chance of studying cosmic radiation with detectors like this, which need to be positioned right next to the collision. That's why they create the collisions in the LHC even though far higher energy ones occur naturally in the atmosphere.

The mini black holes, if they do form at energies produced by the LHC, are also created in these natural cosmic ray collisions. So they can't be hazardous to the Earth as we are still here.

WHY THEY THINK THE BLACK HOLES WILL VANISH AS SOON AS THEY FORM

First, most theories say that the LHC is not energetic enough to create black holes. So chances are it won't create any.

If it does, then our leading theories say that the black holes will immediately disintegrate into a flash of light and radiation as soon as they form. That's because of Hawking Radiation which it's thought would mean they would evaporate immediately in a tiny fraction of a second.

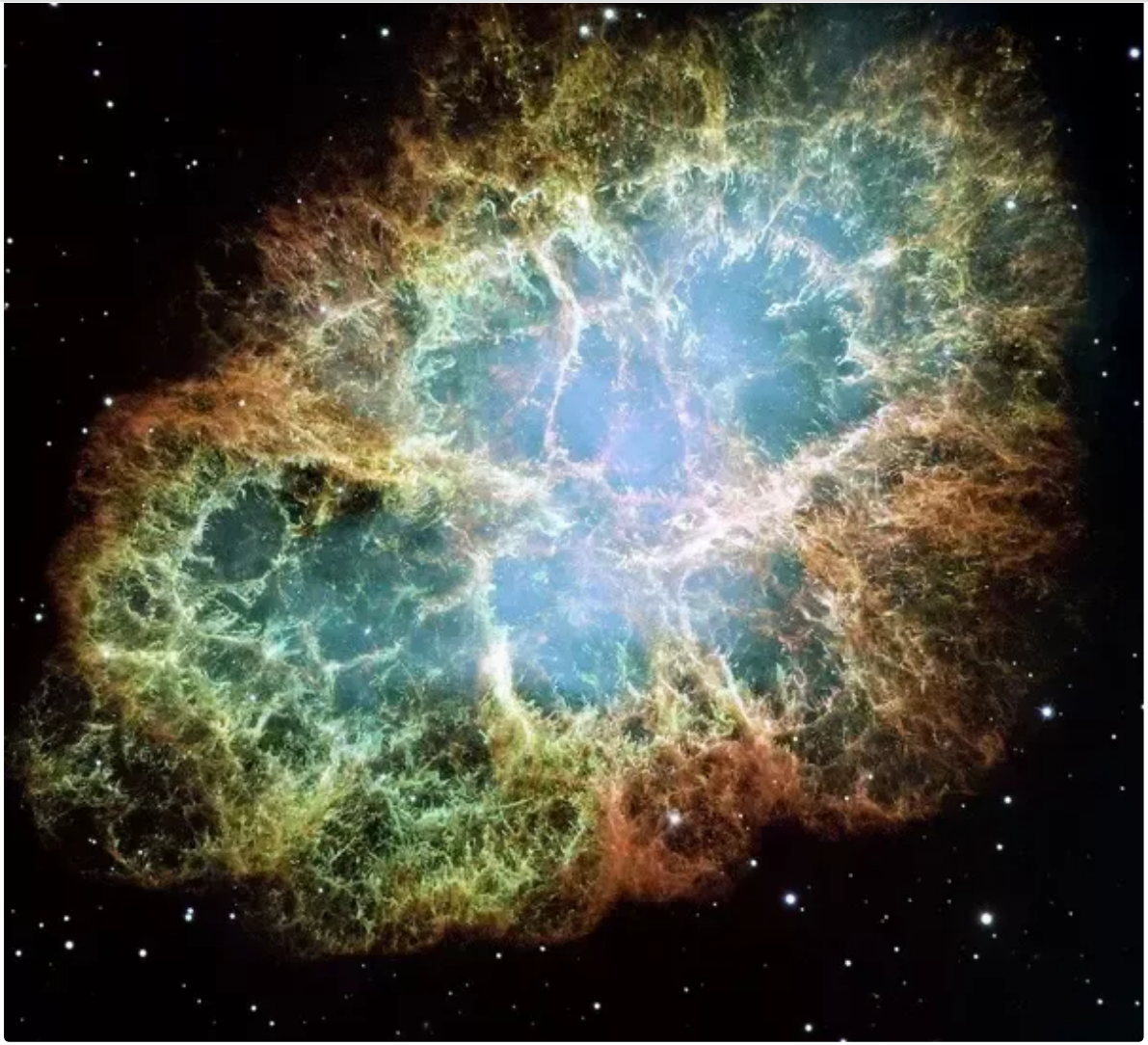
However that's only theoretical, not yet observed because of difficulties of creating them in a laboratory, if they exist at all. Indeed that is one of the predictions the experiment could confirm.

So - that wouldn't be enough to prove that it is safe.

WHY THEY ARE SURE IT IS SAFE - OUR ACCELERATORS, EVEN LHC, ARE TINY COMPARED TO NATURAL ACCELERATORS LARGER THAN OUR SOLAR SYSTEM

The reason scientists are sure it is safe is rather because they are only reproducing conditions that happen naturally, indeed at far higher energies which the LHC could never achieve, nor any other accelerator we can build.

The most energetic "cosmic rays" are produced in natural "accelerators" around stars, and the most energetic ones are too energetic to be produced even with a stellar sized accelerator. Perhaps they are produced by black holes in galactic nuclei? The first of these to be discovered packed as much energy as a baseball thrown at 60 mph . That may not sound a lot, but for a tiny particle the size of a proton, that's an absolutely huge, almost unbelievable, amount of



> The glorious Crab Nebula in the constellation Taurus, above the head of Orion - photographed with Hubble. You can get the full size original here .

> Zoom in on the Hubble detailed image of the crab nebula, shown in context in the night sky above Orion (ESA animation).
>
> It's a natural huge "particle accelerator, producing particles with energies way beyond current human capabilities.
>
> But even this accelerator is nowhere near powerful enough to create the most powerful cosmic rays, protons flying so quickly relative to Earth that they pack as much energy as a baseball thrown at 60 mph, or faster.
>
> Their source is currently unknown, possibly giant black holes.

Also with our technology, the only way we can accelerate particles to such huge speeds is to build accelerators this big. We don’t know any way to “miniaturize” this. So, with our current technology, we'd need to build similarly sized accelerators, much larger than our entire solar system, to equal those energy levels. We are nowhere near to that capability yet.

And at present, we don't have any other method to create particles with such huge amounts of energy, or anything close to this.

STEPHEN HAWKING'S COMMENTS

Stephen Hawking: God particle could wipe out the universe - quotes from his preface to a new book called "Starmus" -- a collection of lectures given by famous scientists and astronomers

> "The Higgs potential has the worrisome feature that it might become metastable at energies above 100bn gigaelectronvolts (GeV)."
>
> "A particle accelerator that reaches 100bn GeV would be larger than Earth, and is unlikely to be funded in the present economic climate."

A hundred billion GeV is a hundred million TeV. So he is saying there that a particle more energetic than the most energetic cosmic ray particles that hit Earth could make it metastable.

I think the last sentence is meant as humorous understatement perhaps. The most powerful cosmic ray particle which in turn is seven million times more energetic than the LHC collisions. An accelerator the size of the Earth would be nowhere near big enough. After all there are accelerators far larger than our solar system that produce the cosmic rays naturally and they are not powerful enough. Colliding giant black holes won't do the job either, or it would happen already.

He's talking about the equivalent of a particle accelerator which must be about the size of a galaxy or possibly larger probably.

Stephen Hawking lost a $100 bet when the Higgs boson was discovered . He made a bet with Gordon Kane of Michigan University that it would not be discovered. Transcript of what he said

trillions of years. See my Debunking: Stephen Hawking Says Universe is on the brink of instability and could collapse - metastable, in a false vacuum state.

And he has a track record of predicting scientific doomsday things without putting a great deal of thought into them. See my Debunked - Stephen Hawking puts an expiry date on humanity

Just because someone is a scientist who has made breakthroughs in theoretical physics - that doesn't stop him from also being a human being and saying somewhat daft things as well. Michio Kaku is similar ,more so, he's an excellent physicist but says the daftest things. Just before 2012 he said that we would have an "energy wave" that would threaten the Earth on dec 21. Hard even to know what he meant except a solar storm - he was just hooking in to the general 2012 panic and adding to it for goodness knows what reason.

So Stephen Hawking isn't as bad as that but he does seem to relish his doomsday forecasts.

WHAT ABOUT CLAIMS THAT IT WILL OPEN A "PORTAL TO ANOTHER DIMENSION"

For those who think that it's going to open up a portal to another dimension - or any of those other claims - remember that anything it does, is done millions of times every year by natural particle accelerators firing particles at the Earth as well as everywhere else in the galaxy. It's the same argument as for the mini black holes. If the LHC could create a portal to another dimension then there must be many millions of those portals opening every year. Tens of thousands of them opening in Earth's atmosphere every day, opened by particles at energies millions of times higher than the LHC.

We don't see that happening. And if it is happening and somehow we don't notice, it's obviously harmless. But I think that this idea is based on a misunderstanding.

- parallel universes
- extra dimensions
- string theory
- Rainbow gravity theory - a new theory according to which different frequencies of light experience different amounts of gravity

Those are all just ideas and none have been confirmed. If any of those are true, it changes nothing. It's still something that happens millions of times a year so can't be dangerous :). It just means we may understand it better. Physicists will be very interested if any of these theories ends up being proven. If they are all disproved then again that's very interesting too.

So far it hasn't detected any mini black holes. So, there's no evidence yet that any of those theories are true, though they haven't been disproved either.

Anyway - anything that it does - it is doing it in a much more feeble way than the natural particle accelerators and the only thing it does different is to do it in a place where we can position detectors all the way around the collision site to look closely at the collsion to see what is happening. All we are doing with the LHC is looking at something that already happens naturally.

See Detection of mini black holes at the LHC could indicate parallel universes in extra dimensions

For more on this, see The Astronomical Particle Colliders That Put Our Own to Shame , Cosmic radiation (CERN) , The Safety of the LHC , and Ultra high energy cosmic radiation (wikipedia)).

Debunked - The obituary of the teenage girl who committed suicide in 2011 is fake

Robert Walker

Summary: tabloids don't publish fake obituaries. It was also reported in her local newspaper the Bath Chronicle. Being Buddhist and Vegan doesn't make you OCD. OCD is not a mental illness.

He confuses two stories, one of a 16 year old UK girl called Isabel Taylor who killed herself partly out of fear of solar storms, which doomsday prophets associated with the 2012 stories.

> 3:13pm, on September 24 2011

The other one is about a sixteen year old Indian girl called Chaya who killed herself in september 2008, out of a fear that the Earth would crack open when the Large Hadron Collider switched on, afraid that everyone in her village would die.

This is the video I'm debunking, by Scott who makes a living from ad revenue on Nibiru Doomsday videos. I think that youtube should stop all ad revenue on videos like this myself - any video that promotes doomsday stories just shouldn't get ad revenue. They have other exceptions such as videos that show extreme violence, so surely ones that make people suicidal with fake news should be exempted too.

He earns an estimated £2.7K - £43.9K for youtube ads on these videos . That's $3.36K - $54.7 K

He claims that the story is fake news. It is true that the Daily Mail sometimes publishes inaccurate and occasionally out and out fake news (don't seem to have a system in place to check for fake news) - but not fake obituaries. And he has got them confused, the Daily Mail doesn't run stories about people having alien births etc - those are the "red top tabloids" like the Sun. Even the red top tabloids don't publish fake obituaries. Any journalist who wrote a fake obituary would be out of their job pretty quick.

It's better to go to her local newspaper - she was from Bath and there's a long obituary in the Bath Chronicle here which you link to but don't mention:

Teenager who feared the world was about to end

And in the gazette and herald

Family grieves for Neston girl found hanged

This is the Daily Mail one he mentions

Girl, 16, kills herself after researching doomsday disasters and becoming convinced the world was about to end

The main story that scared her was a fear of nuclear reaction in the sun and sun spots. Since it's associated with 2012 then I expect that that means the solar maximum (which doesn't have an exact date but reached its maximum some time in 2013) which happens every 11 years. Before 2012 then a lot of people associated the next solar maximum with the end of the world and that it's date was in 2012. and that it would somehow end the world.

It's all nonsense. The worst that can happen is a solar storm which causes satellites to reboot (can't actually physically damage them, just flip bits in their memory) and cause power surges in very long distance multiple kilometer cables. And those can happen at any time not just at

- Being Vegan or Buddhist does not make you OCD
- OCD is not a mental illness.
- It is called "Obsessive Compulsive Disorder" not "Mental Compulsive Disorder".

It can have many causes but is sometimes a result of depression and when that's the case, then when the depression is treated the OCD goes away. So whatever the course you did on psychology, it doesn't sound as if it covered OCD.

> "OCD is not a disease or a 'mental illness', but sometimes it is a secondary condition triggered by depression (or sometimes General Anxiety Disorder).If this is so, then treating the depression is the first priority, and the GP is the first port of call. Once the depression goes away, the OCD may well follow without much extra effort."
>
> 5 Things OCD is NOT

The most common treatment for OCD is CBT - Cognitive Behaviour Therapy. Despite the word "therapy" in the title, it's not related at all to psychotherapy. You don't discuss your parents or your childhood or anything like that. Just work on how our minds get into ruts - very effective methods to get out of a rut that is causing problems. It is very effective - most people who go through CBT are able to end the worst symptoms quickly within a few weeks of starting the treatment.

STORY DOESN'T SAY SHE HAD OCD AND YOU CAN'T DIAGNOSE OCD FROM A SHORT OBITUARY

Who knows if she had OCD or not? It’s a spectrum thing and many people do to some extent, so it would be no surprise if she did. But a doctor would not diagnose someone for OCD based on a short obituary! None of the stories say she had OCD.

girl in India scared of the LHC and a girl in Bath scared of a solar storm.

The stories about Isabel Taylor say nothing about her researching into pesticides on her computer.

The girl who took the pesticides was called Chaya and her father was called Bihari Lal and she lived in the central Indian city of Indore. She killed herself because of Indian news stories about the world ending because of the Large Hadron Collider. It's a different story.

"Bihari Lal said Chaya - the eldest of his six children - had been frightened after watching local TV reports that the experiment would cause the "Earth to crack up and everybody in the village would die"."

CLINICAL PSYCHIATRIST WARNING ABOUT THE EFFECTS OF DOOMSDAY STORIES ON EMOTIONALLY WEAK PEOPLE

The article on the BBC website, which is more complete than the one he link to, ends:

> "Clinical psychologist Nadia Masand said some of the television coverage had been "irresponsible".
>
> "These people are constantly airing series on black magic, blood-sucking vampires; even sensationalising a natural phenomenon such as an eclipse by saying that it means bad omen," she told the BBC.
>
> "Now prophesising that the Big Bang would bring doomsday! Such programmes can have a disastrous effect on an emotionally weak person." "
>
> Girl suicide 'over Big Bang fear'

more scared. These are real people not just lines of text on a computer screen. It's impossible to say if any of those who contact me who say they felt suicidal would have gone on to commit suicide.

David Morrison said that he heard of several who did. But that's "anecdotal". I would not be surprised if at least some people have committed suicide over these videos. Whether or not, many do suffer extreme anxiety. It's so sad since the whole thing is just nonsense and so easy to debunk if you know a bit of basic astronomy.

For instance, it is easy to see that we have only one sun. Go out any sunny day, block out the sun with a finger, so you don't damage your eyes by staring at it. Look to left, to right above, below. You won't see any second sun.

That debunks the whole BS idea that we have two suns. Suns aren't like bitterns. They can't hide in the rushes and emit booming sounds - there are no trees or rushes or bushes in the sky to hide behind on a clear day. The other things they say are all easy to debunk too.

Nibiru Bullshit Tester - How to check if they know anything about astronomy

I RECOMMEND YOU CROSS THIS CHANNEL OFF YOUR LIST OF PEOPLE WHO SAY SENSIBLE THINGS AND CHECK THEIR SOURCES

Just this short video is so poorly researched and inaccurate, making extravagant claims and claiming to be expert on psychiatry which he is obviously not when he confuses OCD with mental illness and attempts to diagnose OCD from an obituary and calls it “Mental Compulsive Disorder”

And confusing two stories which you can hardly imagine mixing up even on the hastiest of reading. The only two points they had in common was that they were both about young girls

Anyone who can't tell those two stories apart is obviously not a reliable source.

Stay well away if you find these things scary. And he is obviously financially motivated as he earns thousands of dollars a year as a result of this activity. Quite possibly thousands of dollars a month from making these videos.

For the stories that scared these two young girls and caused them to commit suicide - why they are no concern at all - see also - Debunked: the Large Hadron Collider will create mini black holes that will destroy the world

And Debunking: Solar Storms to end all life on Earth

434 views · 2 upvotes · Posted Feb 6

Upvotes 2 Comment

Debunked: birds singing at night are a sign the world will end

Robert Walker

This is nonsense. Birds have always sung at night. Owls and nightingales obviously. Where I live I often hear those. But ordinary daytime birds too. Robins particularly often sing late at

The story is here Do You Hear Daytime Birds Chirping At Night?

We are not due the next ice age. That is a now disproven theory. Scientists used to think this in the 1970s before we understood the causes of ice ages. It was just based on assuming that this interglacial (warm period between ice ages) would last the same length of time as an average interglacial. The gap between them varies a lot. Now that we understand this better we know that this is a particularly long gap and we won't go into an ice age for tens of thousands of years into the future.

Here is a video of a robin singing at night near a streetlight.

Why you probably don't have a "phobia" if you are scared of asteroid impacts, two suns, Nibiru, etc

Robert Walker

David Morrison coined the word "cosmophobia" to describe an unreasoning fear of the cosmos. Yes that does help astronomers who aren't affected to get an idea of what is going on. But after talking to many people who are scared of these things for the last year or two, I don't think it is actually a true "phobia" like a fear of spiders. I haven't come across anyone yet with a genuine "phobia". I think it's more of a "habitual fear". That's good news for those affected as habitual fear is easier to deal with.

First I'm not a doctor or psychiatrist. Just describing a distinction which I think is helpful.

EXAMPLE OF A PHOBIA

To explain the difference, nearly everyone has a phobia of some sort. In my case, as is quite common in my family, I have mild claustrophobia. It's very specific. I get mild feelings of fear,

But if it is a glass lift, I couldn't care less how many people are in it and can get in with no fear at all. I also don't mind the London underground at all, because the carriages have windows, even though most of the time all you see out of them is a speeding tunnel wall. There is nothing rational about it. But however much I reason about it I can't stop this very mild fear through reasoning.

There are ways of dealing with phobias I know. It's not easy but can be done. If I needed to work with lots of people in a small space without windows I'd investigate them.

EXAMPLE OF HABITUAL FEAR

Now for an example of habitual fear. If someone throws a ball at you very hard, so it stings, and then they pretend to throw something at you, even with nothing in their hand, you will probably flinch. You know you are in no danger of being hurt at all, but an unreasoning fear of being hit kicks in, just momentarily.

If they then keep pretending to throw something at you, you probably won't flinch any more.

So, I think that fear of Nibiru / two suns / asteroid impacts is like that. When I talk to someone who has got very scared that we have two suns, for instance, I explain how it's easy to check that we have only one sun by blocking out the sun with a finger, look to left, to right, above, below. I also explain how the double sun images and videos on the internet are made, through lens reflections, flares, hoaxes etc and point them towards all the sun images without extra suns in Flickr.

So, they understand the reasoning there. They can see we have only one sun. But they have been so scared of a second sun for so long, that they still have the fear of a second sun, even once they realize we have only one sun.

Suppose you had a friend, call them Boaty, after “Boaty McBoatface”, who is rather batty about Antarctica. Every week at work they tell you about their adventures in Antarctica over the weekend. You know they never went to Antarctica. You saw them in the street maybe. Yet they keep talking about it and insist they have just been to Antarctica. Talk about the things they’ve seen. Bring in photos like this

> One of the numerous Ice Fume roles near the summit of Mount Erebus in Antarctica. Image credit Mount Erebus Volcano Observatory

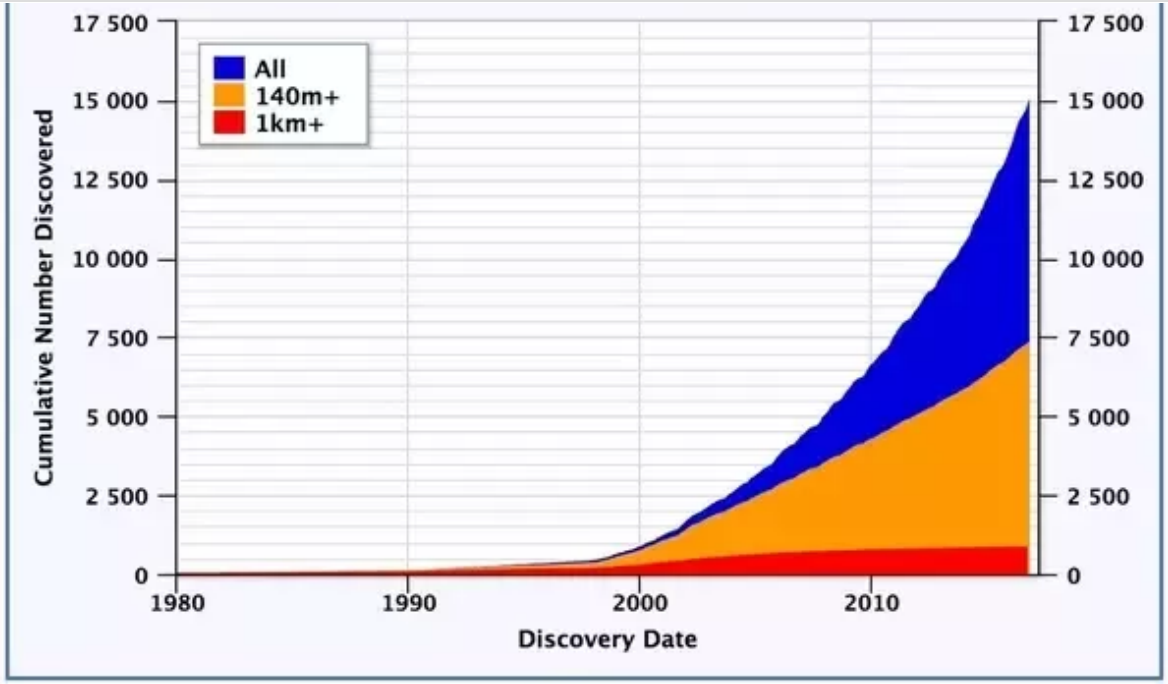
Now maybe one day they actually do go to Antarctica. They come back and tell you about it. But of course you won't believe them. It's rational not to believe them. But maybe they went with a friend of yours who you know is truthful and not given to telling tall stories. So they say that "yes we did go to Antarctica". And then you do believe them and say "Oh my, so Boaty did go to Antarctica after all".

So, it's like that for the asteroid impact stories. The Metro magazine, Express, Sun, etc they keep running tall stories about asteroid impacts. So that's like Boaty telling tall stories about Antarctica.

If you want the truth about asteroid impacts, then go to a proper astronomy site. For instance Earth Sky. Earth, Space, Human World, Tonight

That's a good reliable site for astronomy. If we do have an asteroid predcted to hit us - they will run the story, it will be accurate and give more details also than the tabloid press.

Or subscribe to Asteroid Watch (@AsteroidWatch) | Twitter . Here is a recent tweet from them:



> To date, over 15,000 near-Earth asteroids have been discovered & catalogued. None pose a risk over next 100 yrs.
>
> Asteroid Watch on Twitter

Or head over to Daily Minor Planet which you can also subscribe to, to get their daily news story about asteroids.

So, even when there is a real asteroid impact predicted, most likely a tiny one hitting the sea or a desert - well Metro, the Sun etc have blown it. Nobody will believe them if they publish this story, if the reader has any sense. That's like Boaty saying he's been to Antarctica.

But go to Earth Sky and read it there, or follow Asteroid Watch, or any other reliable source on

This is especially for the really bonkers ideas like a second sun of Nibiru. They get you by saying that you have to listen to them because you need to listen to both sides of hte argument. But that's rubbish.

For instance, suppose someone comes up to you and says "Do you know that you are standing on your head?".

You say "Oh, you mean relative to Australia", "No, you are just standing on your head".

Do you think you need to listen to both sides of that argument?

Or if someone says "Did you know that Usain Bolt is a top ranked tennis player and he won wimbledon in 2008 and all the sprint videos are hoaxes and a lie perpetuated by the establishment"

- would you feel you have to listen to both sides of that argument?

Of course not.

CROSSING THINGS OFF YOUR LIST

So, I recommend, that you cross things off your list of things to be scared might end the world. Probably quite early on you can cross the "two suns" off your list though some people continue to be scared of that one for many months and find it hard to believe the arguments that we have only one sun, even though they understand them rationally.

So - think about it carefully, once you are sure we have only one sun - well if anyone says we have two, you don't have to listen to their side of the argument. Just treat it as a tall story. They are not reliable in this area.

There is no need to listen to their side of the argument there either! So you can just cross that off.

Same for pole shift, and earthquakes, and all these things.

I find that some people get scared of the Moon when they first notice it. Maybe all your life you have paid almost no attention to it. Then you start noticing the sky and you notice that the Moon rises at a different time every day and is often visible in the daytime. This may scare you. It's just because you never noticed this before. All your life the Moon has been doing this but you never paid it any attention.

So, try going to the websites which list the moon rise and set times for your location. You can then confirm that the Moon is rising at just the time when it is predicted to rise and nothing scary is going on. You can then cross the Moon off your things to be scared about.

Same also for particular sources. The Sun, Expresss, Metro magazine, the online Telegraph, they all have run stories about the end of the world that are based on fake news, or are just nonsense. So -they are noted for telling tall stories about the end of the world. Like our friend Boaty in the fictional story then you can just cross them off your list too. Some find their stories entertaining. If they scare you - just don't read them. There is no need to do that.

RESIDUAL PANIC

However even after all of this, you may still find you have a totally unreasoning fear that the world is about to end. It probably feels like a phobia. It's not a fear of death. Some people even feel suicidal, they want to kill themselves to get rid of this fear of the world ending.

You've ruled out all the particular things that got you scared, but you still feel panicky. This I think is what David Morrison was referring to when he talked about "cosmophobia".

or shooting stars. It started when they started to read news stories, usually about “Nibiru” or they watched videos about it.

So that doesn’t sound like a phobia but more like a habitual residual fear. Those who come to me early on, who have only just read the stories recently, they get satisfied easily. They just need a few answers, say “right, yes I see it now thx” and off they go.

But those who have been scared for some time - often it has built up to the point where every day they wake up anxious that the world is about to end and this colours their entire day.

They may retreat from the world, seldom go out at all. May sometimes have left work. Don’t have many friends. Spend a lot of time on the internet reading stories about Nibiru. It’s almost become their entire world. Some leave their job and go and live in the countryside or somewhere where they feel safer.

Often they are receiving medication from doctors to deal with anxiety. So that definitely helps. It takes the edge off the anxiety I think. Modern medicines are much better than they used to be. Often involve boosting serotonin, which gives you a sense of well being, a natural chemical we have anyway. That makes it easier to put this in perspective.

So in this situation of course it is going to take a while to come out of it and to begin functioning more normally without this constant fear of Nibiru.

So - I’ve already mentioned medication. I’m not a doctor but I do recommend you contact your doctor if you haven’t already especially if it is debilitating like this. You don’t have to do what the doctor recommends. With medicine it’s definitely sensible to ask the question “Is it habit forming, and will I have any difficulty coming off it?”. The answer for modern medicines I understand is usually no. Especially the ones that work by boosting serotonin. But do ask your doctor that question, and then make your decision based on what they say. You don’t have to do

COGNITIVE BEHAVIOUR THERAPY

It's worth a try I think. It's mainstream and your doctor might well refer you to a specialist. Despite the word "therapy" in the name, it's not the sort of thing where you talk about your past, your parents, childhood etc. It's very much in the present.

It's to do with identifying ruts you get into. Often those who are scared of Nibiru tell me they have tried stopping themselves from thinking about it. They may have tried also wishing very strongly for the stories not to be true. None of that works.

Try this experiment. For the next minute try not to think about a hippopotamus?

Did you succeed? I can almost guarantee that your mind was full of hippopotamuses although you probably never thought of them at all all day up to now.

So, it's a bit like that if you try to stop thinking about Nibiru, and to stop panicking. But it is possible to do something about it, just not in that head on direct way. That's what cognitive behaviour therapy helps with, if I understand it right. It's good for any kind of obsessive behaviour and is often used to help people with OCD. It has a very high success rate.

FEELING OF IMPENDING DOOM

You can have this fear without any reason for it. I don't know if it is the same thing, but there's an Australian fish that causes unreasoning fear of doom in patients who have been stung by it.

> Small box jellyfish, possibly Carukia barnesi , one of the jellyfishes responsible for irukandji syncrome. Photo Carukia barnesi - by Forgez Wikipedia (there are many other photos of Carukia barnesi but I can't find one right now that has a suitable sharing license to include here)
>
> You can read the story of its discovery here: Irukandji Jellyfish. Carukia barnesi

This jellyfish is not dangerous to most people, if you get out of the water and get treatment, but for some reason people who are stung by it become convinced they are going to die, although they don't. See Apparently There's a Jellyfish Whose Sting Causes Feelings of Impending Doom

You can get a similar feeling if you eat too many nutmegs, like huge numbers of them. See feeling of impending doom .

So - not saying it's the same thing but that shows how you can have this feeling of impending doom, even when you know there is nothing to be scared of. And it's not a phobia. Eventually it goes away. I think there are similarities. Obviously if it is something like that, an actual change in your body leading you to feel fear all the time, then reasoning, and things like cognitive

You can do a lot by just not searching for Nibiru. On facebook, then say you don't want to see "stories like this" in your feed - click on the x at top right of the story and you see that option. Stop searching in Google and stop clicking through to Nibiru in search results and Google will eventually stop showing them to you.

Take a break from the internet altogether. Especially if the main thing you do on line is to search for stories about Nibiru it may help a lot to just stop going online. Take an internet break, for a few hours, a day, a week, whatever is sensible and practical for your situation. See if that helps and if it does, you have a way to deal with the situation.

Or anything else, to just notice things that help with your fear of the world ending.

And associate with people who know that it's nonsense and can reassure you when others tell you it makes sense. If you are interested in astronomy you could try joining your local astronomy club - people who regularly observe the sky through telescopes and follow the planets and all the latest astronomy news, in the tradition of amateur astronomy, will certainly not have any truck with ideas of us having two suns or extra planets or all that BS.

And you can try our groups on facebook,

- Dazzathecameraman
- Voices Of Reason To Explain X - V.O.R.T.E.X
- Cosmophobia
- Doomsday Debunked

You tend to get lots of stories appear about doomsday, so if you want to avoid those stories altogether they may not be the best place at that point. But the stories get debunked and you can talk to knowledgeable astronomers and scientists who will help you get grounded in this

So, if you can see rationally that these aren't things to be scared of - that's an excellent starting point. But you may well find you can't get rid of your fear instantly through reason. But eventually it gets less and less and in many cases it just goes away, in my experience of talking to people over the internet who are scared of these things. Might take months, might take longer sometimes. Some that I talked about this first a year ago are still scared a bit, but much less so. So if it takes a year that's not so unusual either.

See also my I understand that Nibiru is not real but still feel scared all the time - what can I do?

353 views · 1 upvote · Posted Feb 5

Upvotes 1 Comment

Debunked: Mountain sized asteroid 2014 UR116 headed towards Earth

Robert Walker

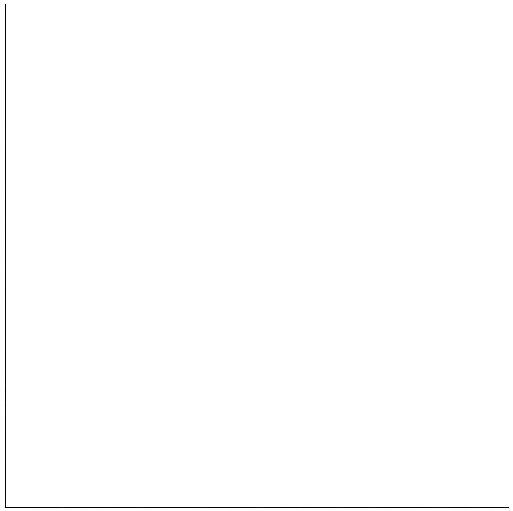
This one is not even listed as a "Potentially Hazardous Object". This means that it's not a possible threat at all even for many centuries into the future. The closest it gets for the next 150 years is 2.7 million miles or nearly ten times the distance to the Moon, in April 2047.

- Metro Newly discovered asteroid could wipe out humanity
- Daily Star Asteroid threat is so real NASA steps in to protect Earth from direct hit
- RT 1,000 times stronger than Chelyabinsk meteorite: New asteroid may threaten Earth

They all cite the Russian astronomers as saying we will need to keep an eye on it because it could be perturbed unpredictably by other planets. That's nonsense. Perhaps they were misunderstood or misquoted.

The main cause of uncertainty is if we have too few measurements to calculate an accurate orbit. This one ,as the name implies, has been tracked since 2014 so is well understood.

This is the sequence of discovery images from 2014



Gravitational effects of the planets are well known and can't surprise us in the next few

Although it was only discovered last month, we have 300 observations spanning three years. That's because after discovering it, they could go back through looking at images of that patch of the sky and find "pre-discovery" images where astronomers photographed it and thought it was just a very faint star and didn't pay any attention to it at the time. So its orbit is very well understood.

It got so much media attention that JPL put up a page about it here

> "Some recent press reports have suggested that an asteroid designated 2014 UR116, found on October 27, 2014, at the MASTER-II observatory in Kislovodsk, Russia, represents an impact threat to the Earth. While this approximately 400-meter sized asteroid has a three year orbital period around the sun and returns to the Earth's neighborhood periodically, it does not represent a threat because its orbital path does not pass sufficiently close to the Earth's orbit.
>
> "Furthermore, Tim Spahr, Director of the Minor Planet Center in Cambridge Massachusetts, has also re-computed this object's orbit after noticing that it was the same as an object observed six years ago. Using both sets of observations, the future motion of this asteroid was carried further forward in time using the automatic computations made by the Sentry system at NASA's Near-Earth Object Program Office at the Jet Propulsion Laboratory. These computations rule out this object as an impact threat to Earth (or any other planet) for at least the next 150 years.
>
> "Any statements about risk for impact of discovered asteroids and comets should be verified by scientists and the media by accessing NASA' Near Earth Object (NEO) Program web site at http://neo.jpl.nasa.gov/risk/
>
> "or the European equivalent, the NEO Dynamic Site at

It's debunked in many places:

- EarthSky astronomy magazine (a top quality and reliable site for astronomy) here: Asteroid 2014 UR116 is no threat to Earth | EarthSky.org
- Phil Plait for Bad Astronomy No, Asteroid 2014 UR 116 Is Not Going to Hit the Earth
- NASA Asteroid 2014 UR116, A 400-meter Sized Near-Earth Asteroid, Represents No Threat to the Earth

Debunked: We are in danger from a magnetic pole shift in the near future

Robert Walker

Summary: It's not something to worry about, and we are not in the middle of one anyway.

We get magnetic pole shifts every few tens of thousands of years. Last one was 41,000 years ago. But there is no evidence that we are in the middle of one now. Both magnetic poles are close to their geographical poles and though the magnetic field strength is currently decreasing

or maybe sometimes one way and sometimes the other way. Several centuries after it started, our compass's North would point South and Vice Versa.

Last time we had a reversal, nothing happened, humans survived just fine. There isn't any evidence that they cause mass extinctions. The ozone layer gets thinner for a while meaning more UV light gets to ground level, but it doesn't vanish. That would probably be the main risk for our descendants maybe many thousands of years from now who have to live through a pole shift if there is an increase. But it is easy to protect from UV light. Nothing much else will happen.

This is different from the idea of a geographical pole shift. That's just nonsense. See Debunking: Inuit elders say that the Earth's poles have shifted position for that one.

Magnetic pole shifts do happen - we have lots of good evidence of this from the geological record. First discovered by studying rocks that form in the sea floor, e.g. along the Atlantic, in the so called "deep sea trenches" where the rocks are pulling apart and new rock forming, very slowly. They found magnetic strips of rock pointing in opposite directions where they trapped the Earth's magnetic field as the rock solidified.

IN DETAIL

This article from IFL Science propagates many of the myths about magnetic pole shifts. Why The Earth's Magnetic Poles Could Be About To Swap Places – And How It Would affect Us

Short answer, nothing much for most of us:

- **Migratory birds might get confused** since they rely on the direction of the magnetic field.

- **Solar storms would have more effect but Earth** would still have a magnetic field, just a bit weaker.
- **Astronauts in low Earth orbit** would need more protection from solar storms
- **Ozone layer damaged leading to increased UV radiation** so humans would need more sunblock to avoid skin cancer. It would stress the populations of phytoplankton in the oceans but there is no evidence yet to support the idea that this could have major wider reaching effects. This is a matter of on going research.
- **No mass extinctions** as a full reversal happens every two hundred thousand years approximately and we have nearly all the same species on Earth as we had hundreds of thousands of years ago.
- Our atmosphere still protects us, as it is equivalent to ten meters of water in mass. Only the upper atmosphere gets increased levels of particle fluxes. The cosmic radiation you detect at ground level is due to much more penetrating particles than the slower moving ones in solar storms.
- **The solar storms have large scale electromagnetic effects, and we would have to harden long range transmission cables** but we should do that anyway as present day solar storms can go right through the Earth's magnetic field protection when they are strong enough.
- **We get increased erosion of the upper atmosphere by solar storms, but magnetic field reversal is so rare that this has no long term effects -** it can't strip away the atmosphere even on geological timescales. Solar storms can do that on Mars because it had no magnetic field for billions of years

Brunhes–Matuyama reversal 781,000 years ago.

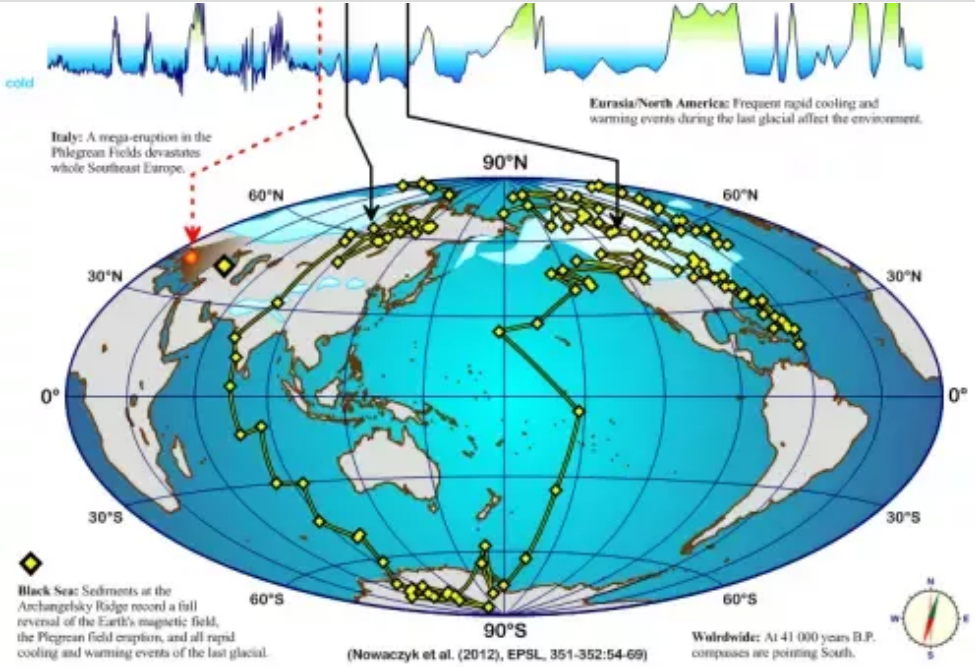
But sometimes the magnetic field reverses temporarily, and then reverts to its original state again. One geologically recent example, the Laschamp event 41,000 years ago. This happened surprisingly quickly, around a century for the polarity shift, unlike a full reversal that takes thousands of years for it to reverse.

It was a complete reversal, not just a change in position of the pole. While reversed, the field strength was only 5% of our normal magnetic field, but it had North and South interchanged. It lasted for 440 years. Of that time period, the two reversals took up 250 years.

An extremely brief reversal of the geomagnetic field, climate variability and a super volcano

It’s not much different though whether it just flips for a short time or flips for a long time.

In this diagram the yellow dots track the motion of the north "virtual geomagnetic pole"

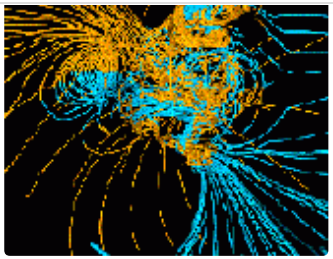


> For a couple of science news stories about this research: An extremely brief reversal of the geomagnetic field, climate variability and a super volcano , Ice age polarity reversal was global event: Extremely brief reversal of geomagnetic field, climate variability, and super volcano
>
> It remained reversed for a total of 450 years and the two polarity reversals took 250 years of that. That's very rapid on geological timescales.
>
> For the detailed scientific paper: Dynamics of the Laschamp geomagnetic excursion from Black Sea sediments . This diagram is discussed on page 65.

So, it does seem it is something that can happen. Not just in a few years. But over a couple of centuries.

This is a simulation of a magnetic reversal on supercomputer from 2010, just to give an idea of how it works, it's not just the magnetic poles moving, like turning around, the magnetic field would get complex in the middle of the transition. It would get pretty hard to use a compass, I'd imagine, need to rely on up to date maps of the direction of the magnetic field in whatever part of the world you were sailing in.

This is what it's like in the middle of a reversal:

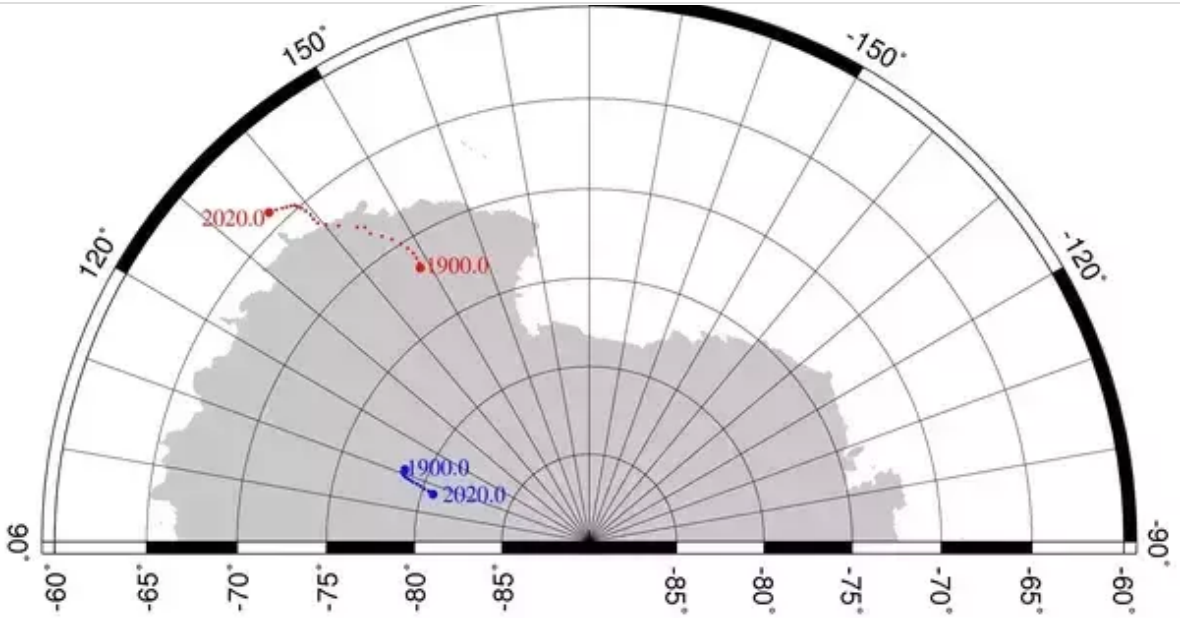


Geodynamo

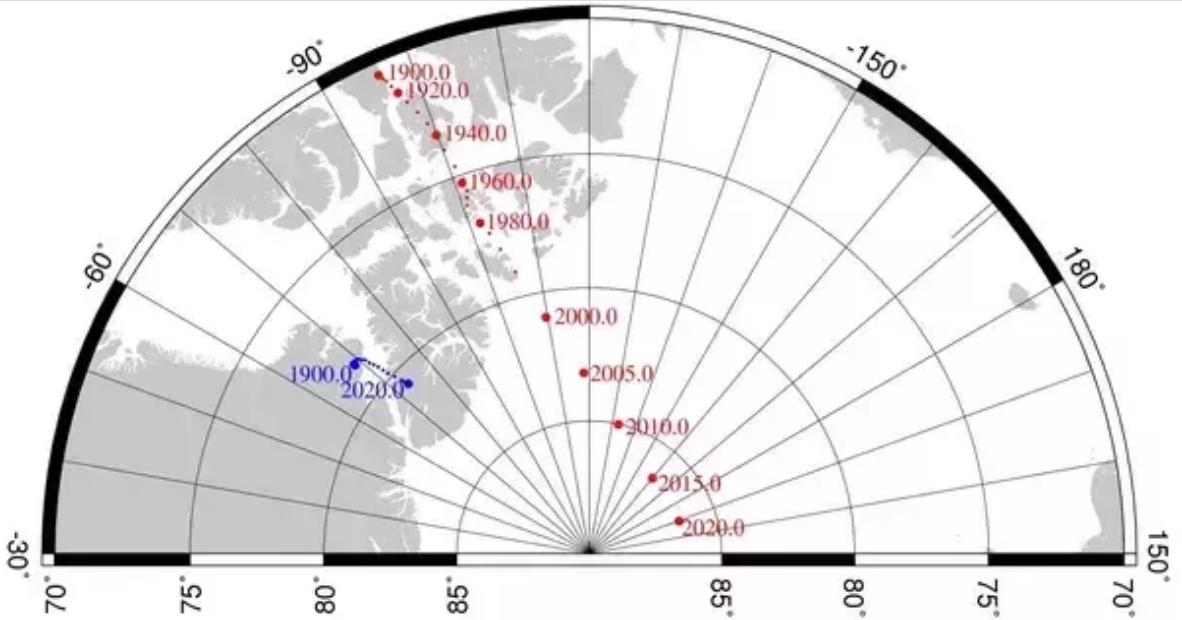
We are nowhere near anything like that at present.

CURRENT SITUATION, NO SIGN OF A REVERSAL

The South dip pole lies at a latitude of 64.28 degrees South, outside Antarctica, in the open ocean, also outside the Antarctic circle.



While the North magnetic pole is far closer to the pole, almost directly at it right now:

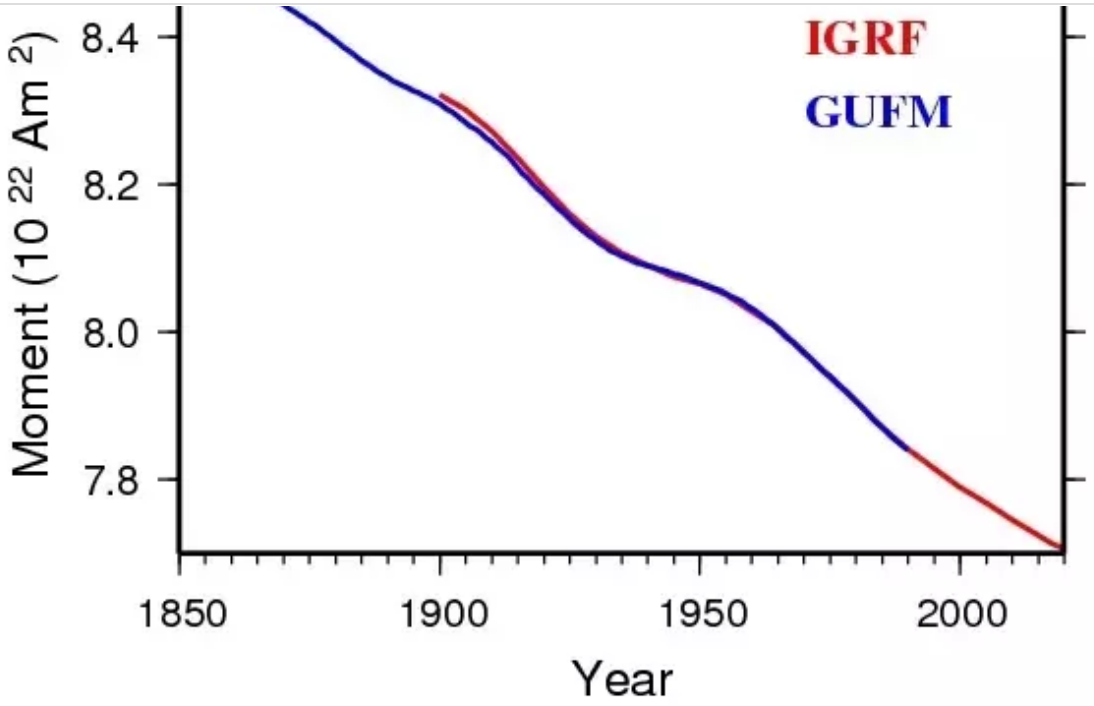


As you see the N. magnetic pole is continuing to move closer to the geometric N. pole and the S. magnetic pole is continuing to move away from the geometric S. pole.

In these diagrams, the blue is the geomagnetic pole - treats the Earth as if it were a dipole magnet. So the geomagnetic poles are diametrically opposite each other. The red dots are the dip poles - the point on the surface where your compass needle would point directly downwards or upwards.

More about it here: Magnetic Poles

There's also evidence that the magnetic field is getting weaker. But it’s been much stronger than usual for a while and so far it is not particularly low, just declining towards rather ordinary values



What it will do next is anybody's guess. If you extrapolate that graph, it reaches 0 so a reversal after 1500 years. But there is no reason to suppose that it's doing that. Even if it gets very weak, often you get "excursions" where the field gets weak, but then just restores itself in the same direction as before.

So there is no reason to suppose it will reverse based on the magnetic field strength so far. The magnetic poles are continually moving anyway and at present they are close to the poles and the magnetic field strength is normal.

See Magnetic Reversals

There were increased levels of radiation, with increased levels of Beryllium 10 and carbon 14. See https://www.sciencedaily.com/rel...

(note, in case of confusion: the paper doesn't say that the reversal caused the supervolcano eruption, it's just that their research allowed them to research both events as they were close together in time)

We remain protected by the atmosphere, which is roughly equivalent in radiation shielding to ten meters thickness of water. So we don't need to be concerned we'll all die, like astronauts caught in a solar storm outside the shelter of the Earth's magnetic field. That can't happen.

Human beings have managed fine through many previous reversals. Anatomically modern humans evolved around 200,000 years ago, archaic humans 500,000 years ago, and earlier hominids have been around for millions of years, see human evolution

The weaker magnetic field during a reversal wouldn't make much difference for the faster particles in cosmic radiation as these fast particles go straight through the Earth's magnetic field anyway. And some particles are even accelerated by the magneticfield. The Earth's atmosphere protects us from this, again shielding equivalent to ten meters thickness of water.

Theoretically the increased radiation levels from the slower particles could increase cloud levels (because radiation is supposed to help with cloud formation, similarly to the way they produce trails in cloud chambers) which could cool the Earth. The authors of that paper couldn't find a clear correlation of weather with the cosmic ray flux during the Laschamp event however (just summarizing what they way in their paper).

More generally, there's no proven link between magnetic reversals and extinctions.

> "During a transition the magnetic field at the surface of the Earth decreases to about 10% of

> evolution of life on our planet can be drawn."
>
> Magnetic Polarity Transitions and Biospheric Effects (2010)

In more detail: in the summary conclusion section on page 157 of the earlier paper:The Sun, geomagnetic polarity transitions, and possible biospheric effects: review and illustrating model (2009) they conclude that the main effect would be generation of a natural hole in the ozone layer and this would stress the populations of phytoplankton in the sea, but that so far none of the recent studies have yet been conclusive enough to decide if this has cataclysmic effects on the Earth's ecosystem.

> - "A major atmospheric effect of polarity transitions is most probably the generation of a natural ozone hole due to enhanced SPE activity. This ozone hole is associated with a strong increase of erythemal weighted surface UV-B flux. .
> - "The increase of erythemal weighted surface UV-B flux represents a clear stress on aquatic ecosystems such as phytoplankton populations. Using a simplified model of enhanced UV-B stress on such a population indicates a complex, nonlinear response of the population.
>
> ... "We conclude that many further studies on details of the suggested process chain and actual analyses of geologic proxies are necessary before a possible connection following the processes discussed can be confirmed. All recent studies do not yet allow one to decide whether a polarity transition is a cataclysm to the Earth system or not. "

This is an earlier 1980 paper with the same conclusion: Relationship between biological extinctions and geomagnetic reversals

More citations in the wikipedia article here: Geomagnetic reversal

There's no risk to humans. But there is a risk to the electricity transmission network and to satellites mainly. Ordinary strong solar flares aren't really a problem, there is enough warning and the electricity companies and so on can take measures to protect themselves. Impacts of Strong Solar Flares . We get those every so often, every decade or so.

But then - there's the possibility of a really big solar flare. There was a big solar flare back in Solar storm of 1859 . Known as the "Carrington event" after an English astronomer who was observing the sun, saw some huge sunspots, and spotted an intense white flash from the sunspot group. The auroras turned night to day, people could read the newspaper by the auroras. Gold minors in the Rocky Mountains woke up and ate breakfast at 1 a.m. thinking it was sunrise on a cloudy day.

Telegraphs stopped working - and in the USA, some operators disconnected the batteries and found they could send telegrams just using the induced electricity from the storm. See ***Severe Space Weather Events*** Telegraph operators also saw sparks leaping from their equipment, some big enough to cause fires. What If the Biggest Solar Storm on Record Happened Today?

So - at the time that was just a curiosity and hardly made any difference to anyone except the telegraph operators and people woken up early by the bright auroras. But if we had a storm like that now, the effects could be huge. We have never had a flare anything like that big since then.

The main effects are:

- It could knock out many of our satellites including GPS by interfering with its electronics. I think the main risk here is that they go off line and have to reboot - not physical damage Impacts of Strong Solar Flares .

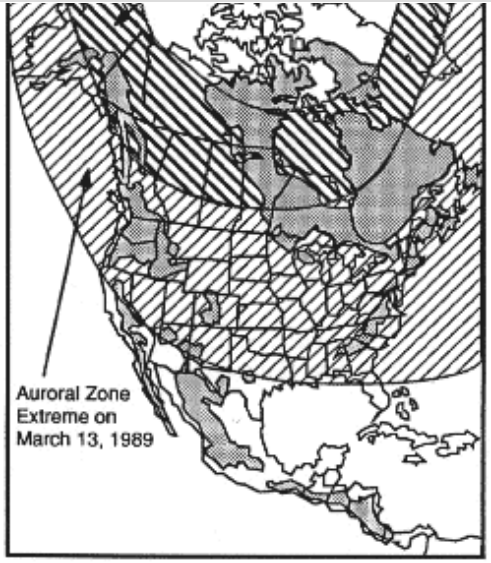
- It could destroy the transformers in our electricity grid for transmission of electricity.

Basically the power companies need to install monster surge protectors. Solar Storms: What You Need to Ask Your Power Company

And another approach involving adding extra resistors - this amounted to a total cost of the order of $100, million, for an event that could cost trillions (between 0.6 and 2.4 trillion dollars to replace damaged transformers after sch an event according to the Lloyds report) and mean outages of electricity for between 6 days and years. An Inexpensive Fix to "Prevent Armageddon" But Congress didn't pass the bill that was proposed to spend this $100 million on this fix.

I'm not sure of the latest on this. There's a lot about this online but it can be a bit hard to sift the accurate sites from the ones that are a bit over the top and sensationalist.

Blackouts certainly can happen, this is something that actually did happen in Quebec in 1989 You are most vulnerable in the higher latitudes so the North of the US would be the ones who lose power, and the higher latitude countries in Europe. Apparently also more vulnerable if the power lines run above igneous rocks.



> "Power systems in areas of igneous rock (gray) are the most vulnerable to the effects of intense geomagnetic activity because the high resistance of the igneous rock encourages geomagnetically induced currents (GICs) to flow in the power transmission lines situated above the rock. "
> The Day the Sun Brought Darkness

And - is something you can do something about - ways of protecting the transformers in power grids seem the most important thing to focus on. There's a useful recent discussion here at physicsstackexchange:
Can a Coronal Mass Ejection (CME) cause a blackout on Earth and why?
Where one of the answers says that the power network has various unintended protections built in, mainly that if one transformer blows out, the rest in the grid tend to trip rather than blow out too. And that in a study that he and some colleagues did, they found the power grid may be less vulnerable than previously predicted because of these reasons, but satellites that

> "So the most recent idea is that our satellites are very vulnerable but our power grids may not be as vulnerable as we originally thought (though, all of these issues are incredibly difficult to model and predict so take my comments with a grain of salt)."
> - see the conversation here: Can a Coronal Mass Ejection (CME) cause a blackout on Earth and why?

Any other links on this?

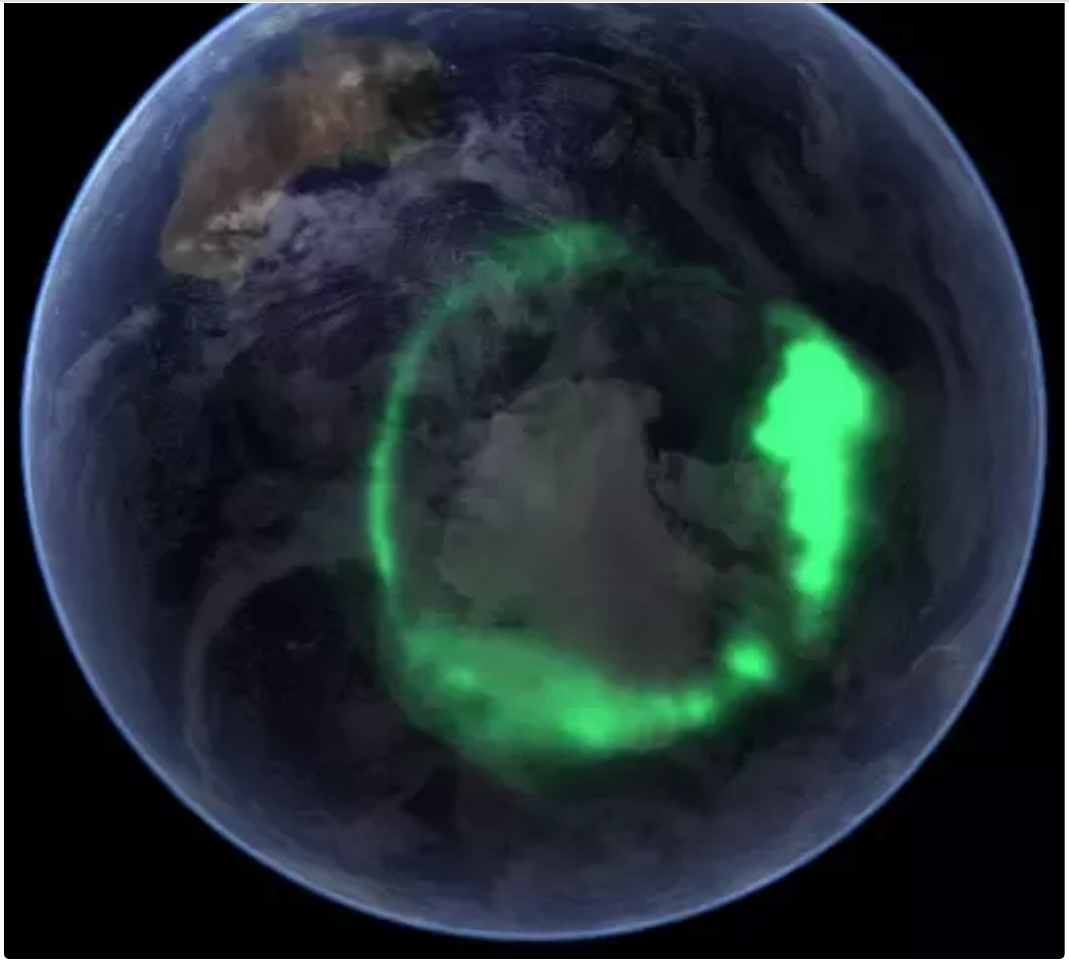
(This is a shortened version of Robert Walker's answer to How often do solar storms occur? Can they hit earth or cause harm to use?)

NO DIFFERENCE IN NUMBERS OF PARTICLES THAT GET DOWN TO GROUND LEVEL

Solar storm particles are too weak to get through the atmosphere at all. Cosmic "rays" actually particles (the name is confusing as they aren't photons or radiation and travel at less than light speed) - they can, but the atmosphere is equivalent to 10 meters thickness of water so only the most energetic can get all the way through.

The loss of magnetic field won't make any difference there as it's our atmosphere that protects us most (though it would make a big difference to astronauts in the ISS). It increases the number of particles that hit the upper atmosphere, whch is why it can influence the ozone layer and perhaps cloud formation. It also makes magnetic field differences to the surface which is how you can get the effects on long cables such as electricity transmission cables. But it doesn't increase the number of particles that get down to ground level in the atmosphere.

AURORAS



Here is a stunning video of the Aurora Borealis from the ISS in 2012.

And a compilation of various videos of it here

See also If you were alive during the reversal of Earth's magnetic poles, would you notice anything on Earth while it occurred, like a sudden change in weather?

Debunked: 2016 WF9 to hit Earth and trigger mega-tsunamis February 16th or 25th 2017 - says Dr Dyomin Damir Zakharovich

Robert Walker

Summary: It's fake news - anyone who runs this has no system in place to check if the story is fake. The title of this article is taken from the Sun but several others are running this story. It's fake news.

If you trace it back, the original story about "Dr Zakharovich" talks about the "dark side of the Sun", which is a staple of joke stories in Astronomy like the fake news that N. Korea claimed to have landed an astronaut on the Sun at night. It's hard to be sure if it is meant to be humour, satire or real - but it is one of several stories about the "dark side of the sun" on the same website. Hopefully most of you know that the sun doesn't have a "dark side" and that at night it is just hidden below the horizon.

The later versions of the story still mention the supposed astronomer "Dr Zakharovich" but omit the ideas of a dark side to the sun

Earth.

I expect the "self proclaimed astronomer"'s name is just made up. They wouldn't use a real person for a joke story about the dark side of the Sun. This particular asteroid is nowhere near Earth. On February it passes 132 times the distance to the Moon. Its closest flyby is 20 times the distance to the Moon in February 2149

But since then somehow it has lost all its joke elements and journalists who don't bother to check their sources for fake news are running it as a serious story.

I hope most of those reading this know that the sun doesn't have a dark side.

It's like them all running an April Fool joke as if it was real news.

Anyone who runs this story doesn't check for fake news for asteroid impacts so cross them off your list of reliable sources for astronomy.It is a serious problem I think, the large numbers of news sites that are willing to run joke / hoax / fake doomsday stories without any system in place to check them.

Papers running this story without any mention of its origin as fake news include:

- Daily Mail: Is a doomsday asteroid on its way to Earth?
- Metro Magazine: Doomsday asteroid 'will hit Earth on February 16,' Russian maniac warns
- The Sun A massive asteroid is coming our way and one 'scientist' think its going to SMASH into our planet and cause a mega-tsunami of doom -
- Express: Is asteroid due to crash into Earth sparking mass tsunamis NEXT WEEK?

- Catholic online: Is a fragment of planet Nibiru about to hit Earth? Prediction targets Feb. 16 as date for cataclysmic event - Technology - News - Catholic Online
- Ten News 'Doomsday' asteroid to hit Earth next month – theorist
- AOL news Conspiracy theory predicts doomsday asteroid will destroy the Earth in February
- Heat Street Conspiracy Theorist: Doomsday Asteroid To Destroy Earth in February, and NASA Knows
- M2 'Doomsday Asteroid' Incoming, According To Conspiracy Theorist
- TechPlz End Of The World 2017 Theory: Asteroid To Strike Earth on Feb 16
- Reflection of Mind Nibiru Fragment To Strike Earth in February, Says Russian Astronomer
- Reflection of Mind (again) Doomsday Asteroid To Hit Earth Next Month And Set Off String Of Mega-Tsunamis -

The original version appears on

- Someone's Bones: Nibiru Fragment To Strike Earth in February, Says Russian Astronomer
- Copied to Mysterious Earth Nibiru fragment to strike Earth in february, says russian astronomer
- And numerous other Nibiru / Planet X blogs etc that just ran it unchanged: Google search for: * Nibiru fragment to strike Earth in february, says russian astronomer "

The Daily Mail actually does some rather decent science and astronomy articles at times. Some are well researched and careful. But others are just bunk. Maybe they have some good science journalists and some hopeless ones and it depends who writes the article?

Snopes debunks it here, but even they didn't pick up on the fact that it originated as a joke story involving the dark side of the sun, which is easy to find with a google search

- FACT CHECK: Will a Doomsday Asteroid Destroy Earth in February 2017?

This site though does do the check back to the original and it's a good article debunking it

- The New Daily: Don't be fooled by that 'asteroid collision' story

HOW I FOUND THE ORIGINAL STORY

It's actually quite easy to find the original source of a story like this. I used the google search option to search for results before a particular date.

Enter a search for e.g. the name "Dyomin Damir Zakharovich" + "asteroid" and then set the final date to different dates. You will soon find that the name didn't occur before January of this year anywhere on the web. Then go forward by a week, found it was first week of January, keep dividing down and soon you find there are few results and the earliest was 4th Jan.

It's a little confusing as the google search by date is slightly flawed ,sometimes shows later stories than the final date you set, but it is easy to check those individually as it doesn't make many mistakes.

I doubt if this is a real person. There are earlier occurrences, e.g. this story again on "Someone's bones" under Russian Nibiru Astronomer Fears For His Life says

A search for Lomonov+Zakharovich only turns up ten results, and mostly highly dubious planet X / Nibiru ones at that.

IN DETAIL

This is a rather distant asteroid / comet. This is an artist's impression of it.

> "2016 WF9 will approach Earth's orbit on Feb. 25, 2017. At a distance of nearly 32 million miles (51 million kilometers) from Earth, this pass will not bring it particularly close. The trajectory of 2016 WF9 is well understood, and the object is not a threat to Earth for the foreseeable future."
>
> NASA's NEOWISE Mission Spies One Comet, Maybe Two

NASA didn't say that, I'm sure, no astronomer would say that. It will be so far away that it can't possibly be a naked eye object and would need a large telescope to see it at all. When reading these articles you need to know that journalists, especially in the red top tabloids, just make things up to make the story sound good. Rather like someone telling a tall tale in a pub.

The only reason NASA did a bulletin about it is because it seems to be a comet that has lost all of the ice and gas that makes comet tails. They think it is a comet because comets are dark (their nucleus that is) and it is darker than ordinary asteroids. Apart from its darkness it looks like an ordinary asteroid, doesn't have a tail More about it: 2016 WF9 .

That's interesting to astronomers. But it's not even in an orbit that takes it anywhere near Earth. It's closest approach in the next 200 years is well over a century in the future, in February 2149. And even then, it will be more than 20 times the distance to the Moon.

This is what NASA say about it:

> "It's in an orbit that takes it on a scenic tour of our solar system. At its farthest distance from the sun, it approaches Jupiter's orbit. Over the course of 4.9 Earth-years, it travels inward, passing under the main asteroid belt and the orbit of Mars until it swings just inside Earth's own orbit. After that, it heads back toward the outer solar system. Objects in these types of orbits have multiple possible origins; it might once have been a comet, or it could have strayed from a population of dark objects in the main asteroid belt."

Note that it crosses the ecliptic just inside Earth's orbit. This means it can never hit Earth as long as it remains in its current orbit. An object in a trajectory like that would have to cross the ecliptic exactly at Earth's orbit to hit us.

The earliest version of the story I can find online is here, 4th Jan: Nibiru Fragment To Strike

strike Earth in february, says russian astronomer "

But then it started to morph into a new story after that.

I'm not sure you can even call it fake news. More of a satire or joke story as it says

> "According to Dr. Zakharovich, 2016 WF9 was one of trillions of asteroids churning around Nibiru in a cosmic whirlpool. Occasionally, the asteroids collide, bumping one another likes balls on a billiard table, sometimes ejecting one another from orbit. In this case, Dr. Zakharovich said, 2016 WF9 was jettisoned directly toward Earth. Using the "slingshot effect," it first doubled speed circling the brown dwarf star, **then doubled that speed to the third power when it spun behind the dark side of the sun,** propelling it toward Earth at transversel velocities."

I think most of us know that the Sun doesn't have a dark side :).

It's from a blog that takes almost every news story in the News, and runs it as a story about Nibiru: Someone's Bones

Here is another story from the blog, about the report of a failed test from the UK Trident submarine: British Sub Tries To Nuke Nibiru, Nearly Ignites War

> ""This was a clandestine operation," Steele said. "No one was supposed to find out. They had to spin a story to conceal the truth. Prime Minister May learned that **Nibiru's relative position to the dark side of the sun had made it vulnerable to nuclear weapons**. She also learned that late last year Kim Jong-un launched nukes at Nibiru, to no affect. She thought British-American technology would be better. She ordered the operation without informing parliament." '

and runs it in a slightly more reputable newspaper. Then another even more reputable journalist reads that, thinks there is lot of fuss about it, and they rush to run it before anyone else, not stopping to check where it came from originally. Then you get maybe a dozen different news sites all rushing to publish it as fast as possible - and none of them have a policy requiring their journalists to check if an asteroid impact story is fake news.

And it is so easy to check these stories too. When they say NASA says we have an asteroid headed our way, or any other astronomical authority, just go here Sentry Risk Table

Although that page is published on the JPL website, it's a result of collaborative work by astronomers in dozens of different countries. The whole thing is done in an open way. You can find all the observations online if you search for them, and if you know enough astronomy, you can run the orbital simulations yourself to find out what the asteroids will do in the future from the observations done so far. There is no way any government or organization can hide this.

If the first entry is white, blue or green - then the story is a fake, First entry is white. So you don't even need to research to find out where it came from. That shows that it is fake news. If journalists knew to do this, then we wouldn't get any of these stories - well perhaps.

More about it here: Debunked: Nibiru fragment to strike Earth in February

4,117 views · 3 upvotes · Posted Jan 27

Upvotes 3 Comment

Summary: A supernova is an exploding star. Our star can't explode. There are many stars that can but the nearest one is 150 light years away. This is far too far away to harm us in any way at all. It would just be a very bright star in the sky for a few days.

We know the region close to the Earth very well and it's not likely that we are missing a supernova candidate so close it could harm us. Stars do also move, so if you look far enough into the future, some stars that are now a long way away will be closer, and some of the ones that are close by will be further away.

So, it's possible that we have nearby supernova candidates millions of years into the future but for the next few thousands up to hundreds of thousands of years, it seems we are safe from supernovae.

Also the main effect of a supernova is to increase the amount of UV light by destroying the ozone layer. Our atmosphere is a thick barrier to the ionizing radiation, similar to ten meters thickness of water as radiation protection. So Earth won't be in any danger from the ionizing radiation. Some scientists think supernovae and gamma ray bursts caused mass extinctions in the past. If so, on the basis of the latest research, they would have to do that through increased levels of UV light. Though UV light is harmful, it's a bit hard to see how that could cause a mass extinction. It could easiiy make some vulnerable species extinct .This is a matter of much discussion.

Supernovae are very common. We get one every century in our galaxy. The nearest one so far is 700 light years away - and most often they are thousands or tens of thousands of light years away.

So - in short, it's something to look forward to, not something to be scared of. I'd love to see a

Flamstead in 1680 as a sixth magnitude star, so on the edge of naked eye visibility - and he just recorded it as a star and didn't know what it was).

OTHER TYPES OF STAR - LUMINOUS RED NOVAE, MAGNETARS, AND GAMMA RAY BURSTS

There are many other types of ways stars can get very bright - in the ordinary "nova" - but they can't harm us, even if they are very close.

The recent stories in the papers about a supernova in 2022 were actually about a Luminous red nova which is in between the brightness of a normal nova and a supernova. So it's not actually going to be particularly bright. At it's brightest, it may perhaps reach magnitude 2, the same brightness as the Pole Star. For more on this: Debunked: A new star that will appear in the sky in 2022 is a sign of the end of the world,

Another kind of star that's quite dramatic is the magnetar. These also are harmless to Earth Debunked: Pastor Paul Bagley predicts that Magnetar SGR 1806-20 is going to send a gamma ray blast on 26th December which will be devastating to Earth

Then you'll also hear that gamma ray bursts can harm us. Well it's similar to a supernovae, though because they could harm us from thousands of light years away, it's not so easy to make a comprehensive list of candidates. But we do know of many gamma ray burst candidates and they are just not pointing in the right direction to harm us. The star WR 104 used to be a gamma ray burst candidate, but after more measurements they found out that its axis is tilted at an angle of f 30° - 40° (possibly as much as 45°) which would mean it would miss. See WR 104 Won't Kill Us After All - Universe Today . And the way they cause harm us is by damage to the ozone layer which would be a nuisance, we'd have to use UV sun screen protection, but it would not make us extinct, and probably won't make many species extinct. For details see my.

burst because we don't understand those very well and though very rare, they could harm us from a greater distance. But those don't seem likely either.

And all of them, supernovae, gamma ray bursts, or anything else like that - they harm us through damaging the ozone layer and could not possibly make humans extinct. We'd just have to wear broad brimmed hats, or protective clothing or use sun cream to avoid the risk of skin cancer from the UV light. I go into this in detail in the gamma ray burst answer so take a look at that article to find out more.

If we did have a nearby supernova or gamma ray burst, maybe we'll all be wearing Mexican hats (sombreros) and sun cream to protect ourselves from the UV light:

The most harm a supernova can do if very close is to damage the ozone layer and create a big ozone hole which increases the amount of UV light.

Our star can't go supernova because it's not heavy enough for that. It does have quite a turbulent future if you look billions of years ahead but it can't go supernova.

It's in a quiet phase of its long life at present, slowly burning hydrogen to helium in its core. By "burning" I mean nuclear fusion here.

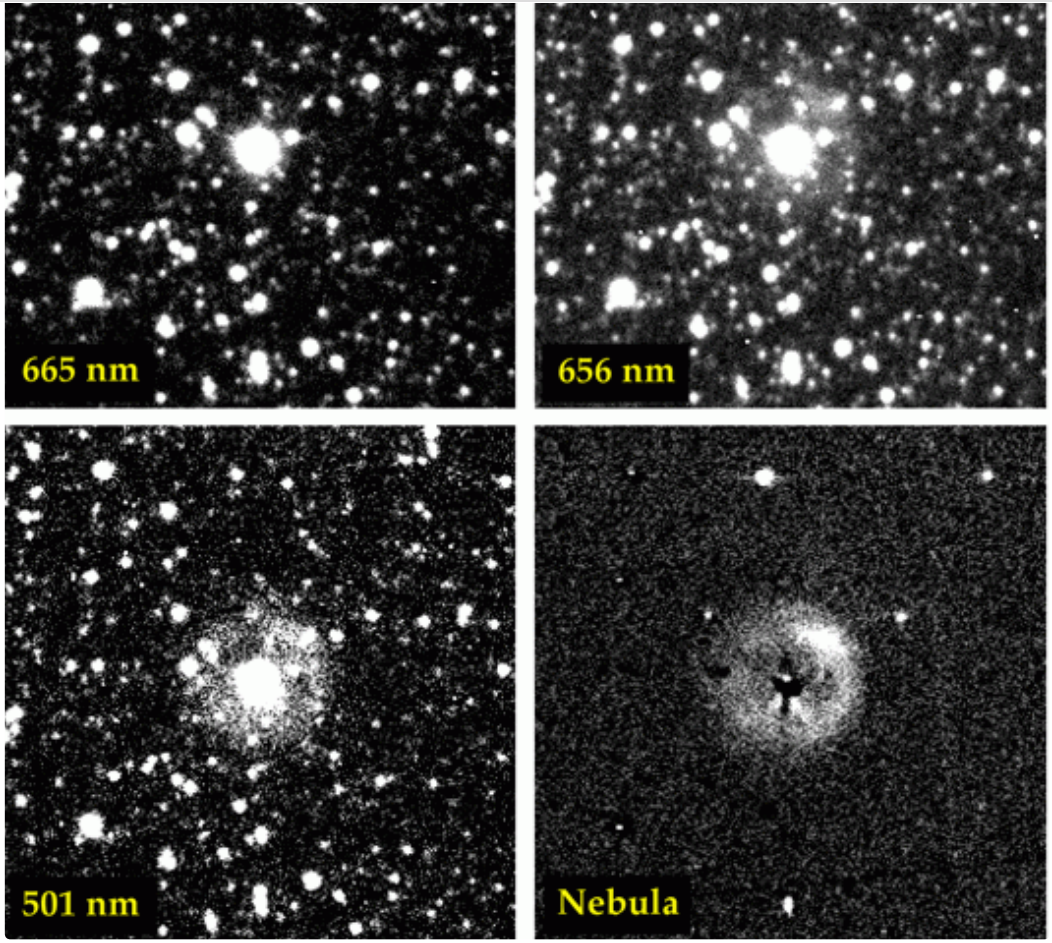
WHAT HAPPENS TO OUR SUN

The events I'm going to describe happen billions of years into the future. We might have to move to another planet or protect our planet from the Sun i some way - or rather - probably not us but whatever evolves by then. That's far enough into the future for a tiny microscopic creature to evolve all the way to humans many times over. For all we know some tiny creature we can only see in a microscope may be the ancestor of the beings in a future civilization on Earth hundreds of millions of years from now.

But we can see other stars that have gone through these stages.

Eventually it runs out of hydrogen and then it starts to contract as it cools down. It could burn helium at that stage, but it's not hot enough. So it has to keep contracting, until its core turns into "Degenerate matter " so squashed together that it can't form separate atoms any more but is a mix of atomic nuclei and electrons.

That's when the helium burns. This happens suddenly producing a Helium flash - which is however not nearly as bright as a supernova. Only the core of the star explodes.



> Sakurai's Object which is currently in the middle of a Helium flash

After that, the explosion has reduced the density of the core enough so that it can burn Helium in a more controlled fashion. It burns more hotly, than hydrogen, converting helium to carbon and oxygen (mainly). Because the core is so hot the star expands - and the outer envelope cools down so our sun will become a red giant star, rather than the current hotter white star (it's

goes the same colour. So stars work the same way.

Our sun is white hot. When it becomes a red giant it goes red hot. But that won't happen for billions of years. At that stage it gets rather volatile throwing off clouds of gas and will form a "planetary nebula".

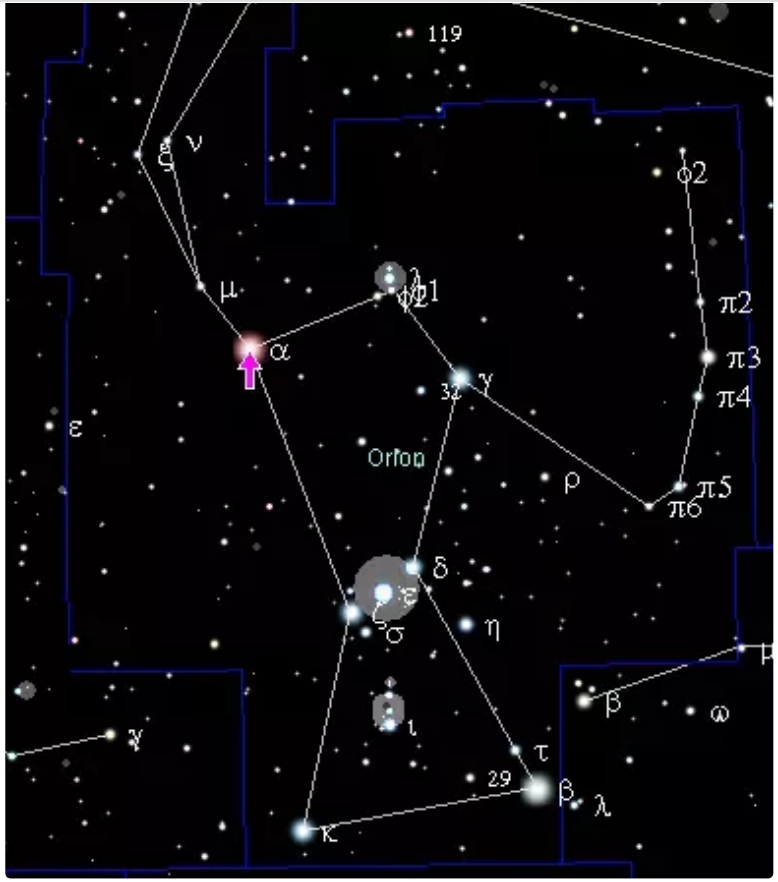
After that when our sun uses up its helium fuel, it's not hot enough to go any further. So it will just cool down into a small dense and very hot star known as a white dwarf. This can't produce any more heat from inside. But it's so hot and so heavy that it just stays white hot for billions of years. No stars in our universe are old enough yet to have cooled down from the white dwarf state to the next stage of a black dwarf. It would take more than a quadrillion years, so a thousand billion years, for our star to become a Black dwarf

For more about this: The Evolution of the Sun

To go supernova it has to go much further than helium burning, it has to burn all the way up the periodic table to iron, which then because it is inert causes it to collapse. Our sun never gets hot enough for that because it isn't heavy enough. But other stars can do this.

WHAT HAPPENS TO A STAR HEAVIER THAN OUR SUN

Betelgeuse is another red giant star 640 light years away in the constellation Orion, one of the easiest to recognize constellations in the night sky. It's the star in Orion's top left shoulder, shown with an arrow below:



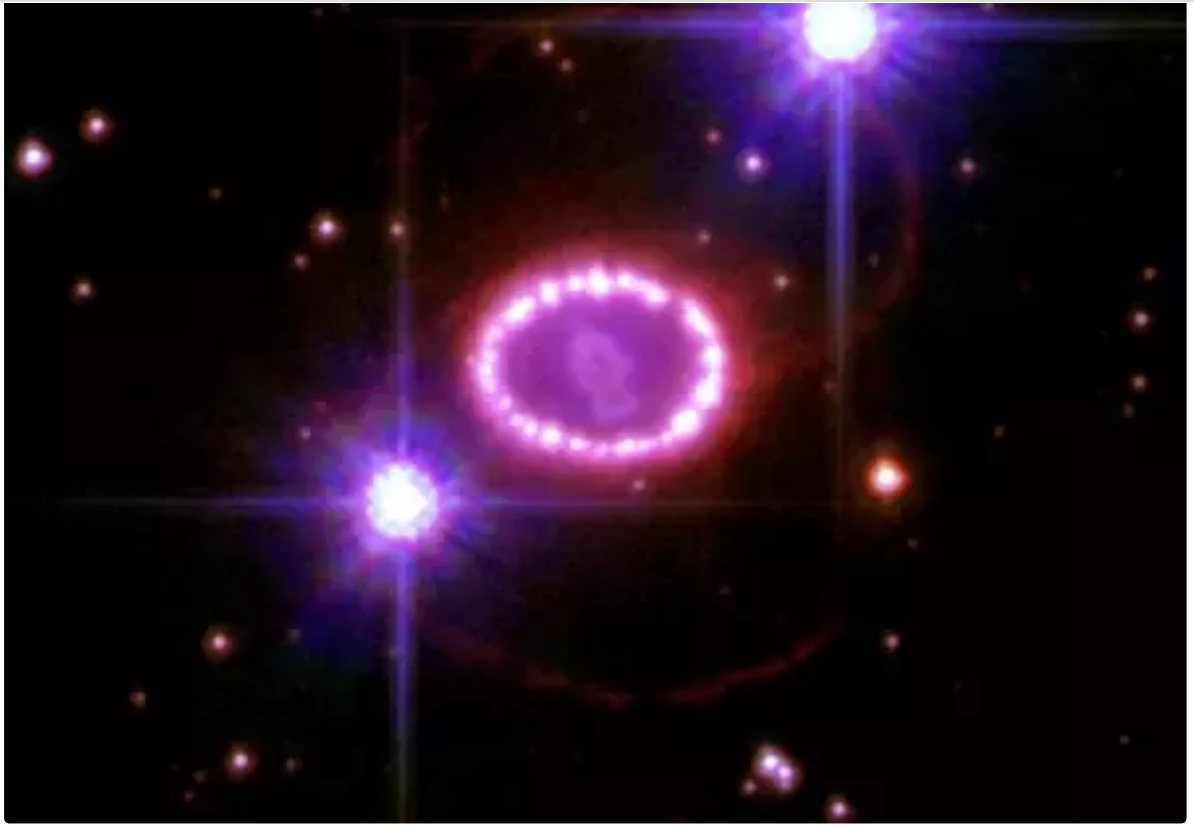
However it's heavier than our Sun. So when it runs out of helium, then it contracts, and will be able to burn the oxygen and carbon in its core. Eventually it runs out of that also, and burns heavier and heavier elements. It gets through each one more and more quickly. Eventually it gets to iron, which won't burn. When that happens, suddenly the core is not supported any more, and the star collapses. The falling in material then bounces back to create a big shock wave. For a long time scientists couldn't figure out how that would do anything much, but turns out that the star creates huge amounts of a mysterious particle called a neutrino. A neutrino

away to be any problem for Earth, nor will it be a second sun. It will just be a very bright star in the sky. It will be an interesting sight for astronomers, great chance to study a supernova close up. For everyone else, just a very bright star. Briefly, the brightest star in the sky. Betelgeuse will explode someday

Eta Carinae is another star that can go supernova. It's a "blue supergiant" - so that shows it's not just red giants that can go supernova. This is a very young, super hot star 8,000 light years away and it may explode in the next few hundred thousand years. It's also far to o far away to harm us.

There are two types of supernova. The first way it can happen is the type II supernova which I just described.

This is the closest supernova that we've actually seen exploding of Type II,



> SN 1987A in the Large Magellanic cloud - a dwarf galaxy that's close to our Milky way galaxy and in orbit around it, visible from the Southern hemisphere as a faint patch of luminosity in the sky to naked eye in very dark skies. Although this was 168,000 light years away, it became briefly so bright it was an easy naked eye star, at magnitude 3. The red in this photo shows radio waves and is given off by the dust from the explosion. Blue is X-rays and green is visible light and those colours mark out the expanding shock wave.

TYPE Ia SUPERNOVAE

supernova explosion.

When it explodes, this can literally tear the white dwarf apart leaving nothing there at all, or it may collapse to form a neutron star.

But there are no nearby candidates for a type Ia supernova either. The closest is IK Pegasi which at 150 light years away is far too far away to harm us. It's moving away from us and the scientists think it won't go supernova for several million years, by which time it will be perhaps 500 light years away. It would need to be within 30 light years to be harmful.

Here is Phil Plait of "Bad Astronomy" talking about the two types of supernova and about how there is no nearby star that can go suprenova.

There are type Ib and type Ic supernovae too. These happen when a star loses its outer envelope, for instance to a companion star - and then the naked core collapses. Type Ib and Ic supernovae

We get supernovas quite often and they leave rather beautiful remnants.

LIST OF SUPERNOVAE

So here is a list of them from 1000 AD. Adapted from the List of supernova remnants - Wikipedia

Brightness in astronomy is measured using magnitudes. They work the opposite way from what you'd expect. Larger positive numbers are fainter so 6th magnitude is very faint. The smaller the brighter and negative magnitudes mean quite a bright star.

Venus at its brightest is -5 so anything as bright as that or brighter would be very noticeable. Sirius is -1.5 so anything brighter than that would be brighter than anything in the sky except for some planets, the Sun and the Moon.

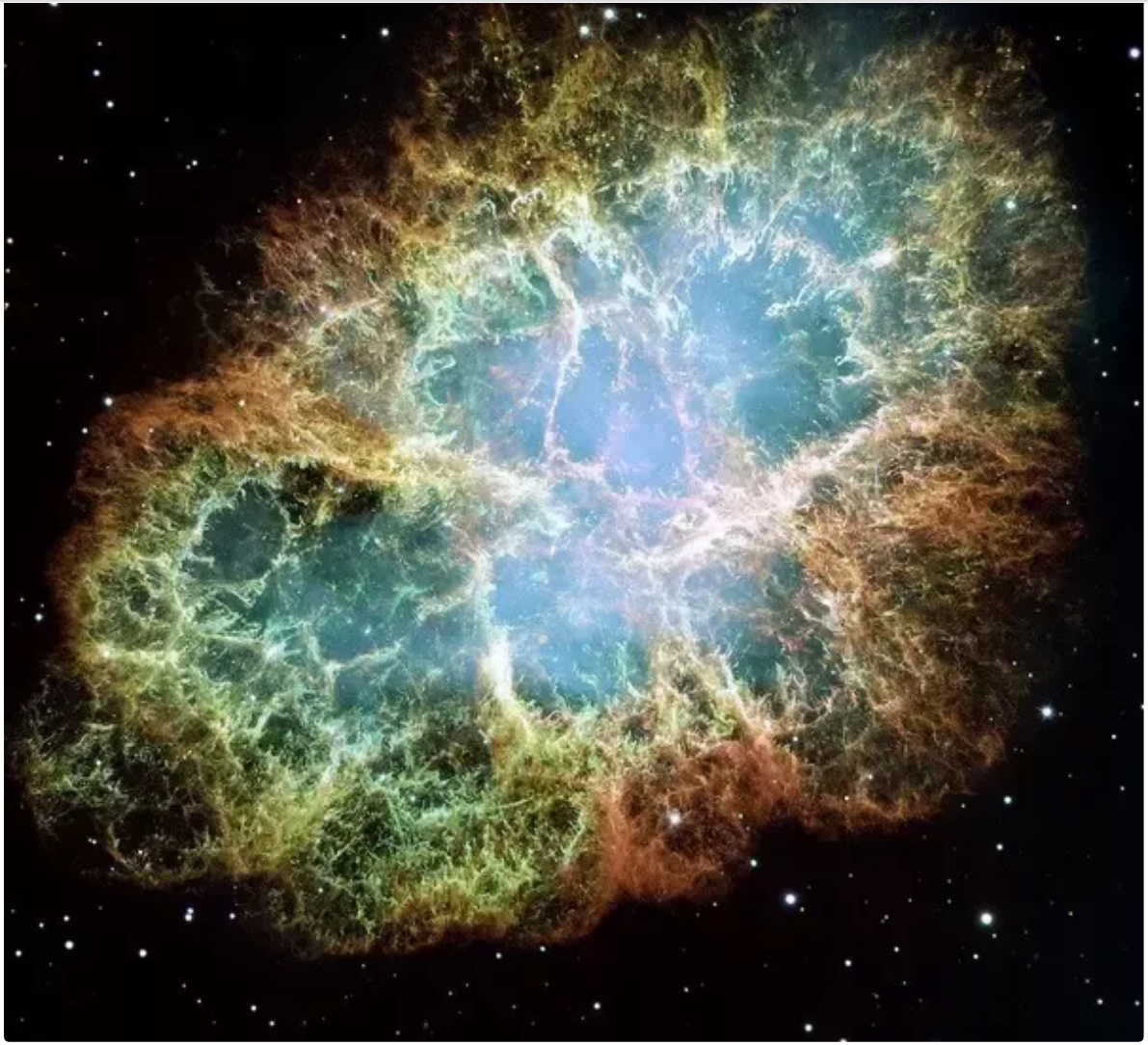
Also note, these images are using enhanced and often false colour. The remnants wouldn't be anything like as bright as this or as colourful to the naked eye.

W49B About 1000 AD

No observations recorded but it would have been seen around 1000 AD if visible. Distance 26,000 light years.

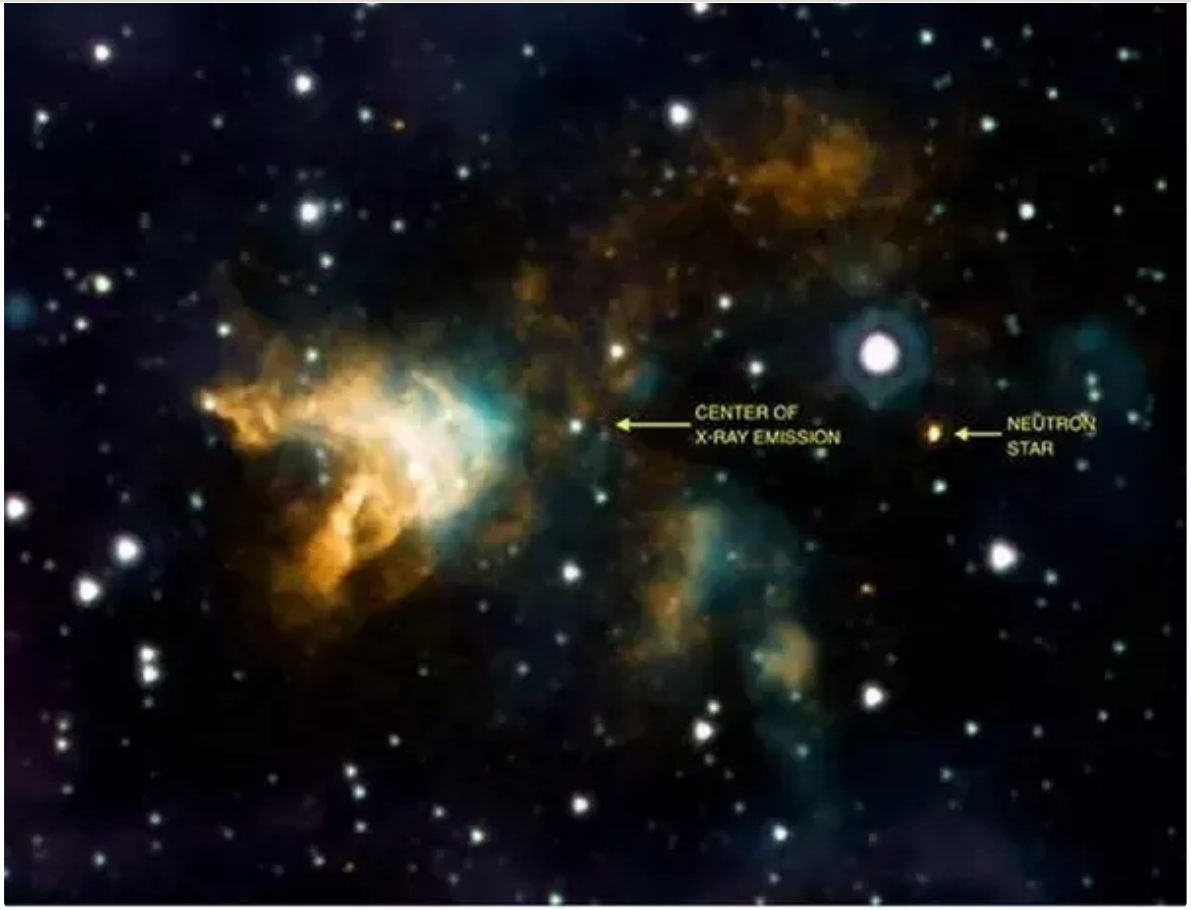
Magnitude −7.5, distance 7,200 light years

SN 1054 or M1 or Crab Nebula 1054



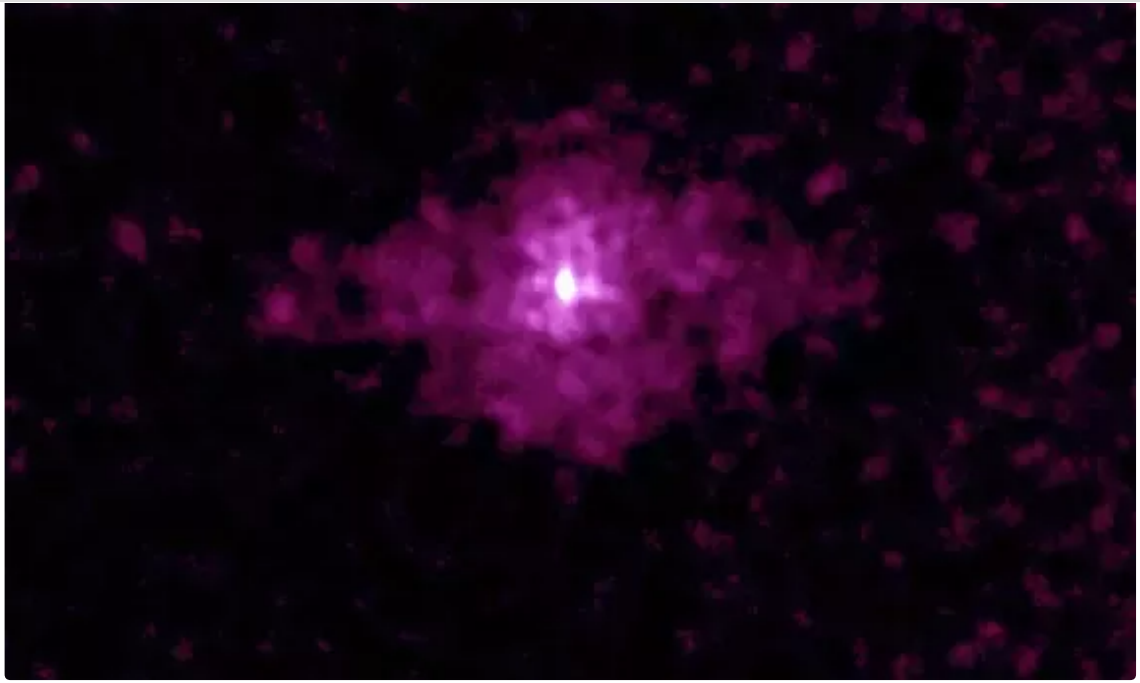
Magnitude -6, distance 6,400 light years

G350.1-0.3 About 1100



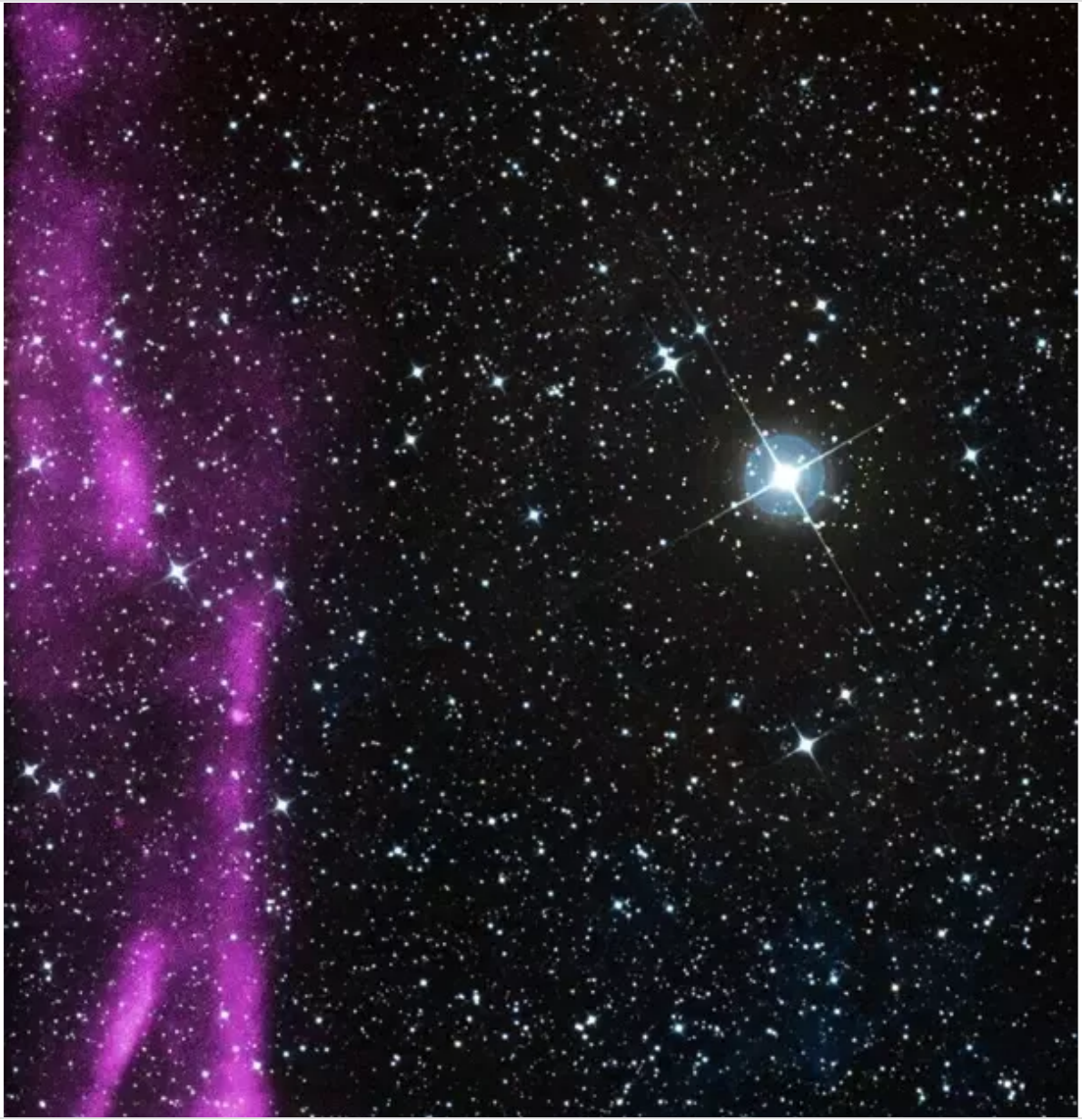
Unlikely to have been seen because of interstellar dust. Distance 15,000 light years

SN 1181 1181



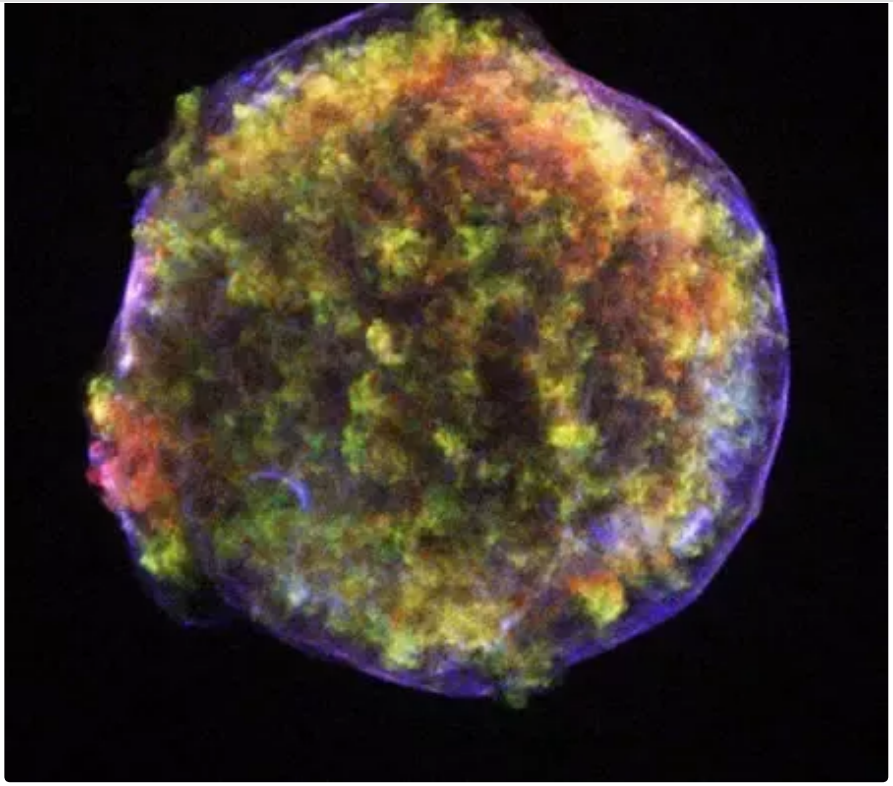
Magnitude -1, distance 26,000 or more light years

RX J0852.0-4622 or Vela Junior About 1250



Distance 700 light years. Not observed. At 46 degrees south, it would have been invisible to most of Europe.

SN 1572 or Tycho's Nova, November 11, 1572



Magnitude -4, distance 7,500 light years

SN 1604 or Kepler's Nova October 8, 1604

Magnitude -2.5, distance 20,000 light years

Cassiopeia A Mid 17th Century, obscured by interstellar dust. Recorded as very faint sixth magnitude star by John Flamstead on August 16 1680, he didn't know what it was

Magnitude 6, distance 10,000 light years

G1.9+0.3 About 1868 - obscured by the dust at the center of our galaxy, no observations

Not observed. Distance 25,000 light years

442 views · 2 upvotes · Posted Jan 27

Upvotes 2 Comment 1

closer

Robert Walker

Summary: This does not mean that the world is about to blow up into dust within two and a half minutes. It's like when a friend says "I could eat a horse". They couldn't eat a horse. They also don't want to eat a horse. But they aren't lying when they say that. They are just using vivid imagery.

> Camargue horse - photo by Wolfgang Staudt.

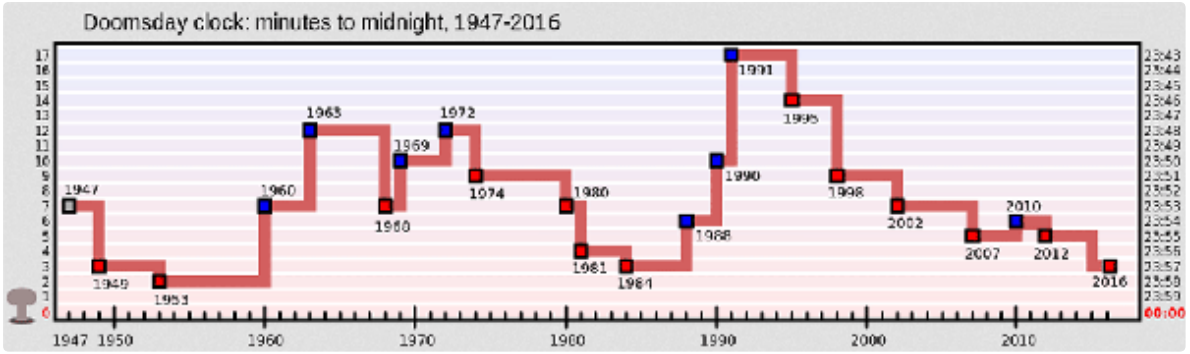
Here is an example story: Doomsday Clock moved to move closer to midnight as threat of

language is used in these announcements, it sounds as if they are saying that the world will blow up into dust within two minutes. Some are getting very scared that this will happen suddenly and soon.

But this not what it means. That “two and a half minutes” is nothing to do with time at all in these announcements. They could as easily say “two miles” or “two thousand miles”. Then the announcement would be “Doomsday is becoming one mile closer”. Or “Doomsday is becoming a thousand miles closer”. The word “minute” there is essentially meaningless. It’s no wonder that scared people find it confusing.

It is vivid imagery for effect. This is called “hyperbole”,

The clock often stays at the same time for years on end. They move it backwards if things improve and forward if things get worse. This shows its position up to 2016



You can read about the timeline here .

They are saying that there is a significant risk of serious consequences. Such as for instance, flooding, drought, starvation, cities getting bomb damage from nuclear weapons and many killed if we have an all out nuclear war etc. And the reason for saying that is to get politicians to

think the risk is lower. That's all. It is a very unusual form of hyperbole. We don't often use time like that in our daily life, so it's no wonder that people find it confusing.

So, yes there are things to worry about. The things I listed, flooding, drought, bad harvests, cities with bomb damage and lots of people killed if we have a nuclear war and so on. But they aren't saying those things are about to happen right now either. They are not saying that we will have a global nuclear war within two minutes. Also they are not saying that we will have flooding of coastal cities within two minutes.

They are things that could happen and we need to watch out for. Many of them will happen several decades from now if they do happen. If we act on their warning, then these things won't happen. The reason for making this announcement is to stop them from happening.

Just remember, in all theses announcements, all the way through, it's like when your friend says they could eat a horse. Just about everything they say in these announcements is hyperbole. .

Let's count all the examples of hyperbole in this one article

- **"Doomsday** becoming **one minute closer"** (title). It is not literal doomsday. It is not literally one minute closer
- "symbolises the current threat of **global annihilation"** - it is not literally annihilation
- "the closest it has ever been to the **apocalypse**" - it is not literally apocalypse in the sense of Jesus appearing and ending the world as some fundamentalists think will happen
- "Earth was closer to **oblivion**" - it's not literally oblivion in the sense of nothing

so obviously hyperbole but rather similar.

It's a bit like the way that in some circles, a groom at a wedding is expected to say that the bride is the most beautiful woman in the world. They don't mean that literally, just beautiful in their eyes, but their bride might get very upset if someone was to announce to the assembled company that they are not the most beautiful woman in the world. This is a funny Mitchell and Webb sketch about it - two British comedians.

See also my: Why we don't need to be scared of the "Doomsday clock" (short version)

337 views · 1 upvote · Posted Jan 26

Why we don’t need to be scared of the “Doomsday clock” (short version)

Robert Walker

It’s name is rather unfortunate for those who get easily scared by such things. It’s not a clock, and it’s not about Doomsday. So why do they call it a “Doomsday clock”?

Well it’s for much the same reason you might say “I’m so hungry I could eat a horse”. It doesn’t mean that you could literally eat an entire horse.

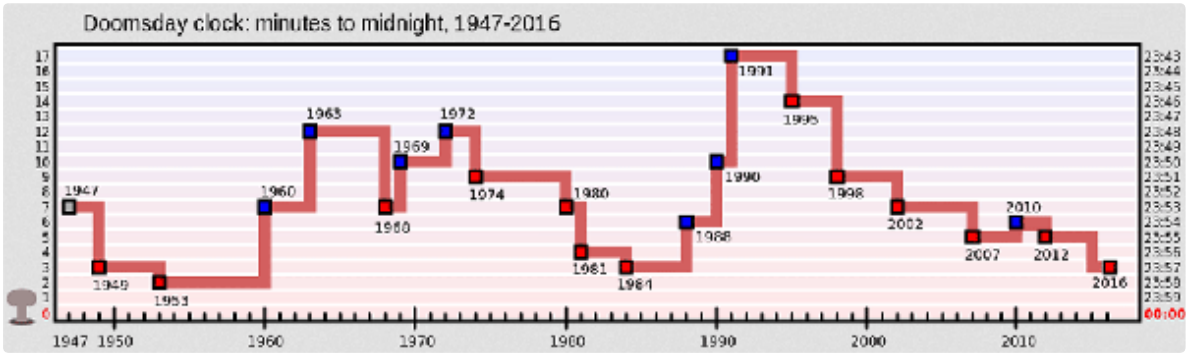
So what is it really about? It's about things that could have large scale effects. For instance a global nuclear war or climate change. Neither of these things could make us extinct. Any more than you could literally eat a horse.

The clock is a graphic like this:

The idea of the clock is to help politicians to make decisions to make the world a safer place.

It's just a number made up by a group of scientists. They set it to a given number of "minutes before midnight". Again it doesn't mean that we have only minutes left to do something about it. It is just a made up vivid picture that's all. Those "minutes" don't correspond to any real thing at all.

The clock often stays at the same time for years on end. They move it backwards if things improve and forward if things get worse. This shows its position up to 2016



You can read about the timeline here .

And we can do something about it. The whole point in the doomsday clock is to get politicians to do something about it.

If you watch one of the Doomsday Clock announcements, you may find it rather scary. That's because the scientists use the same vivid exaggerations throughout.

For instance in the previous announcement, one the scientists said that a Russian attack could turn the US states into nuclear ash. That's not true. It couldn't do that. We don't have anything that could do that. He meant it in much the same way that you mean it when you say "I could eat a horse".

This sort of language is called "hyperbole". Deliberate exaggeration for emotional effect. The listener is not expected to take it literally.

The scientists do this a lot in these announcements. That's because they want to stress the importance of doing something to the people who are listening. Especially to politicians. When we are passionate about something, we often use hyperbole.

It's not lying because they don't expect the listener to take them literally. But they are perhaps more used to talking to other scientists. Perhaps they don't stop to think that there might be young children watching, and others, who might take their statements on face value.

If you take what they say in that way, that is like going home alarmed and telling everyone that your friend plans to eat a horse. So it's something to watch out for if you listen to the announcements.

This is a short summary of my Debunked: "Doomsday" clock, Brexit "Doomsday" and use of "Doomsday" as hyperbole - which I've written using especially with somewhat younger readers

I sometimes get contacted by 14 year olds who are scared of these stories. Other times I am contacted by their adult relatives who want something written to show to them to reassure them.

If you find this helpful let me know. I can do more short versions of my answers in this way.

Debunked: Russia is building a cobalt bomb - to make the entire East coast of the US uninhabitable for several decades

Robert Walker

Summary:

Yes Russia did “leak” plans for a huge “dirty bomb” to make the entire East coast of US uninhabitable for several decades. But this is an insane idea, and commentators say that it is probably a staged leak designed to intimidate the US. The designs that were “leaked” show a super fast torpedo able to travel under the sea at 230 mph, virtually undetectable, and that does

cobalt 60, for instance as a tracer (add a small amount of cobalt and you can trace the debris by searching for cobalt 60 or there might be cobalt in the bomb anyway as part of the steel casing).

IN DETAIL

First the background to this is that it might be possible to create a nuclear bomb such that if you let of thousands of them, and bombed the entire world, it would make most of Earth uninhabitable except inside protected areas like enclosed air tight domes and nuclear bunkers. It's a thought experiment by Leo Szilard - Wikipedia The idea is to design a weapon that will fill all of the Earth's biosphere with dangerously radioactive Cobalt 60. You can do this by adding lots of ordinary cobalt, easy to obtain, which would turn into Cobalt 60 in the explosion.

It would be an insane thing for a superpower to develop. We don't have cobalt bombs. There have been a couple of nuclear tests that produced small amounts of cobalt 60 in the debris. But they were not designed as cobalt weapons.

There was a "news leak" in November 2015 saying that Russia is building a giant cobalt bomb, twice the size of any nuclear bomb ever tested, which would be designed to cause a radioactive tsunami that would wash 1,500 km inland over the East coast of the US, and make the region uninhabitable for some decades. Technically such a bomb could perhaps be built. But it's an insane idea. Commentators have suggested it was a deliberate leak designed to intimidate the US and that the equipment shown was actually a torpedo designed to deliver deep sea equipment and surveillance equipment. It's hard to credit they seriously intend to do this.

IN MORE DETAIL

It is possible to design a nuclear weapon to make the Earth uninhabitable. Theoretically if you could dust the entire Earth with cobalt 60 using enough cobalt bombs you could make it uninhabitable to humans - except of course in protected areas - for instance inside domes

> designed to produce less radiation damage in the first few hours, but more radiation damage over time periods of years and decades. Areas affected would only become habitable to humans a century after the impact. It was just a "thought experiment" to show that we could in principle build doomsday bombs. They would need only of the order of hundreds of kilograms of cobalt.

The idea is that cobalt 60 has a long enough half life so that it could spread throughout the Earth's ecosystems before it decays away enough so that it no longer kills people.

In practice it probably wouldn't really work as described. You'd need to do lots of tests and it would probably still have a patchy distribution. Anyway we don't need to worry about cobalt bombs. There have been a couple of nuclear tests that produced a small amount of cobalt 60 in the fallout but they were not designed as cobalt weapons. In one case the cobalt came from pellets used as tracers, and in the other case from the steel casing. For more on this see the wikipedia entry on Cobalt Bomb which has lots of cites to follow up.

This is perhaps the closest we have to a doomsday scenario but no such bombs exist. After all it's not to anyone's advantage to make the world uninhabitable.

I suppose if you want to fix the nuclear doomsday SF stories you could make the weapons cobalt bombs. That wouldn't work for scenarios that have Earth uninhabitable thousands of years into the future, but would work if the author only needs Earth to be uninhabitable for decades into the future.

If some people were able to survive somehow for as long as a century, underground, or in domed areas cleared of cobalt 60, or because of patchy distribution of the cobalt 60, then after that they'd be able to survive fine though with increased cancer risk for a few more decades.

That would fit many post apocalyptic science fiction stories. There is no way a WWII could

IS RUSSIA MAKING ONE ANYWAY THOUGH?

However there is this news story from 2015 that Russia might be developing a cobalt bomb to be delivered from a submarine. Not a doomsday weapon, but a weapon that would be designed to cause mass civilian casualties.

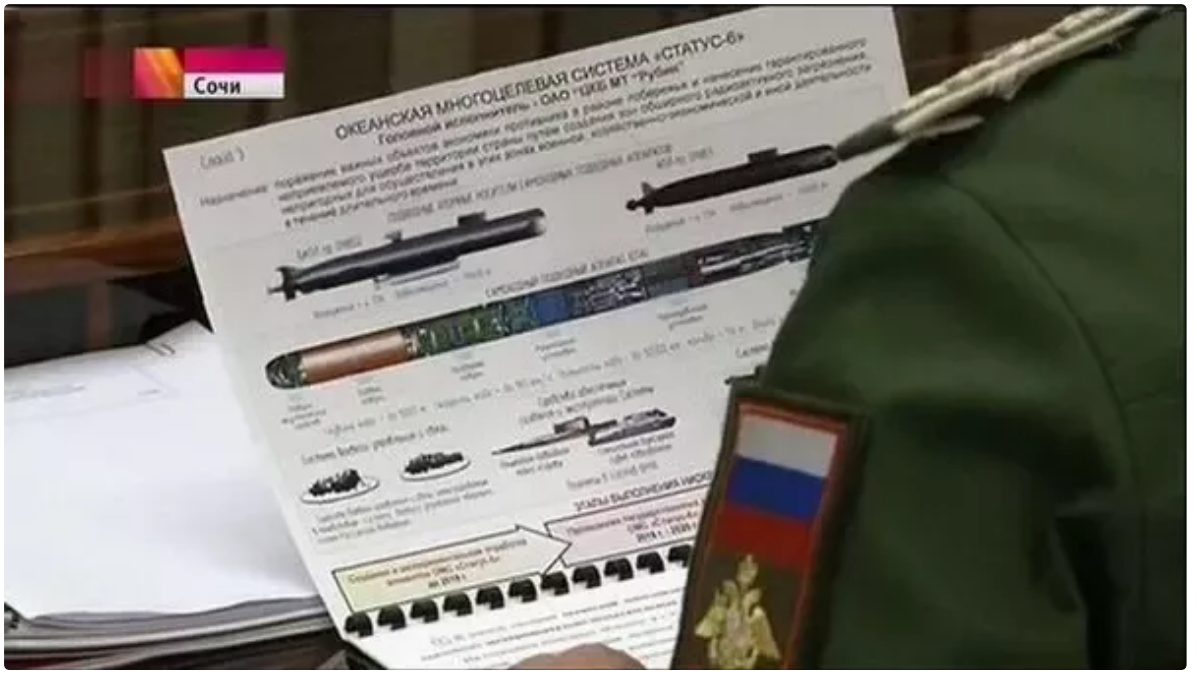
It would salt the sea with radioactive cobalt 60 or some other radioactive element, and this then would bathe the port with radioactive slurry that would make it uninhabitable for some decades. A 100 megaton bomb detonated in the sea - twice the size of the largest nuclear weapon ever built, detonated off the eastern coast of the US could also generate a tsunami that would wash 1,500 kilometers inland.

Russia reveals giant nuclear torpedo in state TV 'leak' - BBC News

It was presented briefly on Soviet news as an “Accidental leak”. But this may have been actually an intentional leak designed to intimidate the US.

The supposedly “accidental” leak is at 1.45 into this video where for a short while it shows a close up of a general looking at allegedly top secret plans for a torpedo.

This is a screenshot



It shows designs for a high speed torpedo and this does seem to be real, that they have torpedoes that can travel underwater, at 230 mph and are virtually undetectable. This is the *Shkval* (Squall), , and it's not new news, experts have known about it since 1995. It uses "supercavitation" to create a near vacuum at its tip to travel through water with almost no resistance as if traveling through air. VA-111 Shkval

But as for the idea that they would be used to deliver a cobalt bomb, it seems hard to credit that anyone would seriously build such a weapon.

Konstantin Sivkov, Russian Geopolitical Academy"

- "Robotic torpedo shown could have other purposes, such as delivering deep-sea equipment or installing surveillance devices. The Russian defence ministry has a special division for deep-sea research - **Konstantin Bogdanov, Лента.Ру website"**
- "This is no secret for the US, whose military is also working in the area of robotic submersibles for hunting and destroying submarines **- Viktor Murakhovsky, reserve colonel, editor of Arsenal of the Fatherland magazine."**

As they say in this news report:

> "Ordinary nuclear weapons can at least be used on purely military targets. This has no conceivable purpose other than killing civilians," says Acton. "Whether the weapon is real or not," says Hans Kristensen of the Federation of American Scientists, "the Russian government must distance itself from this."
>
> Is Russia building an underwater drone to deliver a dirty bomb?

A detailed study by Edward Moore Geist for the Association of Atomic Scientists Would Russia's undersea "doomsday drone" carry a cobalt bomb? also comes to the conclusion that though such a device would create large areas of lasting contamination, they would have little control over where those areas would be. They could easily end up harming themselves. He thinks the nuclear powered drone in the slide is probably a real research project, but not designed for this purpose.

> "But exploiting this principle in practice would be forbiddingly difficult because of the difficulty of predicting the ultimate distribution of the radioactive contamination,

> undermining the strategic case for such attacks. These findings suggest that the Kremlin is not pursuing radiological "doomsday bombs," even though the nuclear-powered drone on the slide seems to be a real research project."

NUCLEAR WINTER, NUCLEAR AUTUMN, OR NO GLOBAL CLIMATE EFFECTS?

The best models available at the time predicted nuclear winter up to the 1980s. The early 1980s models were shocking in their predictions , of a cooling by 40 to 60 C (70 - 100 F) immediately after the exchange. The idea of a large scale nuclear winter was the consensus up to around the time of the Kuwait oil fires in 1991 . Then the way the smoke behaved caused the scientists to question their models of what would happen to dust and smoke in the atmosphere after a global nuclear war.

> much of the Middle East went dark, and dropped a few degrees for a short while, apart from that, nothing happened. This lead them to revise models on how smoke and dust is propagated through the upper atmosphere and they discovered that after a nuclear war, the dust would not go high enough to cause a nuclear winter.
>
> As Carl Sagan (one of the scientists who worked on the nuclear winter models) wrote: "it was pitch black at noon and temperatures dropped 4–6 °C over the Persian Gulf, but not much smoke reached stratospheric altitudes and Asia was spared."

This lead to them re-evaluating the models that lead to the nuclear winter prediction, which were rather crude by modern standards, making many assumptions and approximations. Modern bombs which are much less than one megaton in size, would throw most of the debris up only as far as 60,000 to 70,000 feet which means the debris will rain to Earth within hours or days, close to the point of impact. Our nuclear arsenals are also much smaller than they were at the time of the nuclear winter calculations. Also our cities are constructed in ways that make fire storms less likely. So in short, some would say that probably even at the height of the cold war, we would not have been plunged into a nuclear winter. As it is now, certainly not. Here I'm summarizing Allen E Hall's answer to In a total nuclear exchange where the entire worlds arsenals are used, how long would the nuclear winter last and would we survive? The models still predict asteroid impact witner, because gaint asteroids can send material high into the stratosphere.

Here is the New York Times retro report on nuclear winter.

This is a paper about the suggestion mentioned towards the end of that report, that even a confrontation between Pakistan and India with 100 15 kt nuclear weapons (50 on each side) involved could have global effects .

> and terrestrial and aquatic ecosystems. Killing frosts would reduce growing seasons by 10–40 days per year for 5 years. Surface temperatures would be reduced for more than 25 years due to thermal inertia and albedo effects in the ocean and expanded sea ice. The combined cooling and enhanced UV would put significant pressures on global food supplies and could trigger a global nuclear famine."

So that is the polar opposite of those who say it would have no effect at all.. So, we have views at both ends of the spectrum here. However these predictions for a controntation between Pakistan and India come from a rather simplified model. It's a 3D model, not a 1D approximation and in that sense is detailed. But their starting point is from a point after the initial explosions. They just load the atmosphere with carbon soot over the relevant areas of India and Pakistan, and then run the model forward to see how it continues. Even in a 3D model, that's making lots of assumptions. Would the soot end up in the distribution they suggest?

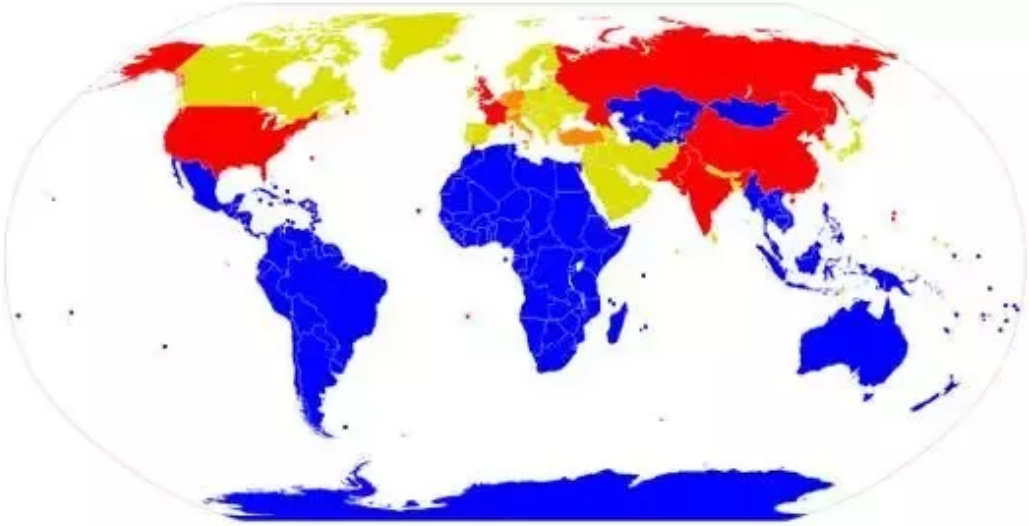
The situation is complicated. Though many fires would break out in cities, some of them may burn for only a short time. Would they combine together to make a firestorm? They didn't for Nagasake which was a city built largely of wood and paper, which would not be permitted with a modern city. But then they might be ground burst weapons, so what difference does that make? What would the end result be in the atmosphere of the complex pattern of many different fires? What would the vertical distribution be? In the example of the Kuwait fires then most of the carbon was distributed in the first few kilometers and did not reach the stratosphere. Also water vapour is another complicating factor. The fires themselves produce water vapour during combustion and more is taken in from the atmosphere and lofted high where it may form clouds, which then will tend to keep the surface warmer than it would be. Also then the excess moisture rains out taking soot and dust with it. The whole thing is very complex. Here is William Cohen talking about it in his 2007 boo k. He is an expert who

nuclear winter, turning summer into winter, is no longer on the table. There are lots of cites to follow up in the Wikipedia page on Nuclear Winter which will help. See it's Scientific Criticism and debate section.

It's still not a literal doomsday if there is a nuclear autumn. It's rather similar to the idea of a volcanic winter after a super volcano, where you'd need to grow different crops, adapted for a colder climate until the temperatures recover. I don't mean that in the sense it is easy of course, but it is possible. It is a very similar situation to the situation after a supervolcano, so I cover that in the section What really happens if Yellowstone erupts as a supervolcano, or if some other supervolcano erupts?

NULCEAR FREE SOUTHERN HEMISPHERE

The entire southern hemisphere is a nuclear free zone, and without the scenario of a nuclear winter, this means it would experience almost no effects at all from a global nuclear war.



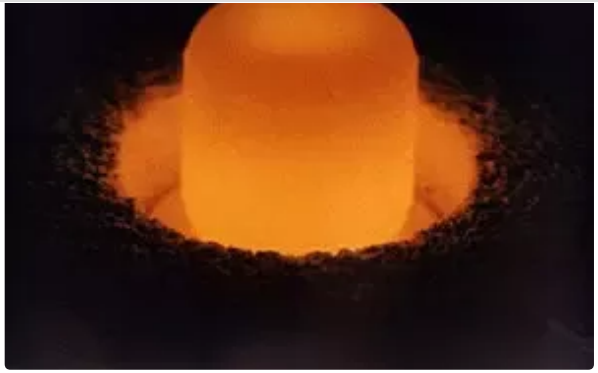
> are attacked, the harshest radiation is over quickly. The most lethal radiation is nearly all over within half an hour.
>
> The idea that nuclear weapons would cause a nuclear winter has also been shown to be false.

Perhaps if nuclear weapons were thought of like that, as instant city carpet bombing weapons with serious radiation sickness side effects if you are caught in the open close to the attack, it might make it easier to get rid of the things. I think this is an example where perhaps hyperbole actually doesn't help, though it's a natural thing to do.

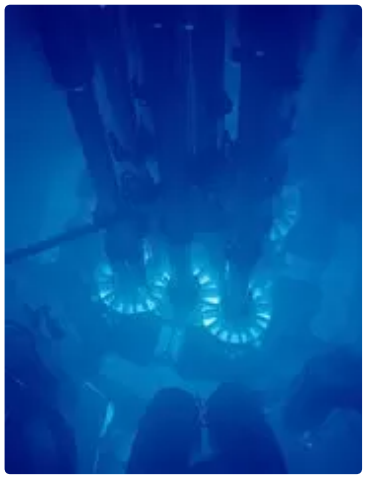
If you feel you must use hyperbole as a scientist, or you notice that you have just come out with a hyperbole through natural speech, well there is a solution. You can flag it. Say "nuclear weapons could turn the States to radioactive dust - not literally", add the "not literally". It may be a bit lame to do that, but if you are talking to a general audience, it's better than scaring a listener who might take you literally.

So that's a good example of a doomsday scenario that in fact is nothing like doomsday. We have vivid scenarios in popular imagination, movies and books, of a few survivors picking their way through radioactive debris. Or even, everyone dying, as in Nevil Shute's "On the Beach" . We may think of them as still risking death centuries later from exploring the cities where the bombs landed. That is a staple of science fiction, but it's a movie / sci-fi trope. You can explore its use in tv / movies / science fiction on the TV tropes website, see

- Artistic License – Nuclear Physics
- Sickly green glow - for some reason radiation is shown as green in films, though it is normally blue in real life, when visible. The radioactive materials, if they get hot enough, glow orange in real life.



- This is what Plutonium 238 looks like. It is so radioactive that it glows orange from the heat. Not green, but orange. This form of plutonium is used to power spaceships through conversion of the heat to electrical power. However, it can't sustain chain reactions. Nuclear bombs or conventional nuclear power plants use Plutonium 239 . or Uranium 235 instead which are much less radioactive but can sustain a chain reaction.



- And this is what a reactor core looks like , glowing with Cherenkov radiation.

If you click through the links there you'll find many movie tropes that build up a kind of "movie consensus science". Audiences come to expect this as it has been built up over many previous movies they've seen, and it can even seem "wrong" if shown the way things really are. These tropes often get further and further away from reality.

Scientifically a radioactive post nuclear war doomsday is nonsense, at least for the nuclear weapons that we have. After all Hiroshima is a thriving modern city.

For more on this see my Doomsday Debunked - Nibiru Is Nuts - What About Nuclear War, Asteroid Impacts, Runaway Warming,...

Debunked: Nibiru fragment to strike Earth in February

Robert Walker

Summary: yet another asteroid flyby. Not the slightest risk to Earth. Closest flyby before 2200 is 2149-Feb-02 18:59 when it passes at a distance of at least 7.9 million kilometers. That's over 20 times the distance to the Moon. The idea that it is a "fragment of Nibiru" is just made up by whoever wrote the story, it's fake news again.

HOW TO CHECK IF THERE IS A RISK FROM AN IMPACT BY AN ASTEROID

It is easy to check any of these asteroid impact stories. Just go to this page : Current Impact Risks which is sorted with the most significant risk first.

If the first entry is blue, white or green there is no significant asteroid impact predicted for the next 100 years. If it is yellow then there is a tiny chance of an impact but it is so low probability that they expect it to turn green or white as they find out more.

If the first entry is orange or red - just go to any reputable astronomy website as it will be

The blue ones can hit Earth but are 30 meters or less. They can still have an effect as that's larger than the size for the Chelyabinsk one but only locally and most just burn up harmlessly in the atmosphere.

In detail

The earliest version of the story I can find online is here, 4th Jan: Nibiru Fragment To Strike Earth in February, Says Russian Astronomer

Copied many times, later version here: Nibiru fragment to strike Earth in february, says russian astronomer , identical text.

I'm not sure you can even call it fake news. More of a satire or joke story as it says

> "According to Dr. Zakharovich, 2016 WF9 was one of trillions of asteroids churning around Nibiru in a cosmic whirlpool. Occasionally, the asteroids collide, bumping one another likes balls on a billiard table, sometimes ejecting one another from orbit. In this case, Dr. Zakharovich said, 2016 WF9 was jettisoned directly toward Earth. Using the "slingshot effect," it first doubled speed circling the brown dwarf star, **then doubled that speed to the third power when it spun behind the dark side of the sun,** propelling it toward Earth at transversel velocities."

I think most of us know that the Sun doesn't have a dark side :).

It's from a blog that takes almost every news story in the News, and runs it as a story about Nibiru: Someone's Bones

Here is another story from the blog, about the report of a failed test from the UK Trident submarine: British Sub Tries To Nuke Nibiru, Nearly Ignites War

> thought British-American technology would be better. She ordered the operation without informing parliament.” ‘

The “dark side of the sun” there suggests it may be meant as a joke. If it isn’t then Dr. Zakharovich obviously isn’t an astronomer as the term is usually understood. Nibiru enthusiasts often claim to be astronomers by which they just mean that they say speculative things about planets and stars, which they seem to think is all you need to do to be an astronomer. It doesn’t mean that they know anything about astronomy or have tried observing the real planets or know anything about how our solar system works. You can tell they aren’t astronomers as the word is usually understood from the absurd things they say.

This is the original NASA announcement it’s based on:

> NASA's NEOWISE Mission Spies One Comet, Maybe Two

That's over 132 times the distance to the Moon. It's orbit is worked out here through to 2200. JPL Small-Body Database Browser

It never comes close to Earth. It's closest flyby between now and 2200 is 2149-Feb-02 18:59 when it passes at a distance of at least 7.9 million kilometers.

It's dark like a comet -comets despite their bright tail have a very dark nucleus with some dark material covering the ice. 2016 WF9 is between 0.5 and 1 kilometer across. But it doesn't have a tail. That's not particularly mysterious. It just means it is probably a comet that has flown past the Sun so many times that it has lost all of its volatiles from near the surface, such as ice and carbon dioxide, and so no longer produces a tail. It is half way between a comet and an asteroid.

The calculations aren't by NASA. It's a world wide co-operation of many astronomers world wide. There are many eyes on the calculations and all the observations are available for everyone to look at. This is an area where we can do very exact calculations - look at how New Horizons was able to do close flyby of Pluto - if we'd had any mistakes in our understanding of the gravitational fields in our solar system they could never have done it.

It is easy to check stories like this. Go to the Current Impact Risks

If the first entry is white blue or green, then you know that there is no future impact predicted at present all the way through to 2100. Therefore it is a fake news story.

If the first entry is yellow then it means they don't know much about it yet but it is very unlikely to hit Earth, and so it will almost certainly soon turn white or blue, as has happened in the few

The ones shown blue may hit Earth but are too small to cause any damage.

733 views · 2 upvotes · Posted Jan 22

Upvotes 2 Comment 1

Debunked: One of Trumps first actions on becoming president was to sign executive orders about Nibiru

Robert Walker

Summary: This is just a fake news story. Trump did say “ready to unlock the mysteries of space” in his inauguration speech. And yes we have many mysteries in space to solve. For instance, even our nearby neighbour the Moon has many mysteries to solve. However, for astronomers and scientists, Nibiru is no mystery, it is just plain nonsense. It’s also true that he signed some executive orders on his first day in office. They were to do with the first steps towards repealing Obamacare and towards appointing two of his team to office.

Details

The story is here: Trump Admits Nibiru Is Real, Signs Executive Orders . The story is based

> *technologies of tomorrow."*
>
> Trump inauguration: Full text of new president's speech - BBC News

Of course all the Nibiru Nuts jump to the conclusion that this mention of *"unlock the mysteries of space"* means that he will make a search for Nibiru top priority. As far as they are concerned, that is the only mystery in space. For anyone with any basic understanding of science or astronomy then Nibiru is no mystery. It is just plain nuts.

But there are many mysteries, e.g. is there ice at the poles of our Moon, and if so, how much? Does our Moon have underground caves over 100 km long and several kilometers in diameter, as some of the data about it suggests? Is there microbial life on Mars, is there life in the oceans of Europa, or in planets around other stars, how do galaxies form, about the origins of our universe. For astronomers and for many others then this makes the universe a place of wonder and discovery, not fear and dismay.

This is the image for the story

Another view on it here:

> “Trump signed an executive order Friday night directing government agencies to "ease the burdens" of Obamacare while the new administration and Congress work toward repealing and replacing the Affordable Care Act.”
>
> “Trump also signed paperwork authorizing the elevation of two new Cabinet secretaries. The Senate voted this evening to confirm Trump's nominees for defense secretary, James Mattis, and homeland security secretary, John Kelly.”
>
> Trump Signs Executive Order To 'Ease The Burdens Of Obamacare'

> The executive order rescinded Ronald Reagan's "Nibiru Secrecy Act of 1983," an obsolete regulation imposing stiff penalties—50 years imprisonment and unspecified fines—on Nibiru whistle-blowers."

It's just made up fake news. The "Nibiru Secrecy Act of 1983," is also made up. The date 1983 there probably refers to the IRAS observation of infrared sources that the astronomers couldn't identify to start with and when reporters asked them what they might be after the first observations, they said "I don't know" and then mentioned various possibilities and one of those was that they might be very distant planets in our solar system.

They soon proved that they were all well outside our solar system and so weren't planets. For details see Debunked: The IRAS infrared satellite found Nibiru in 1983

Debunked: Earth will be visited in 2017 by ancient beings from Nibiru who visited us before thousands of years ago

Robert Walker

First, Nibiru is nonsense. See my answer to How do we know Nibiru isn't real? You might as well call Jupiter Nibiru - which it probably was for the Sumerians.If you mean Nibiru as the Sumerians understood it, then if I understand right, it variously meant the pole star, Jupiter, and some other things

We don't know of any ancient ones living in Jupiter or on any of its moons. The pole star is 433 light years away and is not about to fly past our sun.

If you mean Sitchin's "Nibiru" then it is fiction. He predicted it at various dates, not sure of the details but in the far future, 80 years from now or some such. But his planet's orbit is unstable. It would have been expelled from the solar system, hit another planet or messed up the other planets' orbits within a million years so well over 4 billion years ago. Hard to say if there ever was a planet om such an orbit, it's long gone, billions of years ago, long before the dinosaurs, long before even the Moon formed and before the Earth's oceans formed.

If you mean the 2017 prophecy by David Meade, which is probably what you have in mind as many papers have run it recently and I get asked lots of questions about it - it is just a gathering together of every unverified urban myth about Nibiru, and he hasn't done any fact checking at all. He seems to think that there are objects in the night sky that can only be seen from a plane flying high up in the sky above South America. That makes no sense. If there is something approaching Earth from the South Pole it is visible from the entire southern hemisphere every clear night. He thinks IRAS found "Nibiru" in 1983 - false. He thinks the Vatican has built a multi-meter telescope - false. Some details here: Debunked: Nibiru will hit or fly past Earth in September 2017 - David Meade's "prophecy"

Basically if a site has the word Nibiru - if it is about ancient Sumerian they mean either Jupiter or the pole star or an ancient Sumerian deity or various other things, but not an extra planet.

mathematical concepts that we start to teach children at around age five or six. Though those concepts seem so simple to us, they are the hard earned result of many generations, thousands of years of work by past mathematical genuises.

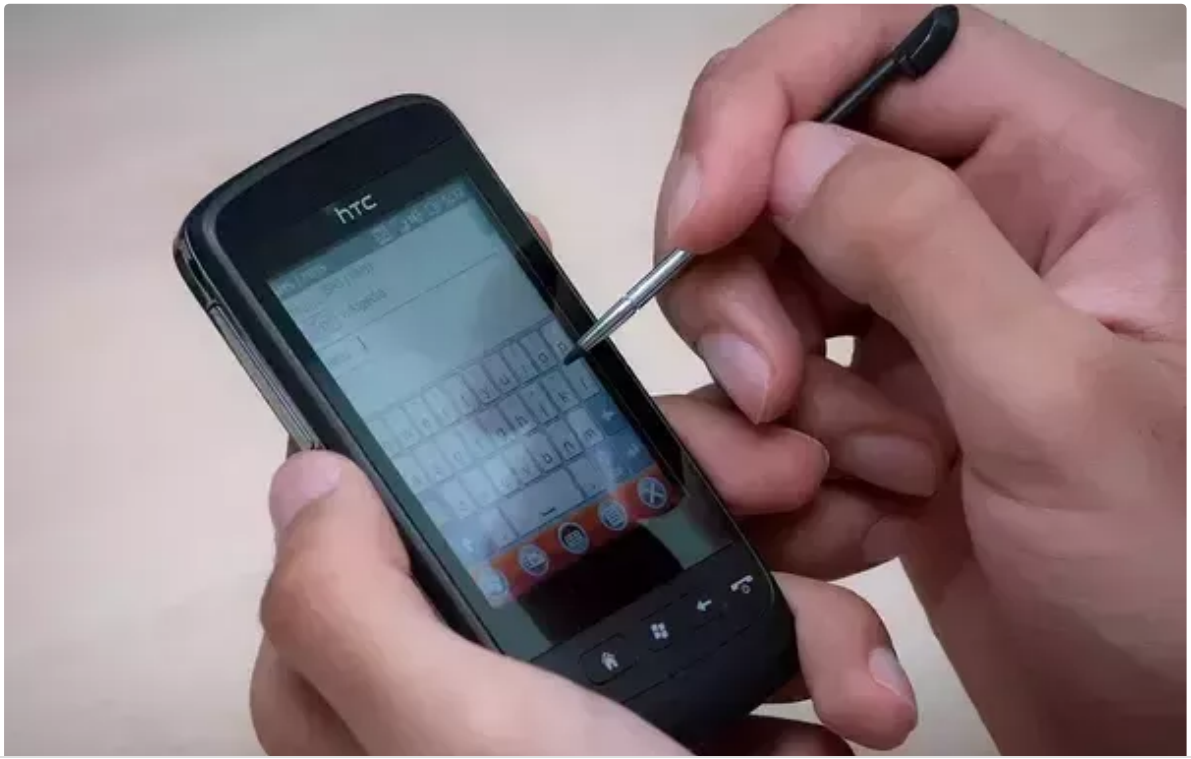
It's just unbelievable that we were contacted by ancient astronauts and even if we were their slaves, that we didn't learn how to use fractions, or negative numbers or zero, from them. Never mind things like knowing about Saturn's rings, or Jupiter's moons, or the craters on the Moon, or basic ideas of science and astronomy such as that Earth orbits the sun, or that matter is made of atoms, existence of electrons and nucleus, or that meteorites come from space rather than from volcanoes or stones lifted up by winds, etc etc.

I think there is no evidence at all of any ancient knowledge from extra terrestrials. Though lots of ancient wisdom in philosophy and understanding of human nature and of ways to work with the natural world, an ecological type of wisdom etc. But their best scientists and astronomers and mathematicians just hadn't got many of even the simplest of modern concepts in those subjects.

There are many images often shared as "Ancient astronauts "

Doesn't much resemble a spaceship to me. Out of thousands of drawings from the past, we are bound to come across one or two that accidentally resemble things that we have today.

Suppose we sent them a drawing of this, back in time somehow:



of course!

Just as we read their figures as astronauts in spacesuits, they'd read our styluses and phones as clay tablets with clay styluses.

We always interpret things in terms of our culture when there is some resemblance.

Originated as my answer to Is 2017 the return of the ancient ones from Nibiru?

389 views · Posted Jan 19

Upvotes 0 Comment

New Horizons than it is from Earth, therefore it is Nibiru and is about to hit Earth and is causing climate change and earthquakes

Robert Walker

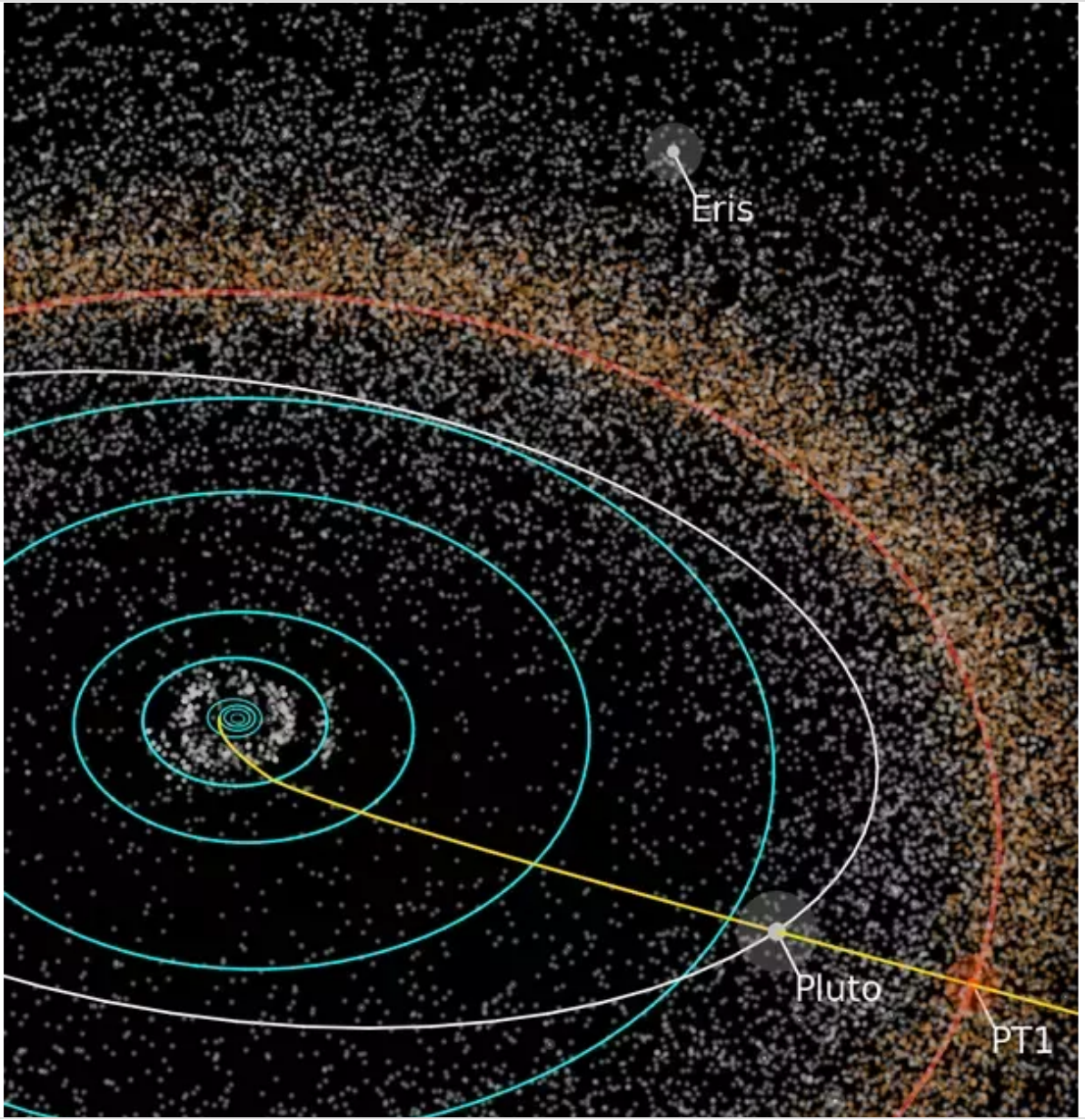
This is a claim from a recent Nibiru video. That Eris is Nibiru, is about to hit Earth and is causing earthquakes, also causes global warming, and flooding.

Summary: Eris is a very tiny dwarf planet, a long way away from us, and is not the slightest danger to us.

IN DETAIL

His basic argument is that the New Horizon team said that Eris is further away from New Horizons, than it is from Earth. From this he deduces that it must therefore be close to Earth, and so must be about to hit us in perhaps two years time.

Doesn't follow at all. To understand how it works see this diagram:


Eris
Pluto
PT1

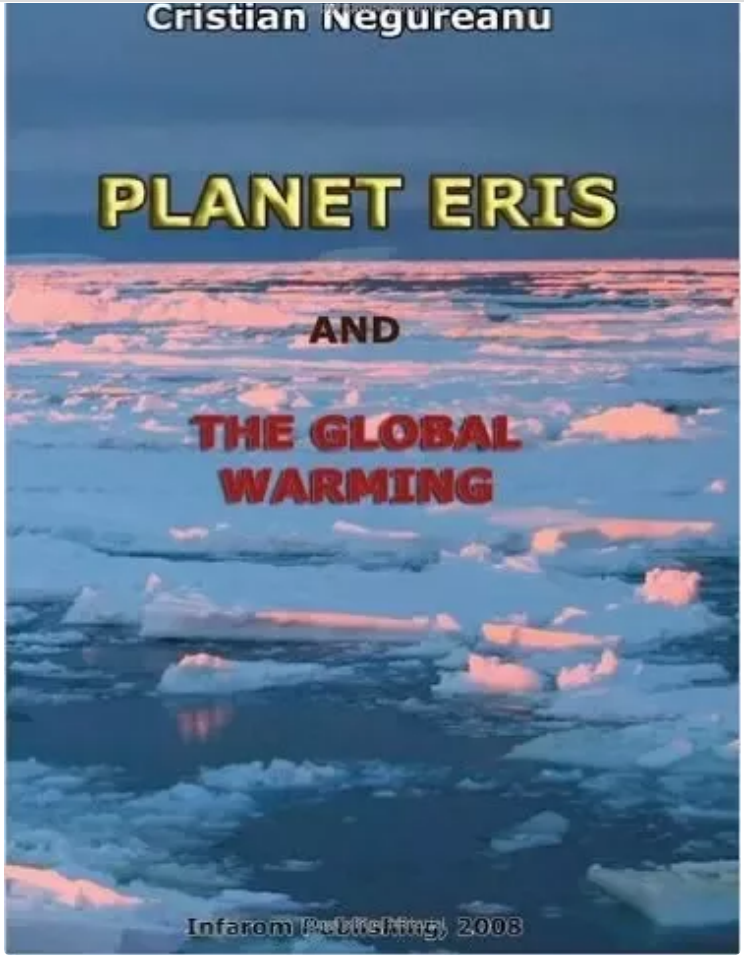
Do you see how it is possible for Eris to be a long way away from the Earth (where the yellow line leaves at the center) - and also a long way away from New Horizons - and yet closer to Earth than it is to New Horizons?

That's a single frame from this nice animation to show where they all are relative to each other in 3D:

Orbits of Pluto and PT1, New Horizons' flyby targets

More about the extended mission here: Finally! New Horizons has a second target

This is the original video:



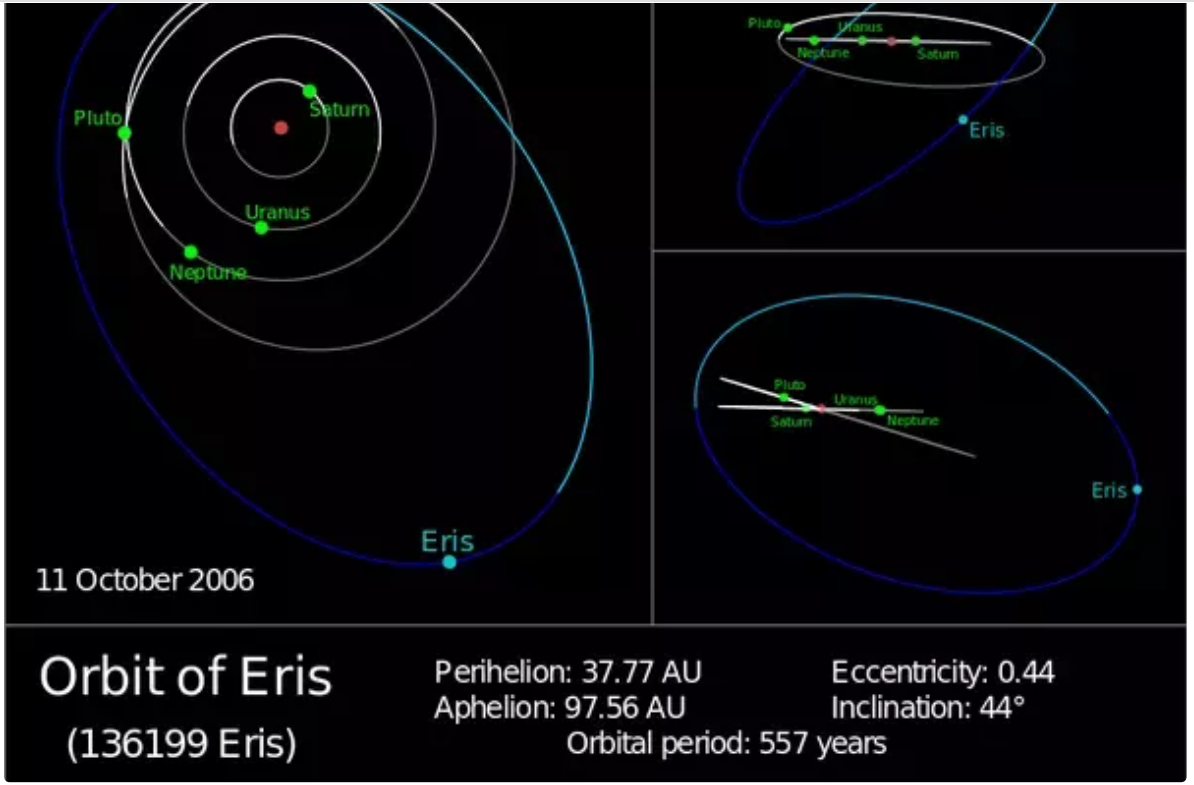
Planet Eris and the Global Warming: Cristian Negureanu - this book claims that Eris is also warming up Pluto, Neptune's moon Triton, is causing the volcanic eruptions on Jupiter's Io, and warming Mars and Saturn,

This is LOL crazy stuff. You might as well try to warm your hands by Pluto on a starry night. So far away and so faint you can't see it except with a very powerful telescope.

or warming the entire solar system!

As for its name - well Eris which turned out to be around the size of Pluto is what lead to the IAU decision to not classify Pluto as a planet - something that lead to a lot of discord. So the IAU thought it would be an amusing name to call it after a goddess of discord . It's not at all to do with any suggestion it could hit Earth. That's not possible. It's just alluding to that dispute over its planetary status. The alternative would have been to call Pluto, Eris, and also Ceres and perhaps Vesta, and many others planets. Many think that the decision should have gone the other way there (I do also).

Here is its orbit



As you can see, it dips inside of Neptune's orbit. That's possible if a dwarf planet is in an orbital resonance with Neptune. It doesn't dip inside Saturn's orbit.

There is no chance at all, not even the remotest chance, of it hitting Earth. And even Jupiter is not close enough to cause tides. Never mind the tiny distant Eris. Nor do any of the other planets have any warming effect on Earth.

It is all total BS, by someone who doesn't understand astronomy or basic geometry. He's got a good way with words, presents himself well, he may have many talents but he hasn't got a clue about the topic he is talking about here.

Debunked: Rich people are buying bunkers to escape from Nibiru

Robert Walker

Summary: Yes it's true that some rich people are buying space in bunkers, and the CEO of the company markets them as bunkers to escape from Nibiru, so presumably he thinks that's a message that helps to sell his bunkers. This just shows that wealthy people are not immune to falling prey to BS merchants who find new ways to part them from their wealth.

IN DETAIL

This story is true. Well actually, what they buy is space in a bunker able to hold 80 people to survive for a year. The shelters are in Eastern Germany and were developed by the Russians during the cold war to survive a nuclear war. There are many such shelters in Europe and the States that the government no longer needs. Indeed - that the governments aren't interested in these shelters surely suggests that they are hardly preparing for a flyby of Nibiru :). Any government that has anyone on their staff who understands basic astronomy will LOL at that idea. And, why would they be selling off surplus underground shelters if they planned to house all the elite in them?

Anyway this is the company Vivos (underground shelters) ... They are ex-Soviet surplus

> Their communal swimming pool

It was originally an underground weapons storage facility for military equipment and munitions built by the Soviets in the cold war. But they had to sell it because it was too close to a main road to store weapons. Billionaire Bunkers: Exclusive Look Inside the World's Largest Planned Doomsday Escape

According to that article in Forbes magazine, it can withstand just about everything including a nuclear bomb falling close by, airplane crash, chemical and biological agents, etc.

A typical chamber is 5 meters wide, 6 meters tall and 85 meters long. It has a total of five kilometers of tunnels if you put them all end to end.

> This apparently is a bedroom from the complex

There are three separate nuclear blast and radiation proof vehicle entrances to the shelter, and each entry is blocked by a 40 ton access door fitted with hardened steel rods, and a second set of airtight sealed doors, to protect against biological, chemical and gas.

So yes - if you are super rich (it's obviously marketed to billionaires and multi millionaires from the photos), you can buy yourself a space in this bunker. And the CEO, Robert Vicino, gets the red top tabloids like the Daily Star to run stories like this: SHOCK CLAIM: Elite preparing for Nibiru apocalypse NEXT YEAR but the rest of us are DOOMED (Express) or Global Elite Preparing For Nibiru Apocalypse In September 2017: 'But They Don't Have A Plan For Us, Only

It means that someone who is selling underground bunkers has managed to persuade the red top tabloids to run a story to promote his company - and that there are some very wealthy people who are scared of Nibiru - if indeed that's why they buy space in his bunkers.

Wealthy people are just like everyone else, they aren't necessarily sensible. They may be good at selling things, or may be that they inherited wealth, or got lucky, won the lottery or whatever. It doesn't mean they understand astronomy and are immune to being peddled bullshit by BS merchants like Vicino. They are just like you or me, except that for one reason or another they happen to be billionaires or multi-millionaires, and there are a lot of billionaires around now.

If that doesn't convince you, if you are someone who is ready to believe any conspiracy theory that is floated on the web, even one promoted with an obvious commercial reason- ask yourself - why would governments be selling off these bunkers if they needed them for their own elite?

Governments do have underground shelters, in the cold war especially, also even during WWII, you can go and visit Churchill's underground shelter in London. And the US is still building them and probably others also. But it's not to protect against Nibiru. It's still for the same reason as these were built originally, in case of war, mainly nuclear war.

And since the cold war they've been selling them off mainly, though they do still build and maintain some. See Debunked: The US government is building vast underground bunkers to escape from Nibiru

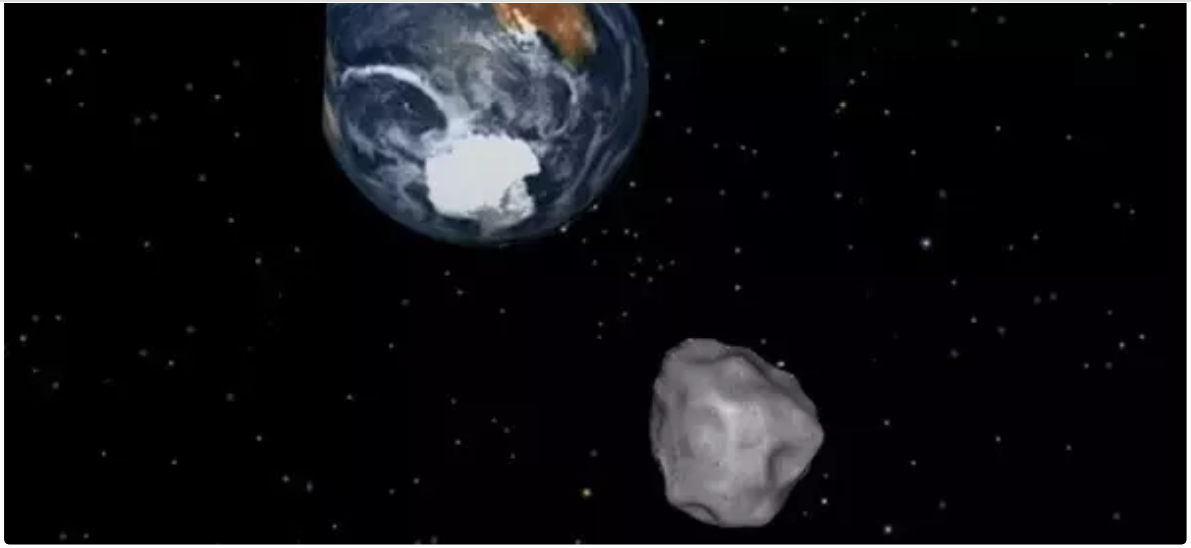
So yes, governments do build underground bases. And NO - that does not mean they are preparing for Nibiru! The whole idea of Nibiru is bonkers so for sure no government is going to waste even a moment of thought about it.

And yes, some very wealthy people do apparently buy space in bunkers in East Germany. That

List of news sites that have run false reports that Earth is about to be hit by an asteroid

Robert Walker

These papers don't know to check the Current Impact Risks table before publishing an asteroid impact story. Often they publish harmless asteroid flybys often at many times the distance to the Moon, but embellish them by saying that instead of a flyby, the asteroid is going to hit Earth on that date. The choice is often very strange, there may be many asteroids doing flybys closer to Earth even on the same day as the one they choose to pick out and say is going to hit Earth.



> 2012 DA14 which did a harmless very close flyby in 2013. A close flyby is still a miss. This one passed closer than GEO, only 17,200 miles away (27,680 km) . This one didn't cause much of a scare - but many much more distant ones do, every year, in articles by journalists who don't know how to check asteroid impact stories.
>
> This is the one that happened on the same day as the Chelyabinsk one - they knew about this flyby long in advance, the asteroid was discovered in 2012 as the name implies .The Chelyabinsk one approaching from the direction of the Sun on the same day was not spotted until it hit - which is possible for very small asteroids approaching from that direction, but impossible for anything large. Even Chelyabinsk asteroid would have been spotted during an earlier observation opportunity several months earlier if it had been just a bit larger, like double size (say).

I will start this list using a particularly striking false report, 2009ES, because **SO many sites** ran a story claiming it was about to hit Earth long after it had already done its flyby on

International Business Times AU ,

You can see the “Chinese whispers” effect here. Here is an early blog that is more or less accurate. China's Largest Telescope Sights an Asteroid Approaching Earth

Except the title itself is a bit misleading - the Purple Mountain Observatory Schmidt design optical telescope may be their largest Schmidt telescope, I don’t know, but it’s certainly not their largest optical telescope. It’s 1.2 meters. By way of example the largest telescope at Xinglong Station (NAOC) - Wikipedia is 5.2 meters in diameter, also has a 4 meter diameter and 2.16 meter diameter telescope.

And this sentence can’t be quoted accurately:

> “Zhao Haibin with the observatory said minor planets' trajectories could be changed by stellar attraction from planets such as Mars. Continuous observation is needed to keep track of any changes.”

- the attraction of Mars is easily predicted, and its effects don’t have to be monitored. The trajectories are affected by some minor effects such as the effects of sunlight heating up a spinning asteroid which then rejects the heat on its dark side, on the asteroid’s trajectory. But those are taken account of in the error margins for the predictions.

It’s probably based on that, that the rest embellished it to a Doomsday scenario. This is an early report on just the 9th September which got some of it right but said it risked hitting Earth in time for the US election which was nonsense. Enstars

At some point along the line of news sites copying other news sites, the date of the flyby was lost from the story and after that, there was nothing to stop them from continuing to run it as an impending impact story for the whole of the rest of September. Also that first story talks

do have to keep an eye on it - but it is no risk at all for the next couple of centuries.

Many of them falsely said that scientists warned it would be the end of the world. That was just journalistic embellishment. If they'd asked any astronomer who knows about such things they'd have learnt that it had already flown past Earth harmlessly, in some cases several weeks before they wrote that.

It's almost impossible for us to be hit by a 10 km asteroid in the next century because all the ones that large that do regular flybys of Earth are already known and none of them will hit us. That only leaves comets. They would be spotted on the way in many years before a flyby or hit, and as only 1 in 146 of the flybys are by comets, the chance of a comet impact, already 1 in a million per century for 10 km asteroids, drops to 1 in 146 million or so, so tiny that it's next to impossible that we are hit by such a large comet. Maybe a close flyby as for comet Siding Spring and Mars, (that was a much smaller comet less than 1 km in diameter)

(WILL ADD TO THIS LIST - this is just one of many such asteroid impact stories that hit the news, all false, since 2015 when I started writing about it and getting questions from scared people about them)

318 views · Posted Jan 15

Upvotes 0 Comment

Is Nibiru a Hoax?

Yes it's a hoax. It's like someone who claims to be an expert on sport, who in the next sentence says that Usain Bolt is a top seeded tennis player and won wimbledon. If you know the basics of astronomy, the things they say are as absurd as that. They give away their complete ignorance of astronomy within a couple of sentences.

"INVISIBLE" BROWN DWARFS

By way of example, they read in genuine astronomy articles that brown dwarfs can be spotted in the infrared when far from any star even in pitch darkness. They conclude from this that they are invisible in ordinary light - that's like concluding that you are invisible because you are warm. Since when did warming something up make it invisible?

CAN'T SEE ANY DIFFERENCE BETWEEN A PLANET THAT NEVER COMES CLOSER THAN SIX TIMES THE DISTANCE TO NEPTUNE AND A PLANET THAT FLIES PAST EARTH

They read that astronomers think that there is a chance we may have a planet that's in an orbit that takes it at its closest to 200 au from the Sun and at its furthest, 1200 au from the sun - and if it exists, it must currently be at its furthest point or we'd have spotted it already easily. Neptune is 30 au from the Sun - so at its closest this "Planet 9" if it exists reaches more than six times the distance to Neptune - but to be not spotted yet, it has to be five or six times further away than that right now.

They conclude that this proves that they have been right all along that there is a planet in an orbit that goes from way beyond Neptune all the way to Earth's orbit and back again every 3600 years and is currently very close to us, "hiding behind the Sun" and just about to hit us or fly past us. Do you see a difference between these two scenarios? They can't seem to see any

> Bill Nye shows the scale of our solar system. If "Planet 9" exists then the closest it comes to Earth is six times the distance to Neptune. It must be several times further away than that at present or we'd see it already. Do you see a difference between this and the idea of a planet that comes as close to the Sun as Earth? They can't see the difference which shows the level of their understanding of astronomy.

IMPOSSIBLE PLANET

Their orbit is impossible because it would cross the orbits of all four gas giants. It can't keep missing them time after time because they have different orbital periods and it would hit one of them or be deflected out of its orbit or mess up our solar system within a million years. If our solar system ever had such a planet, it is long gone ,more than four billion years ago.

Even a 1 km comet would be easy to spot two years before it gets to Earth or Mars as we know from experience too, e.g. Siding Spring found nearly two years before its flyby of Mars and it

Then they go on to pile on the most absurd things. They say that we have two suns. I frequently get people asking me if it is true that we have a second sun and that we are in danger of it flying past Earth! Honestly. Don't they believe their own eyes? This is very easy to check. Don't stare at the Sun. Hold a finger in front of the Sun and then look to left and to right. Hold your finger at anothre angle and look above and below. Do you see a second Sun?

You have just disproved their theory that we have a second Sun.

BALDERDASH AND BULLSHIT

They say so many absurd things. They dress them up in videos with stirring sound tracks and authoritative sounding voice overs. And somehow people who know nothing about astronomy come to believe these things. Who knows if they are just unable to reason logically, or if they are hoaxing everyone else, or don't understand astronomy or what it is. Some are certainly just doing it as hoaxes for the ad revenue. And the ones who are selling Doomsday bunkers obviously have a commercial reason for running these stories. There are dozens of books on it also. It's like a minor industry, all based around balderdash and bullshit.

ASTRONOMY NIBIRU BULLSHIT TESTER - WOULD YOU READ A SPORTS COLUMN THAT STARTS "WHEN USAIN BOLT WON WIMBLEDON IN 2008..."?

I suggest you try out my Nibiru Bullshit Tester - and - well you don’t even need to do that. If a website or a news site or a TV channel or blog talks about a planet called Nibiru in all seriousness and they are not debunking it, then - just cross them off your list of people who know anything about astronomy.

To continue to read after that is like reading in all seriousness an alleged sports blog that starts "When Usain Bolt won Wimbledon in 2008 ...". It's even more absurd than that. Usain Bolt is a human being and could in principle win a tennis tournament, it is just not his sport. But their

See also my Debunked: Nibiru will hit Earth on [Insert Date here]

356 views · 1 upvote · Posted Jan 15

Upvotes 1 Comment

List of newspapers that run fake or unchecked Doomsday “news”

Robert Walker

Many papers publish fake Doomsday stories without checking them at all.

These ones do no checking to see if the story originates from a fake news site:

- Inquistr , Au.com , Sun , Daily Mail . Cosmopolitan , Daily Star , Metro Magazine , East Coast Radio , WBNews , Yahoo7 News , RT , BT.com , Bustle

We know that because they all published this story from a site known to publish fake news, without checking where it came from originally: Debunked: World To End After Two Snowy Days In Salento, Puglia, Southern Italy, Tears On Macedonia Icon

This one published a doomsday video from an anonymous youtube user without any checking and based an entire story and a count down timer to the end of the world on the text typed by

There are many more and I can add to this as I continue. These don't get caught with the Chrome Bullshit detector plugin because they publish many reliable stories. I'm sure they would never dream of publishing a fake obituary. But for some reason they don't seem to think any fact checking is needed at all before publishing a story that says the world is about to end, but just republish stories they have read in other papers or that they have seen shared on social media such as facebook.

If we compile a list of the newspapers and online news sites that publish fake doomsday news, then maybe this will be useful? If you know of others to add to this list, do say! I will include also those that publish asteroid impact stories without checking the Current Impact Risks table to see if the story is genuine. Any paper that published an asteroid impact story recently belongs in that list as we have had no genuine impact predictions.

We can do a separate list for fake or unreliable Doomsday news video channels.

One way to think about it is that for these papers, every day is a potential April Fools day for Doomsday stories - except that they don't give the usual hints that it is an April Fool, and often the journalists themselves have been fooled.

Debunked: World to end on Friday 13th

together?

Robert Walker

Summary: It's just red top tabloid nonsense, debunking it because I got a couple of pm's about it. Whole thing is based on three facebook comments, no link given, authors not identified. And it's another of these "This is a sign" story where there is no explanation given of why they think the world will end. They just say "I spotted something strange and therefore the world will end". Nothing here to be scared of.

It's like the story of Chicken Little. I won't give the ending until later in the page just in case anyone doesn't know it :).

The article is here, in the Express, it's so daft I can't imagine many were upset but I got a couple of pm's asking about it. END OF THE WORLD: Christians predict apocalypse THIS WEEK as Venus lines up with Wolf Moon . By "Christians" in the title it just means three people who posted comments on facebook, they don't say who. Could be anyone. No other sources given. Also in the Daily Star

The article claims that Venus will be at its brightest for eight years. Not true. It reaches its brightest in its current cycle on 17th February. Venus at greatest brightness

And of course Venus and the Moon are often in the sky together, at full Moon especially. At full Moon, the Moon is in the sky all night, rises as the sun sets, sets as the sun rises, so it is in the sky together with anything else that happens to be visible at night on that day.

It is true that the 13th of this month is a Friday. It's the thirteenth of the month because of the calender reform introduced by pope Gregory in 1582 .

It is a Friday is because this day in the week is associated with Venus in many cultures and we call it Friday because in old English the goddess Frigg happens to be associated with Venus.

Nobody is quite sure why some consider the number 13 to be unlucky.

So what does any of that have to do with astronomy or anything astronomical? The Sun and Moon and planets would orbit as they do no matter what calender system we use or what we call the day of the week, or whether or not we think the number 13 is unlucky.

THIS IS A SIGN - LIKE CHICKEN LITTLE TREATING AN ACORN FALLING ON HIS HEAD AS A SIGN THAT THE SKY WOULD COLLAPSE

The words "This is a sign" in this context usually means:

"sign" which has no connection with anything, the connection just made up out of thin air like Frigg spinning fog in the clouds except there isn't even any fog to spin.

CROSSING SITES OFF YOUR LIST OF PLACES TO TRUST ABOUT SUCH STORIES

So - I hope based on this you can now cross the Express and the Daily Star off your list of papers to pay any attention to? They don't check a story even if it is only based on three anonymous facebook comments. They are well known in the UK as the "red top tabloids" that often publish sensationalist and even hoax stories.

It's like every day is April Fool's day. But they don't give any clues to tell you which articles are the "April Fools".

This is a rational thing to do. Once a news site publishes fake news without checking it, then it is rational to distrust it in this topic area. You can no longer rely on it for such stories.

See also my Debunked: World To End After Two Snowy Days In Salento, Puglia, Southern Italy, Tears On Macedonia Icon

A huge number of papers, mainly the more sensationalist tabloids in the UK, ran this story.

As it turned out

- It originated in a site known for publishing fake news but none of the tabloids bothered to check that
- It said that local residents say that Salento never has snow in winter. Turns out it had several days of snow, and thick snow at that, in January 2015. None of them bothered to contact anyone in Salento before writing what "local residents say" about snow in Salento. I mean - do you believe they asked someone there and that they didn't

- It links to an alleged prediction of a super volcano. If you read the story - yes this is a volcano that once had a super volcano eruption. It formed the Campi Flegeri caldera 39,000 years ago. But the study only discusses a possible future ordinary eruption, not a super volcano eruption. It doesn't predict it either, just discusses some observations that might lead to an eruption but there again might not as similar symptoms in the past have often not lead to eruptions.

  Earth of course gets many eruptions. Nothing unusual about that, though important of course to local residents of Italy that they monitor it carefully.

LIST OF NEWS SITES THAT RUN FAKE DOOMSDAY STORIES WITHOUT CHECKING THEM

This shows that none of these online news sites have any policy requiring their reports to check up on fake doomsday stories:

Inquistr , Au.com , Sun , Daily Mail . Cosmopolitan , Daily Star , Metro Magazine , East Coast Radio , WBNews , Yahoo7 News , RT , BT.com , Bustle

So - if you read a Doomsday story in any of those, then you might as well be reading those papers on April Fools day.

It's like a site that claims to be about sport saying that Usain Bolt is a tennis player. It's also like a newspaper that publishes fake obituaries - you would never read such a newspaper to see if someone has died or not, once you know it publishes fake obituaries.

So why read these papers for their Doomsday stories when you know they publish fake doomsday stories regularly? If you want to make things simpler for yourself, then whenever

Soon you will find you get hardly any or probably no doomsday stories. You may get an occasional surprise like the Telegraph, you'd never think it would publish a fake doomsday story, well I wouldn't have thought so until they did. After that, cross them off your list too.

I'm compiling a list of the fake Doomsday news I've been contacted about - at the end I'll do a list of all the sites that published fake Doomsday news since 2015 which may help with this.

It's confusing because many of them wouldn't dream of publishing this fake story from Disclose.tv : FALSE: Snowden Pronounced Dead by His Girlfriend in Russia

Yet they are willing to publish a fake story about heavy snowfall in Italy means the world will end, or that Venus and the Moon in the sky together on a Friday 13th mean the world will end based on three facebook comments.

They think it is very important not to make a mistake about a single person dying, and so they should be. But they think that no checking is needed at all for a story that says the world is about to end. I think this is because they just don't take those stories seriously, and don't realize that they scare anyone. Nothing else makes much sense.

274 views · Posted Jan 14

Upvotes 0 Comment 1

Debunked: World To End After Two Snowy

Robert Walker

Summary: This is a widely reported story in the tabloids and other papers. The story is that the world is going to end because of two days of snow in Salento in Southern Italy, which according to the story is a sign that we are going to have a massive supervolcano eruption. There is absolutely no scientific reason for connecting two days of snow to supervolcano eruptions. It's all based on a story in a fake news site which got passed from one paper to another and they lost track of where it came from. Nothing here at all to be scared of.

I've also posted this to my Science20 blog here as Debunked: World To End After Two Snowy Days In Salento, Puglia, Southern Italy, Tears On Macedonia Icon

IN DETAIL

They base it on each other's stories. When you go back to the source, it's Inquistr which in turn bases it on Disclose.tv which is a website that often publishes fake news including a false story Snowden Pronounced Dead by His Girlfriend . None of them except Inquistr mention that this is the source of the story.

The article is here in the Inquistr: 500-Year-Old Prophecy By 'Italian Nostradamus' Comes True, Sparks Fears Of Supervolcano Apocalypse . Other papers running this story today: Au.com , Sun , Daily Mail . Cosmopolitan , Daily Star , Metro Magazine , East Coast Radio , Yahoo7 News , RT , BT.com , Bustle (only one so far to do slight debunking - they couldn't find the primary source for the "prophecy" and remark that the only sources are from tabloid newspapers that run end of times prophecies regularly)

Many of these link back to the Inquistr article and that in turn doesn't cite any academic

Amongst previous stories they ran a fake news story that FALSE: Snowden Pronounced Dead by His Girlfriend in Russia and they republished a satire news story about NASA being contacted by Aliens as true: FALSE: NASA Admits It Is in Contact with Alien Species and Just Forgot to Mention It

This story was so widely and uncritically reported with none of them except Inquistr explaining that the source is Disclose.tv that I think it is quite a good test to weed out the papers that run stories like this, without doing any due diligence to find out where the story came from, which I was able to do here in a few minutes of googling.

So these are all news sites you can basically disregard therefore as not likely to be reliable in this topic area - since none of them debunk it except Bustle, and that only slightly skeptical about it. Others treat it in perhaps a slightly humorous tone but scared people won't see the humour in it. And people are getting scared by this story already.

HEAVY SNOWFALL IN SOUTHERN ITALY

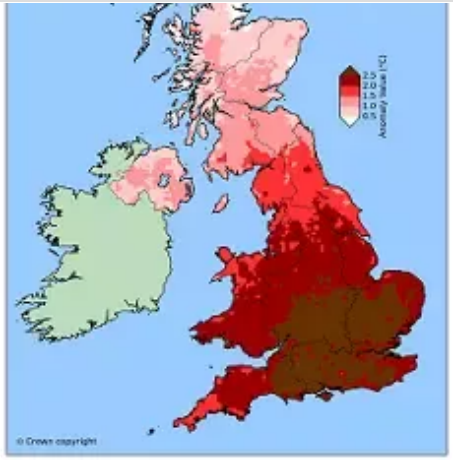
So anyway let's do a proper debunking: First, apparently, it is true that Salento has had two days of unusually thick levels of snow. Video in the article.

This bit though is untrue and must be just journalistic embellishment, probably they never asked a local inhabitant

> "But the fears have intensified into near-panic after two consecutive days of snowfall occurred in Salento, a peninsula in southern Puglia, Italy, where, according to residents, “it never snows.”"

It snowed heavily for several days in January 2015 just two years ago. Photos here including a snowman and their dog in very heavy snow. They say there that it was the first time in 30 years. So do two heavy snowfalls in three years mean anything?

We’ve got a cold spell throughout Europe just now. This is one of the predictions of global warming that there will be less precipitation overall ut the individual events will have more precipitation. Similarly for hurricanes that there are likely to be fewer but the individual hurricanes will be stronger on average. So I expect that’s what it is. We’ve had an unusually warm winter so far here in the UK Record breaking winter for England and Wales . It’s more than 2 C above average in the south of the UK, as this map shows:



To find a warmer winter you have to go back to 1869. and that was only 0.1 C warmer. And no other winter has been so warm back to 1659 - that's for central England which has the longest continuous temperature record in the world.

> "The latest end of month statistics show it was provisionally the warmest winter for England and Wales since the record series began in 1910, while it was the third-warmest for the UK as a whole. The warmth has been most notable in the south of the UK with mean temperatures across much of the area more than 2C above average.
>
> "In the Central England Temperature record series, the longest temperature record in the world dating back to 1659, this winter has been the second-warmest at 6.7C, just behind the previous record of 6.8C set 1869."

Paradoxical as it may seem, it's part of the same pattern. We may get more of this as the world continues to warm very slightly.

As well as that, the occasional very cold spells in northern Europe winters could be the result of changes in the position of the jet stream as a result of climate change and the warming of the

For more on this: Extreme cold winters fuelled by jet stream and climate change

So, to have occasional snow storms unusually far South in a slightly warming world is no surprise at all. But as it turned out, it's not even unusual for Salento :).

TEARS ON ICON

On the icon, this is the icon that allegedly cried. See how it is damaged around the left eye?

It's the Express anyway, it's not the most reliable of newspapers, it's a red top tabloid often publishes sensationalist unresearched stories and sometimes out and out hoaxes (like every day is April Fools day but without the April Fool part of it where they leave obvious clues that it is a hoax): END OF DAYS PROPHECY: Fears for terrifying 2017 event after Virgin Mary painting cries

Anyway if I am permitted to be a bit skeptical - what about damp damaging the painting? If it is a true story. Or maybe something to do with the paints that make up the painting destabilizing? And why would a painting shedding drops of anything, even if it is a miracle, for Catholics that believe firmly in miracles (some of them anyway) and not just ordinary real world physics - why would that mean the world is going to end? Why not just that e.g. the Virgin Mary is crying because of some local tragedy in the village? Doesn't the Bible say

> "Are not two sparrows sold for a penny? Yet not one of them will fall to the ground outside

STORY OF POSSIBLE SUPER VOLCANO IN ITALY

The story also ties this in with a previous story about a possible supervolcano in Italy

Italian supervolcano has started to stir to life

So on that, first, why would two days of snow in southern Italy mean that a volcano is about to erupt? It doesn't make any logical or rational sense. It is just a "sign" which basically seems to mean that if you notice something odd anywhere in the world, that it is taken as evidence that some other unusual hypothesis that you happen to find scary is more likely to happen even if there is absolutely no causal connection between them.

Nonsense! Why would that be the case?

So anyway on super volcanoes, they are very rare indeed. But can indeed happen. They are not world ending events. They happen quite a lot on the geological timescale. 42 supervolcanoes in the last 36 million years

What really happens if Yellowstone erupts as a supervolcano, or if some other supervolcano erupts?

So they are possible. They are amongst the most likely of these devastating scenarios, though that still doesn't make them that likely.

Those statistics make the chance of a supervolcano before 2100 about 1 in 10,000 . So 99.99% certain it won't happen before 2100.

WHAT HAPPENS IF WE DO GET A SUPERVOLCANO

I cover it in detail here: What really happens if Yellowstone erupts as a supervolcano, or if some

The worst supervolcano in recent times was the one that created Lake Toba — in Indonesia — about 75,000 years ago. It's 100 kilometres by 30 kilometres, maximum depth 505 metres.

Danau Toba

> Its ash covered Malaysia to a depth of 9 meters, there's an ash layer from it in central India that's still 6 meters thick today, and ash from it is detected as far away as Lake Malawi in East Africa.

It injected 2500–3000 km³ of debris into the atmosphere, and probably killed 60% of the human population worldwide, mainly through climate change impacting on their food supply.

That's the picture generally, that the main effect is through global climate change, which reduces the temperature globally by about ten degrees C for a decade, together with the direct effects of the deposits of ash on their crops. A large supervolcano like Toba would deposit one or two meters thickness of ash over an area of several million square kilometers.(1000 cubic kilometers is equivalent to a one meter thickness of ash spread over a million square kilometers). If that happened in some densely populated agricultural area, such as India, it could destroy one or two seasons of crops for two billion people.

So yes it can be very serious. We can prepare for it though. With two years warning we can do large scale tests to work out what are the best crops to grow during the event. Also store crops that are currently used to feed cattle or for production of ethanol, for human consumption

More about this here What really happens if Yellowstone erupts as a supervolcano, or if some other supervolcano erupts?

So now what about the thing about Italian supervolcano has started to stir to life

Well if you read the story - yes this is a supervolcano. It formed the Campi Flegeri caldera 39,000 years ago. But the study only predicts a possible ordinary eruption, not a super volcano eruption.

SUMMARY OF THE DISCUSSION SECTION OF THE ARTICLE

The article is here and open access for anyone to read. But it is written in techy scientific language so you need to know how to read that sort of stuff.

So here is a summary of what they say in the Discussion section. I haven't done anything here except to rewrite it in non technical terms plus I've only "translated" the most relevant sentences.

Magmas near the critical degassing pressure drive volcanic unrest towards a critical state

So this is what they say:

Their model fits an increase in hydrothermal activity and from this they deduce that it is getting warmer. Their model suggests that this warming may be due to addition of water derived from magma. They can't deduce any structural effects using their model but they notice that the caldera has raised in synchrony with their model's hydrothermal temperature increase so suggest that the magmas they are studying may contribute to that effect.

But they caution against using their model for prediction at this stage, because the process can

Their conclusion was, direct quote:

“Additional careful scrutiny of monitoring data in the coming months and years is key to interpreting whether hydrothermal heating or magma quenching will prevail.”

In other words despite all the dramatic reporting of this paper, all they were saying is that this mountain might or might not erupt, and that it needs more monitoring to see what happens, and they were just discussing an ordinary eruption also.

MATTEO TAFURI PROPHECY?

As for prophecy well - that is just some person saying they think something is going to happen. Would you rely on prophecy to decide whether to carry an umbrella tomorrow?

I’m not sure why so many people think that prophecy is of any relevance at all to whether or not a supervolcano will erupt. And if prophecy worked, why aren’t all the winners of state lotteries prophets? I can’t even remember hearing any story about someone who says they prophesied the winning numbers and so won that way.

Anyway this is the chap who wrote the so called prophecy according to this story: Matteo Tafuri

> “Salento of palm trees and mild south wind... Two days of snow, two flashes in the sky, I know the world ends...”

In a google search, it’s not in google books or google scholar. This is the earliest online reference I can find :

> 'Salento of palm trees and mild south wind, snowy Salento but never after the touch. Two days of snow, two flashes in the sky, I know the world ends, but I do not yearn,' Tafuri’s

Hope this helps some of you be a bit less scared of this.

Also do check out my book Doomsday Debunked (free online and also available on Kindle) and our facebook group: Doomsday Debunked

303 views · 1 upvote · Posted Jan 12

Upvotes 1 Comment

Debunked: A new star that will appear in the sky in 2022 is a sign of the end of the world

Robert Walker

This is a claim from Breaking Israel News that this star predicted for 2022 will be the brightest star in the sky and that it will accompany the arrival of the Messiah. Since this is a Jewish paper this is not a "second coming" as they don't recognize Jesus as the Messiah. Story here: Will Balaam's Messiah Prophecy Be Fulfilled When Brand-New Star Appears in 2022? . This story also ran in the Daily Mail here: New star could herald the Second Coming, claims Israeli rabbi

Breaking Israel News is the same paper that published the musings of a rabbi who claimed that the world would end on Sunday October 2nd 2016 .

So, first, this is a genuine prediction from astronomy. But it's not going to be the brightest star

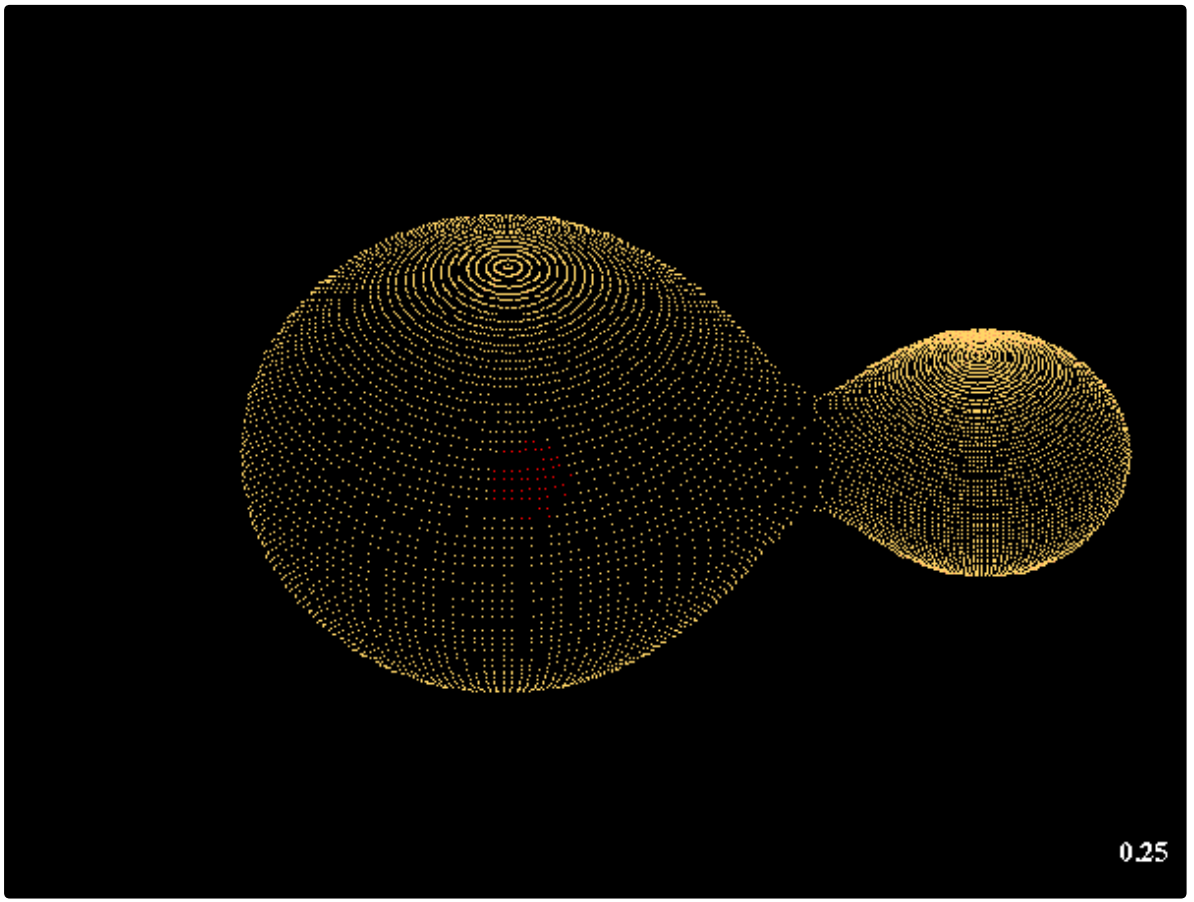
It's actually a Luminous red nova which is in between the brightness of a normal nova and a supernova. So it's not actually going to be particularly bright. At it's brightest, it may perhaps reach magnitude 2, the same brightness as the Pole Star.

This is a more sober treatment from EarthSky: Star predicted to explode in 2022 | EarthSky.org

This chart shows where it will be in the sky

> Image showing position of the predicted red nova from their press release

It's the result of a merger of two stars in KIC 9832227 a contact binary which is 1800 light years away.



So, far from being dazzlingly bright, it's a star that you would only notice if you are very familiar with the night sky and the Cygnus constellation. I recommend that you get to know the constellation well now before this star appears or you won't notice any difference in the sky.

But we get lots of supernovae. On average our galaxy has perhaps one a century or so, but getting on for half of them are hidden from view because of dust in our galaxy. Ten in the last 1,000 years of which 5 were recorded. Three were obscured by dust. One was too far south to be seen from northern Europe and with one, don't know if it was visible or not.

Sometimes they are very bright. The world doesn't end when we get a supernova :). Perhaps if I share a list of them it may help.

Rather than be scared of them, we should look forward to them, a wonderful sight. If only we could see a proper supernova. But they are so rare, chances of seeing a naked eye supernova in our lifetime is quite low as we get visible ones only every couple of centuries. It's been 300 years since the last easily visible one but that doesn't mean we are "due" one, if it is a random process as it seems to be.

LIST OF SUPERNOVAE

So here is a list of them from 1000 AD. Adapted from the List of supernova remnants - Wikipedia

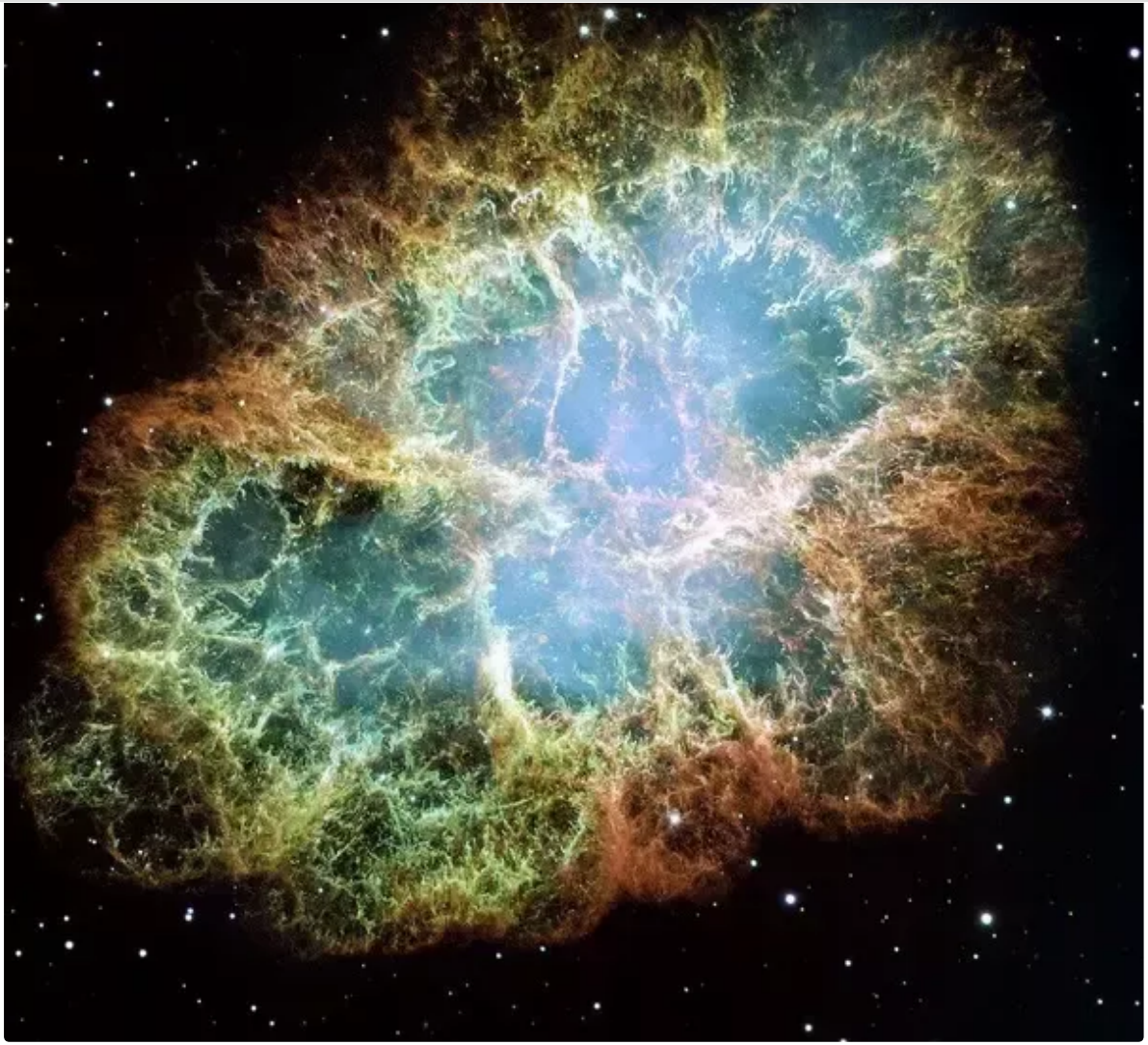
Brightness in astronomy is measured using magnitudes. They work the opposite way from what you'd expect. Larger positive numbers are fainter so 6th magnitude is very faint. The smaller the brighter and negative magnitudes mean quite a bright star.

Venus at its brightest is -5 so anything as bright as that or brighter would be very noticeable. Sirius is -1.5 so anything brighter than that would be brighter than anything in the sky except for some planets, the Sun and the Moon.

Also note, these images are using enhanced and often false colour. The remnants wouldn't be

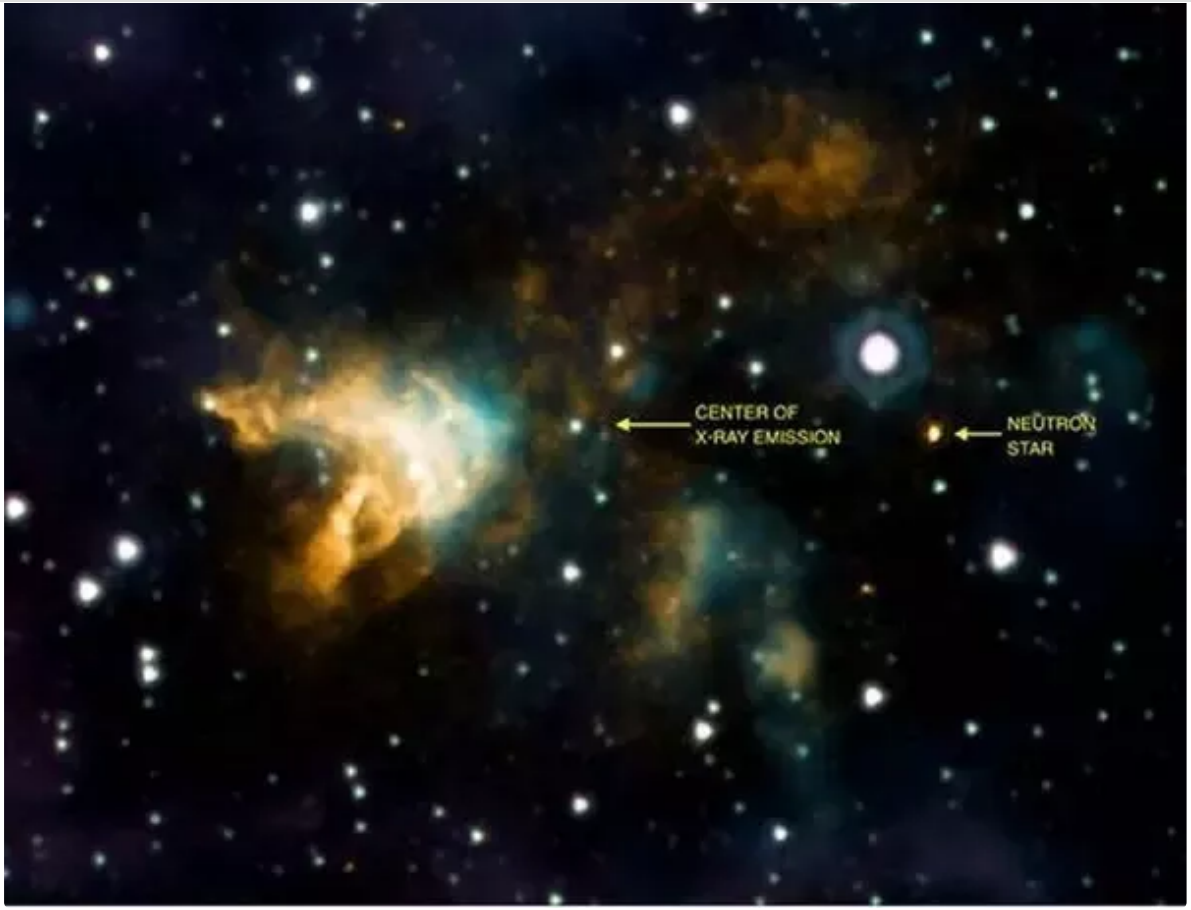
No observations recorded but it would have been seen around 1000 AD if visible. Distance

Magnitude −7.5, distance 7,200 light years



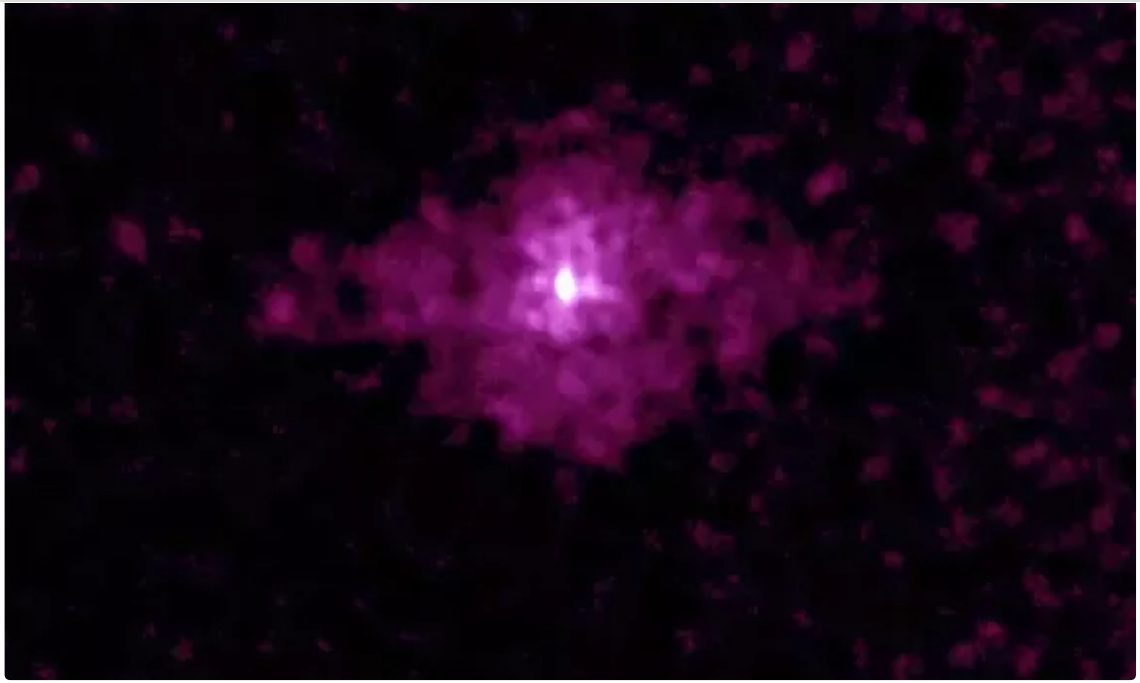
Magnitude -6, distance 6,400 light years

G350.1-0.3 About 1100



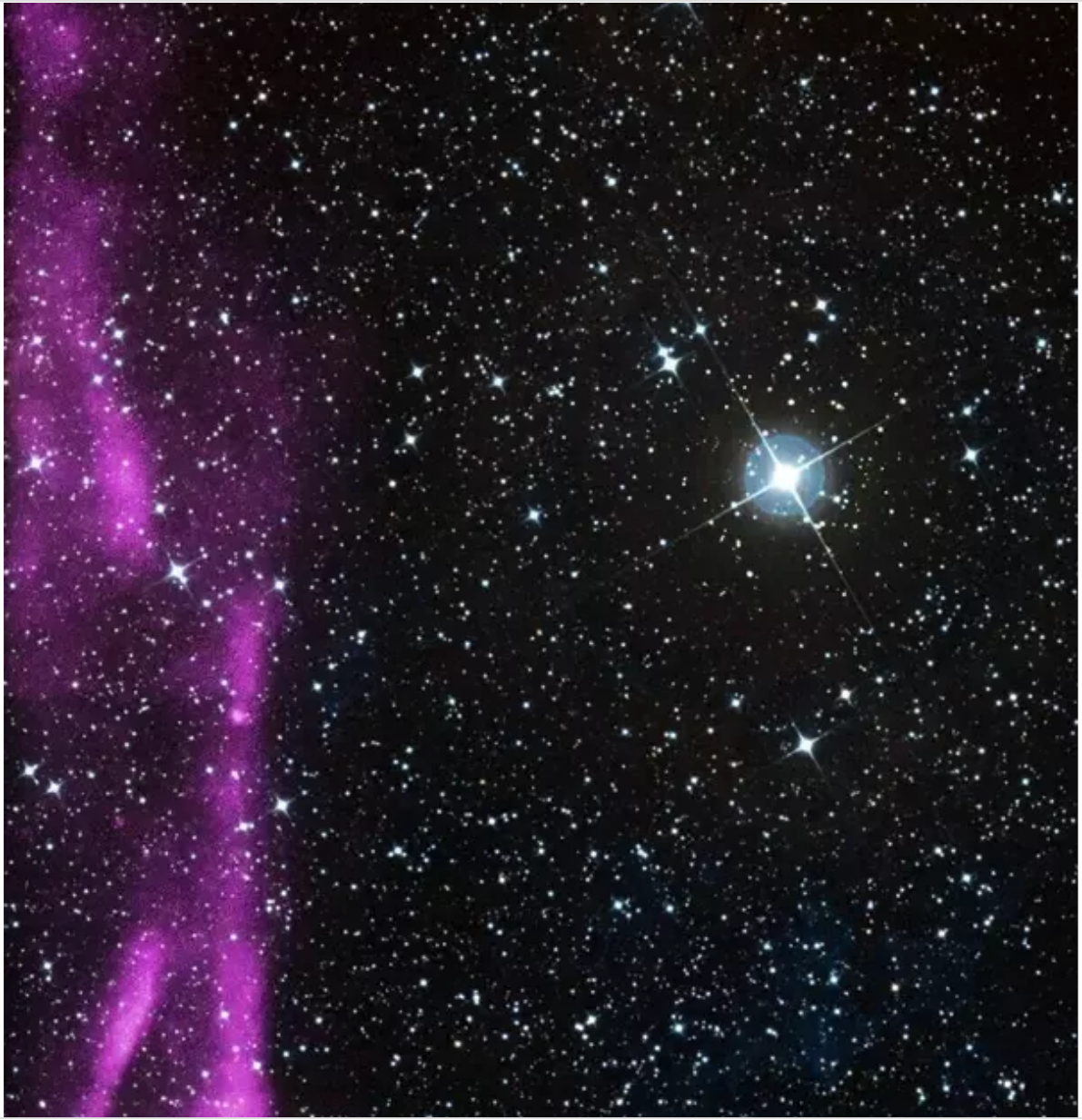
Unlikely to have been seen because of interstellar dust. Distance 15,000 light years

SN 1181 1181



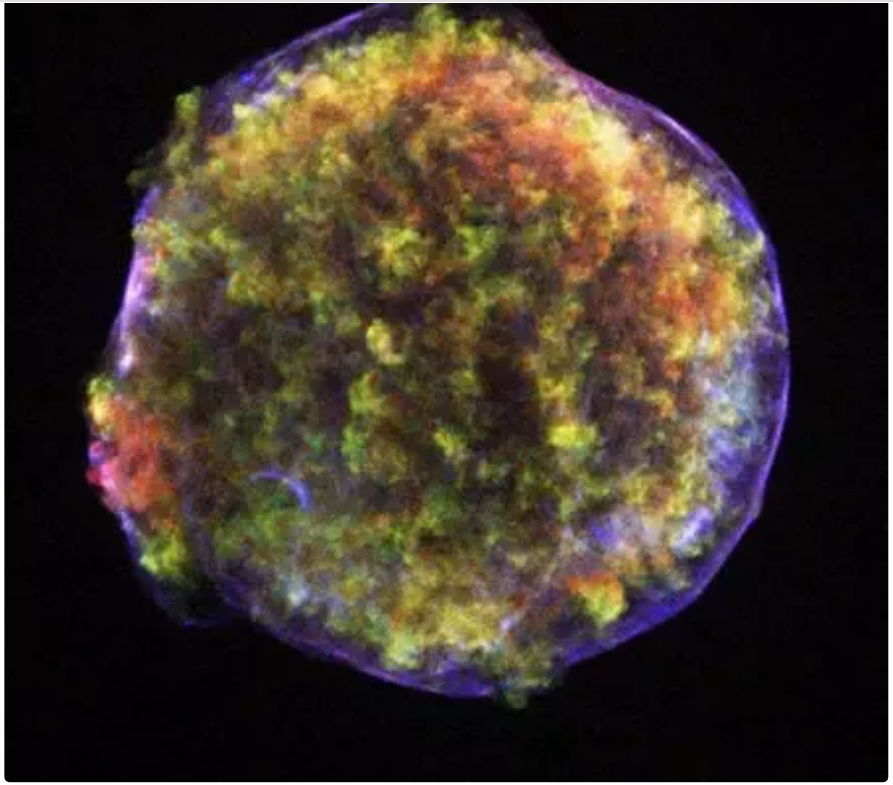
Magnitude -1, distance 26,000 or more light years

RX J0852.0-4622 or Vela Junior About 1250



Distance 700 light years. Not observed. At 46 degrees south, it would have been invisible to most of Europe.

SN 1572 or Tycho's Nova, November 11, 1572



Magnitude -4, distance 7,500 light years

SN 1604 or Kepler's Nova October 8, 1604

Magnitude -2.5, distance 20,000 light years

Cassiopeia A Mid 17th Century, obscured by interstellar dust. Recorded as very faint sixth magnitude star by John Flamstead on August 16 1680, he didn't know what it was

Magnitude 6, distance 10,000 light years

G1.9+0.3 About 1868 - obscured by the dust at the center of our galaxy, no observations

Not observed. Distance 25,000 light years

holes found near the Milky Way — NO!

Robert Walker

Summary: Black holes don't suck everything into them - that's a common mistake. The stars in our own galaxy orbit our central monster black hole no problem. And the closest of these black holes is 38 million light years away. It is not the slightest risk to Earth.

IN DETAIL

I've been asked about this one a couple of times. It's a case of a title that's a bit scary if you don't know what it means. Good example of how just a title can scare paople. The article is here on the ITV news site: Hidden 'monster black holes' discovered near our Milky Way

Now, first, yes we have a monster black hole at the center of our galaxy, at least almost certainly. It is far closer to us than either of these ones. But it is still so far away that the light that gets to us from the galactic core left there in the middle of the last ice age.

We are orbiting around the Galactic Center at a distance of around 25,000 to 28,000 light years. We are as safe from that as we are from the Sun. A planet can orbit a black hole just as it orbits a star, and the stars of our galaxy have been orbiting the central black hole and the denser center of our galaxy for billions of years.

Indeed, the stars orbiting the black hole at the center of our galaxy move so fast that you can actually follow them and see their positions change over time periods of years. The ones that are closest to the black hole orbit at speeds that are a sizeable fraction of the speed of light. Here is an animation of them based on direct observation:

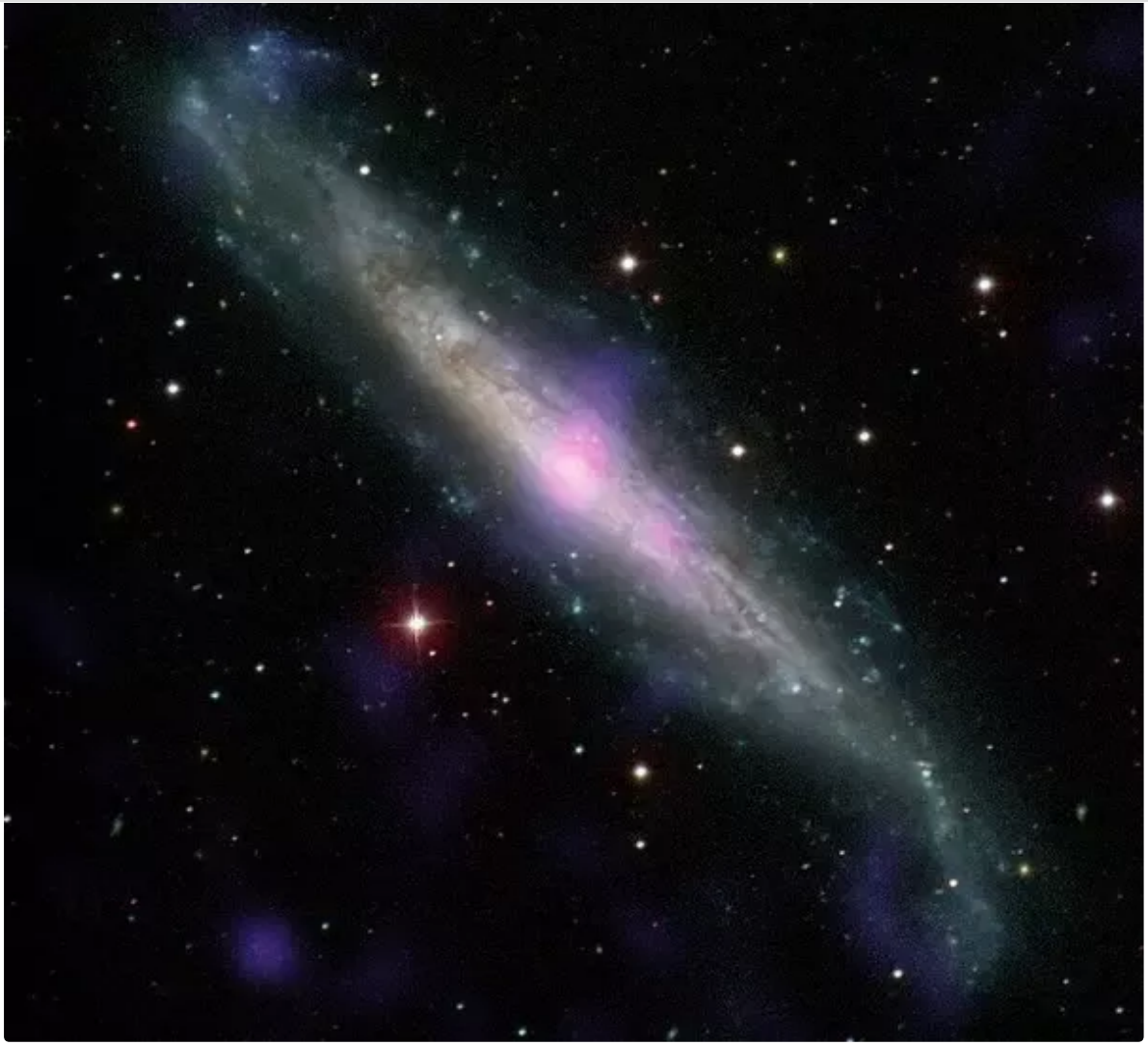
> The fastest star in that animation was traveling at 5000 km/sec when it came closest to the black hole, or about 1.66% of the speed of light - this rules out most other hypotheses proving that what we have at the center must be a black hole, or something even more exotic.

Anyway the main thing is that you can see it doesn't "suck in" the stars around it. They just orbit it, as they would when orbiting any massive object.

There is a small region around any black hole which has the unusual property that if you enter, you can't exit, and will inevitably hit the center a few seconds or minutes later. That's the reason for the confusion. But so long as you stay away from this region, known as its event horizon, then you are at no risk from it.

Anyway - there's a more accurate version of the story here: Monster black holes lurking in nearby galaxies

They found two new supermassive black holes. The nearest one is in NGC 1448 which is 38



> NGC 1448 which is 38 million light years away - newly discovered black hole at its center. It is not in any way a threat to us.

> Andromeda Galaxy (with h-alpha) - by Adam Evans

.It actually spans quite a large part of the sky, far larger than our Moon - but galaxies are not nearly as bright as you might think from science fiction. If you were in a spaceship looking towards our galaxy from the distance of the Andromeda galaxy, you just wouldn't see our Milky Way unless you turned off all the interior lights and waited for your eyes to dark adapt, then you'd see just the core of our galaxy as a very faint smudge on the edge of visibility. This is what the Andromeda galaxy would look like in our sky if it was as bright as the Moon, it's huge:

> Andromeda if it were brighter - see also Phil Plait's article about it: Yes, That Picture of the Moon and the Andromeda Galaxy Is About Right .
>
> Even if you look in binoculars though, you don't see the full extent of it, all you can see is the brighter central part of the galaxy, which is why even maybe some amateur astronomers who have seen it in binoculars may be surprised to learn how large it really is in the sky..

And - yes there's a monster black hole at the center of the Andromeda galaxy too, but it is no threat to us at all.

> Double Nucleus of the Andromeda Galaxy (M31)

This shows the nucleus of the Andromeda galaxy. Unusually, it's got a double nucleus. The fainter dot to the right actually marks the position of its monster black hole which masses more than a hundred million suns. It also has at least 35 other smaller black holes orbiting its center
Trove of Black Holes Discovered in Andromeda Galaxy

Indeed the Andromeda galaxy is actually headed our way and will collide with the Milky Way about 2.75 billion years from now. That's so far into the future that evolution could go all the

double the density of stars for a while, depending where we are when it collides - but the stars are so far apart that that still means there is almost no chance of any star from the Andromeda galaxy coming anywhere close to us.

The two black holes at the center will merge eventually with all the stars left orbiting it, making a single elliptical galaxy.

That's probably where our sun would end up, orbiting somewhere in the outskirts of an elliptical galaxy - though we can't predict what will happen to an individual star exactly. Some stars get thrown out into the depths of intergalactic space with escape velocity during the collision. That could happen to us, but we'd still be just fine, our skies though would get darker and darker with few stars except in the direction of the milky way, eventually ending up in intergalactic space with no other stars around visible to sight at all. There are many stars like that right now, as a result of previous galactic collisions, out in intergalactic space with completely black skies with no stars visible, from their planet except their own parent sun, and the faint smudges of distant galaxies. Chances are if we still have technology then or whatever beings have evolved on Earth, they'd be migrate to another star during the collision if they discovered their one is going in a direction they don't want to go.

Here is a short summary, rather good, from Business Insider

And here is a recent simulation of what will happen when the two galaxies collide:

This is what it would look like from Earth, though this is with the brightness turned right up, the first image shows the night sky as it is now but for most of us the milky way is so faint we can barely see it except with really dark skies:

stars help to fill out the new elliptical galaxy. It still produces new stars, but not nearly so many after that, as most of the gas and dust was used up in the collision that lead to its formation. Most of the stars gradually age. Elliptical galaxies tend to have a much higher proportion of older stars. They are orange in colour, while spiral galaxies are more blue in colour.

MACSJ1423.8+2404 - center of a cluster of galaxies. The elliptical ones are orange, consisting mainly of very old stars such as red and orange dwarfs, and the spirals (like ours) are blue.

> by Hubble of the cluster Abell S0740 450 million light-years away in the direction of the constellation Centaurus. .

See also VSAuce's take on this:

So anyway even monster black holes are no risk at all to Earth, and they are very common, just about every large galaxy probably has one. And their stars continue just fine and don't get sucked into their black holes, because that's just not how black holes work. Many science fiction movies get this wrong, though some of them do treat black holes accurately.

266 views · Posted Jan 9

Quick way to cross off fake doomsday news sites and video channels from your list of reliable sources on astronomy

Robert Walker

Even with the Chrome fake news plugin there are lots of sites that publish nonsense and fake doomsday news. For instance Metro magazine, Express, and several other papers that wouldn't dream of publishing a fake obituary are totally unreliable in the area of astronomy. You can simplify things a lot by just crossing off your list of reliable sources on this topic if they publish stories that say any of these things:

- **Anyone who talks about Nibiru as if it were a sensible theory**, or Hercobulus or Wormwood
- **Anyone who says that the Earth's poles are shifting** - the geographical poles. You can check this any starry night, that the stars all continue to circle around the pole star as seen from Earth - two observations a couple of hours apart will confirm this, any starry night. And our GPS would stop working right away - that you can use GPS to tell the position accurately shows the poles can't have shifted.
- **Anyone who says we have two suns**. Just block out our sun with a finger, look above, below, to left or right and you can check we have only one sun.
- **Anyone who says that brown dwarfs are invisible -** they are warmer than similarly aged smaller planets, which means you can see them even if they are far from

- **Anyone who says that a planet can hide behind the Sun** for years on end - a planet can hide behind it for about one month at a time if it is in a long period orbit
- **Anyone who says that a planet can be in an orbit that takes it close to Earth** - such orbits are no longer possible in our solar system, was possible for the first million years but such orbits are unstable so they can't still be here today
- **Anyone who says that they know the world will end just through prophecy** with no explanation of how it happens. There's no rational reason to believe such people - there have been countless false prophecies of the end of the world
- **Anyone who falsely says we are about to be hit by a huge asteroid** - for those stories just go to the Current Impact Risks table. If the first entry is blue white or green then the story is nonsense. Current Impact Risks . If anyone publishes a story saying that we will be hit by an asteroid and the first entry there is blue white or green this means they don't know enough about astronomy to do this very simple check for their story.
- **Anyone who says we got more earthquakes than usual last year** - it's easy to check that we didn't, USGS FAQs - Earthquake Myths and List of earthquakes in 2016
- **Anyone who publishes any other astronomical story that is easy to prove false** with a simple check with a reliable source.
- **Any newspaper or website or youtube video channel that runs any of those stories** without debunking them thoroughly

If you do that then that will eliminate nearly all the fake doomsday news in your google search news feed or shared on facebook, as well as all the news sites and video feeds that publish them

just about all of them.

If you went to a newspaper and in its sports section it said that Usain Bolt is a top seeded tennis player and has just won a major tournament in tennis, would you continue to use that paper as your source for sports news? No of course not, you'd never trust anything it said on sport ever again. You might continue to read other sections but you'd know that it's sports editor is a moron, or at least, knows nothing about sport and can't be bothered to check his stories with anyone else who does know about the subject. You would not read anything in it on sport again probably except for laughs.

To rely on a paper or video channel that says any of those things in the list above is just like relying on the paper or video channel that says that Usain Bolt is a top seeded tennis player. For some reason, though most papers are reliable on sport, and on obituaries, many of them don't seem to think there is any need to check astronomical stories at all, they just run them based on something they read in another paper or hearsay or goodness knows what.

So there are many newspapers that are very unreliable in the topic area of astronomy - especially the UK tabloids for some reason. As an example, there are very few of them that bother to check asteroid impact stories to see if there is in fact an asteroid predicted to hit Earth. All the dozens of stories published on this in the last year about many separate supposed imminent impacts would have been thrown out at the editing desk if their astronomy or science editor in chief knew to check the Current Impact Risks table. And any paper that runs a Nibiru story, apart from a debunking one, you know right away doesn't have an editor in chief with astronomical or scientific background.

Also though US papers aren't as bad as the UK ones, a few of the US supposedly scientific TV channels, especially the Discovery channel, are just appallingly bad in the area of astronomy. They make it worse by mixing up genuine stories with nonsense so you can't tell if a particular

newspapers don’t have a policy requiring them to check stories shared on social media

> “A recent study of local TV stations in the US conducted by Adornato revealed that that nearly 40% of their editorial policies did not include any guidelines on how to verify information from social media, yet news managers at the TV stations admitted that at least a third of their news bulletins had reported information from social media that later was revealed to be false or inaccurate.”

And the original fake news sites earn money through advertising, can be $10,000 for a single fake story that goes viral.

> "We've had stories that have made $10,000 (about £8,100). When we really tap in to something and get it to go big then we're talking about in the thousands of dollars that are made per story,"

It’s the same for the fake youtube videos - they earn thousands of dollars from ads. This is at least part of the reason for it, then you get people who fall for it, but without the ads revenue in the first place - the rest would probably never happen or not be as big as it is now, just be a few people with off the wall ideas trying to convince their unbelieving friends that their ideas are correct.

Story here: The rise and rise of fake news - BBC News

Though it's mainly non scientists, some scientists who are normally reliable sometimes say doomsday scare nonsense. Michio Kaku is notorious for this. I don't know why he does it - it's hard to credit that such a distinguished scientist could say in 2012 that Earth faced doom from a "wave of energy" from solar storms on 21st December 2012, in the middle of all that 2012 scare. There was no truth to it at all. He is a frequent guest on these US TV true mixed with fake "science" channels.

David Morrison, expert on asteroid impacts and astrobiology, former director of the Sagan institute and very distinguished NASA researcher, talks here about this issue with Michio Kaku seventeen minutes and fifteen seconds into this video.

So I'd also cross Michio Kaku off your list of reliable sources on astronomy news. He does say a lot of good things, if you have a good background in astronomy, enough to be able to distinguish between the true and the fake news. It's a great shame to have to say this for someone who is so knowledgeable and who presents science topics so well. But for those who don't know how to do it, I'd say, sadly, that you should steer well clear of him and treat him as a thoroughly unreliable source in astronomy because of his occasional off the wall statements like this that are just completely false. The effect is worse, because everything else he says is so good, so people come to rely on him.

316 views · 1 upvote · Posted Jan 8

Upvotes 1 Comment

Debunked: Dire predictions for 2017 by

Debunking story in the Sun: Nostradamus predictions for 2017: Terrifying forewarnings of 16th century prophet revealed .

Nostrodamus was a sixteenth century apothecary and seer . He didn't make any predictions for 2017. His only dated prediction is this one apparently

> "***L'an mil neuf cent nonante neuf sept mois,***
> ***Du ciel viendra un grand Roi deffrayeur:***
> ***Ressusciter le grand Roi d'Angolmois,***
> ***Avant après Mars regner par bonheur.***"
>
> **Translation:**
> **"The year 1999, seventh months,**
> **from the sky will come the great King of Terror,**
> **bringing back to life the great King of the Angolmois.**
> **Before and after, Mars reigns by good fortune."**

There apparently Angolmois is a region in the south of France but has been interpreted as an approximate anagram of Mongolois - the Mongols .

This is one guess at what it meant from before 1999

> "The gist therefore seems to be that in July 1999 a possibly appeasing Pope will in some way stir up a leader with Mongol (or possibly Lombard) connections (some French observers prefer to take the word 'Angolmois' literally, and refer it to the former François I, who was duke of Angoulême), with the result that a previously raging war will accidentally flare up again."

and so on to extract meaning from them.

For instance, one of the most recent:

- Prediction that the Oronoids of 2016 was going to be the end of the world (this is a regular meteor shower we get every year) 'Nostradumus doomsday comet' set to bombard Earth with meteors TONIGHT

These most recent predictions are particularly absurd, published in the Sun (UK Red top tabloid - noted for the way they publish sensationalist stories often with no fact checking and often out and out hoaxes): 'Nostradumus doomsday comet' set to bombard Earth with meteors TONIGHT

Remember that Nostradamus was a sixteeenth century Frenchman.

The predictions come from Axel Noudelman who calls himself a "Digital marketing executive" he has managed to market these predictions anyway: Top 10 Nostradamus Predictions for 2017

Here are three that seem particularly absurd:

3. Commercial Space Travel

Commercial space travel is the real deal, but beyond orbital flights things will become exponentially more difficult. The moon, asteroids and mining missions are unlikely targets within the next two years.

> The first person to hypothesize that meteorites came from space was Ernst Chladni in the late eighteenth century . Before then, the consensus of everyone, including scientists, was that the rocks known as meteorites came from volcanoes or were stones lifted up in strong winds. So he can't have predicted anything about asteroids as he didn't know that such things were possible

4. Wars over Global Warming

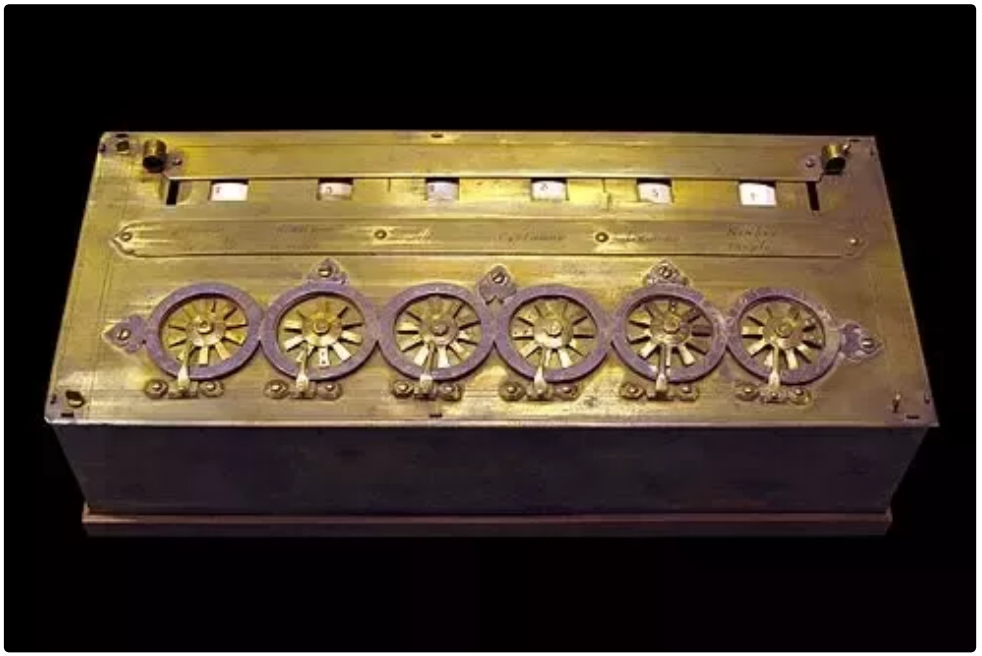
Nostradamus believed the possibilities of 'Hot Wars' could be escalated in 2017 due to global warming and diminishing resources. As far as the warfare itself goes, the greatest threat in the future will be terrorists and bio-attacks.

> He wouldn't have known anything about global warming or bio-attacks

6. Cloud Computing Will Disappear

Nostradamus also predicted that the term 'cloud' will disappear from the phrase 'cloud computing' by 2017 because most of the computers will simply be assumed to be done in the cloud.

the seventeenth century, a century after Nostradamus.



Pascal's calculator

The idea of programming didn’t develop until the nineteenth century with Ada Lovelace

Ada Lovelace who worked out programs for Babbages mechanical calculator and so is often regarded as the world's first programmer

So I think you can see that the idea that Nostradamus predicted anything about computing or cloud computing is rather absurd.

For more about this, see Debunked: Nostrodamus predicted the end of the world on [insert date here]

Fake doomsday and disaster news from 2015 through to 2017

Robert Walker

I thought I'd look back on the last year and a half since I started debunking these stories with the blood moon hoax on September 24th, 2015 . If you don't follow these things or have people asking you to debunk the stories, you probably have no idea how many times doomsday is predicted, in the news or in youtube videos. I thought, if I do a chronological list, then it might help those who get scared to perhaps step back and LOL at it. And also for journalists, and those who write blogs etc, to see the scale of the problem of fake doomsday news.

For the asteroid stories, it's normally an asteroid that flies past at many times the distance to the Moon and with nothing remarkable about them, often larger asteroids fly past closer even on the same day or the same week. I've no idea why sometimes one of them hits the headlines and the journalists say it is about to hit Earth. This list will have more stories per month later on as it goes through to 2016, that's not because more were published, but rather because by the end of 2016 I have quite a few people who share the stories via pm, on my Science20 blog, and in the facebook groups. At present it is running at several stories most weeks, so I think the

shorter one.

Do also see my Plea to Journalists: Please Debunk Rather than Dramatize "Doomsday" Stories - The Vulnerable Get Suicidal

[IN PROGRESS]

DOOMSDAY NEWS DEBUNKING STORIES

Washington Post, published January 5, Will the mysterious shadow planet Nibiru obliterate Earth in October? No.

Independent, published 24 August 2016 'Blood moon' and 'rogue planet Nibiru' are on their way to kill us all, conspiracy theorists wrongly claim

FAKE DOOMSDAY AND DISASTER NEWS IN 2015

May 15th - asteroid 1999 FNS3

Express (UK tabloid): "Asteroid a MILE wide to hurtle past Earth in 48 HOURS - as experts warn of MASS EXTINCTION" - A COLOSSAL asteroid hurtling through space is feared to be one of the biggest EVER to threaten a collision with Earth."

Debunked: Just Another Day In Space

May 28th - massive earthquake in California prophesied

Washington post: Despite this man's predictions, no one's expecting a massive California quake today

Debunked: Just Another Day In Space

Inquistr Asteroid 2012 TT5 Is The 'Killer Rock' — Asteroid Will Impact Earth On September 24, Doom-Mongers Say

Debunked: The Truth About the "September 2015 Asteroid Impact" and Just Another Day In Space

September 28th, blood moon - means fourth of a series of lunar eclipses

How world ends: not specified, just a sign that it ends

Express: End of the world? What Blood Moon prophets NOW say will happen after 'apocalyptic' eclipse

Mirror: The world could be ending on September 28. And here's why...

Debunked: Just Another Day In Space

December asteroid (not specified which asteroid, no date)

Debunked: The Truth About the "September 2015 Asteroid Impact" (mentioned as another asteroid)

FAKE DOOMSDAY AND DISASTER NEWS IN 2016

Published in October, no date given asteroid 2000 ET70

Though no date is given, some of the stories suggested it was about to hit us in the near future.

Example, International Business Times: Researchers say giant asteroid to hit earth, but Nasa says not in the immediate future

Debunked: This asteroid was nowhere near Earth in 2010 and due to radar measurements in 2012, has one of the best known orbits of the asteroids, is not going to hit Earth for centuries into the future, Debunking: All going to die as a result of impact of Asteroid 2009ES or 2000 ET70 or [insert name of asteroid here]

September (story ran for most of the month), no exact date given, asteroid 2009ES

Nature World News: End of The World? Massive Killer Asteroid Heading Towards Earth, Experts Warn on Nature World News

Metro magazine: Warning of doomsday asteroid 'with the power of three billion nuclear bombs

Debunked: It actually did a flyby on 5th September but because one Chinese report about it gave no date they ran the story for weeks afterwards. Debunking: All going to die as a result of impact of Asteroid 2009ES or 2000 ET70 or [insert name of asteroid here]

October 21st claim: Scientists miscalculated orbit of comet Halley and it is due to hit Earth on this date

How world ends: tsunami, earthquakes,

Daily Mail online ran a news story with the title"'Doomsday' comet set to shower Earth tonight" (now changed to Orionid meteor shower set to dazzle Earth up to 20 flashes per hour)

Debunked: Debunking: Halley's comet is going to hit Earth this week

See also my List of newspapers that run fake or unchecked Doomsday "news"

Both are work in progress.

Debunked: Nibiru will hit or fly past Earth in September (or October or November) 2017 - David Meade's "prophecy"

Robert Walker

Summary - another doomsday story about Nibiru which shares many of the misconceptions floating around on the internet. He just repeats them and makes no attempt to check if they are true or not.

He thinks that the gravitational pull of the Earth is so great that an approaching entire solar system will be diverted into a loop around Earth, and he thinks that a planet approaching from the South would only be visible in a plane flying high above South America (for some reason) and lots of other nonsense things.

There is nothing here to be scared about.

DETAILS

This is yet another Nibiru story, publicized in

- Metro magazine Earth 'will be destroyed in October 2017' - and the rich are building bunkers

- Daily Mail Conspiracy theorist claims planet Nibiru will end the world in October
- iTech Post Blood Moon Prophecy: Asteroid Impact, Collision With Planet Nibiru To Happen In 2017
- Inquisitr Planet X/Nibiru: Researcher Claims New 'Overwhelming Evidence' Doomsday Will Occur In 2017 — 'Authorities Keeping Public In The Dark'

The journalists who write these stories clearly don't run them past anyone with any credentials in astronomy or science. Cross them off your list of news sites that provide reliable information on astronomy.

It publicizes the book by David Meade: Planet X - The 2017 Arrival I'll just cover the part of his book that you can read with "look inside" as there is plenty there to debunk already, and the summary of his ideas in Sun magazine

For instance he says that the Vatican operates the Large Binocular Telescope

For debunking see Debunked: The Vatican built a huge telescope, one of the largest in the world, to track Nibiru

He says that Melissa Huffman's video is of planet X.

For debunking see Debunked: Melissa Huffman did a video of Planet X

He says that the IRAS satellite spotted Nibiru. See Debunked: The IRAS infrared satellite found Nibiru in 1983

He says that Nibiru is only visible in the infrared spectrum. Brown dwarfs are easy to detect in infrared light, even if they are far from any star because they are warm (at least compared to interstellar space) - but that doesn't make them invisible in ordinary light. That's like saying that you are invisible because you are warm.

The darkest brown dwarf would be as bright as Betelgeuse at the distance of Jupiter and easily visible in telescopes way beyond Neptune. For details see Debunked: Nibiru is invisible because it is a brown dwarf or made of dark matter

He says it can't be seen because it is approaching from the south.

> "There is no hiding this incoming solar system any longer! It consists of a dark star, smaller than our sun, which hosts seven orbiting bodies, some smaller than our moon and a couple of them larger than our Earth. The dark star is called "Nemesis" or "Planet X." The blue planet is called the "Blue Kachina." The planet that is larger than Earth that is orbiting the dark star is called "Nibiru." It is also known as "The Planet of the Crossing" and the "Destroyer." There is another object – some refer to it as "Helion."

> you're flying at a high altitude over South America with an excellent camera. As it intertwines and approaches it, will come from our south and loop all the way to the extreme north, then come back south again as it exits our orbital path."

Overwhelming evidence for the 2017 arrival of Planet X / Nibiru

If a comet say, was approaching us from the south, would mean it is easy to see throughout the southern hemisphere. Indeed if it comes from due south, then you can see it all night every night all year round from the southern hemisphere, so long as there is a clear night. So approaching from south or north makes an object easier to see, not harder to see, so long as you live in the appropriate hemisphere and of course there are large numbers of people in the southern hemisphere :)..

This shows an almost total ignorance of astronomy and suggests he has never paid much attention to the real night sky. There isn't any hidden direction that things can come to us from, not the size of a planet never mind a solar system. The Cheliyabinsk meteorite could appear with no warning but that's because it is only 20 meters in diameter.

He also seems to think that Earth's gravitational pull is so great that a star with several planets orbiting it approaching Earth would be diverted into a loop — the loop around Earth.

His September alignment is a very rough one, that all the planets are so close to the sun that they are impossible or hard to see. Not one that astronomers would pay much attention to. Not even as a "pretty sight" as you can't see it. And they aren't particularly close. The alignment of the Sun with the Moon is of significance because they cause tides and we get our largest tides at new and full Moon every two weeks, the "spring tides". None of the planets are close enough to cause tides and their alignments are of no significance. For details see: Debunked - an alignment of the visible planets behind the sun on 23rd September 2017 is a sign of the end of

And for the reasons why a planet in such an orbit is impossible anyway see my Debunked: Nibiru will hit Earth on [Insert Date here]

You can be sure if anyone says something like this in all seriousness that they don't have a decent background in science. They don't understand concepts that you would cover already in any decent high school physics / science course. These are ideas that can be explained even to a very young child with an interest in science indeed,

See also my Nibiru Bullshit Tester - How to check if they know anything about astronomy

Debunked: Melissa Huffman did a video of Planet X

Robert Walker

This is the video, by Melissa Huffman'

Whatever it is, it can't be a planet or moon. This shows the Moon during a partial eclipse.

Photo by TyphoonChaser

As you can see, the Moon itself is completely invisible. It's not lit up by the sun because the sun is behind it. You can see how this works for yourself, if you just use a table lamp, hold an orange between it and yourself, and you will see the dark side of the orange.

The Moon is behind the clouds and behind the scattered blue of the sky. And is completely black against a black sky, if you were to look at it, say, from space. So you don't expect to see it.

If someone thinks they can photograph a planet next to the sun, fully illuminated, and so close

interested, or somehow missed out on it. Unless you are a journalist - if you are about to publish a news story about Nibiru - do run it past an astronomer first!

EXPLANATION OF MELISSA HUFFMAN'S VIDEO BY MICK WEST

Mick West has looked at her video carefully, recently, and come up with an explanation.

First, he stabilized her video, as you can see here:

If you look at it carefully you can see that her sun sized "planet" is actually moving slightly relative to the clouds. Not nearly as much as the obvious lens flare, but in the same direction. So it can't be a sun mirage but has to be something much closer to the camera.

This doesn't mean her video is a hoax - it could easily be that it's a result of misthreading a filter on the camera. Or a result of taking the video through a window.

If you engage the threads incorrectly, at an angle, then the glass of the filter will be at an angle to the lens, and then you'll get this effect. He shows that with a cross thread on his own camera which causes a similar double sun, complete with photo of the effect.

> Cross threaded filter - easy to do when you put it on in a hurry - causes a similar double sun effect. Photo by Mick West

Just as with her video, when you zoom in on the image, it expands. And is sharp and clear like hers.

It is easy to check something like this if it happens to you. You can do the same test as for lens

same place in the sky if you keep the camera reasonably vertical all the time.

He goes into details here: Explained: Two "Suns" Sanibel Causeway, Florida [Offset Lens Reflection]

364 views · Posted Jan 2

Upvotes 0 Comment

Debunked: The Vatican built a huge telescope, one of the largest in the world, to track Nibiru

Robert Walker

Example David Meade: Planet X - The 2017 Arrival - many others also say this. He says that the Vatican operates the Large Binocular Telescope

This is indeed one of the world's larger optical telescopes - and it had the acronym "LUCIFER " at one point. It's also on the same mountain as the Vatican's small telescope.

This is the Vatican's telescope

Vatican's telescope on Mount Graham - see Vatican Advanced Technology Telescope

The Vatican has a long term interest in astronomy - they have operated telescopes for centuries.

317 views · Posted Jan 2

Upvotes 0 Comment

of the argument about Nibiru - or indeed anything

Robert Walker

With most of these Nibiru conspiracy sites especially, you don't need much knowledge at all to check for yourself that they don't check their sources. You can use my Nibiru Bullshit Tester - How to check if they know anything about astronomy.

BULLSHITTERS ARGUING THAT YOU HAVE TO LISTEN TO THEM

Within a sentence or two they say some BS thing such as that IRAS discovered Nibiru in 1983, or that Robert Harrington found Nibiru and was murdered to keep it secret etc. Things that you can disprove for yourself easily by just following up the cites in the debunking articles.

But then they will say, or you might feel that

> "You have to listen to us otherwise you are biased and only hearing one side of the story"

That is one of the main ways they get you caught up with it, they spout BS and then say you have to listen to their BS because if not you are only hearing one side of the case. They may also say that everyone else is lying or mistaken. So then you go on to read page after page, or watch video after video in an effort to hear both sides of the story.

YOU DON'T HAVE TO LISTEN TO BOTH SIDES OF A BS ARGUMENT

But it's not true. You don't have to listen to both sides of every argument. There is no obligation to do that at all. Especially, you are not biased if you click away from bullshit. Once you realize

There are many reputable lists of fake sites now. Wikipedia has a page which compiles several of them together into a single list. List of fake news websites - Wikipedia . But of course that is not a comprehensive list of all the BS on the web, and we will never have such a comprehensive list. It deals with some (not all) of the worst ones but it is good to develop a bit of a BS detector yourself.

As for learning how to do it yourself, well you can just take a look at some of the stories on a website. If the stories in the topic area that interests you are bullshit, well it's perfectly rational and reasonable to cross them off your list of news sites that you visit, on that topic, or indeed, at all. There are far too many news sites anyway to visit them all, even all the top ones, every day. There's no obligation at all to visit any of the fake or bullshit news sites or blogs, not just every day, but ever.

I'd say actually that if the website has a story about Nibiru, or Hercobulus or Wormwood, and it is not a debunking site, that's plenty of reason to write it off ones list of reliable sources for information on astronomy. That's not bias, that's just getting rid of BS.

In that sense some of the more sensationalist papers, would count as sources of fake astronomical news I'd say though not detected by the Chrome BS detector plugin and not in any of the list of BS websites. They can't be automatically detected as BS because they are reasonably accurate in other news areas. They would never publish a fake obituary, for instance, but what they write on astronomy is full of BS.

Generally, yes, it is good to hear both sides. But people who write BS take advantage of that as a way to get you to listen to them. And you don't have to read Bullshit.

NO NEED TO READ BOTH SIDES OF EVERY CONSPIRACY THEORY EVEN IF THEY CHECK THEIR SOURCES

conspiracy theory you come across.

Most of us probably have friends who tell us we must read both sides of the case for various conspiracy theories. For me, usually it's about the 9/11 disaster conspiracy theory. But that is just not something I find remotely plausible. My only reason for reading it is to help friends who I feel have been taken in by things that are false. I have done a bit of that indeed, for that reason, and found as I expected that the sources are not reliable. E.g. things like saying they found evidence of sophisticated explosive when it is just nanoparticles such as you'd expect to find in such a high temperature fire anyway that happen also to be found in some explosives, that sort of thing.

So I have read a bit of that particular conspiracy theory - but my only reason for doing it was to humour them really and try to help them. I didn't need to do it for myself. I read more than enough for my own purposes on that one, long ago.

If you do that - it doesn't mean that you have decided to become a missionary and to go around converting everyone else to your views on the implausibility of the 9/11 conspiracies or whatever it is. You are not claiming to be an authority on it. You have just read enough on it for your own purposes. You don't have the need or wish or have any personal interest to read any more on the topic for yourself. And all that's okay.

If you carefully read both sides of every conspiracy theory that's out there you can easily spend most of your life just reading conspiracy theories. There are better ways to spend ones life. So, I think even for the ones that seem well sourced, it's entirely reasonable to say

> "I have read enough for myself, and just don't find it credible. I have better things to do with my life, so I'm not going to bother to follow up that one".

Or even

CHOOSING HOW TO SPEND YOUR LIFE

Even if it is some major political decision, say, about whether the UK should stay in the European Union in the recent BREXIT vote here in the UK, or who you think should be president in the US. Well you don't have to take part in politics. Democracy depends on enough people voting to be a reasonable gauge of public opinion. But it is not an obligation on anyone to vote on every or any issue.

Voting is voluntary, which means, that if you don't want to vote or even think about a political issue, or read anything on it, or listen to anyone's views or evidence or ideas about it. It's entirely up to you. If anyone says you have to think about it, or have to investigate it, or have to vote, they are way out of line there.

Again it is a matter of choosing how to spend your time. If you think your time is better spent on music, on poetry, on gardening, on having a good time with your friends, well that is what makes us civilized, that people are able to do such things.

NO NEED TO READ NEWS AT ALL

Many people who are scared of Nibiru tell me that they feel they have to compulsively keep reading the stories. But from their descriptions, it doesn't sound much like OCD. At least I don't think so, though perhaps some of the techniques of OCD might help, if you have got the ideas obsessively spinning around in your mind and cant' stop, especially Cognitive behavioural therapy (CBT) .

It's said to be very effective for many people. It involves first noticing your obsessive behaviour and then working with it Cognitive Behaviour Therapy . Those techniques might be worth a try if you feel you've got in a rut and can't get out of it. And some people who contact me

obligation to society, almost, to read these stories and watch the videos. But you don't have to do this at all. You are getting scared. Even once you know they are nonsense they still scare you.

So, take a break from it. Stop reading altogether, or at least have a holiday from it. The world will continue spinning as you do so. Indeed, not just fake news, hoaxes, conspiracy theories, and bullshit stories. You don't need to read news at all. Why not have an occasional holiday from reading news altogether?

INDEED - YOU HAVE A RIGHT TO GO ON RETREAT FOR YEARS ON END IF YOU WANT TO - NOT SPEAK TO ANYONE, NOT READ ANYTHING

You don't have to read news at all. Indeed some people go into retreat for years on end. I'm a Buddhist so I'll share a story from a Buddhist tradition, but it's the same in many other traditions, e.g. Christian retreats, that you can go on retreats, shorter ones or longer retreats. Her is a video about it, titled: Cave In The Snow - Tenzin Palmo

Or if you prefer to read it as a story - a shorter account of her life here on the Guardian: 'I spent 12 years in a cave'

They feel they are doing something worthwhile. They won't vote, won't listen to political speeches. When they come out of their retreat, there may be a new president or political leader of their party they didn't vote for, there may be many things that they could have voted for, surveys they could have responded to, emails they could have written in favour of various good causes. There might be famous actors they have never heard of, athletes who have won gold medals, sports teams that have won championships, even wars and other world events they have never heard of. There are many things they could have done with their life instead of going on retreat, including helping others in many different physical ways.

But if you go on retreat - you aren't saying that you think everyone should go on retreat. You are not undermining democracy. You are not undermining the Olympics or the work of the many people who help others in so many ways, doctors, nurses, charity workers.

You just think that you yourself, at that particular stage of your life, should go on retreat. There can be many reasons for that. Again that's one of the things that makes us civilized that some people can go on retreat. The people who support them as they do that feel that the retreat is a worthwhile thing to do.

When meditators go on retreat, then generally they are doing it not just for themselves, but for everyone. They are creating space for not just themselves but for everyone, by being in retreat. It's almost like they are creating an opening out to oxygen and fresh air for all beings by finding space to go on retreat.

Of course it is not for everyone to go on retreat. But perhaps that can give you inspiration to realize that yes, it is okay to have a holiday from reading the news every day, if it makes you scared and anxious, and to find ways to create a bit of space in your life.

that meditators get when they go on a long retreat. You don't need to go on retreat for years. You can find that space and openness in just a moment, whatever it is that brings that space into your life.

277 views · 1 upvote · Posted Dec 30, 2016

Upvotes 1 Comment

Debunked: ALMA's Gna (if it exists) is Nibiru

Robert Walker

Summary: if this object exists, it's a long way away from the Sun, and does not threaten Earth in any way. It may be a dwarf planet, one of many, at around the same distance from the Sun as Uranus. But it is too soon to know what it is, if it exists at all.

IN DETAIL

The original paper says if the object they found exists, that it is either a small dwarf planet at the distance of Uranus or a larger planet not orbiting our Sun passing by at a distance of a sixteenth of a light year. Either way it is neither anything to do with "Planet 9" nor is it any threat to Earth whatsoever and it is nothing to do with the Nibiru idea as that makes no astronomical sense.

> ALMA-antennas - early photograph after they linked three of them together

First, what the conspiracy theorists say:

And now what the scientists say. This is the original paper. It says

> "Unless there are yet unknown, but significant, issues with ALMA observations, we have detected a previously unknown objects in our solar system.
>
> Based on proper motion analysis we find that, if it is gravitationally bound, Gna is currently located at 12–25 AU distance and has a size of ~220–880 km.
>
> Alternatively it is a much larger, planet-sized, object, gravitationally unbound, and located within ~4000 AU, or beyond (out to ~0.3~pc) if it is strongly variable" [1512.02650] The serendipitous discovery of a possible new solar system object with ALMA

In other words, translating it into more ordinary language, the astronomers say that they are not sure what they found, but it may be either of these two possibilities:

- a small dwarf planet at around the distance of Uranus from the Sun
- A rogue planet not orbiting our sun (that's what "gravitationally unbound means) which is currently passing by our solar system at a huge distance of about a sixteenth of a light year.

Either way it's nothing to do with the "planet 9" hypothesis. Nor is it any threat to Earth. And it is absolutely nothing to do with the BS Nibiru idea of conspiracy theorists.

For reasons why Nibiru is impossible, and why astronomers just LOL at the idea, see

Debunked: Earth is threatened by a flow of interstellar helium 3 and helium 4 around Christmas every year

Robert Walker

Summary: The story is true, to some extent - but it's just helium atoms, like the helium in a child's balloon. It's totally harmless, it's not even ionized and in the tiniest of concentrations of a single atom every few cubic centimeters. If it hits the Earth's atmosphere, so what? Our atmosphere gets hit by helium from the Sun all the time and has much more helium in it already..

IN DETAIL

This is based on a confused understanding of some genuine scientific research and is being shared on social media at the moment over Christmas. It is not of the slightest risk to Earth. Example video:

And another video on the same theme

So first, some background, The Earth’s upper atmosphere is bombarded by charged ions which

even get through the atmosphere. It's equivalent to ten meters thickness of water above us protecting us from ionizing radiation. Cosmic radiation does get through, but our bodies are adapted to this and we can withstand small amounts of radiation like this no problem at all.

But this isn't a story about solar storms. It's something much gentler than that.

The solar wind consists mainly of hydrogen nuclei, but some other atoms including helium, and also trace amounts of other elements (C, N, O, Ne, Mg, Si, S, and Fe). See this summary from Stanford university Stanford SOLAR Center -- Ask A Solar Physicist FAQs

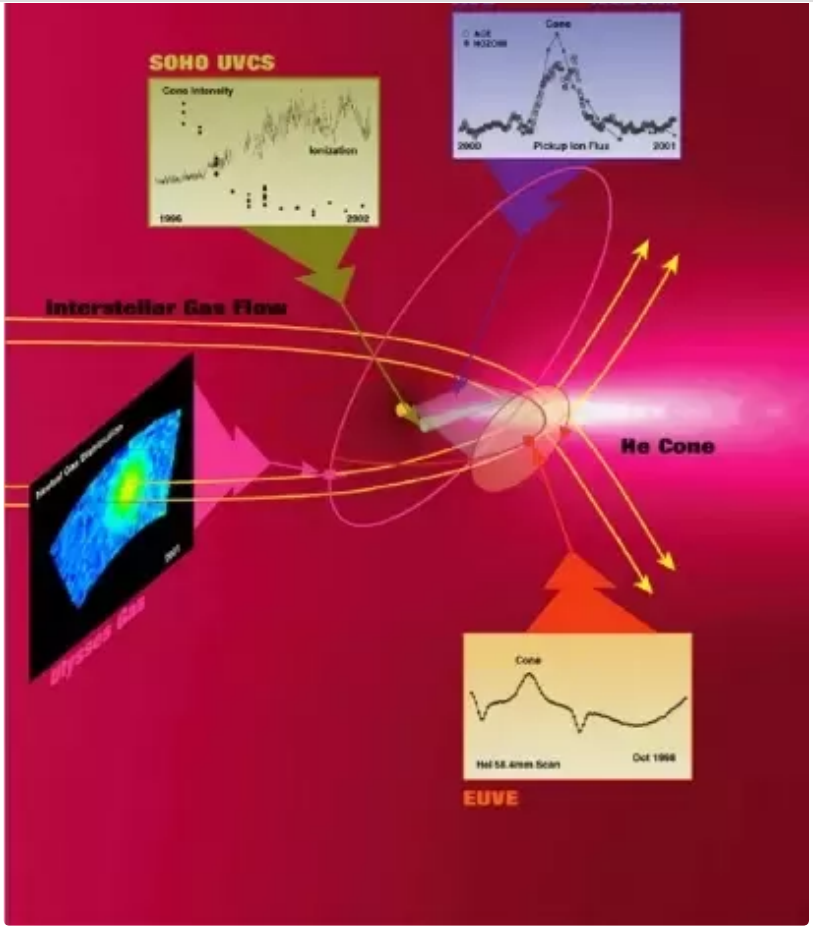
So most of the material that reaches us comes from the Sun. Interstellar space consists of a very very thin vacuum and amongst that, tiny trace amounts of atoms. Most of them are charged, and the Sun's solar wind keeps charged interstellar particles (plasma component) away from us,

But in addition to that, there is a flow of neutral helium gas and this penetrates into the heliosphere because it isn't charged: The Flow of Interstellar Helium in the Solar System

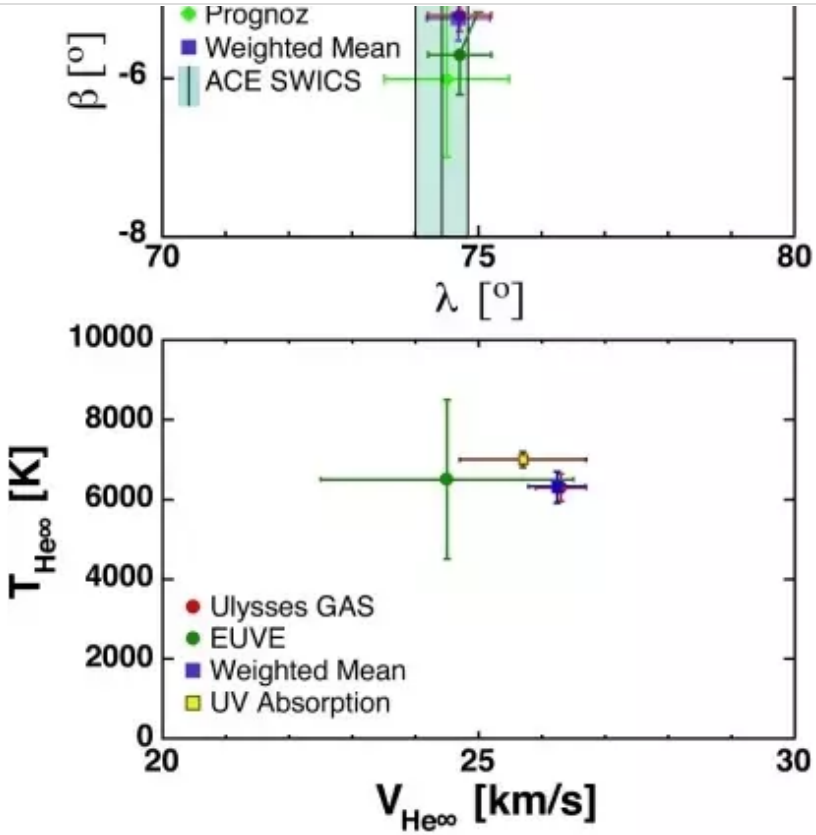
As this neutral helium flows past the sun, the atoms close to the sun get torn apart by solar radiation and become charged, which causes a small cavity.

But most of the gas stays neutral. It is focused by the Sun's gravity to provide a flow of neutral gas.

So, this is a false colour diagram. It's not a photograph. The He cone here is still what we'd call a hard vacuum



This shows its composition:



The bottom figure shows that it is quite hot, around 6000 degrees C, and fast flowing, 25 kilometers per second.

It's density is about one atom every 67 cubic centimeters (0.015±0.03 atoms per cubic centimeter).

By comparison Earth's atmosphere has 2.5*10^25 molecules per cubic meter (figure from here), or 2.5 * 10^19 molecules per cubic centimeter, or around 25,000,000,000,000,000 atoms per cubic centimeter.

even ionized so won't cause solar storms or magnetic effects. Our Earth's atmosphere is 0.0005222% Helium already anyway. (Helium concentration in the earth's lower atmosphere) Adding a few atoms of helium to our atmosphere will have no effect at all.

Then for some reason, the videos confuse this with the idea of a galactic alignment. We have an approximate alignment of the Sun with the center of the milky way on the 19th which by coincidence is close to the winter solstice on the 21st.

Back in 2012 an urban myth was propogated that Earth is in danger every winter solstice, due to this alignment.

Christmas originally started as a pagan festival to celebrate the winter solstice but the date drifted. That is enough for them to say that we are endangered by the center of the galaxy on the 25th.

There is not even the remotest connection of this very rough alignment of the galactic center with the Sun on the 19th December and these results about neutral flow of helium. And the galactic center is so far away that we see it as it was in the middle of the last ice age. It can't threaten us in any way at all, we are just too far away.

They just took bits out of one story, the galactic alignment which was already fiction, changed the date from the 19th to the 21st and then to the 25th - and then took bits out of the other about wisp of helium which doesn't mention a date that Earth passes through the helium, and smashed them together to make a new story and claimed that this means that this wisp of helium endangers Earth. Balderdash and nonsense.

I debunk the galactic alignment urban myth here: Debunked: We are doomed because Earth will pass through the galactic plane during the winter solstice on December 21st - and the Sun will be aligned with the galactic center on that date

as they usually won't as after all they are about different things, and then claim that this mish mash of ideas means that Earth is threatened. They can show you diagrams and quotes and so on because they made it like that as a patchwork of bits and pieces from different stories, but they don't belong together and the whole thing is just nonsense for anyone who knows anything about science or astronomy.

EXAMPLE FROM SPORT TO TRY TO GIVE AN IDEA OF WHAT A JUMBLE THESE STORIES ARE TO A READER WHO HAS A BACKGROUND IN BASIC ASTRONOMY

It's as if someone claimed to be expert on sport and wrote:

> "Tom Usain Bolt from Jamaica won a gold medal and a world record time in the Olympics in London for synchronized diving in 2008"

If I had to debunk that story, then I'd explain:

Tom Daley from the UK, got a bronze medal in the individual performance in Olympics 2012 and another bronze in the synchronized swimming in 2016.

Usain Bolt from Jamaica won a gold medal for 100 and 200 meters in 2008 as well as in 2012 and 2016,

The 2008 Olympics was in Bejing, not London (the London one was in 2012 and the 2016 one was in Rio).

Synchronized diving is not a racing event so the idea of a world record time for synchronized diving doesn't make sense.

Just about every detail in that sentence is wrong, yet break it down to individual words and the

So, it's a jumble together of things that are connected to the Olympics, so in that sense there is a kind of a truth in it - but the sentence as a whole is completely false and says many false things.

That's how they work. And when I debunk these stories I say things that for people who know a bit about astronomy are as obvious as the things I just said about the Olympics are for people who know a little bit about sport.

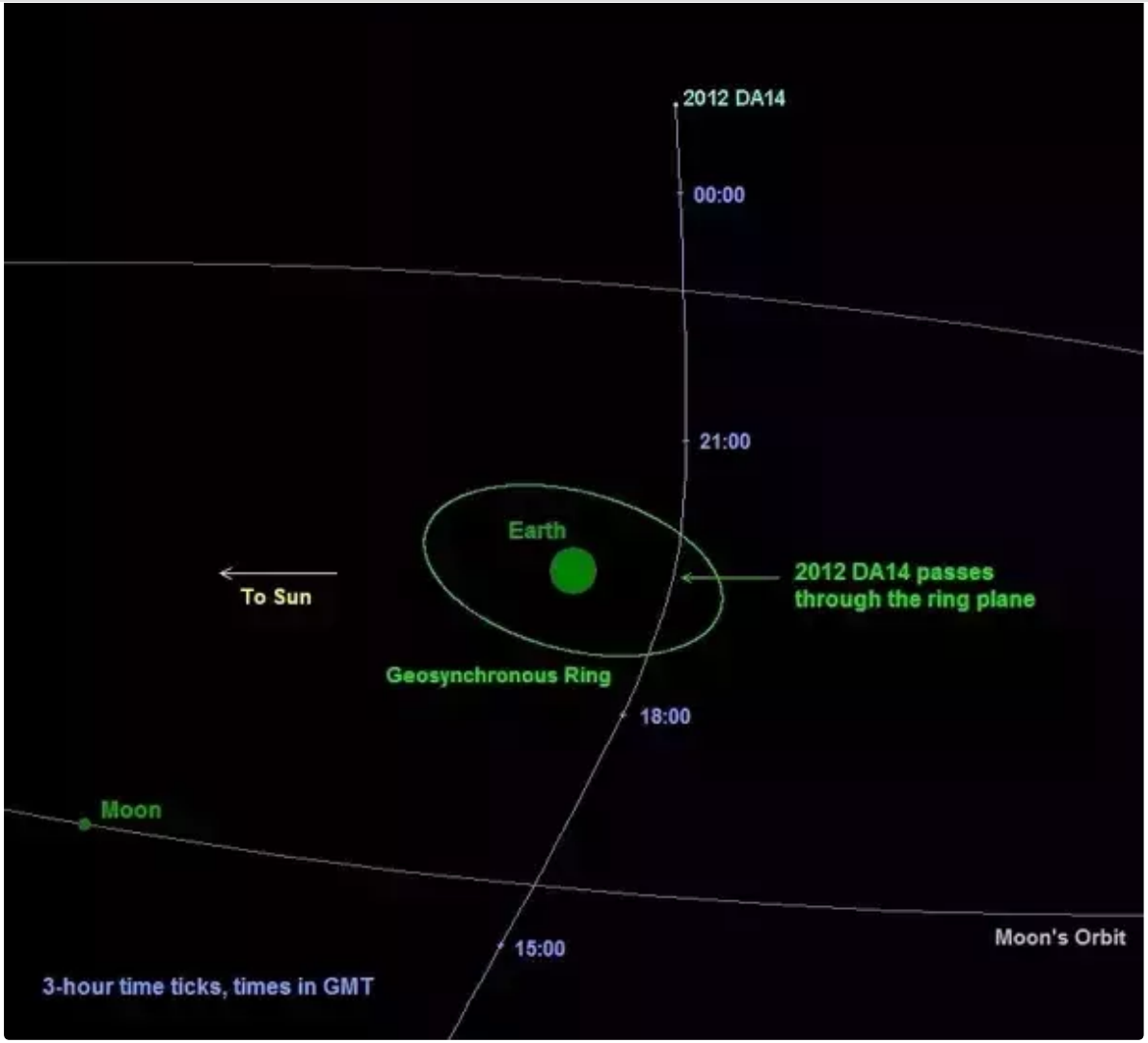
So now imagine you debunk a sports story like that and then - well some of the people you talk to say "Oh right, I get it now" but every now and again you come across someone who says"Nonsense, you are lying and are paid by the government to cover up the truth which is that Tom Usain Bolt from Jamaica won a gold medal and a world record time in the Olympics in London for synchronized diving in 2008"

That's what it is like debunking many of these doomsday stories, such as the ones about Nibiru. That's also why the stories are never covered in astronomy articles or journals, just as the sentence about sport which I used as an example would never be covered in a sports magazine, even if for some reason it went viral and was shared by thousands of people.

Debunked: Asteroid 2012 DA to hit Earth in

This is an example story you might find from 2012 which could get you concerned about this object: Huge asteroid could hit Earth in 2020 . It did briefly have a 0.033% risk of hitting Earth some time from 2026 onwards (never had a chance of hitting in 2020). See the old archived version of its table here: 2012 DA14 Impact Risk (old version of the page) That made it 99.967% certain it would miss. It was viewed only for a short time on February 23, 2012, not long enough to figure out an exact orbit before it was lost from view.

It was predicted to do a flyby of Earth in 2013 at a distance of 27,743 km so lower than the geostationary orbit in 2013, the closest any asteroid has been to date, Only a little over four Earth radii away.



That flyby gave scientists the opportunity to make very precise measurements of its orbit which showed it will not hit Earth through to 2200 (usual time period over which they do these predictions).

367943 Duende (2012 DA) - Wikipedia

So, 2012 DA is noted for the closest flyby of an asteroid that missed Earth to date. It is also notable because by a remarkable coincidence (but coincidences do happen of course), it did its flyby on the 15 February 2013 just 16 hours after the Chelyabinsk meteorite impact. It was only a little larger, 30 meters in diameter compared to the 20 meters of Chelyabinsk, yet as you see, we knew about it already nearly a year before the impact.

If the Chelyabinsk asteroid had been a bit larger we'd have spotted it months earlier as for 2012 DA. and if it had approached in any direction except from the sun we'd have spotted it days or maybe a week or so before.

Anyway 2012 DA is of absolutely no danger to Earth in 2020 or at any other time through to 2200. It is a small asteroid and the chances are high that if it eventually does hit Earth that it will land in the sea or a desert area and be harmless anyway. It would also be easy to deflect if we ever need to do it especially with the decades of warning we would have. No need to have any concerns about this one.

See also

- How did we miss the Chelyabinsk asteroid?
- Why Resilient Humans Would Survive Giant Asteroid Impact - Even With Over 90% Of Species Extinct

You may also be interested in my: "**DOOMSDAY DEBUNKED" book**

- Doomsday Debunked - kindle edition

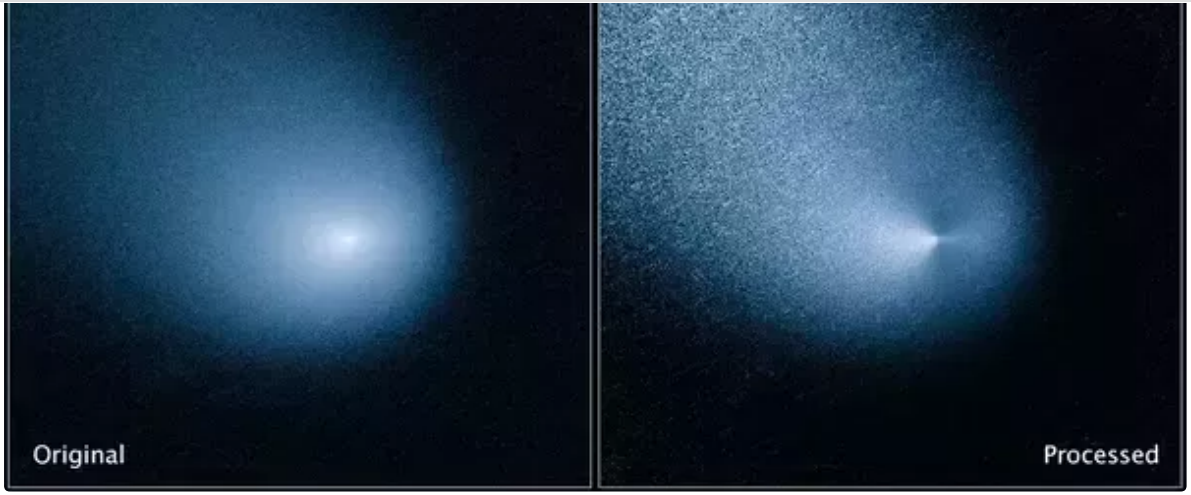
List of the articles in my Debunking Doomsday blog to date

Debunked: NASA researcher says humans face possible future extinction from asteroid impacts - 96% of species extinct equates to 0% chance of humans extinct

Robert Walker

This is something you often read, even sometimes from scientists. This is an example article I'm commenting on. Earth woefully unprepared for surprise comet or asteroid, Nasa scientist warns . It quotes Dr Joseph Nuth who warns:

> "But on the other hand they are the extinction-level events, things like dinosaur killers, they're 50 to 60 million years apart, essentially. You could say, of course, we're due, but it's a random course at that point."



> Photograph of comet Siding Spring by Hubble - right hand image is more processed. This comet did a close flyby of Mars and at one point was predicted to have a tiny chance of hitting Mars. In the end it missed Mars by more than a quarter of the distance from Earth to the Moon

If you read the rest of the article, it's a worthy goal, to prepare us for asteroid impacts of all sizes from the small Chelyabinsk one up to really large 10 km ones.

There are a number of things potentially confusing about this statement if you read it as a non scientist.

- Although there is a risk of "mass extinction" if a large asteroid hit Earth, **"mass extinction" there doesn't mean "extinction of humans"**, we would certainly survive as a species after an asteroid impact. He doesn't actually say "human extinction" in that quote.
- **We are not "due" an extinction at all. Probability doesn't work like that.**

Asteroids that could do this and none will hit Earth over that timescale.

That leaves comets, and the chance of that is less than 1 in 100 million per century, as a very rough guess (since 99% of the impacts are thought to be from asteroids, and only 1 in 155 of the known NEOs are comets). So you can be something like 99.999999% certain this won't happen. The chance is so tiny it's negligible for all practical purposes. This risk has been pretty much retired due to the intensive asteroid surveys of the last couple of decades.

- **But the chance of a smaller asteroid impact is still high enough to make it worth working on it**, especially since this is the one natural hazard we can not only predict to the minute, decades in advance, with enough information but also prevent also, given a long enough timeline.
- **If we detect an asteroid headed our way, it's most likely that it is small** and that we have have decades to deflect it.

So, in more detail:

NOT "DUE" A MASS EXTINCTION

So - that is a scientist speaking as a scientist. But of course the internet picks it up as "we are due" and omits the qualification "but it's a random course at that point". He was actually saying "we are not due" if you read what he said in context.

To say that we are "due" a mass extinction is a bit like saying that after you throw nine heads, you are due to throw a tail. Not true. The chance that the next coin toss is a tail is 50/50 for a fair coin no matter how many heads you throw.

event of a size that happens every 100 million years. If you look at the diagram the big five are irregularly spaced.

Some scientists have tried to discern a periodicity in the extinctions of 27 million years. If they are right then we are due the next extinction about 15 million years from now. But that is very controversial and if true, it wouldn't cover all mass extinctions.

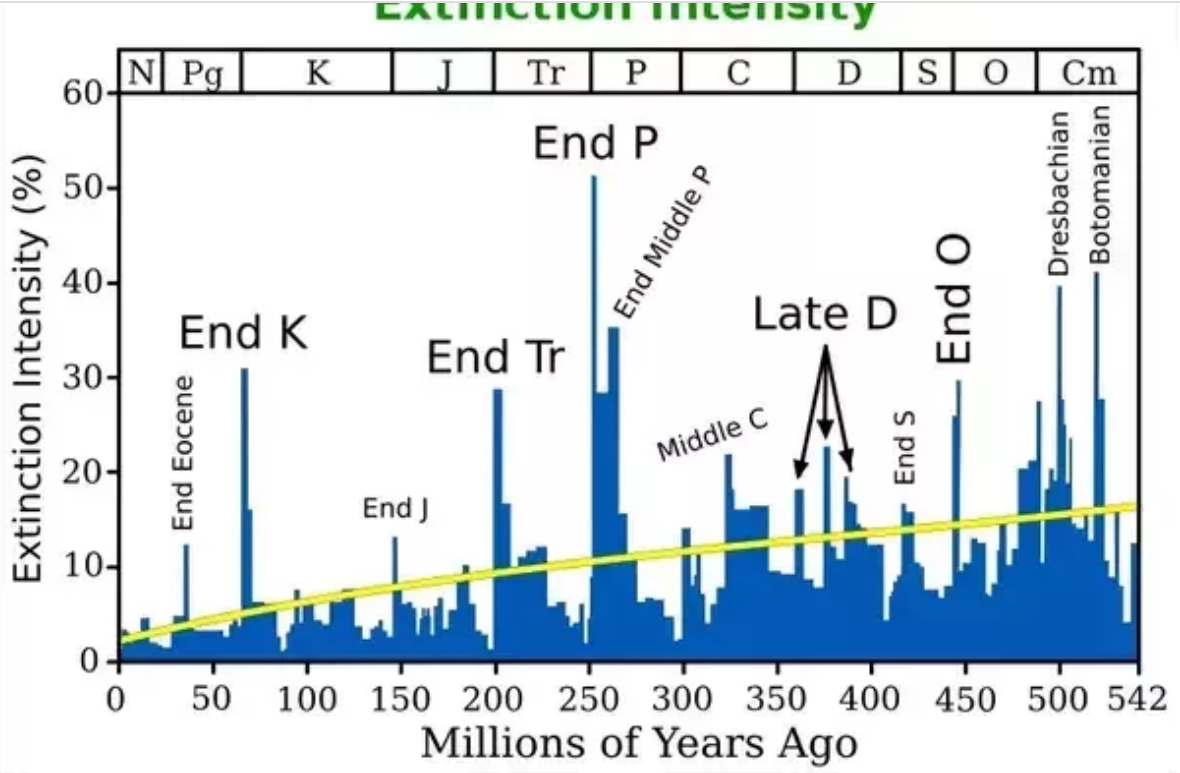
That's why he said

> *"but it's a random course at that point."*

We could get a mass extinction in the near future. But not likely in the next century.

70% OF SPECIES EXTINCT - 0% RISK FOR HUMANS EXTINCT

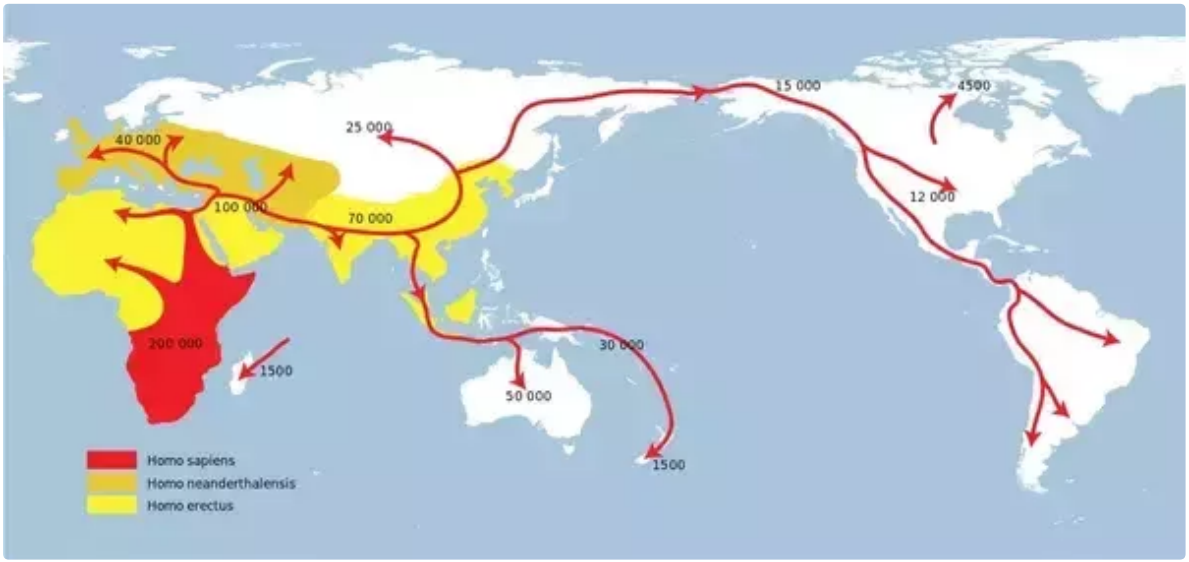
If you look at some of the past extinction events, you might think that humans could go extinct very easily. The worst of all of those was the Permian–Triassic extinction event during which 96% of marine species and 70% of land species went extinct according to one estimate.



> This graph shows some of the major extinctions - note that some of the extinctions spread over several tens of millions of years. This probably doesn't mean that the extinction took tens of millions of years as this is a graph of the fossil species and due to the Signor–Lipps effect - that a species may seem to go extinct in the fossil record before it actually is extinct because typically you get only a few specimens scattered over time so can easily miss the exact moment of extinction. The extinction that ends the Permian era is thought to have lead to extinction of 96% of all marine species. and 70% of land species.

So based on those figures you might well think that there is a 70% chance that humans would go extinct as a result of whatever causes those extinctions.

gamma ray burst or a large asteroid impact, but humans are great survivors. We were at risk in the past before we developed tools and clothing. But with clothes, tools, boats, etc, we are an extremely adaptable species, able to survive anywhere from the Kalahari desert to the Arctic, with only stone age technology. We had already colonized most of the world by the end of the neolithic period.



> Overview of Pre-modern human migration - there is debate and controversy about the details, but generally agreed that humans were already present world-wide by the end of the neolithic period (which ends around 2000 BC), or shortly after.

So, as long as we retain at least stone age technology, there isn't much that could make us extinct. Even if we have to go back to beachcombing and surviving on shellfish, which was a staple of early human diet in cold places such as Canada and Scotland where I live, one way or another some humans would survive.

Conchero al sur de Puerto Desead - a shell midden in Argentina. For long periods of time ancient humans survived on shellfish, for so long that they built up these huge shell middens in many parts of the world. See Shell Midden

We can eat shellfish, insects, fish, nuts, fruit, roots, cereals, birds, animals. So long as any of those survive the extinction event, anywhere in the world and so long as humans retain at least stone age level of understanding of technology - ability to make clothes and simple tools and to make boats to cross rivers and seas to find new sources of food - then there would be many survivors and we would not go extinct, even if more than 90% of species went extinct.

Without any technology, turtles, crocodiles, alligators, small mammals, flying dinosaurs (the birds), dawn redwood trees, pine trees, many lifeforms survived the dinosaur extinction impact. And humans with the barest minimum of our technology are able to survive anywhere

River turtle, *Boremys basking on a* Triceratops dinosaur skull, Credit: Brian T. Roach, Yale Peabody Museum

How Tough Turtles Survived Dino-Killing Meteor

It did become extinct eventually, but not through asteroid impacts. Probably because it was unable to retract its neck and succumbed to predators.

Humans, a single species, survive in just about all the major terrestrial ecosystems on Earth.

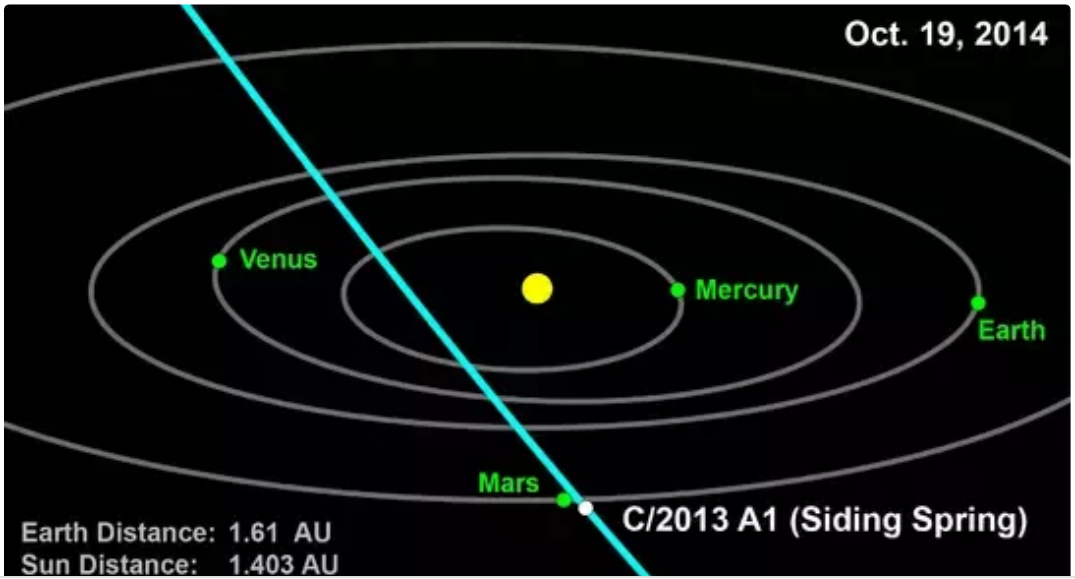
Homo Sapiens is listed in the IUCN Red list of threatened species as one of the species of least

RISKS FROM AN ASTEROID

We have already found all the 10 km asteroids that do regular flybys of Earth. We have found 90% of the 1 km asteroids. This makes it very unlikely that we are hit by either a 1 km or 10 km object in the next century.

We could be hit by a comet. But they are rare. He mentions the comet Siding Spring which did a flyby of Mars. But it's important to note that it actually missed Mars by and it was only It was only 400 - 700 meters in diameter, so of a size that would have only local effects if it hit Earth, probably not quite large enough for a tsunami depending on whether it hit into deep or shallow seas and how much it breaks up in the atmosphere - and was discovered 22 months before the flyby, so more than a year and a half. A larger comet would be discovered years before the flyby.

This shows the trajectory of Siding Spring:



It's orbit was uncertain when first discovered, as is usual, giving a tiny chance of hitting Mars. But was eventually shown to miss. So if a comet happened to be in a similar orbit but targeting Earth instead of Mars that would be what we'd expect, that it would have a tiny chance of hitting Earth but a few months after discovery or maybe sooner, we'd know for sure that it would miss. It would be exceedingly unlikely for such a comet to hit.

Probably only one impact in 100 is by comets. So it doesn't really make a lot of sense to focus on defense from comets first. We can deal with 99% of the threat by looking at Near Earth Asteroids and they are also easiest to deflect, as if we can find them decades in advance, just the gentlest of nudges will deflect them away, just microns per second of delta v.

Now I totally agree that we need to put more work into searching for asteroids and detecting them and preparing to deflect them. And eventually also good to speed up detection of comets too, which will happen anyway as a side effect of the asteroids search.

As for having a rocket on standby to deflect a comet, well I think you need to bear in mind that though it could be needed right away, it might also not be used for the several thousand years. So - is that our priority? And as for deflecting asteroids - there are so many different ways to do it and what we use would depend on the exact scenario. For instance for some asteroids, it might be sufficient to "paint" the asteroid white with a white dust. So we would need a spacecraft able to dust it uniformly with white dust to deflect it using the effect. Here is a short video of professor Dave Hyland talking about the idea:

And article
Asteroids No Match For Paint Gun, Says Prof | Texas A&M Today
(or How to Deflect Killer Asteroids With Spray Paint | WIRED)

Its due to the Yarkovsky effect . When the sun heats up a rotating object, then the rotation carries it around some distance before the thermal photons are emitted as heat. The amount of the effect depends on how rapidly the object rotates, but also on how light or dark it is Since most asteroids are very dark, the obvious way to change the amount of this effect is to paint it white. So long as you discover it long in advance, then this may be enough to shift its orbit to miss the Earth (orbital predictions have to take account of the Yarkovsky effect).

I think that with unlimited funding we would devise half a dozen ways of deflecting asteroids, test them, and have them in a “ready to launch” state ready to deflect any conceivable asteroid, even if they may have to wait ten thousand years before we need some of the solutions.

However in the situation as it is now, with limited funding then I think it makes much more sense to focus our efforts on detection.

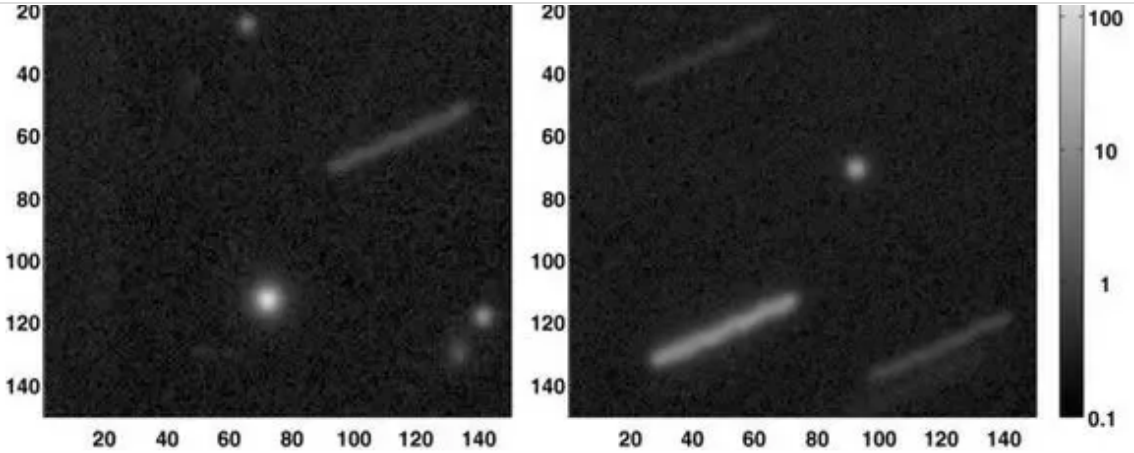
HOW TO FIND HAZARDOUS ASTEROIDS SWIFTLY

There are new developments in asteroid tracking which may help here. Especially, use of

The idea is that instead of doing a 30 second exposure, you do many shorter 2 second exposures. With conventional CCD's that adds to the read noise so you get more errors but there are new CCD's developed for medical imaging that permit fast accurate reading, called Scientific CMOS detectors. The Andor Zyla is an example here.

> Andor Zyla 5.5 | sCMOS Camera medical imaging camera capable of fast read out with low read error

You can then use this to simulate tracking the asteroid with the camera, which makes the asteroid far brighter in the images.



> This image shows a the result of stacking many photographs of asteroid 2009BL with camera set to follow the stars on the left - notice how the asteroid is shown as a streak, and rather faint. On the right, the same photos are stacked to follow the asteroid which then shows as a much brighter spot, and the stars are streaked and fainter.
>
> Image from: DETECTION OF A FAINT FAST-MOVING NEAR-EARTH ASTEROID USING THE SYNTHETIC TRACKING TECHNIQUE
>
> When the asteroid is small and traveling faster across the field of view, the trail can be so faint it can't be distinguished from background noise when the camera follows the stars. If you know its velocity you can make it much brighter by following the asteroid. But what can you do if you haven't detected it yet and don't know which way it is moving? The idea of synthetic tracking is that you take lots of short exposure photos and just try stacking them in many different ways until you find the right velocity and an asteroid pops into vie win the photo. This is time consuming but modern graphics cards permit fast parallel processing which makes synthetic tracking feasible.

They found that fewer than eight of these cubesats, fitted with 15 centimeter synthetic tracking telescopes could find more than 70% of NEO's larger than 45 meters in diameter in less than six years. The total cost would be $50 million so a tenth of the cost of Sentinel.

With larger 30 cm telescopes they could find 95% of the NEOs in the same time period. For details see their 2016 Annual Progress Report

These are the asteroids that are most hazardous for us. And $50 million is not a lot. Any developed country could find that out of loose change from its defense budget and it would retire most of the risk from the larger asteroids within six years.

It would still leave the risk of comets, but those are not the priority because they are so rare. If we had loads of funding it would make sense to fund a rocket ready to launch if necessary, even if it is quite possible it won't be used for 1000 years. That's the ideal situation, to do both. But with limited funding, detection is surely the priority.

See also my Giant Asteroid Headed Your Way? - How We Can Detect And Deflect Them

I've now written up this article, somewhat expanded, as: Why Resilient Humans Would Survive Giant Asteroid Impact - Even With Over 90% Of Species Extinct

331 views · Posted Dec 15, 2016

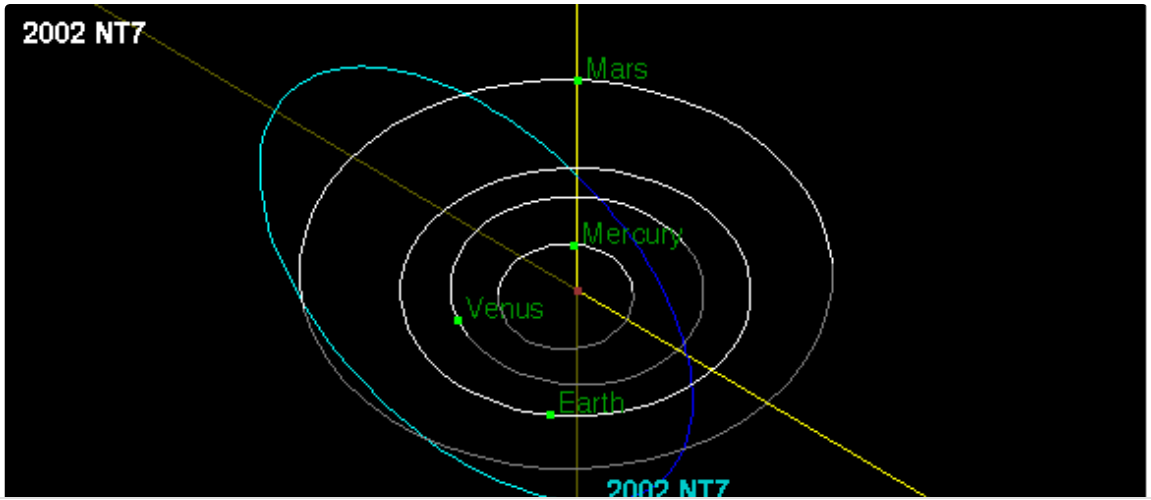
Upvotes 0 Comment

2019

Robert Walker

2002 NT7 originally had a risk of 1 in 250,000 of hitting Earth in 2019 on 1st February 2002. This meant it was almost certain to miss, 99.9996% certain to miss. So it was no surprise that a little while later when they refined the orbit, that they found it would miss in 2019. There was a chance of it hitting in 2060 for a while but that was ruled out too. All that happened rapidly in 2002. It was removed from the risk table on the 1st August 2002 .

This does not mean that there was any cover up going on as the conspriacy sites claim. It is just the normal thing. If an asteroid has a very low chance of hitting Earth, like 1 in 250,000 then you expect that it will be proven to miss as you refine the observations. That's what is going to happen in 99.9996% of the cases of an orbit like that. It was notable as the first orbit to reach a positive rating in the Palermo scale. More about it here: 2002 NT7 .



> certain it would miss. As they say in the initial announcement "By far the most likely scenario is that, with additional data, the possibility of an Earth impact will be eliminated.", and indeed further calculations showed it would miss. There was still a small chance of it hitting in 2060 until 1st August 2002 when they proved that it was no hazard to Earth at all in the near future through to 2200. You can see a list of all its flybys predicted through to 2200 here .

To check any of these stories just go to the Current Impacts Risk Table and if the first entry is white or blue then that means there is no risk and the story is either a hoax or a misunderstanding because the table is sorted with the entry of most risk at the top. If the first entry is yellow, orange or red, just head over to any major astronomy news site to find out more, as it is sure to be top news there. Red is the only level that means they are sure it will impact. So far none has ever gone higher than yellow. We have had a couple of tiny asteroids that were predicted to impact a short while before they actually hit but they were so small they would have been classified as blue in that table, too small to be a significant hazard. One landed in the middle of a desert in North Africa and one in the sea to the west of India.

354 views · 1 upvote · Posted Dec 14, 2016

Upvotes 1 Comment

Debunked: Earth faces a century of 400 giant impacts starting in 2017

This is another doomsday fake story, from the UK newspaper, the Express. There is no truth in it at all. It's easy to check a story like this in detail. Just go to the Current Impact Risks table. If the top entry is blue or white, as is the usual situation, then there are no current predicted future impacts on Earth, so the story is false. If the top entry is yellow, orange or red, well go to any reputable site for astronomical news and it will be a top story so then you can read all about it there. Only red means a predicted impact, the other colours mean there is a chance of an impact.

Details

This is actually a story from 2014 but is naturally gaining more attention as 2017 approaches: SHOCK ASTEROID WARNING: Planet earth faces 100 YEARS of killer strikes starting in 2017 I have just replied in a comment there, here is my comment:

We have already found all the Near Earth Asteroids of 10 km or larger. We have found 90% of the ones of 1 km or larger and are finding them at one per month. Will be nearly finished that survey by the late 2020s. There is a tiny chance of a larger comet from the outer solar system, from the Kuiper belt or the more distant Oort cloud. This belt is not newly discovered but has been known about since the 1980s (building on earlier hypotheses).

Here is a video about the observation of the first verified Kuiper belt object - this which must be what they mean by a "second asteroid belt" though actually it is made up mainly of comets, not asteroids.

But for a 10 km diameter comet to approach Earth from so far afield would be extremely unlikely. We get a 10 km impact every 100 million years on average, and last one was 66 million years ago. Only one impact in a hundred is probably from comets so that makes the chance of such an impact this century, now all the NEAs are found and not headed our way, a negligible 1 in 100 million - that's the risk of it happening at all any time this century. We'd also see such a comet years before it got here in the very remote chance of it happening.

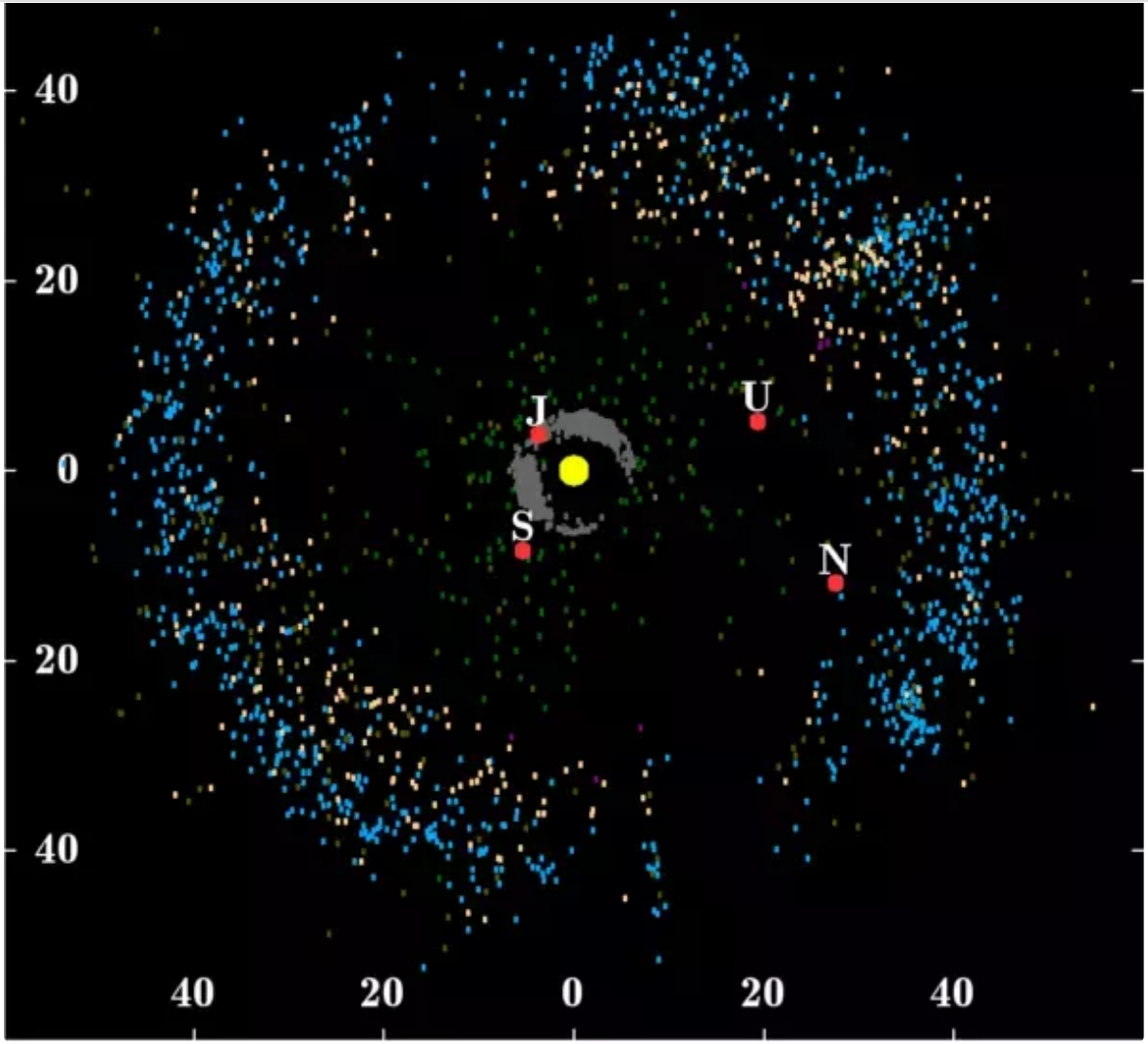
As for a 100 km diameter comet, forget it. The entire inner solar system from Mars inwards hasn't been hit by such a comet for well over 3 billion years from the cratering record of Mercury the Moon, Mars ,and what we have of the records of Earth and Venus. The leading explanation for this is that Jupiter protects us against the largest comets by breaking them up, or they just hit Jupiter, or ejected from solar system or hit the Sun. It seems to do a very effective job of this. Not so effective for smaller ones though it does take many "hits for the team" of smaller asteroids too, as the largest target there is in the solar system.

And there certainly has been no announcement predicting 400 impacts in the next century. I can't imagine where that comes from. It is easy to check these stories. Just go to the JPL Sentry Risk Table and you see the current impact risks ordered with the most risky at top. If the topmost entry on that page is white or blue, as it is now, and as is usually the case, then there

MORE ABOUT THE KUIPER BELT

This is a very distant belt of objects. First it was just a theory to explain the distribution of comets, but eventually we started to find objects in them. Now we know a lot of Kuiper Belt objects and we know for sure it exists. Very remote though, well beyond Neptune. However it is a source for comets that sometimes come into the inner solar system. We now know of many objects in it

Here is a very short animation of the newly found objects in the Kuiper belt



This plot shows the Kuiper belt objects in blue. The giant gas giants are shown in red.

The N stands for Neptune. Mars, Earth and Venus are all closer to the sun than Jupiter

Objects can hit Earth from the distant Kuiper belt. But the chance of this happening is almost vanishingly small for a 10 km comet - and no chance at all for a 100 km comet as that hasn't happened in over three billion years. Also we'd see them coming years in advance.

Debunked: Pastor Paul Bagley predicts that Magnetar SGR 1806-20 is going to send a gamma ray blast on 26th December which will be devastating to Earth

Robert Walker

This is all over the youtube Nibiru conspiracy videos right now. They are saying that Pastor Paul Begley has predicted that we are going to be hit by a gamma ray burst on 26th December from SGR 1806-20.

Summary - it is no risk at all to us. This is over 50,000 light years away. We have had a burst before and it did cause glitches with some satellites. But Earth's atmosphere, equivalent to ten

that date. But if we do, it's not going to harm us.

> Artist's impression of the last gamma ray burst from the magnetar SGR 1806-20 which hit the Earth's upper atmosphere on December 27 2004

So,

- Yes, there is a magnetar SGR 1806-20 .
- Yes, it is a soft gamma ray repeater.

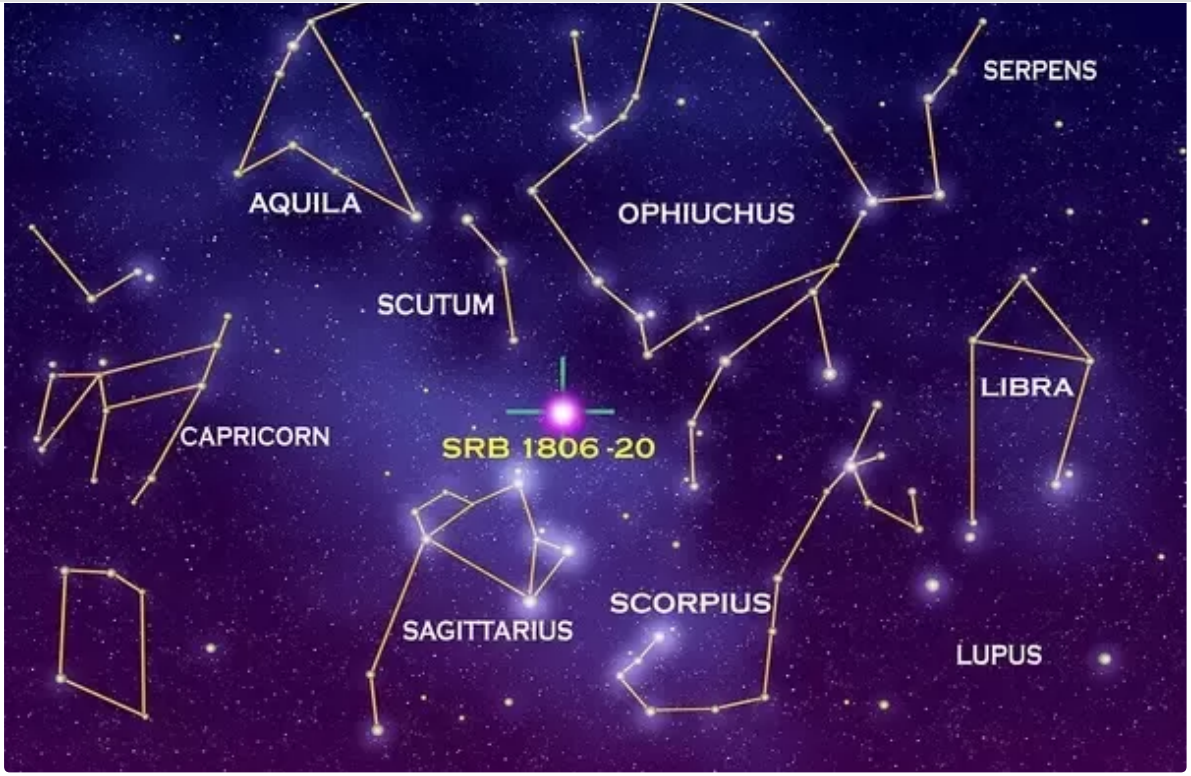
huge coincidence.

In detail

This star is a Magnetar which means a spinning neutron star with a very strong magnetic field. And yes, there was a star quake on December 27th 2004 on this star. The star quake released more energy in a tenth of a second than the sun would in 100,000 years.

It was far too far away to have serious effects on Earth. About 50,000 light years away. The blast was however strong enough to ionize the Earth's upper atmosphere and it disabled several satellites temporarily.

This is an artist's impression of the event:



NASA release about the event in 2004: Cosmic Explosion Among the Brightest in Recorded History

Luckily the nearest magnetars are thousands of light years away from us. For more about this type of star, see What are Magnetars?

This is his video

IMPOSSIBILITY OF PREDICTION

Some celestial things can be repeated - pulsars can be predicted, because they repeat on a

He links his prediction with the completely different idea of the effects of solar storms on Earth's magnetic field.

These can blind satellites temporarily, e.g. it could knock out GPS - not damage them permanently, just force them to reboot through temporary glitches in memory. So that's similar to the effects of a soft gamma ray burst. But solar storms can also cause major fluctuations in the Earth's magnetic field which causes large currents to flow in long distance cables, such as power transmission cables. This won't damage your computer or phone - the cables are far too short to be affected by the weak changes in the magnetic field. But the currents induced in cables tens and hundreds of kilometers long could damage the large millions of dollars high voltage transformers. If that happened, it could mean that power is lost for weeks, or months as they are expensive and hard to replace.

The executive order that President Obama signed was to harden transmission lines and to protect them and the satellites against solar storms. This was another story that was way over exaggerated in the media: Debunking: Solar Storms to end all life on Earth

SUMMARY

We can't predict the next gamma ray burst from a magnetar. Such a burst is of no possible danger to us on Earth, and nor is any other magnetar because they are just too far away. It could blind some satellites temporarily.

We can predict solar storms but only a short while in advance, not days in advance. The effects of a solar storm on satellites are similar. They can also cause power failures, and Obama signed an executive order to find ways to help harden our power cables against them.

A nearby magnetar could damage our ozone layer like a supernova explosion, but there aren't any close enough to do that. The nearest ones are thousands of light years away.

Debunked: A gamma ray burst could make humans extinct

Robert Walker

Summary, most likely no effect. At most, could have an effect on our ozone layer. The danger is from UV light. Our atmosphere shields us from the ionizing radiation, same mass as ten meters thickness of water.

Even if the burst originates as close as a few thousand light years away in our own galaxy, the only effects would be increased UV from an ozone hole, and though it might cause some extinctions (jury is out on that), it would be easy for humans to protect against. As for WR104, at one point they thought there was a chance that it was pointed at us. New data suggests that it is tilted away from us at an angle of 30° - 40° (possibly as much as 45°) which would mean it would miss.

IN DETAIL

First gamma ray bursts are rare. They come in two forms, the long bursts and the short bursts. Long bursts come from supernovae, but only 1% of them cause these bursts, so they are very rare. They are associated with the very most brightest of supernovae (hyperonva). Short bursts may come from colliding neutron stars. For details see The biggest explosions in the

Gamma Ray Bursts (GRBs)

We wouldn't be able to predict a gamma ray burst, as the gamma rays arrive at the speed of light from thousands of light years away, but the chance of it happening is tiny.

If it did happen, then it is a short lived event, from seconds up to hours at most (but the very long events are very unusual).

Gamma ray bursts are very focused, with beams in opposite directions, and would need to be pointed directly at us to cause harm - which is very unlikely. We have seen many gamma ray bursts in distant galaxies, but most are over a billion light years away, which shows how rare they are.

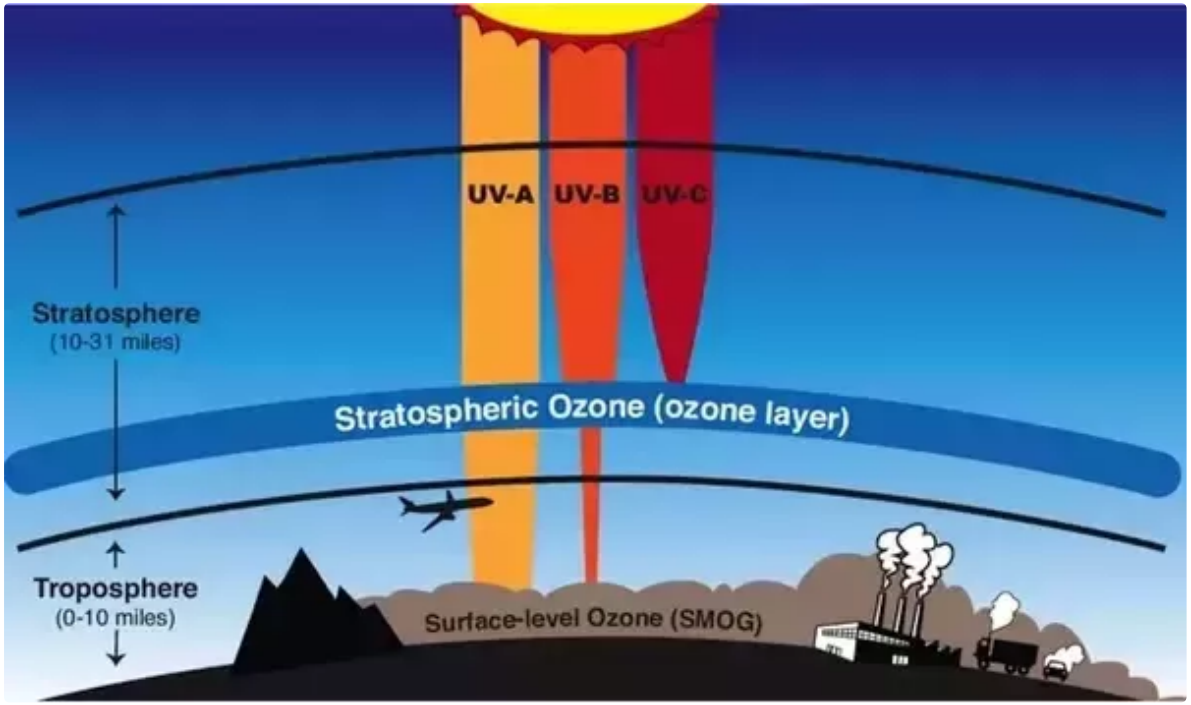
> years away and most of the ones spotted are over a billion light years away.Gamma ray bursts and pencil-thin jets

NASA gave a research announcement for a paper on How Deadly Would a Nearby Gamma Ray Burst Be? Paper itself is here . Some online sites reported this paper incorrectly as saying that the researchers had shown they were more hazardous than expected. Actually their conclusion was exactly the opposit eof that - they proved that they are less hazardous than expected.

> side of Earth comes into view.

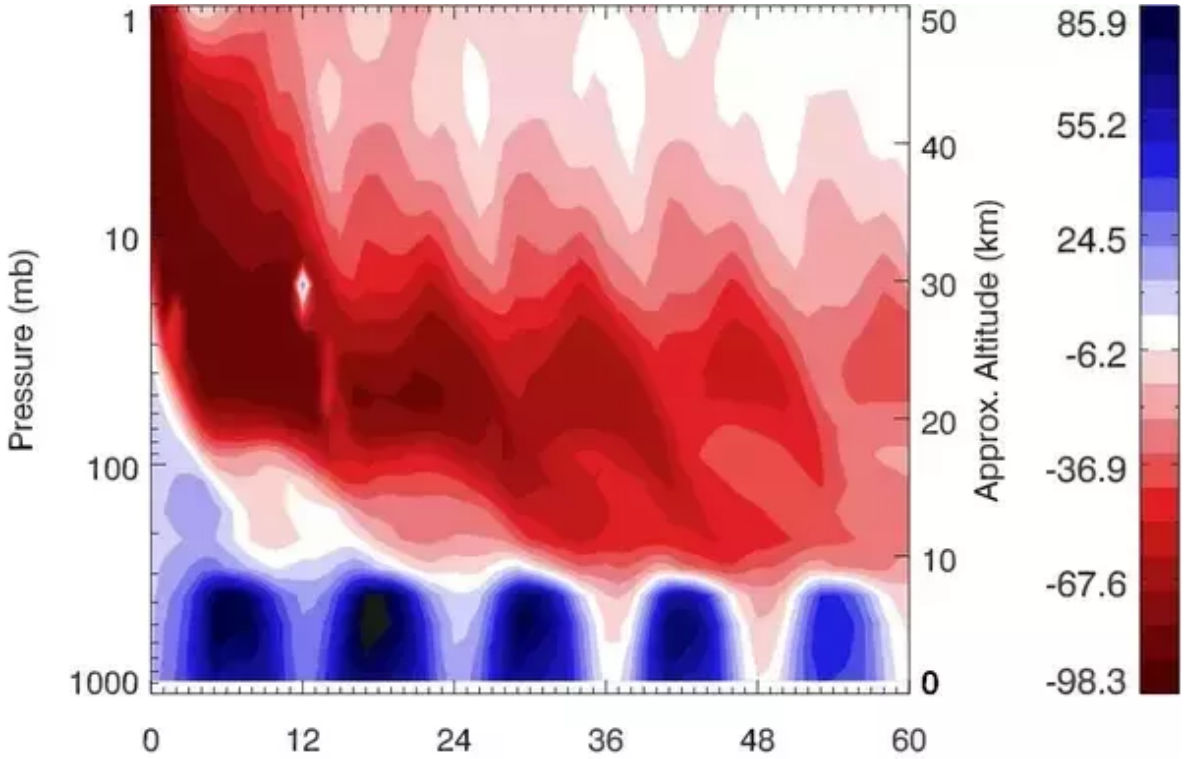
Our atmosphere shields us from the worst effects. It's equivalent to ten meters of water shielding us from cosmic radiation and gamma rays. So you don't need to worry about direct effects of all that radiation - it just won't reach us (same is true for a nearby supernova).

Most of the effect would be on the ozone layer creating a hole and leading to increase UV light until the hole heals. This increase in UV can then break up oxygen atoms at ground level and so cause increased ozone levels at ground level - so the effect is less in the upper atmosphere but more at ground level.



> Shows how UV in the upper layer can cause Ozone smog at ground level

increases of ozone in the lower atmosphere.



> The gamma ray burst not only reduces the amount of ozone in the upper atmosphere. It also creates ozone depleting nitrogen oxides. They took the example of a gamma ray burst which hits the south pole most severely, as that has down drafts of air constantly. Those would bring the nitrogen oxides down to the lower atmosphere which is why you see the red regions descending with time. This causes a series of pulses of ozone depletion in the upper atmosphere which then leads to increases of ozone at sea level as the red regions let more UV through to the lower atmosphere. The model assumed a 100kJ/m2 burst from the direction of the South Pole, for a gamma ray burst within a few thousand light years of Earth (that's

temporarily to 10 ppm. To be harmful to animal life it would need to reach 30 ppm. It is also not enough to be harmful to ocean life. Even if all the ozone created at ground level got absorbed in the sea, it would not be enough to be harmful to ocean life. So this disproves the hypothesis that a gamma ray burst could be the cause of the late Ordovician mass-extinction.

This was falsely reported on some news sites as proving that hypothesis that the gamma ray burst caused the late Ordovician mass-extinction. As you can see, that is the exact opposite of what they actually did prove..

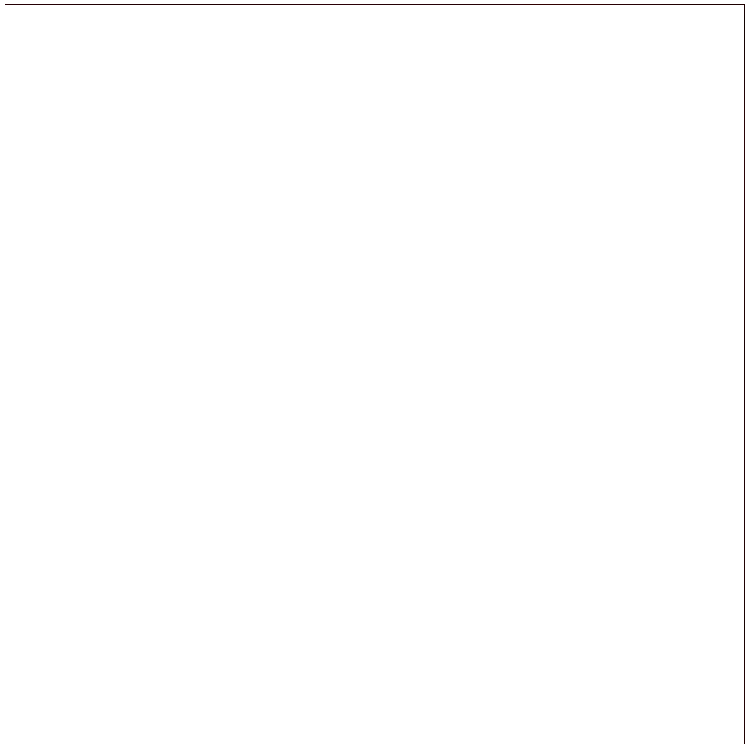
However the paper was just about the effects of ozone. UV light remains a hazard after a gamma ray burst and could cause extinctions of species (not humans).

NEARBY GAMMA RAY BURST CANDIDATE

Are there any nearby stars that could go supernova and send a gamma ray burst towards us? Well there is this one WR104, which is about 7,500 light years from Earth. That makes it close enough for that 100 kJ type blast that could damage our ozone layers and it is a “Wolf Rayat star” which is likely to go supernova in the next few hundred thousand years.

Of all the stars of that type we know, it’s the only one that we seem to see more or less facing along its axis. So it could be pointed straight at us. The dust is lit up in a spiral pattern and it is carried around in synchrony with its companion star with a rotation period of 220 days.

More detailed picture here:



It looks as if it is facing us nearly face on. But spectroscopic observations of the star suggest it's axis is at an angle of 30° - 40° (possibly as much as 45°) which would mean it would miss. See WR 104 Won't Kill Us After All - Universe Today

be on the ozone layer mainly and increasing UV until the ozone layer healed.

MORE ABOUT THE EFFECT OF A NEARBY GAMMA RAY BURST

Our atmosphere would shield us from most of it except some strong UV light due to depletion of the ozone layer. You'd be shielded from that just by standing in a shadow or shading yourself from the light any way you like. So, humans could shield against it easily, just use more sunblock when out of doors until the layer heals. Other creatures of course couldn't use sunblock and might be more affected by it.

The oxides of nitrogen produced in the upper atmosphere are not concentrated enough to have an effect at ground level and this new research shows that ozone levels at ground level are not high enough to be hazardous even for a very close gamma ray burst. So the main effects are from the UV. So if a gamma ray burst causes extinctions then it would be due to the increased levels of UV light at ground level until the ozone hole heals. But this is something humans can protect ourselves against easily. More about its effects in this paper

Researchers reported in 2013 that Earth might have been hit by a Gamma-ray burst in 8th Century (paper: Effects of Gamma Ray Bursts in Earth's Biosphere) but this would seem a bit unlikely considering how rare they are. Later research that same year (2013) found that the increased levels of Carbon 14 and Beryllium 10 in AD 775 could be explained by a solar flare instead, see The AD775 cosmic event revisited: the Sun is to blame

A nearby gamma ray burst, only a few thousand light years away, would hit one hemisphere of Earth with a short but intense blast of bright light, X-rays and gamma rays. But our atmosphere blocks these high energy photons, so much so that astronomers have to use space telescopes above the atmosphere to observe them.

Some of the UV light would get through the atmosphere, a brief fraction of a second burst of

Though the authors don't say, human eyes are easily damaged by UV light so probably anyone looking at the flash at the time would be blinded, get a big dark spot form in their retina of dead cells, just as you would do if you stared at the sun through a telescope. But then - you might blink or shut your eyes automatically when you see such a bright flash of light, and UV light is blocked by the human eyelids, and if you are looking in a different direction or in a shadow from the burst you won't be affected.

The main effects even of a very nearby gamma ray burst are

- Ozone layer hole which would last for many years
- NO_2 gas - brown gas that blocks sunlight so would cool the Earth
- Nitric acid rain from the NO_2

Of those, there isn't enough nitric acid rain to harm organisms and the nitrate might actually act as a fertilizer for some plants.

The cooling is not that strong, reduction in 1% for some years. Unless the climate was close to some "tipping point" it's not likely to have a significant effect.

The main effect is from ozone depletion. This would increase the amount of DNA damage from UV light up to sixteen times for a few months, and up to five to seven times the usual levels for several years.

Humans could easily protect ourselves. It's only light and you could use barrier creams, broad rimmed hats, and clothes covering your skin etc for a few months or years to protect yourself from the UV until it returns to normal levels.

These effects seem too small to do much, so it's a challenge to understand how even a nearby

Threat to Life on Earth

CONSPIRACY THEORY "PREDICTIONS" OF GAMMA RAY BURSTS

Sometimes conspiracy theory videos or websites claim that scientists have predicted a future gamma ray burst for some particular date that will devastate life on Earth. If you see something like this, you can be sure that they are an unreliable source for astronomy.

Most gamma ray bursts observed are over a billion light years away and we haven't yet seen one in our galaxy. These bursts are very rare indeed so it is an unlikely scenario.

Also, they can't be predicted as they are due to distant events which we can't observe in enough detail to predict - and it doesn't seem likely that we can predict supernovae or gamma ray bursts for precise dates in the near future. At the moment astronomers at best could say something like "this star may go supernova some time in the next few million years and if so there is a tiny chance it sends a gamma ray burst along its rotation axis" (most supernovae probably don't produce gamma ray bursts at all).

PROBABILITY OF A GAMMA RAY BURST WITHIN 50 LIGHT YEARS (SAY)

The nearest likely gamma ray burst in the last billion years is 1000 parsecs away. But could we have a really close one, as close as say 50 light years away? Gamma ray bursts happen every 10,000 to a million years in a typical galaxy . The volume of the Milky Way, our galaxy, is roughly 8 trillion cubic light years and it has has 400 billion stars approx. (going by the higher estimates here).

The volume of space within, say, 50 light years is about 500,000 light years. So you'd expect it to contain 500,000 * 400 billion / (8 trillion) or around 25,000 stars.

So anyway let's overestimate throughout for a rough back of the envelope type calculation. So 25,000 stars out of 400 billion, and assume a gamma ray burst every 10,000 years and one in 100 of those (say) is pointed towards us. So that makes it a gamma ray burst pointed towards us and within 50 light years every (400 billion / 25,000) * 10,000 years, or every 160 billion years. Remember that this overestimates the number of stars near to us by an order of magnitude, so it's probably more like once every trillion years or so. So such a nearby gamma ray burst seems very unlikely.

Even at 50 light years, we'd be protected from most of the damaging radiation by the thickness of our atmosphere. It's equivalent in mass to a ten meter depth of water. It would be rather similar to a nearby supernova. It's too unlikely to get much attention in papers on gamma ray bursts, but there are estimates of the effects for a supernova. See What's a safe distance between us and an exploding star? And for more details, the paper here: Could a nearby supernova explosion have caused a mass extinction?

They find that a supernova within 32 light years (ten parsecs) would not heat up Earth significantly, would not be bright enough to harm the ecology through the light alone. In the year after the event so you'd get as much ionizing radiation as you get normally in between a decade and a century. So significant but it doesn't seem to be enough to be devastating.

It seems likely to be similar for gamma ray bursts, so the main effects would be on the ozone layer and on nitric acid rain - but we don't need to look into this any more I think as the event is so very improbable.

WHY DO MANY PEOPLE WHO ANSWER THIS QUESTION SAY THAT WE'D BE TOAST?

I think many of the stories that circulate just ignore the effect of the Earth's atmosphere. It's

So basically they do back of the envelope calculations rather than reading the scientific research papers on the subject. It's understandable that they forget about our atmosphere so easily. It doesn't feel as if it is so heavy. The pressure is equalized inside and out. A bit like the way fish swim in the sea, we breathe the air and have no idea how much weight of air there is above us because we have the same amount of pressure outwards too and are in equilibrium with it.

When you drink water with a straw what actually happens is that you create a reduced pressure at the top of the straw and the weight of the atmosphere pushes the water up the straw into your mouth. If you had a perfect vacuum then you could suck water up 10.3 meters. So the weight of the atmosphere is the same as the weight of 10.3 meters thickness of water. Every square meter of the Earth's surface has 10.3 metric tons of atmosphere above it.

Here is a video showing how you can suck water up to several meters through a straw, six meters, but not quite 10.3 meters - because you can't create a perfect vacuum. Anyway - at the end where it shows them trying to suck the water up to the top of a cliff - the atmosphere above us is equivalent in mass to a layer of water the height of that cliff.

That's what they tend to forget.

So they are right, there's no warning, but you aren't toast. Indeed you'd not notice the event itself at all except as a very bright flash - good idea to close your eyes if that happens because the UV light could make you blind.

The effects of a nearby gamma ray burst or supernova, even if it is as close as just a few light years away would be just on the upper atmosphere on the ozone layer leading to more UV radiation - an ozone hole - and possibly nitric acid rain. The ionizing radiation effects are not significant.

SUMMARY

Perhaps Gamma ray bursts could have caused some mass extinctions in the past - but so far we don't have anything that is confirmed to have been caused by a gamma ray burst. It is a minority view hypothesis for the Ordovician–Silurian extinction events - if so this study suggests that they couldn't have caused this extinction through ozone smog at ground level. That leaves the UV light but it's hard to see that causing the extinctions to such an extent either. Paper about biological effects of gamma ray bursts here

You don't need to worry that a gamma ray burst could make humans extinct. Though it could be a nuisance for us. Thankfully they are very very rare. Like supernovae, they can't be predicted because they happen as a result of very distant astronomical events that we are nowhere near being able to observe with enough precision to predict such a thing.

We can identify stars that are going to go supernova in the next few million years, but that's the most we can do by way of prediction. Of those only 1% would produce gamma ray bursts and of

- Gamma ray burst
- Effects of Gamma Ray Bursts in Earth's Biosphere
- Gamma-Ray Bursts as a Threat to Life on Earth

This originated in my answer to What would happen if a strong gamma ray burst were to hit the Earth? Any sort of technology that would withstand its effects? Would the burst affect the entire planet, or is there a chance parts of the planet would be affected to a lesser degree?

379 views · 4 upvotes · Posted Dec 12, 2016

Upvotes 4 Comment

Debunked: "Doomsday" clock, Brexit "Doomsday" and use of "Doomsday" as hyperbole

Robert Walker

Summary: It's hyperbole . Humans use hyperbole all the time. Exaggerated metaphors for the purpose of evoking strong impressions and strong feelings. It's not a literal "Doomsday".

Details

- Brexit: The doomsday scenario has come true
- 3 Brexit Doomsday Scenarios
- Brexit Doomsday? Britain's Many Surprises
- George Osborne just unveiled a Brexit doomsday scenario for Britain's economy and personal finances

They are not saying that the world is about to end. This is use of the word “Doomsday” as hyperbole. It’s like when you say “I am so hungry I could eat a horse”. It doesn’t mean that you could literally eat an entire horse.

> It's an example of hyperbole, an image that is exaggerated for effect.

It's the same for the Doomsday Clock. This is a clock which measures how close we are to some global disaster such as climate change or global nuclear war. It is not a literal time period. At present it is at three minutes to midnight. The last time it was at that point was in 1984.

Timeline for the Doomsday Clock

A group of scientists come together to decide where to put it. It's just a number and not a literal time period. This is the announcement for 2016

great deal of hyperbole there. E.g. talking about the risk of a Russian attack turning the US states into nuclear ash. That's not literally true.. An all out nuclear war would lead to devastation of many US cities but many people would survive, just as many did with Hiroshima. The radiation levels would also soon return to close to normal as for Hiroshima except for a few hot spots. Similarly when they talk about "blowing up the world" again that is hyperbole and not meant to be taken literally.

Normal human speech is full of hyperbole. And even in situations like this then it just comes naturally to people to use hyperbole and you need to keep that in mind. The reason they use hyperbole is because they want to evoke strong feelings amongst listeners to do something about it, and in such situations then you expect hyperbole.

Hyperbole is not deception. It's said in such a way that it is supposed to be easy to spot, as when you say "I could eat a horse" there is no way anyone could take that literally. It's the same with all instances of hyperbole, the idea is to use an expression that is so exaggerated that (hopefully) nobody could take it to be literally true. Similarly when they talk in that video about nuclear weapons "blowing up the world" or "turning the US states to radioactive dust" then that is not meant to be taken literally. It's meant to be so exaggerated that it is obvious hyperbole as a figure of speech. We don't have any weapons that could do either of those things.

It can go wrong if someone takes it literally.

And even an all out nuclear war would not be a literal doomsday. See my Debunked: A nuclear war would make Earth uninhabitable - and humans extinct and Debunked: Climate change will make the world too hot for humans

259 views · 1 upvote · Posted Dec 12, 2016

Debunked: Trump (or any other president or president elect) is the Anti Christ

Robert Walker

Trump may be many things, but I can't imagine him falsely claiming to be a Messiah to save us all. Also the very idea of a single “antichrist” is not really in the Bible. John uses it in the plural in his gospel, as

> 1 John 2:18
>
> “Little children, it is the last time: and as ye have heard that antichrist shall come, even now are there many antichrists; whereby we know that it is the last time.. ”

It’s warning against false teachings that can lead you astray basically. Numerology can lead you astray easily. The idea of a single future antichrist is a later synthesis. See Antichrist - Wikipedia (Wikipedia tends to be quite good on theology).

This is the alleged 666 on Donald Trump’s coat of arms:

It is very easy to find all sorts of patterns in events, numbers, texts etc. That's because there are so many ways to combine letters and numbers. Mathematicians sometimes do this for fun. For instance, there's a famous puzzle to write all the numbers from 0 to 100 using four 4s. This puzzle dates back at least to the late nineteenth century. It was published in an book by W W Rouse Ball in 1882, and earliest mention in print goes back to 1881. Four fours

Here is an example

> *7 = (4 + 4) - (4/4)*

Can you write every number from 0 to 10 in this way? What about writing all the numbers from 0 to 100 using four 4s plus mathematical operations such as addition, multiplication,

you like between 0 and 100, or indeed up to 386 and probably further too.

And here is a fun spoof of numerology, short exchange of emails after 9/11: Numerology and Numerology Parodies

Previous presidents of the US have also been proved to be the “antichrist” using numerology. E.g. here is the proof for president Reagan Proof that ronald reagan was the 666 antichrist ! Basically it “comes with the job” - if you get elected as president of the US, someone is bound to come up with a carefully worked out proof that you are the Anti Christ.

This originated as my answer to Could Donald Trump be the Antichrist?

Debunked: This is a leaked video from NASA showing how Nibiru is about to disrupt the entire solar system

Robert Walker

Summary The video is not by NASA. It is a video of a program called Universe Sandbox which

The video is good one actually to show why a large star or brown dwarf like Nibiru can’t exist!

If our system had a companion star or heavy brown dwarf like this - then the events in this video would have happened over 4.5 billion years ago and we wouldn't be here.

A star or brown dwarf in a 3600 year orbit can’t suddenly appear from nowhere. It would have to have been in that orbit since soon after the solar system formed. The events shown in this video would have happened already over 4.5 billion years ago.

The solar system would then consist of the Sun, it’s companion star and maybe a planet or even several planets that all orbit very close to our sun within the orbit of Mercury, so hot that

expect to find planets there. If our sun had a companion with an orbit like this, we wouldn't be here.

So we can know for sure that our sun doesn't have a companion like this. We wouldn't be here if it did.

NOTICE HOW EARTH PASSES BETWEEN "NIBIRU" AND THE SUN IN THE VIDEO

You can notice another thing from the video. Notice how Earth passes between the "Nibiru" and the sun several times in the first half of the video. This shows clearly how "Nibiru" if it existed couldn't possibly hide behind the sun.

Indeed, if there was a planet "Nibiru like that then every time Earth passed between it and the Sun, that would mean that it is on the night side of the Earth (Obviously since the Sun is on the day side). This would make it visible in the night sky, all night, any starry night, to astronomers on Earth.

There is no planet in an orbit like that. But comets can be in these orbits, and that's exactly what happens with them.

EASY TO SEE

Also a massive object like this would be easy to see. Even the faintest coolest brown dwarf is not invisible and would be as bright as Betelgeuse as soon as it got as close as Jupiter. Which is for this entire video.

See Debunked: Nibiru is invisible because it is a brown dwarf and "only shines in infrared" - FALSE - or made of dark matter

Comets, can exist in orbits like that. Comets are very light and there are hundreds of thousands of them out in the Oort cloud. From time to time one of them will get diverted into the inner solar system (happens easily again because they are so lightweight) and they may end up in an orbit like this. Many are already. But they have no effect on the planets of course and they also can't last long in an orbit like this.

Planets also can be in an orbit like this but only for a short time, like the comets. Within a million years they would be gone. And unlike comets, there is no Oort cloud of planets to resupply the solar system with new planets constantly.

This is the reason that astronomers when they hypothesize a new "planet X" such as the "planet 9" idea always hypothesize a planet that orbits way beyond Neptune. At the most it could come inside of Neptune's orbit as Pluto does (Pluto was the original "planet X"). That's possible because Pluto is in a resonance with Neptune. But it is impossible to stay in a resonance with both Neptune, and Uranus since their orbits aren't in resonance with each other.

If there was a planet in an orbit that crossed all four of the gas giants Jupiter, Saturn, Uranus and Neptune, then its orbit would be unstable and not last for as long as a million years. Our solar system is around 4.6 billion years old. Any such planets, if they ever existed, are long gone

UNIVERSE SANDBOX

This is just a video made by some enthusiast using Universe Sandbox and they added a heavy companion to the system and labeled it "Nibiru". Then someone has claimed that it is a NASA video.

If you haven't tried that program - it lets you take the solar system and just add extra objects to it, as well as make up your own new solar systems, and then watch them evolve.

unlikely because the search that looked for it, the WISE search was able to find even rather cold ordinary brown dwarfs 10 light years away and was an all sky search.

Our sun is almost certainly a singleton - half of sun-like stars are. If it does have a companion, it has to be so far away that it doesn't cause any instability in our solar system, or we wouldn't be here. But after many searches it seems increasingly unlikely that we have any companion star.

For more about this see Debunked: Nemesis or Tyche is Nibiru

Why so many people post sightings of "Nibiru" - and why not "Santa" instead?

Robert Walker

This is because if you read the Nibiru websites and watch the Nibiru videos you will learn that if you see a bright light, anywhere in the sky, East or West, North or South or directly overhead, or anywhere else, any time of day or night, and you don't know what it is, that it is a planet Nibiru unknown to astronomers (or hidden by them). If you believe this, and if you aren't very

mean they took a photo or a video and saw an unexplained bright spot on it.

- Helicopters, drones, or sky divers at night with lights on
- Sky lanterns
- Sunlight reflecting off the windows of a distant skyscraper
- The planets Jupiter, Venus, Saturn etc
- The Moon
- Many other things you've never noticed before because most people rarely do more than occasionally glance at the sky, by day or night.

You'll see many different bright objects in the sky and if you happen not to recognize one of those you'll be convinced you've seen "Nibiru" and upload a photo or video of it.

You haven't seen a planet. You've just seen a bright light. If they told you that every bright light you don't recognize is Santa and his sleigh, and you believed them, we'd have loads of reported sightings and uploaded videos and photos of Santa.

See also: Why the idea of Nibiru seems non refutable - and how does astronomy really work?

Debunked: Nemesis or Tyche is Nibiru

Robert Walker

Nemesis and Tyche are real hypotheses from Astronomy though a somewhat out of date one. They are amongst the many ideas for a “planet X” - an extra planet, or in this case a star or brown dwarf, orbiting the Sun. It’s certainly possible that our sun has a distant companion, as many star systems are binary (indeed many are also in systems of three or more stars). Sometimes the companion star or brown dwarf is a long way from the other star.

Most of the brightest stars in our sky are binary. But our sun is actually a rather dim star and only about half of sun-like stars are binary and in the case of the even smaller red dwarfs, it seems that most are single (though these figures are disputed and hard to be sure about). See Astronomers Had it Wrong: Most Stars are Single and Binary Star Systems: Classification

was real it would mean there is going to be an increased number of impacts on Earth due to redirected comets from the very distant Oort cloud, in the future, yes, but that future is 15 million years into the future (various figures there), not next month. The Tyche hypothesis is similar to Nemesis but in a somewhat different orbit that would not lead to extra impacts on Earth at all in the future.

- Tyche - large gas giant, up to four times the mass of Jupiter, orbiting permanently at a distance of around a quarter of a light year from our sun (light, which can get to the moon in 1.282 seconds, would take three months to get to us from it). Orbital period 1.8 million years. A planet. Hypothesized based on a clustering of comet orbits. Disproved by the WISE survey
- Nemesis - hypothesized red dwarf (very small star) or brown dwarf ("failed star") , orbiting permanently at a distance of 1.5 light years from the sun (light would take a year and a half to get to us from it). Hypothesized based on patterns in mass extinctions. Pretty much ruled out by WISE but remote possibility of a very cold brown dwarf in this orbit.
- Nibiru - a BS hypothesis of a planet or a star with planets that orbits the sun once every 3600 years and approaches the sun closer than Earth - so eccentric it would be more or less a straight line orbit in and out. Such an orbit is unstable for a planet, can't last for as long as a million years. Or if you hypothesize a heavy object like a star in such an orbit, it would have wrecked the entire solar system billions of years ago. There would be no stable orbits possible around either our sun or the companion star with this idea, except maybe very close orbits like Mercury.

  Our solar system is over 4 billion years old. So this is not a credible astronomical hypothesis. Hoax / pseudoscience

years away. However the WISE search was an all sky search, covered entire sky three times, and turned up brown dwarfs ten light years away so it is rather unlikely that they missed on as close as that.

The survey actually covered the two polar regions in more detail than anywhere else, because of the way it swept the sky. Each sweep it did of a fraction of the sky photographed both polar regions, so it covered them multiple times. So it covered the entire sky three times and the polar regions many more times than that. If “Nemesis” does exist, it will be very interesting for astronomers, but of no danger at all to Earth for at least 15 million years. And by then, well maybe we can deflect away any comets it sends our way long before they reach Earth, if the hypothesis is true which is seeming increasingly unlikely.

Nibiru conspiracy sites generally confuse Nemesis with Tyche and claim they exist amd are the parent star for “Nibiru” (in other words that they orbit the Sun with an orbital period of 3600 years and they have a planet orbiting them as well).

IN DETAIL.

Here is an example video about Tyche as parent star for “Nibiru”.

Notice that the news casts are all a bit old fashioned in style? Tyche was proposed in 1999 to explain certain patterns in the orbits of comets - but was proved not to exist in 2014 using results from an ultrasensitive infrared telescope called WISE.

> collected in 2010 to 2011.

It was an all sky survey and has ruled out the possibility of a Saturn sized object out to 10,000 times the Earth - Sun distance (33 times distance to Neptune), and a Jupiter size or larger object out to 26,000 times that distance . (I.e. 26,000 AU, 867 times distance to Neptune)

In this video, they seem to confuse this with Nemesis - a hypothesized second star which could have lead to excess comets every 26 million years or so if it existed. The hypothesized Tyche was actually given a new name in order to try to avoid exactly this confusion, since it would be incapable of causing these comet "storms".

> "Such an object would be incapable of creating comet “storms”. To help mitigate popular confusion with the Nemesis model (Whitmire and Jackson (1984), Davis et al. (1984)) we use the name recently suggested by Kirkpatrick and Wright (2010), Tyche, (the good sister of Nemesis) for the putative companion."
>
> Persistent Evidence of a Jovian Mass Solar Companion in the Oort Cloud, page 4 (introduction)

Anyway, for Nemesis , the idea was an excess of comets, not now, but millions of years in the past and future. The last extinction in their list is eleven million years ago, so the next one would be about fifteen million years into the future if they were right. See Periodicity of extinctions in the geologic past .

There have been many searches for Nemesis which have never turned up anything. It was finally conclusively proved not to exist by that same WISE survey that disproved Tyche. This survey turned up new brown dwarf stars many light years from Earth, and as a result of this ultra sensitive search, it doesn't seem that our sun can have a companion star or brown dwarf at all, though until around 2014 or so you could still suppose that it did.

respectively).

And you do see red dwarfs through an ordinary telescope. They are indeed fainter than most stars. None are easily visible to the naked eye, but that is because they are so far away. The brightest red dwarf is Lacaille 8760 which is magnitude 6.6 7. I don't know if anyone has done it - but at that brightness it might just be visible to a keen eyed observer from a very dark site. The closest red dwarf is Proxima Centauri . which is also the closest star known to Earth. It is visible through small telescopes.

But that's just because they are so very far away. Red dwarf stars are just stars, at fairly hot temperature what's more of a few thousand degrees - 3,800 K for instance for Lacaille 8760. Hotter than a potter's kiln. They are brighter than our sun if you orbit close enough to them, and since they are the most common type of star in our galaxy as well, they are one of the key targets in the search for habitable worlds. See Planets Orbiting Red Dwarfs May Stay Wet Enough for Life. And Habitability of Red Dwarf Systems .

He was probably thinking about brown dwarfs. Those are on the borderline between planets like Jupiter and red dwarfs. They don't shine by their own light like a star but are large enough to have a tiny bit of nuclear fusion at some point at least in the early stages of their formation.

They are not at all invisible, but when they are far away from any other star, then they don't emit any light themselves so are black in visible light. They are however warm-ish (-100 °C or so, not what we'd call warm, but far warmer than than the background night sky). That's because they still retain the heat of formation and early fusion. So, even a brown dwarf in total darkness, far from any sun, is bright in infrared and they search for them with infrared telescopes.

Bring a brown dwarf close to a star and it will shine by reflected light in the same way Jupiter

All brown dwarfs are about the same size as Jupiter, incidentally, however heavy they are - a remarkable property . As they get heavier they also collapse in on themselves a bit so don't get much larger.

Anyway WISE has already ruled those out also. It can detect them out to around 10 light years away, and did indeed find brown dwarfs, but none close to our sun. Incidentally it has now been re-activated as NEOWISE and is searching for Near Earth Objects, where it is especially useful for finding dark ones that are harder to spot from the ground but just as visible in infrared as the bright ones.

The name Planet X was not invented by NASA, as they say in the video. Instead, it goes back to Percival Lowell in 1905 and the phrase is used nowadays as a general term to describe a planet you are searching for which you haven't yet proved exists. So if an astronomer, or NASA talks about a Planet X, then that is a short hand to say that they don't know if it exists yet. The very fact that they called it Planet X means they didn't have evidence yet that it existed.

That's all in the first five minutes of the video. I am only an eighth of the way through it and if I debunk everything he says this will surely take very long. I haven't yet come across a single correct statement in it I think. Well about astronomy anyway :).

See also

- my answer to Is Nibiru a real place that will hit Earth? I'm very scared, is the BBC lying?
- Nibiru Bullshit Tester
- Debunked: Nibiru will hit Earth on [Insert Date here]

Bullshit Detector Plugin for Chrome for Fake News Sites

Robert Walker

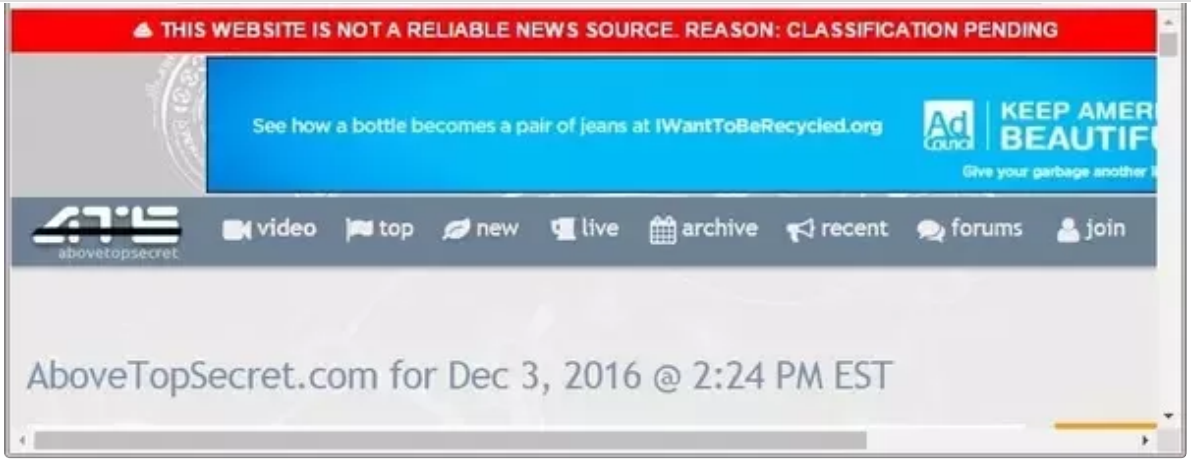
You may find this useful, if you use chrome as your website browser. It shows a red title if you share or visit a site that regularly has fake news or is generally unreliable like "Above Top Secret". You can still read the story if you want to, you just know that it is from an unreliable site.

> Pile of Poo emoji for Apple

Super easy to use. Get it here Bullshit Detector and add it to your browser. If installed correctly you should then see a grey triangular icon at top right of your browser window next to the url bar as in the screenshots below.

This is what it looks like if you visit one of the websites


THIS WEBSITE IS NOT A RELIABLE NEWS SOURCE. REASON: CLASSIFICATION PENDING
MENU
Latest
December 5, 2016 in News: Manchester Pub Will Open On Christmas Day To Feed The
Terms of Use Privacy Contact Us Advertise
YourNewsWire.com
News. Truth. Unfiltered.
Home » Weird » Pope Says This May Be Our Last Christmas
Pope Says This May Be Our Last Christmas
Posted on December 21, 2015 by Sean Adl-Tabatabai in Weird // 58 Comments
Share 27K
G+1
166
Tweet
5 points



You also get red bars like that above the links people share on facebook if they link to fake news sites. It works well in my testing with one exception. It doesn't seem to work for "Before it's News" (you get a black bar instead of a red one, with no text on it). But hopefully you know that that one is a fake / unreliable site already.

It will only detect some of the fake and unreliable news. You get new sites like this all the time plus many sites have a mix of real news and some hoaxes that the journalists fall for.

So - it doesn't work in the other direction. If a site is not labeled as BS it may still have a lot of nonsense on it. For instance it doesn't label the Express as BS, because it has a lot of genuine news there along with the occasional story about "Nibiru" and the end of the world that is complete BS.

And it is just for news sites, won't try to label the numerous blogs and videos with BS Nibiru nonsense on them including the ones that fall for the fake news stories and repeat them. But it will help eliminate some of the worst sites.

For Nibiru particularly also see my Nibiru Bullshit Tester - How to check if they know anything

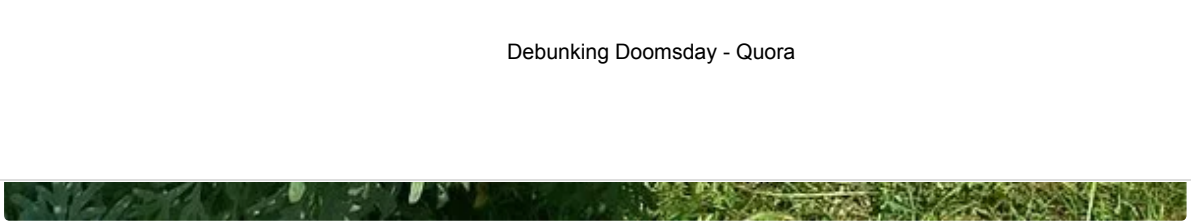
Debunked: Nibiru is Wormwood so must be real

Robert Walker

"Wormwood" just refers to an enigmatic passage in the book of Revelation in the Bible which could mean almost anything:

> And the third angel sounded, and there fell a great star from heaven, burning as it were a lamp, and it fell upon the third part of the rivers, and upon the fountains of waters; And the name of the star is called Wormwood: and the third part of the waters became wormwood; and many men died of the waters, because they were made bitter. - (Revelation 8:10-11)
>
> For more about it see the wikipedia article: Wormwood (Bible) - Wikipedia

The word "Wormwood" is a rare word in the Bible . Normally it means something bitter, and refers to the plant Artemisia Absinthium which is used in the alcoholic drink Absinthe.



The book of Revelations is an enigmatic text which wasn't included in the original version of the Bible and it is easily interpreted in so many different ways that the Eastern Orthodox church has excluded it from the scriptures that can be read from the pulpit (its "lectionary").

When you read passages like that, bear in mind that back then the leading idea about planets was that they are embedded in crystaline spheres that spin around the Earth, and that the stars also were embedded in a big sphere that span around Earth once a day, and the Sun was in such a sphere too.

They didn't know about asteroids. They thought that meteorites came from volcanoes or tornadoes and strong winds, blown into the air. They thought comets were an atmospheric phenomenon. They had no idea about modern astronomy at all.

Ernst Chladni - Wikipedia - first to propose that meteorites came from space, in 1704. His

> The Wold Cottage meteorite - Wikipedia - first meteorite to be recognized as extra terrestrial by some scientists, in 1795

> Fragment of the L'Aigle meteorite shower. These were the first meteorites to be widely recognized as originating from outside of Earth. The fall happened on 26th April 1803. This convinced most scientists of his day that Ernst Chladni was right, meteorites come from outer space

Also the book of Revelations is written in a visionary style. It's not at all clear that these are supposed to be events that actually happen or will happen. They could also be vivid images conveying some other message e.g. about spiritual practice. There are many ways to interpret it. According to many interpretations it describes events that have already happened, or already happened in part. For instance it may describe the events of the persecutation of first century Christians.

Whatever it is about, it is intended as a message of hope for Christians. And for non Christians, it is not a sacred book for you, so why pay any attention? And for astronomers, well the Bible is not noted for its astronomy, indeed hardly covers astronomy at all. That's not its strong point.

See also Debunked - The world will end because the Bible (or some other sacred book) says so

230 views · 1 upvote · Posted Dec 5, 2016

Upvotes 1 Comment

Debunked: Astronomers get murdered by the secret agencies if they “speak out” about Nibiru

Robert Walker

This goes back to a couple of things. First Robert Harrington was one of many astronomers who have hypothesized that there may be extra planets in our solar system orbiting well beyond Neptune. These would be of no more danger to Earth than Neptune or Jupiter, in other words no danger at all. Astronomers call all such planets “planet X”, where X stands for “unknown”.

So it’s not a single planet but many such hypotheses for different planets. The first “planet X” was Pluto. Though you could make a case for calling Neptune the first “planet X” since although the word wasn’t in use at the time, it was discovered in the same way by looking at the orbits of the other planets and deducing that there must be an extra planet beyond Uranus.

So anyway, they often elaborate the story by saying that Robert Harrington discovered planet X

> Robert Harrington, photograph from his obituary Bob Harrington Obituary - he was not murdered. He died of throat cancer six months AFTER his theory of an extra planet beyond Neptune was disproved by Myles Standish using data from the Voyager 2 flyby of Neptune.

The truth is that Robert Harrington did indeed hypothesize a planet X beyond Neptune. His paper is here: THE LOCATION OF PLANET X . As you will see at the end, on page 1478, he suggested a possible planet with, as one example, a semi-major axis 101.2 AU and eccentricity 0.411 which makes its perihelion 59.607 by this Ellipse Calculator , so the closest to the Sun it would get is one and a half times the distance to Pluto. He made this prediction on the basis of anomalies in the orbits of Uranus and Neptune.

dynamical evidence in the optical observations

Myles Standish's article was published after Robert Harrington's death, but submitted long before it and Robert Harrington would have known that his theory was disproved when he died.

And we know for sure that he was not murdered. He died of cancer of the throat. His obituary is here: Bob Harrington Obituary - that's the more detailed obituary from his observatory. The NY times obituary is here, just says he died of cancer: Robert Harrington, 50, Astronomer in Capital

HOAX IMAGES AND VIDEOS OF NIBIRU DONE AS A PRANK

With all this nonsense about Nibiru, some people have done what they intended to be harmless pranks, just to have their videos and images propagated all over the internet as real.

Dramatic Chipmunk :)

PROFESSOR KAPLAN - ABDUCTED UNDER MYSTERIOUS CIRCUMSTANCES WHILE OBSERVING NIBIRU

If you read the conspiracy stories about Nibiru, you've probably heard of the mysterious kidnapped and murdered Professor Kaplan, and the chip with a recording of his observations of Nibiru which was found by someone and uploaded to YouTube.

Here "Professor Kaplan" talks about why he did this hoax video originally as a silly prank for his pals, and his attempts to get it taken down - which only fueled more conspiracy theories about the video.

is recorded at an actual observatory. But he didn't do it for YouTube or for public viewing.

He left two clues that it is a joke in the video including an email allegedly from someone else shown as addressed from "Me" to "Me" in a close up shot, and a quiet chuckle at the end of the video as he gets "abducted". Plus of course him being still alive and giving a skype interview after the joke "abduction" at the end shows it is a joke :)

The idea anyway doesn't make sense. If the secret agencies are going around the world murdering people for talking about "Nibiru" then how come there are so many videos about it on youtube? Entire channels that produce video after video, earning their channel owners thousands of dollars a month of ad income. Occasionally someone will put up a video with a comment saying that they are doing this bravely and expect to be murdered as a result, and the video taken down. But that is just them tying in to this story as yet another hoax / prank and the videos are not taken down.

This is just yet another silly Nibiru story. See also Debunked: NASA has been tracking "Planet X" for decades

247 views · 1 upvote · Posted Dec 5, 2016

Upvotes 1 Comment

Debunked: Those who say Nibiru is real say that we should be scared and worried - are they

I get some people who ask me to reassure them that there is nothing to be scared of from time to time. They watch these videos or go to a website and it says “You should be scared” and just that terrifies them, no matter what the rest of it says.

When these people tell you to be scared in the videos or on a website, it's like someone telling you that you should stand on your head.

> Break Dancing

Or any absurd thing they might say you should do. There is no obligation on you to stand on your head, if some random stranger tells you to do it.

Actually the ones who tell you to be scared are the ones that should do something. They should stop telling people to be scared and worried.

See also my Nibiru Bullshit Tester - How to check if they know anything about astronomy

174 views · 1 upvote · Posted Dec 5, 2016

Upvotes 1 Comment

Debunked: Doomsday scenarios predicted using an Ouija board

Robert Walker

This is an example, from “Above Top Secret”, a notorious conspiracy site where people can publish anything. could america be invaded by the chinese & russians on this date? according to the demons, it does., page 1

With I don't know how many people using ouija boards every week there are bound to be a few "accurate predictions". They will ignore all the times they say someone is going to die and nothing happens. Then one time they say someone will die and they do, and they will make a big fuss about it. So it is easy for a method such as this to seem to work when it is just based on chance.

If Ouija boards did tell the future then the people with ouija boards would win all the state lotteries and nobody else would have a chance. That doesn't happen. Indeed I can't remember any story of someone winning a lottery using a ouija board, I mean one of the big prizes millions of dollars not just $40 or something which can happen by chance easily. If you have

If you do believe in Ouija boards, and that there are such things as demons, and that they are actually contacting demons and asking them questions - well why expect them to be truthful? If they are demons then they probably just want to cause confusion and panic and will make predictions out of mischief. The people who use Ouija boards and interpret them in this way say this themselves.

As an example see this story: The End? . The thread of comments talks about demons and warning that they can be tricky and they can't predict things, just pretend to do so. Who knows whether there is some external influence of some sort. Anyway the thing with any of these attempts to contact supernatural beings, is, why would they be truthful, if there are such? Probably supernatural beings, if they exist, have got the full range of frailties of humans and more so.

Or it could well be that it is just some kind of interaction of the people involved, the ones doing the seance, if so, again, why should it be predictive? Perhaps sometimes they contact some kind of collective knowledge or wisdom, which they couldn't access otherwise, but if so, at other times they could equally contact a kind of collective foolishness or stupidity. How could you know? Being way out and spooky doesn't mean it has to be truthful or wise.

I'm Buddhist as some of you may know, in the Tibetan tradition. I've never got involved in any practices of that type, but I know they do have ideas that you can have practices that connect you directly to visionary inspirations which can actually speak to you directly and say things to you and answer questions. There's an idea that you can make contact with inspirations of great compassion and wisdom, so vivid it feels even more real than real life - so they say, which they think is contacting something we all have also within ourselves, for instance compassion, so it is a kind of external awakening internal. It seems external because you are awakening an inspiration that you have blocked off and don't think of as yourself, so you can't see it as

"demons" at least how it is sometimes translated. It just means a vision or inspiration that doesn't have the inspiration of enlightenment and may inspire in directions that are harmful rather than helpful to practitioners.

The two can be hard to tell apart, but you can tell by the fruit, if it inspires compassion and wisdom and understanding, and if it leads in directions that are beneficial.

It’s much the same whether you believe there really are supernatural beings contacted in seances, or you think that somehow they contact some collective understanding amongst themselves, or whether it is just a matter of seeing patterns in chance events like an ink blot. If unsure it's best just to ignore such things, and especially so if they say anything that is distressing. While if the practice inspires you and helps you towards wisdom, compassion and understanding, maybe it is useful and valuable, who knows.

The idea of divination is an ancient one. The Ouija boards apparently trace their ancestry back to the ancient Taoists. Instead of using letters on a board, they used a suspended pointer that traced out diagrams in sand or incense ash. But mediums in the nineteenth century found their audience got bored waiting for the drawings, and the drawings were hard to interpret, so changed to a board with letters.

The Quanzhen schools of Taoism sometimes use spirit writing as a way to communicate with their ancient semi-legendary Partriarchs.

> Quanzhen Patriarch Chongyang (a.k.a. Wang Zhe) with the yellow nimbus around his head, and his seven disciples. SeeChangchun-Temple-Master-and-disciples-painting
>
> Some modern Taoists in this school believe that they communicate with the Quanzhen Patriarchs through spirit writing. See Teachings and Practices of the Early Quanzhen Taoist Masters

You might also be interested in this Ancient Ouija Boards, Fact or Fiction?

189 views · 2 upvotes · Posted Dec 3, 2016

Debunked: Baba Vanga from the Balkans predicted xyz, e.g. that President Obama would be the last US president

Robert Walker

This is an example story: Nostradamus from the Balkans predicted the end of US politics as the world has come to know it

So the first thing before going into any of this is to realize that prophecy has never been established as an accurate way of predicting world events. It certainly is useless for astronomy. Whether it works for anything else I don't know. But to date, astronomers have not found prophecy to be a useful way of predicting any astronomical events.

When astronomers want to know if an asteroid will do a flyby of Earth, or to advise the general public where exactly to go to observe a solar eclipse and how long it will last for, or decide when to launch a spacecraft to Mars and when exactly it will get there, they use observations and calculations rather than prophecy. So how likely is it that suddenly some prophet will prophecy an astronomical event, and get it right?

Now you can argue about that philosophically. Why do we live in a world where scientific predictions work and prophecy doesn't or is not very reliable? Why can't we just see the whole of space and time indeed? Why aren't we all 100% accurate prophets? You can imagine an alternative universe where prophecy does work with a very high rate of success or even 100%

So, Baba Vanga was a blind Bulgarian herbalist who gained a reputation as a healer and a clairvoyant. She was unable to write and her prophecies were written down by people who listened to her, and of course they were written down in Bulgarian.

This makes it really easy for people to attribute all sorts of sayings to her which she never said. So for instance she is supposed to have predicted WWIII would last from 2010 to 2014 and that the 45th president of the US would be black, etc etc. However it's entirely possible that she never said any of those things. The articles that say she did don't give sources.

Some of those close to her were interviewed in Bulgarian - the report is here if you can read Bulgarian Баба Ванга не е предсказвала края на света

- or you can use auto translate to get a rough idea Google Translate

> "Каква война? Ванга никога не е правила такива предсказания. Някой си ги измисля, после други ги преповтарят и така се стресират хората. Спекулират с името й, защото всички й вярват", коментират дългогодишни съседки и приятелки на пророчицата в Петрич. Бойка Костадинова близо 50 г. е била сред приятелките на пророчицата.
>
> **Translation:** "what war? Vanga has never made such a prediction! Somebody fabricates (those predictions), than others repeats them and the people are getting stressed (by the predictions).They speculate with her name, because everybody believes what she has to tell" says her neighbor and friend. Boyka Kostadinova has been friend with Vanga for 50 years.
>
> "Виждаше и в миналото, и в бъдещето, но предсказания за Трета световна война не съм чула да е правила." Горева смята, че и предсказанията за атентата срещу кулите близнаци в Ню Йорк, потъването на "Курск", избора на чернокож президент на САЩ също са преувеличени. Появили се след смъртта й и никой не обявил кога ги е чул от Ванга.
>
> **Translation:** She was looking into the past, and the future but prophecies about third world war i have not heard from her". Goreva tell that the prophecies about the 9/11, the Kursk and about the black president of USA are also fictitious. They have appeared after her death and nobody have told when she has told those prophecies.

So, no, it doesn't seem likely that she has prophesied world events and what's more it doesn't seem to be the sort of thing she was interested in prophesying whether she could or not.

It is a similar situation with Nostradamus. He was literate so we have his actual writings. But he made many enigmatic announcements, so enigmatic that reading things into them is like seeing shapes in the clouds overhead. You can interpret them to mean almost anything. He made only one dated prediction, for 1999, and nothing apocalyptic happened in 1999. For more on this see Debunked: Nostradamus predicted the end of the world on [insert date here]

Nibiru Debunked: Yes, we deserve to know the truth about Nibiru

Robert Walker

To assess these many claims of the idea that there is a planet headed towards Earth and that this is being kept secret - first, you need to realize quite how small the Earth is compared to interplanetary space.

The Earth travels by its own radius in four minutes. So when astronomers first discover an asteroid they can't know if it is going to hit Earth. Before they can do that they have to know its orbit so precisely that they can say exactly where it will be to the nearest minute or two, years or decades in advance, whenever the impact is predicted. And if a new comet is discovered, the hypothesis is not at all "this comet could hit Earth".

In the peppercorn model of the solar system , the Sun is a soccer ball and the Earth is a peppercorn 26 yards from the Sun. Even if the impactor was the size of Earth or even larger it is like trying to hit a peppercorn with another one from a distance of tens of yards, throwing it blindly in a random direction. The chance of that happening is tiny.

Here is Bill Nye showing the same idea with a somewhat larger scale model with the Sun one meter in diameter:

Hopefully also that helps you understand what a huge fail it is when the Nibiru conspiracy theorists take news stories of dwarf planets beyond Neptune or the idea of a new planet that may exist many times further away than Neptune - and then claim that it is in some way a danger to Earth. Something that orbits beyond Neptune is not in the most remote way any danger to us at all.

The chance is so very tiny of anything hitting Earth in the vastness of interplanetary space, that of all the new comets discovered, and of all the 15,000 asteroids currently being tracked that do close flybys of Earth , not one is going to hit Earth before 2100.

There are 500,000 asteroids in total discovered in the last 30 years.

None of those asteroids will hit Earth before 2100.

To try to find out if an asteroid has any chance of hitting Earth takes weeks of observation. And NASA are not the ones who do those observations. They are a civilian space agency, like ESA and JAXA (the Japanese space agency). Their main job is to put satellites and spacecraft into orbit, and humans too sometimes. It's not their job to actually do the observations, even Hubble observations are done by astronomers internationally who book time on the telescope. And Hubble is the worst possible telescope for detecting asteroids as it has a very narrow field of view to let it look at distant objects at high magnification. That's no good for detecting asteroids and comets when you don't know where they are until they are detected.

The best asteroid detecting telescope we have at present is Pan STARRS which detects many new asteroids every day - it's at the top of a mountain in Hawaii and it is run by astronomical associations in many different countries. And those telescopes only do the initial detection at present. This may be improved in future but at present they are reliant on professional and amateur astronomers world wide to do the follow up observations to work out the trajectory and whether it is going to hit Earth or not. And their results are published here, Current Impact Risks table. This is done in an open way and there is no mechanism in place to hide the information. It is hard to see how it could be done anyway even if all the nations in the world

all the other astronomical observations yourself. You have to be a real geek to do that or to have a lot of background in practical astronomy as they are technical and hard to read but that's not to obscure, that's just because they have lots of data to share so have to present it in a compact format and their readers are used to reading it in that format - also it gets read by computers too nowadays.

And this idea that astronomers would hide impact risks is actually tested in practice too. Apophis particularly had a tiny chance of hitting Earth soon after it was first discovered. This was reported everywhere. Nobody tried to hide it. It would have serious effects if it did hit Earth. The chance of this was only 2.7% meaning a 97.3% chance of a miss - so it is not surprising that later observations proved it would miss.

> Discovery image of Apophis, 885 meters in diameter. It initially had a 2.7% chance of hitting

> work out the orbits. And asteroid discovery is something that is carried out by astronomers, amateur and professional, world wide

Astronomers can find huge things light years away like stars and brown dwarfs and can now find planets too through various methods such as the minute gravitational effects on the motion of stars causing changes in their speed of just meters per second or less because that changes the frequency of light via doppler shift. They can find objects 100s of kilometers in size at the distance of Neptune. They can find them 10 km upwards at distance of Jupiter and have found all the objects of 10 km upwards that do regular flybys of Earth and they have nearly finished the survey of the 1 km objects. The smaller ones like Apophis are harder to survey, but their long term objective is to find all of those too by the 2020s. This may take until the 2030s however, it depends how much money they put into it. It's not a lot you are talking about there, of order of tens of millions to hundreds of millions would be enough to complete the survey.

So my advice would be, if you want something done about impact risk, try writing letters to politicians to try to get them to find those extra tens or hundreds of millions of dollars to complete the survey down to smaller asteroids of tens of meters in diameter. It will not help at all to accuse them of hiding a BS planet that can't possibly exist. How can that help retire the impact risk?

If we do find an asteroid headed our way, then there are many things we can do. We wouldn't just panic and throw up our hands in despair. There are many ideas for diverting asteroids and comets. The more time we have, the easier it is to do it, so making a complete survey is the first priority.

If one was headed our way we'd want to implement big expensive programs to deflect it, so it would be on the news, politicians asking for the money, votes in congress etc to fund a big program to deflect it. If that wasn't possible then they would work out the impact site and start

And if it was large enough to have global effects, you could do things like store crops for the previous year to tide through the lowering of temperature and work out what kinds of crops you can grow during the impact winter and so on. And advice on how to protect yourself from the firestorm if there was one, etc etc.

But those large impacts are very very rare. If you think about it, no large asteroid has hit a populated area for the thousands of years of historical records. So - the chance of an impact this century is very tiny. For a large asteroid 10 km or so, it is 1 in a million per century (the last one was 66 million years ago and they happen once every 100 million years on average). But since they have already found all the 10 km asteroids that reduces it to 1 in 100 million per century approximately - only leaves the comets which you can observe years in advance as they approach Earth.

The smaller ones are far more common. We get hit by dozens of Chelyabinsk size meteorites for every single 1 km asteroid. So if we do get an impact on a populated area, it is far likely to be a small asteroid than a large one. The smaller it is, the more likely it is.

So that again hopefully lets you see they aren't hiding anything. I think part of this comes from disaster movies which give the impression that we could have a large asteroid heading towards Earth and discover it only days before impact. Armageddon does a lot of poetic license. Earth hasn't been hit by an asteroid the size of Texas for billions of years and from the cratering record that is just not something that could happen at this stage in the solar system. We could be hit by a smaller 10 km asteroid but this is exceedingly unlikely 1 in 100 million, and we'd know about it many years before impact.

So these movies are just not accurate. They use a lot of fudges in the science for the sake of a dramatic story line.

you use that BS tester then you can click away from most of them after reading the first sentence or at least the first para. And click away from most videos after the first sentence or two as well.

Debunked: This is a “Winged planet” and is Nibiru

Robert Walker

This object on Google Sky is often shared as “Nibiru” - and they also often claim it is in the missing rectangle in Google Sky (an image from the original database which for some reason has been left out of their upload) though it is actually more than twenty degrees away from it.

Anyway it is a fascinating looking object isn’t it:

Closer view

You can find it here on Google Sky

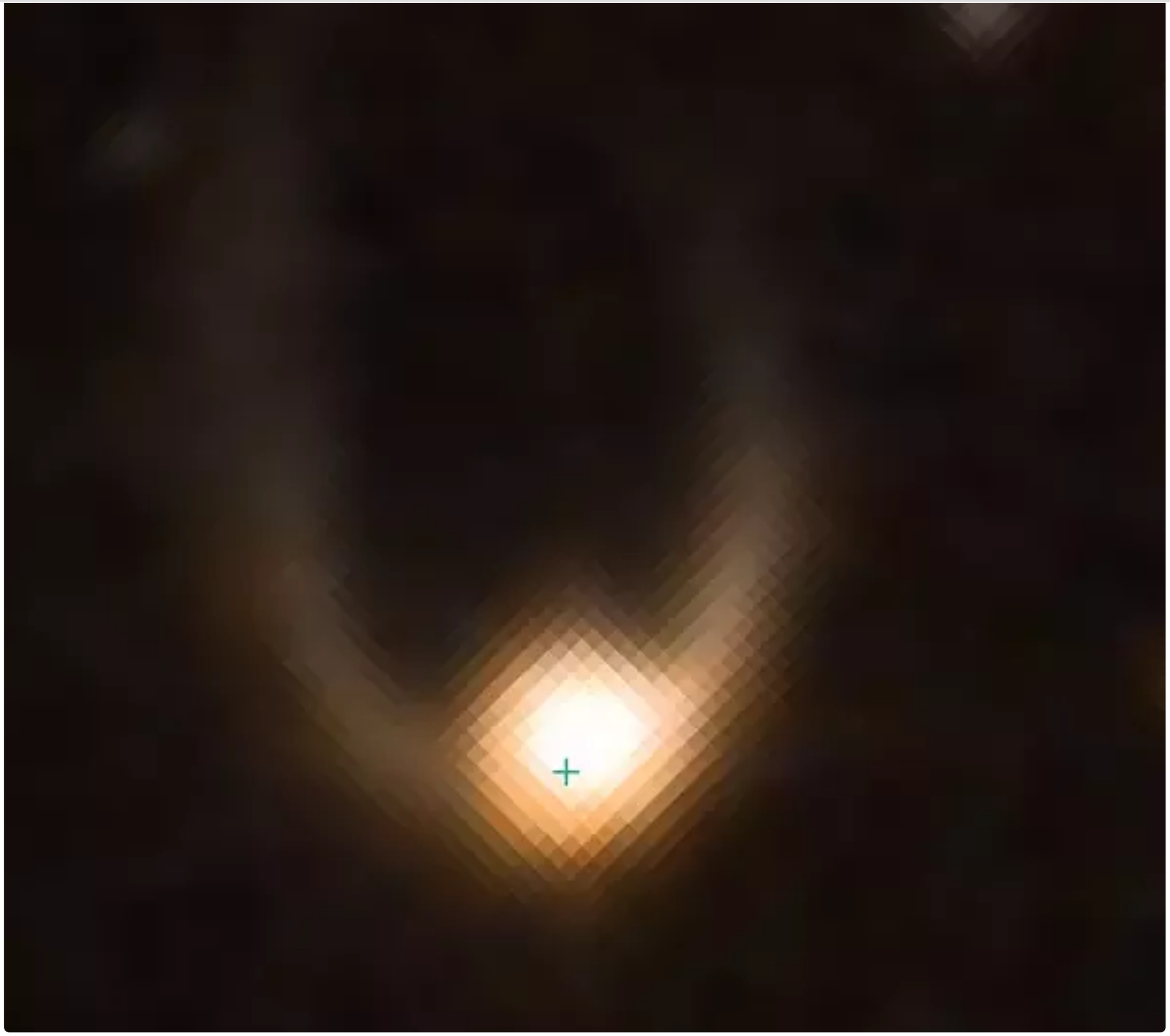
It's actually a T Tauri star - a very young star, from a few hundred thousand to a million years old, still forming into a star and making its first planets.

Many of them still have protoplanetary disks - denser clouds of gas around them which will soon collapse to form comets, asteroids and planetary embryos

> Five young stars in the Orion nebula, four of them surrounded by possible protoplanetary disks which may collapse to form planets in the near future

> And this, remarkably, is not an artist's impression. It is an actual radar image of a protoplanetary disk around a very young star HL Tauri - Wikipedia which is thought to be less than 100,000 years old. The dark lanes here probably indicate places where planets are

Anyway so the “winged planet” is actually not a planet, but a deep sky object. I can’t find information about its distance (anyone know do say) but probably hundreds of light years or thousands of light years away. It is a very young star, probably just started to form planets if it has any (we now think that nearly all stars do form planets). Its name is GN 05.39.2 and its Simbad page is here , which provides more images



> Image from its Simbad page

This is another image from 1st December 2011

> MAST Portal

However if you are a keen amateur astronomer you can go out and take photographs of it yourself. Scott Fergusson did just that, twice, six months apart.

He also covers a rather similar looking reflection nebula

Parsamian 21 associated with HBC 687 whihc is an FU Orionis star - another type of young pre main sequence star, one that varies in brightness dramatically.

317 views · 1 upvote · Posted Nov 27, 2016

Upvotes 1 Comment

Debunked: Paul Cox said that we have two suns

He was joking. It’s a British ironic very very dry sense of humour. Like the humour of the Mitchell and Webb show in this conspiracy theories spoof they did.

Many British people use it a lot in everyday conversation as well, and our comedians make great use of it. That’s a more extreme version, a complete sketch done in a totally dead pan way, more often it is just a sentence or two.

It is absolutely vital for this sort of humour to work that it has to be said totally "dead pan" either you don't give it away at all that it is a joke, or you can subtly hint at it. It's a "wry smile" humour, not LOL but British people find it funny and it is used a lot by the comedians here on TV etc. The nearest to it that those from outside the UK will be aware of is perhaps the idea of

that it is a joke..

Here is the extract:

> Just a joke after they had a problem with a reflection giving a ghost image of the sun. It's the serious tone of voice with which you say something so ludicrous that makes it funny for us. If you make it too easy to see that it is a joke, then it’s not nearly so funny for us, and falls rather flat.

If you are used to it you can tell by the way he says "there is, it's true" - there is a special inflection we often use in that situation that shows it's a joke - a slight upturn of pitch, fading of volume and increase in tempo of speech at the end of the sentence. You don’t have to give that

as the Canary Isles, and uses them for live shows of events of public interest, such as in this case, the transit of Mercury. Its shows are syndicated to media outlets worldwide. Observatories can choose to connect their live feeds with the community. It also allows amateur astronomers to hire the telescopes at a few cents an hour giving them access to multi million dollar telescopes. See Interview: Mike Paolucci, the founder of space-viewing service, Slooh

Paul Cox is an English astronomer who hosts many of the shows and manages most aspects of the Slooh engineering and tech says he immediately saw its advantages for astronomers cloud bound in the UK when he first heard of it in 2003.

It is easy to check for yourself that we have only one sun. Don't stare as it, because that can damage your vision, and you have no pain receptors at the back of your eye.

Just hold your finger in front of the sun to block it from your vision. Look to either side. Is there a second sun there? After doing that with your finger vertical, hold your finger in front of it horizontally and look above and below? Is there a second sun?

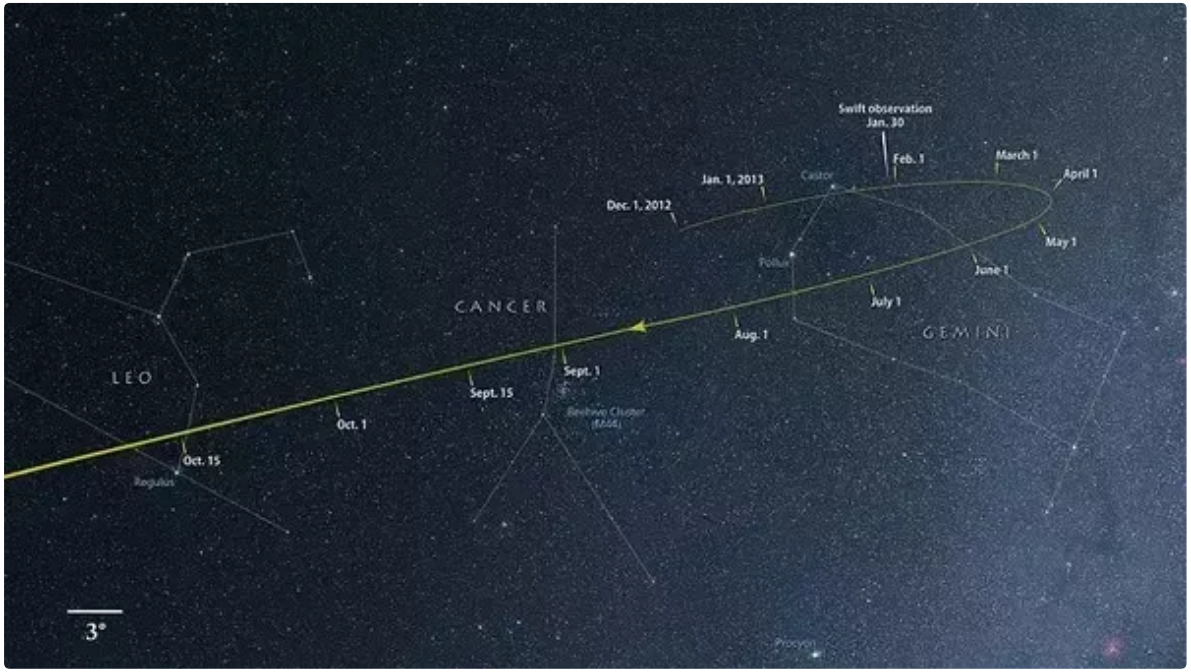
You have just disproved the hypothesis that we have two suns.

579 views · 2 upvotes · Posted Nov 26, 2016

Upvotes 2 Comment

Debunked: Nibiru is at coordinates ...

This is the key to a real object - it will have a co-ordinate in the sky. It will be in a particular constellation. But it won't have fixed co-ordinates, not a nearby object in our solar system. As seen from Earth, the co-ordinates change slowly, moving through the sky. A comet, planet or asteroid is never stationary in the sky for long, Every night they can say exactly where it is in the sky.



Comet ISON tracks through the constellations Gemini, Cancer and Leo as it falls toward the sun - this is an example. The position of Comet ISON could be plotted for every day of the year, and you could read exactly where to look to see it - as it slowly moved through Gemini, Cancer and then Leo in 2013 in this example. Any real object will have co-ordinates like this and has to be seen in front of one of the constellations as seen from Earth.

will cross our orbit accurately to within four minutes, as that is how long it takes for Earth to travel half its width along the track of its orbit. Of the 15,000 known objects that do regular flybys of Earth with worked out orbits, none of them will hit us before 2100, which shows how hard it is for anything to hit Earth even if it is in an orbit that takes it past Earth every few years.

Whenever I have seen a page or video where they say they have co-ordinates for “Nibiru”, it’s always just some deep sky object usually hundreds or thousands of light years away in Google Sky and they claim it is “Nibiru”. Perhaps a planetary nebula for instance - vast clouds of gas that look a bit like planets, the reason for the name.

They surely don’t know how to work out the coordinates of a real object in the sky or how to find an object at those coordinates with a telescope. However, since they are exploring the night sky in Google Sky, there is no need to do that. They can just read off the co-ordinates from the program.

Of course this means that it doesn’t move, because it is some distant object many light years away and anyway Google sky is just a snapshot of the night sky as photographed in the Sloane digital sky survey and other such surveys.

When they say they have co-ordinates for it in Google Sky they usually mean this object:

It's a fascinating looking object. But it is not a planet. It is a very distant young star which is blowing off gas in two jets, as its nebula condenses. For details see: Debunked: This is a "Winged planet" and is Nibiru

If you were tracking a comet, say, you would not use Google Sky. It is not a telescope and doesn't show a real time view. You'd use a telescope to observe it, then eventually when bright enough, follow it with binoculars and naked eye.

So it doesn't make a lot of sense to try to follow a real moving object in Google Sky. So if someone says "These are the co-ordinates of Nibiru and I found it in Google Sky" - it just means they have found some object while browsing the program which to their eyes looks like what

Debunked: The US government is building vast underground bunkers to escape from Nibiru

Robert Walker

This is another urban myth that is often shared on Nibiru conspiracy sites. They claim that governments are building underground bunkers as a place to retreat to when their BS Nibiru hoax planet hits Earth or flies past Earth.

It is true that many governments built bunkers during the cold war, which were designed to protect critical people, with enough of an infrastructure to be able to continue to govern and prevent the country descending into total chaos during and after a nuclear attack. The cold war is over and many of those underground bunkers have been abandoned and sold or put to other uses.

But the US does continue to maintain a number of underground bunkers. I'm sure that nuclear war is uppermost in their minds as a reason for keeping them on, even though a global nuclear war seems far less likely than it was when I was young. They are underground to protect from direct impact and also to protect from EMPs - electromagnetic pulses caused by detonations of nuclear weapons in the atmosphere which can damage electrical equipment.

> NORAD Command Center in the Cheyenne Mountain Complex

They may well have other underground facilities that are secret.

You need these even with a conventional war too. After all the UK had underground command posts in WWII, and that was well before nuclear weapons. The Churchill WW2 underground bunker is a tourist attraction now in London.

Map room in the underground Churchill War Rooms in London - from WWII, now a tourist attraction.

So yes, governments do build underground bases. And NO - that does not mean they are preparing for Nibiru! The whole idea of Nibiru is bonkers so for sure no government is going to waste even a moment of thought about it.

Nibiru Bullshit Tester - How to check if they know anything about astronomy

Robert Walker

Many of the Nibiru website authors claim to be very knowledgeable about astronomy. It is easy to test though, and find out that they don't understand this stuff. Here are some things they may say which immediately show they are mistaken, don’t have the most basic understanding of astronomy, and don't check their sources.

- **If they say IRAS found a planet in 1983** - they are wrong - just follow the links that the debunkers give and you can confirm for yourself that IRAS did not find any planets
- **If they say Robert Harrington found planet X and was silenced** - they are wrong - his theory was proven to be false six months before he died by Myles Standish
- **If they say a planet can hide behind or near the sun for years on end** then suddenly appear, they are wrong. This is easy to show to be nonsense. Nothing in a long period orbit like 3600 years can hide behind the sun for any length of time, because Earth goes around it once a year.
- **If they say that the Earth's geographical poles have shifted**, easy to show they are wrong by checking any starry night, couple of observations and you see that our

- **If they publish a lens flare or an offset lens reflection or sunlight lighting up a patch on clouds**, and claim it is Nibiru this shows they are very gullible and don't understand the basics of astronomy.
- **If they post a distant object in Google sky**, such as a planetary nebula, hundreds, or thousands of light years away and claim it is Nibiru they are wrong
- **If they claim we have two suns**, easy to check, just block out our sun with one finger, and you can see they are wrong

> This rather dramatic image has gone the rounds a bit and been posted as a photograph of a

> If someone tells you that we have two suns - then you know they are speaking BS. Click away as that means they don't have the first clue about astronomy.
>
> It is dead easy to check that we have only one sun. Hold a finger in front of it (don't stare at the Sun as you won't know if your eyes get damaged) With the sun blocked, do you see a second sun to either side, or above or below? No! Therefore we have only one sun. It really is as easy as that to debunk this one.

- **If they say that the astronomers' Planet X or Tyche or Nemesis are Nibiru**, they are wrong as all the astronomer's hypothetical planets are hypotheses for planets that orbit permanently way beyond Neptune - if they exist they are no more of a danger to Earth than Neptune or Jupiter.
- **If they say that the Nemesis theory predicts end of Earth in the near future** they are wrong - the theory (which is more or less disproved now) predicted a possibility of mass extinctions at various dates around 15 million years into the future.
- **If they say that Nibiru is in a 3600 year orbit that goes from outside Pluto to Earth**, that's an orbit that is not stable for as long as a million years so they are wrong
- **If they say that "Planet 9" is Nibiru**, then they are wrong as it always orbits well beyond Neptune, if it exists at all.
- **If they say a brown dwarf is invisible** they are wrong - a brown dwarf is no more invisible than you or me (we also are infrared sources as we are quite warm). Warming something up doesn't make it invisible.

If anyone says any of these things and claims to be an expert in astronomy - that's like someone telling you that Usain Bolt is a top seeded tennis player and won Wimbledeon and then

said this askance, or indeed aghast, and then from then on you'd probably never trust anything they say on matters of sport.

> Usain Bolt winning the 100 meters in Bejing in 2008 . If someone told you he was a top seeded tennis player - that would just lead you to treat that person as someone who doesn't know what they are talking about in matters of sport.

So - it's like that if you have even a basic understanding of astronomy and someone says any of those things I listed, or posts them on a website, or a youtube video, you immediately know that this person knows nothing at all about astronomy. They know as much about astronomy as the person who said that Usain Bolt was a tennis player knows about sport.

There are many other things they say that are immediate giveaways that they don't have the first clue about astronomy. Indeed if an article claims to be astronomical and uses the words Nibiru or Hercobulus or Wormwood, then unless it is a debunking site, that is a giveaway sign

If anyone says any of those things, they don't understand astronomy, just click away. See also my Debunking: You can't trust anyone except the Nibiru people - everyone else is a paid shill of the government or in some other way motivated to propogate falsehoods

And for why astronomers are sure that Nibiru is just nuts, see

Debunked: Nibiru will hit Earth on [Insert Date here]

785 views · 3 upvotes · Posted Nov 22, 2016

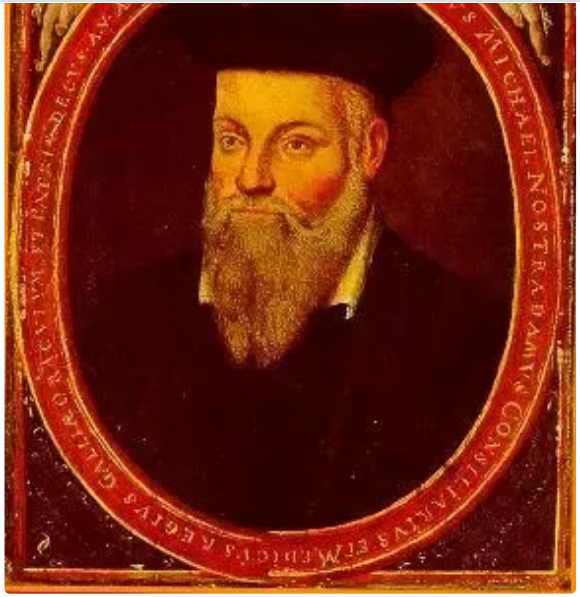
Upvotes 3 Comment

Debunked: Nostrodamus predicted the end of the world on [insert date here]

Robert Walker

Examples:

- Prediction that WWIII will break out, then end in 2026 followed by a giant impact Nostradamus Prophecies Asteroid Striking Earth
- Prediction that the Oronoids of 2016 was going to be the end of the world (this is a



> Portrait of Michel de Nostredame (Nostradamus) by his son César de Nostredame

On Nostradamus, I think best to quote RationalWiki

> **"Nostradamus** was a sixteenth-century French astrologer and scholar who is best remembered for making predictions about world events. As with all visionaries, his success rate has been perfect in hindsight. This is mostly due to the fact that he wrote his predictions in a mixture of his native French, Greek, Italian, Latin , and Provençal and kept them so vague that they can be shoehorned to fit nearly any set of events:"

His only dated prediction is this one apparently

> "***L'an mil neuf cent nonante neuf sept mois,***
> ***Du ciel viendra un grand Roi deffrayeur:***
> ***Ressusciter le grand Roi d'Angolmois.***

> **from the sky will come the great King of Terror,**
> **bringing back to life the great King of the Angolmois.**
> **Before and after, Mars reigns by good fortune."**

There apparently Angolmois is a region in the south of France but has been interpreted as an approximate anagram of Mongolois - the Mongols .

This is a guess at what it meant from before 1999]

This is one guess at what it meant from before 1999

> "The gist therefore seems to be that in July 1999 a possibly appeasing Pope will in some way stir up a leader with Mongol (or possibly Lombard) connections (some French observers prefer to take the word 'Angolmois' literally, and refer it to the former François I, who was duke of Angoulême), with the result that a previously raging war will accidentally flare up again."

Obviously that didn't happen, or indeed anything much else. That is unless with hindsight you apply numerology and claim that he was actually predicting something else. This page claims it is a prediction of 9/11 .

So anyway that is the only prophecy he made with a date attached. But enthusiasts try interpreting his vague words to mean other things, use numerology, anagrams and so on to extract meaning from them.

Both the predictions at the head of this answer were also interpretations of this same passage, and it is easy to find many more attempts to use it to prophecy various end of world scenarios.

NOBODY KNEW ABOUT ASTEROID IMPACTS BACK THEN

then, the consensus of everyone, including scientists, was that the rocks known as meteorites came from volcanoes or were stones lifted up in strong winds. So he can't have predicted a meteorite impact as he didn't know that such things were possible.

Also - when has anyone successfully predicted any astronomical event using prophecy? While on the other hand, the way we predict them by searching for asteroids and comets with telescopes, working out orbits, and then using computers to find the date of the flyby is very successful. Every day astronomers predict several distant flybys of Earth accurately to the minute. Once the orbit is known, they can predict them to the minute also for centuries into the future. No prophets can do anything that's even a patch on that. Astronomers don't need to make up vague quatrains that could mean almost anything in order to be successful at predicting astronomical events.

So hopefully this helps some of you to be more skeptical about Nostrodamus's predictions - or rather - what people claim to be his predictions by shuffling the letters and concepts in his vague and confusing quatrains until they come up with something that makes sense to them.

Debunked: The Doomsday argument

Robert Walker

Summary - this is a rather strange argument that some philosophers find compelling. I'm not sure what else to say except to outline the argument. It is based on some rather weird assumptions.

It is not based on any actual insights into whether we risk extinction - it is just based on pure thought and ideas.

Philosophers have argued it back and forth. And it is most definitely not accepted to be valid by consensus. You'll find at least as many who say the whole thing is nonsense as you find philosophers who think it all makes sense as a way of deducing something about the future of humanity.

COMPARISON WITH OTHER ESTIMATES

Note in the paper he talks about many ways that humans could go extinct. But he doesn't evaluate those risks, is not assigning them a probability of his own. He is just using other people's estimates as a way to compare with his own ideas. He argues that because they come up with similar numbers to him, that this helps to confirm both approaches.

I find that a very weak argument myself. It can easily be a coincidence, indeed he might well have known of their ideas when working on his theory. Or for an influence in the other direction, out of all the literature on the subject, he might have noticed them because they happened to use similar numbers to his as probabilities.

When asked "what is the probability of human extinction before 2100" people will come up with a wide variety of figures.

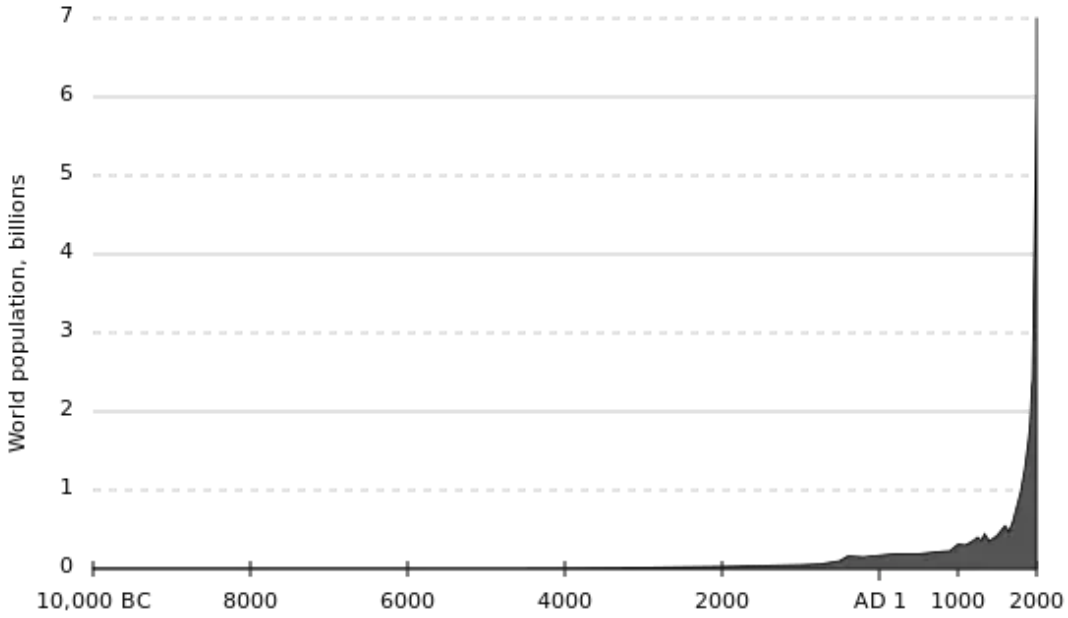
I myself think the chance is pretty much 0% of actual extinction, as many of the scenarios they

And others such as human made artificial intelligences taking over the world I find science fiction at present and unlikely for many reasons. There are a couple of scenarios I think may be possible but can be avoided so long as we take reasonable care.

For my take on this, which you may find refreshing as a different viewpoint, see my Could Anything Make Humans Extinct In The Near Future?

THE ARGUMENT

Basically it's based on the idea that you can think of yourself as born at random at some point in the entire history of humankind.



> World population from 10,000 BC to the present. What happens when you project it into the

half of the total population in the past, when you take all the humans born so far.

So the remaining half of the curve would have the same number of people in it.

If the population stays high at 7 billion with 140 million born each year - then (if this reasoning is correct) the chances are high that it will only last for of the order of a thousand years .

So anyway this mathematician has refined the argument. He assumes that we have 140 million births every year - we have already reached peak child and the population is now growing only because we are living longer. So suppose that now continues endlessly until we go extinct, whenever that is. So now he builds a probability distribution based on this idea that every year we have the same number of children until suddenly we go extinct. Then based on that he works out what the probability of extinction has to be every year to make it so that right now is more or less exactly half way through the population.

Through lots of complex maths then he comes up with a chance of 1 in 500 of extinction every year.

LOADS OF ASSUMPTIONS

However there are loads of assumptions here.

First - this whole way of arguing is itself philosophically and logically challengeable.

This is a much simpler and easier to debunk argument of somewhat the same type:

PROOF THAT I AM PROBABLY CHINESE - OR ELSE - THAT YOU ARE PROBABLY BRITISH

As an example, if just looking at the present, then I'm from the UK, I can argue in a similar way

The philosophers who think the Doomsday argument is valid would challenge whether this is the same type of argument. But I think it is a good example to show the limitations of this way of reasoning and why it is often challenged.

WHAT IF OUR POPULATION DID LAST FOR EVER?

Also another argument. What if some population did last for ever. Then you still have to be born at some point in that population. Freeman Dyson worked out a way that intelligent beings could continue to survive for ever in an expanding continually cooling universe. So it's not impossible in theory. For his ideas see TIME WITHOUT END: PHYSICS AND BIOLOGY IN AN OPEN UNIVERSE

The argument would never let you conclude that your civilization has an infinite future. Even if perhaps your civilization actually does have one.

HOW CAN OUR POPULATION EVER GET STARTED

Another objection - if the argument is valid, then how can the population of humans ever get started? Because after the first few hundred are born, if one of them stops and thinks to apply this argument, then they would prove that they are probably going to go extinct very quickly. Why is the argument valid now, but wasn't for those very early humans?

Anyway those are just some ideas to think about. They would all be countered by those who support this argument and then their arguments in turn would be countered by those who think we can't learn anything by this way of reasoning, and so it can continue back and forth and on and on. Philosophers have built up many elaborate intricate objections and counter objections. If you are interested you can read some of them here: Doomsday argument

Debunked: Have these three sisters predicted the Apocalypse

Robert Walker

So, first of all, for this story to mean anything to you, you have to be a devout Catholic. You have to believe in the Virgin Mary as a saint who appears to people in dreams and you have to believe that the children in this video met her and that this was a miraculous event. Also of course you have to believe that the Apocalypse can occur as a future miraculous event.

If there is anything there you don't believe, there is no need to read any further. This story is not for you. If you aren't a catholic, no need to pay any attention to it.

There is no astronomy or science in this so it has to be debunked on religious terms.

This is one of the videos shared about it:

If you are a Catholic, I've found out a bit more, quora answer here which may help you interpret it according to your faith or you can contact a catholic priest maybe for help. It does seem to be something that Catholics do believe to be a true miracle. A bit about it here:

What were the 3 secrets of Fatima? Are they against Catholicism?

Wikipedia article here

Three Secrets of Fátima - Wikipedia

This gives background on Catholic interpretations of revelations - goes into how the apocalyptic visions are part of a tradition of extravagant symbolism not meant to be taken literally. They were a source of comfort for early Christians facing persecution, and still can be today for Christians facing difficult times because of their faith.

> "The Book of Revelation had its origin in a time of crisis, but it remains valid and meaningful for Christians of all time. In the face of apparently insuperable evil, either from within or from without, all Christians are called to trust in Jesus' promise, "Behold, I am with you always, until the end of the age" (Matthew 28:20). Those who remain steadfast in their faith and confidence in the risen Lord need have no fear. Suffering, persecution, even death by

> enduring message of the book; it is a message of hope and consolation and challenge for all who dare to believe."
>
> The Apocalypse

~So with this three sisters story, there is no actual prediction, and no astronomy. There is also no evidence that they did predict a literal apocalypse and anyway - that would surely go against the teachings in the Bible about false prophets. That's about all one can say.

I think if you are Catholic and want more help with it, best to contact a Catholic Priest for help understanding what it is about.

Also here is my general article about these Biblical ideas: Debunked - The world will end because the Bible (or some other sacred book) says so

Debunked: Earth could be struck by a huge asteroid hundreds of kilometers across

Robert Walker

That's actually an artist's impression of a planetoid hitting the early Earth by Don Davis . But we are at no risk at all from asteroids like that. The last impact on Earth this big was getting on for four billion years ago. The largest asteroids that could feasibly hit Earth are so small they would span at most a single pixel in that image.

The largest asteroids that could hit Earth are about 10 kilometers across, some of them a little larger. But a 100 kilometer diameter asteroid never hits Earth, hasn't for billions of years and there is no likelihood of this happening for millions of years into the future.

To put it in perspective, if you had an image of the Earth with 1600 pixels resolution for its

You can have a go at looking for a 10 km diameter asteroid in a high resolution image of the Earth here .

This is about as large an asteroid as would hit Earth. So you can understand why they don't use realistic asteroid sizes in the images. You wouldn't be able to see the impactor at all!

This is a more accurate image, used in many news stories - where they show it glowing but don't show the impactor, and with a close up zoom in on the Earth.

That's the image that was widely used for reporting 2013 TV135 the roughly 450 meters diameter asteroid that we now know will be over three quarters of the distance to the sun away from Earth on that date .

For a larger, 10 km asteroid, this is an accurate artist's impression, from NASA.

About 70 impactors this large or larger have hit Earth since 3.8 billion years ago.

Also check out the image by Don Davis, of Southwest Research Institute from Ancient Asteroids Kept Pelting Earth in a "Late-Late" Heavy Bombardment .

Nothing much would survive in the near neighbourhood of the strike, out to a range of order of hundreds of kilometers. But far away, many would survive the immediate impact.

RISK OF DINOSAUR EXTINCTION TYPE EVENTS

There is a risk of an object as big as ten kilometers in diameter, or a little more, hitting Earth. But how big a risk is it?

What would you say is the probability of this happening - a dinosaur era ending type impact, before 2100? And what is your best guess for when it is most likely to happen next in the future?

Artist's impression of the impact at the end of the Cretaceous period - credit Don Davis, painted for NASA

The dinosaur extinction event at the end of the Cretaceous period happened 66 million years ago .

When asked that question, most people hugely overestimate the chance of this happening again soon. Many, perhaps influenced by dramatic movies, will say there is a high chance of it happening before the end of this century.

So, if you ask for a best guess about when we are likely to be hit by an asteroid that large, the answer is, probably ten million years from now upwards. It is more likely to be several tens of millions of years before we get hit by an asteroid this large.

To put this into perspective, then since the dinosaur impact, there has been enough time for tiny animals looking like this

Tarsier

to evolve all the way to humans.

It may well be as long again before we have a similar massive extinction type asteroid impact on Earth again. And the dinosaurs didn't have any technology (as far as we know). We could easily survive that event - and what's more we could deflect it also, especially with a bit of warning (more on this later, in What kind of technology could we use to deflect an asteroid?).

> This could happen in any century, as it is a random event. But the chance of it happening within the next century is one in a million, so you can be 99.9999% certain that it won't happen this century. Or indeed, you can probably add an extra 9, make it 99.99999% certain, since most of the 1 kilometer asteroids have already been located, and they all miss Earth in

> 99.999999% certain we won't be hit in this century, and we'd also spot any approaching comet that large many years before it got here. It would of course be far more likely to do a close flyby than to hit.
>
> Most likely it won't happen for many millions of years. You'd expect to get many flybys first, because Earth is such a tiny target, hard to hit.

Indeed, if there were any astronomer dinosaurs at the time (unlikely) it would probably be obvious even to the naked eye. Assuming it did many close flybys first, every decade or two, as is the usual situation - then something that big, at the distance of the Moon would be as bright as a 10 meter diameter satellite in Low Earth Orbit. I would be easy to spot with the naked eye as a faint moving star in the sky.

In any flybys as close as geostationary orbit, it would approach the brightness of the ISS - the brightest object in the sky after the sun and moon.

WHY WE CAN'T BE HIT BY A 100 KILOMETER DIAMETER ASTEROID

In the movie Armageddon, NASA discover an asteroid roughly the size of Texas heading for Earth, due to hit us in 18 days . If you get your ideas of science from movies you might think this means we could be surprised by a huge asteroid like that with only a few weeks of warning. But this is just movie science.

First, we can't be surprised by such an asteroid, as it is far too large to be missed by even amateur astronomers with a decent sized amateur telescope, years before impact.

Enceladus hovering over the North Sea - this is smaller than the asteroid in Armageddon, and it can be spotted by keen amateur astronomers out as far away as Saturn. Image credit NASA / JPL . You might also like to check out Cirro Villa's image of Enceladus hovering over Southern England in Asteroids VS. Your Hometown: Fun but Frightening Graphics Compare Asteroid Sizes to Places on Earth

Voyagers 1 and 2 both took over three years to reach Saturn .

WHY WE CAN'T BE HIT BY SUCH A LARGE ASTEROID AT ALL

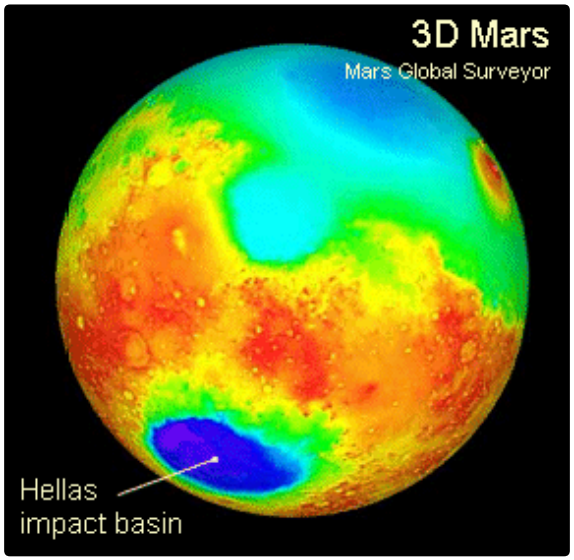
The known asteroids like Vesta and Ceres are all in nice stable orbits. There's a tiny chance of Vesta hitting Ceres every billion yeas, but for sure nothing is going to happen there for millions

to hit Earth.

We can see that also from the meteorite crater record of the solar system that such large asteroids never hit the inner solar system inside of the asteroid belt, not for billions of yeras. There are no huge craters in the inner solar system younger than 3 billion years, out to Mars.

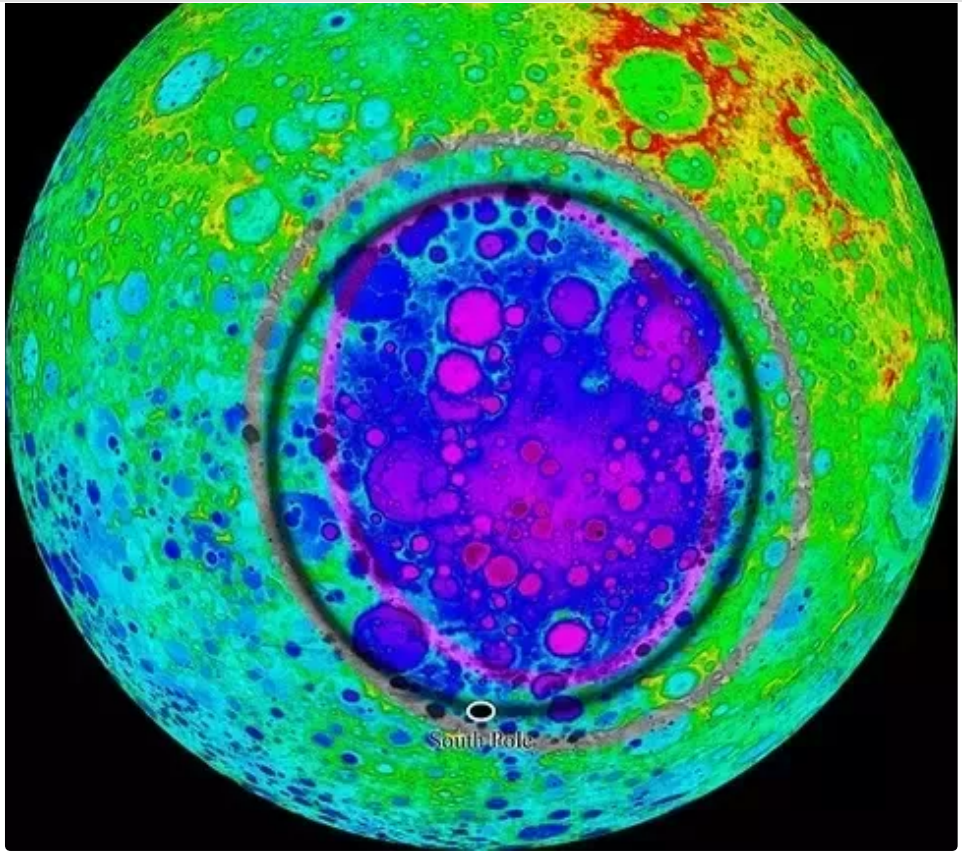
The Moon, Mercury, and Mars all have huge craters from the late heavy bombardment between 3.8 and 3.5 billion years ago.

Craters on Mars



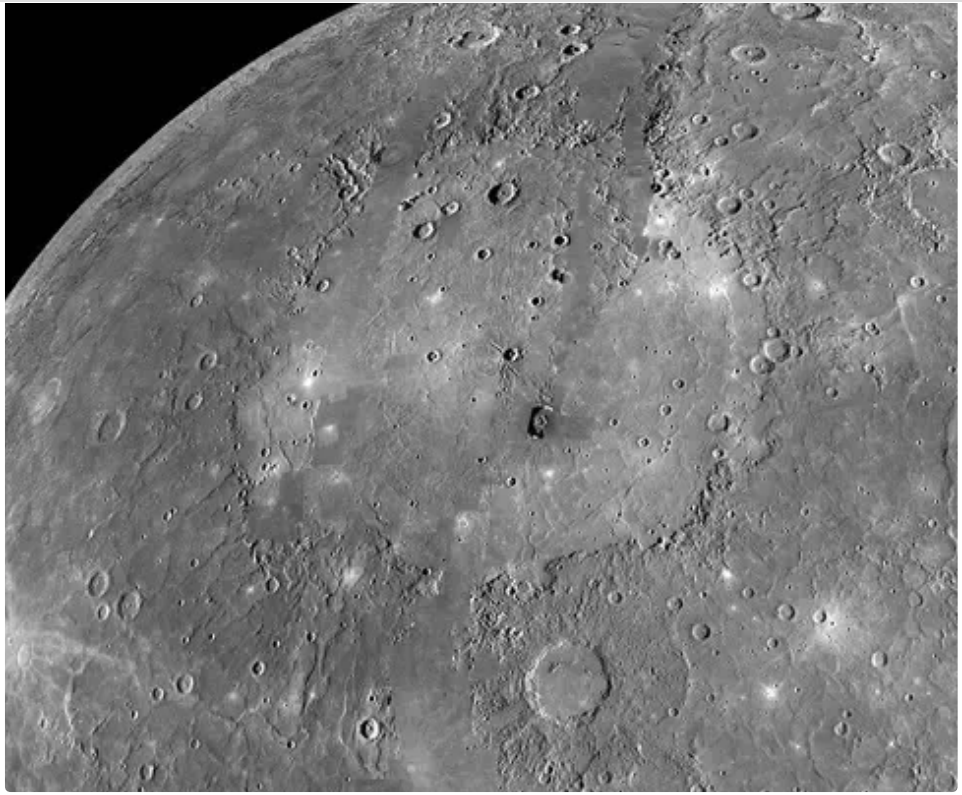
Impact from 3.8 billion years ago when large asteroid impacts were still common. 3D map of Mars - Hellas Basin on Mars

Craters on the Moon



> The Aitken basin at the lunar South pole. It's believed to be over 3.8 billion years but the exact date is hard to pin down. Impact of an asteroid perhaps 170 km in diameter.

Craters on Mercury



The Caloris basin on Mercury.

Craters on Earth

Earth surely had impacts this large back then as well, but the evidence is probably long erased by continental drift.

The largest crater on the Earth may be the Vredefort Impact Structure in South Africa - this was about 300 km in diameter, when formed. The Sudbury basin is nearly as large, and there are three others in the 100 - 300 km range. See Largest craters ordered by size . These are

oceans there - doesn't mean it boiled them dry, just surface layers, and it would come nowhere near making all life extinct. Humans could surely survive even that one if you are in a sub at the time, and after the impact, Earth would remain the most habitable place in the solar system. Anyway - that one is over three billion years ago, soon after the end of the so called "late heavy bombardment" - it is only late compared to the origins of the solar system, early of course from our perspective.

Even though the "late heavy bombardment" was over, there was a tail-end of not quite such huge impacts that continued, perhaps for another 700 million years. Ancient Asteroids Kept Pelting Earth in a "Late-Late" Heavy Bombardment , up to 2.5 billion years ago.

Craters on Venus

Venus is shrouded in a thick layer of clouds, so hard to observe. However, we now know its surface in some detail from the Magdellan spacecraft, which orbited the planet and observed it using radar.

It found a surface with almost no craters. It's easy to see why it has no small craters . Most asteroids up to about one kilometer in diameter or smaller would break up in its atmosphere in an airburst, just as most meteorites up to 30 meters diameter break up in our atmosphere, because its atmosphere is so much thicker than ours.

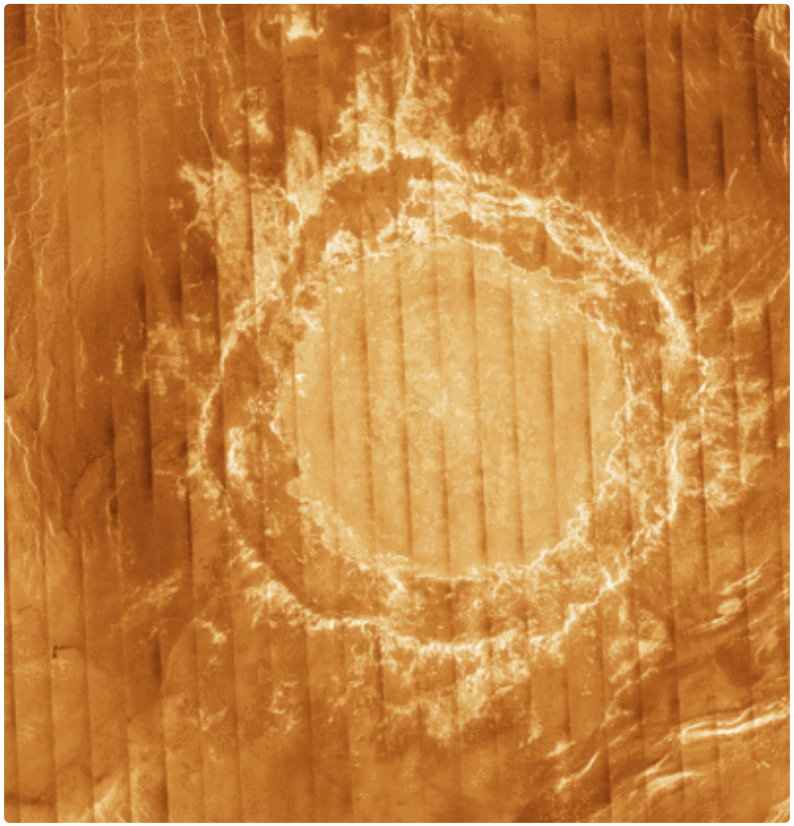
But they also didn't find many large craters and none at all of the really huge ones. It's the least cratered body discovered so far in the entire inner solar system.

This is probably because it's surface is relatively young. It has no signs of continental drift, and not much volcanism right now, compared to Earth (there are some signs that it has active volcanism, but not many). It doesn't seem to be releasing enough heat. And there are long channels, longest in the solar system, where molten lava must have run in the past.

and instead it just gets hotter and hotter, until, from time to time, the entire surface "flips", volcanoes erupt everywhere and cover it in molten lava which completely erases the crater record. Most recently 300 to 500 million years ago .

So, we can only say for up to half a billion years of history, but there have been no really huge impacts on Venus in that timescale.

It's largest crater, Mead crater, is 280 km in diameter



Meade crater - the largest crater on Venus, comparable in size to the larger craters on

by something big early on to explain its retrograde motion - most probably about the same time as the formation of the Moon. And surely like the Moon, Earth, Mars and Mercury it had many really big impacts in the early solar system. But all trace of them is now gone.

Explanation of the cratering record - why are there no huge impacts for three billion years?

So, why do we see no really large impact craters in the inner solar system since the late heavy bombardment, and the "late late" heavy bombardment?

First, the inner solar system is almost completely cleared out of "Texas sized objects". There are a few objects of a hundred kilometers diameter or more are all in stable orbits at least for hundreds of millions of years. Ceres, Pallas, Vesta and many smaller asteroids larger than 100 km in diameter, would be devastating if they hit Earth, but they are all in stable orbits in the asteroid belt, beyond Mars, with no chance of an impact, at least in the near future.

Mercury is another object that could hit Earth - it is in a stable orbit at present, but it happens to have a potential future resonance with Jupiter - the rate of precession of its perihelion (point where it is closest to the sun) is just a little faster than the rate of precession of Jupiter's perihelion. There is a 1% chance, in simulations, that it's orbit gets destabilized. In most of those cases it hits the sun or Venus but there is a tiny chance, 1 in several thousand, that it could hit Earth (for details see this article in scholarpedia written by Jacques Laskar, expert in this topic who did many of the simulations).

Mercury , diameter 4900 km, could hit Earth several hundred million years from now, though the chance is tiny, perhaps 99.95% or better chance that it doesn't have any affect on Earth at all . At any rate its current orbit is stable for hundreds of millions of years.
This image shows Mercury in a subtle false colour, using infra red information and was taken by Messenger spacecraft in January 2008 .

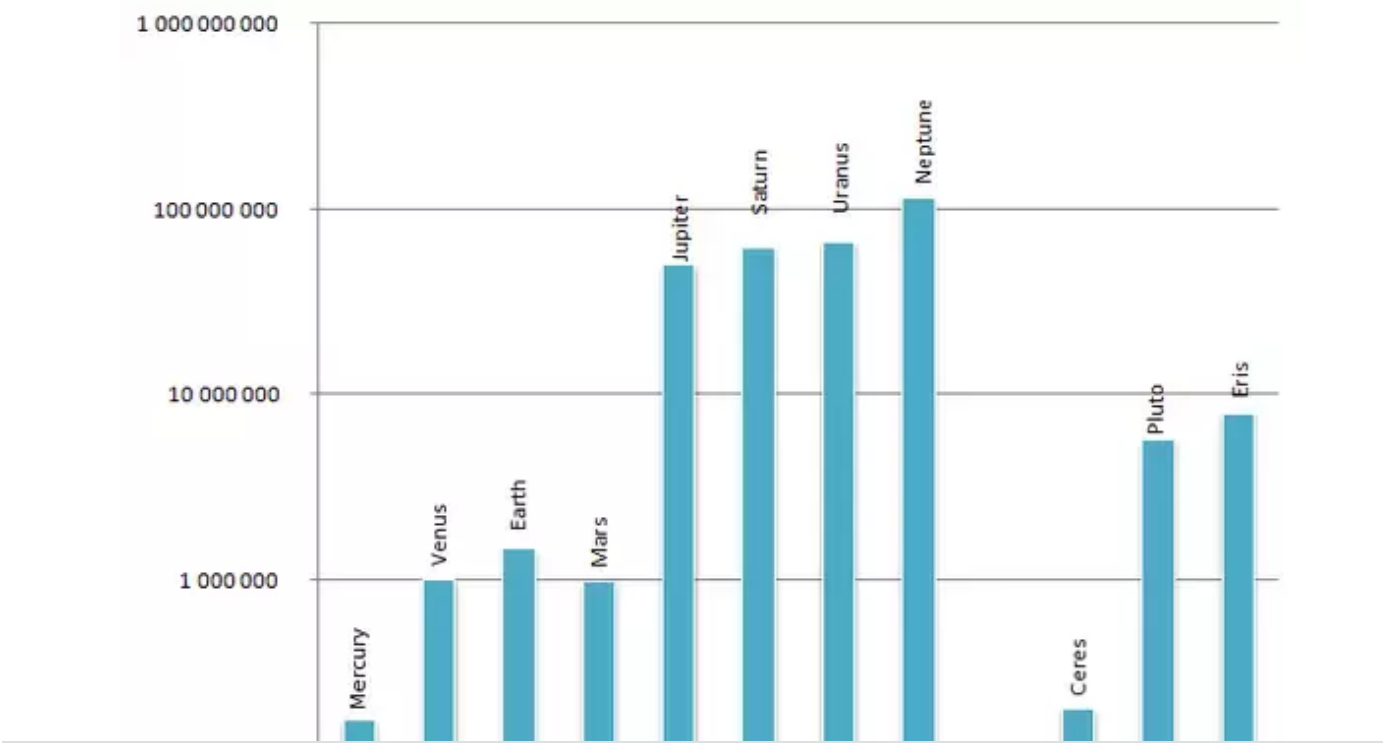
Long term, also, the larger asteroids have chaotic orbits, and Vesta and Ceres have an estimated 0.2% chance per billion years of hitting each other (paper)

So anyway - that's of interest to astronomers, but in the near future for hundreds of millions of

More accurately - anything close to the plane of the solar system, if it is in a Jupiter crossing orbit, is likely to do a close flyby of Jupiter first, because Jupiter's gravitational influence is so large.

Jupiter's Hill radius - sphere of influence - is 53 million km and its distance from the sun is 778 million kilometers.

Earth's hill radius is about 1.5 million km (1,497,000) and its distance from the sun is about 150 million km (149,600,000 km) - ratio of the two is actually larger, but of course, Earth's gravitational influence is much less on anything that passes through its Hill sphere.



Also see:
Hill Sphere calculator

Also
Planetary Calculator framed home page
lets you find the Hill spheres of all the planets in one go.

So any object coming into the inner solar system, unless it gets into some resonance with Jupiter, is going to encounter Jupiter's hill sphere pretty soon.

So the explanation of the cratering record may be something like this: A large comet on its first flyby of the inner solar system is likely to miss Jupiter but will have almost no chance of hitting the tiny Earth.

Also, if it comes from the outer solar system, it is very unlikely to be in exactly the same plane as Earth and likely to be like Halley's comet.

As you see, Haley's comet, in this orbit, can never hit Earth because it's orbit only crosses the plane of the Earth's orbit when it is about as far away as Venus, far closer to the sun.

So, - if you had a comet that came into the inner solar system for the first time, not likely it is in the same orbital plane as Earth.

> ***How tricky is it for a comet to hit exactly the same orbital plane as Earth?***
>
> *More exactly, Earth's diameter / distance from sun = 12,742/149.6 million = 0.00008517379 - which is also approximately its angle in radians as seen from the sun.*
>
> *So to hit the Earth on a first flyby into the inner solar system, without first doing numerous flybys of Jupiter, Earth etc, it has to have the same inclination as the Earth, 1.57 degrees, to*

> *Not only that though, Earth's diameter compared to the perimeter of its orbit is about 12,742/(2*pi*149.6 million). So, if it does happen to have exactly the same inclination, to two decimal places of precision, the chance of hitting Earth on it's first flyby of the inner solar system, before any flybys of Jupiter or the other planets, is still less than one chance in 74,000.*

It needs to be deflected into the same plane first, which it could do with flybys of Jupiter (say), which changes its orbit.

Then many of them hit Jupiter, or hit the Sun, or grazes past it and melt away. Others are thrown out of the solar system. The ones that are left after all that are split into many smaller comets through close encounters of Jupiter or the Sun. These break it up through tidal interactions - the gravitational forces are different on the inner side, and outer side of the comet. As comets have low levels of gravity and are not tightly bound together, they break up easily.

We saw just this happen with Comet Shoemaker Levy . It got split into numerous smaller comets

At the time it was thought that this was a rare once in a century type impact. But then another impact was discovered in 2009

The impact scar here is approximately the size of the Pacific ocean, and the impact was perhaps 200 to 500 meters in diameter, but was not seen before the impact. It was discovered by an amateur astronomer, Anthony Wesley, who then discovered a much smaller impact in 2010 probably caused by an object just 8 - 13 meters across. And then two amateur astronomers in 2012 observed another impact. This time, by chance, a third amateur astronomer was taking a video of Jupiter at the time, and checking back through his video frames, found that he had recorded the event.

This is another example of the role of amateur astronomers in Astronomy. They can watch targets like this continuously, which the professional astronomers, who have to justify their time on large telescopes, simply can't do. Though Hubble of course, for instance, could get better images of Jupiter, there is no way one could justify pointing it at Jupiter 24/7. And amateur astronomers now have equipment that lets them take photos and videos like this. For

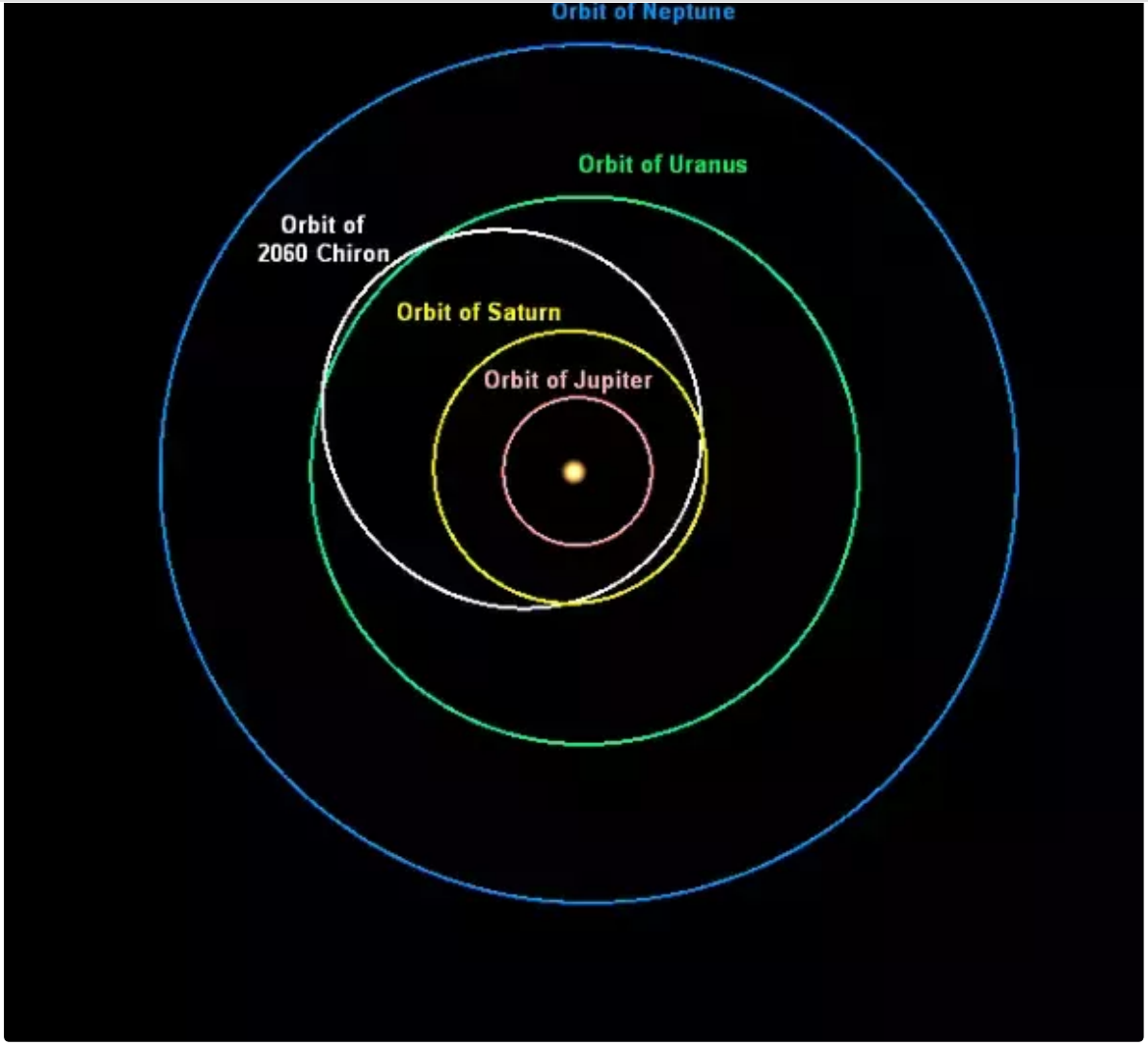
impacts last two or three months. Based on this, then the best estimate at present (in a paper from 2010) is that Jupiter gets hit by an object between 0.5 and 1 kilometer in diameter every decade . This is five or ten times the previous estimates.

That's about two thousand more than the number that hit Earth.

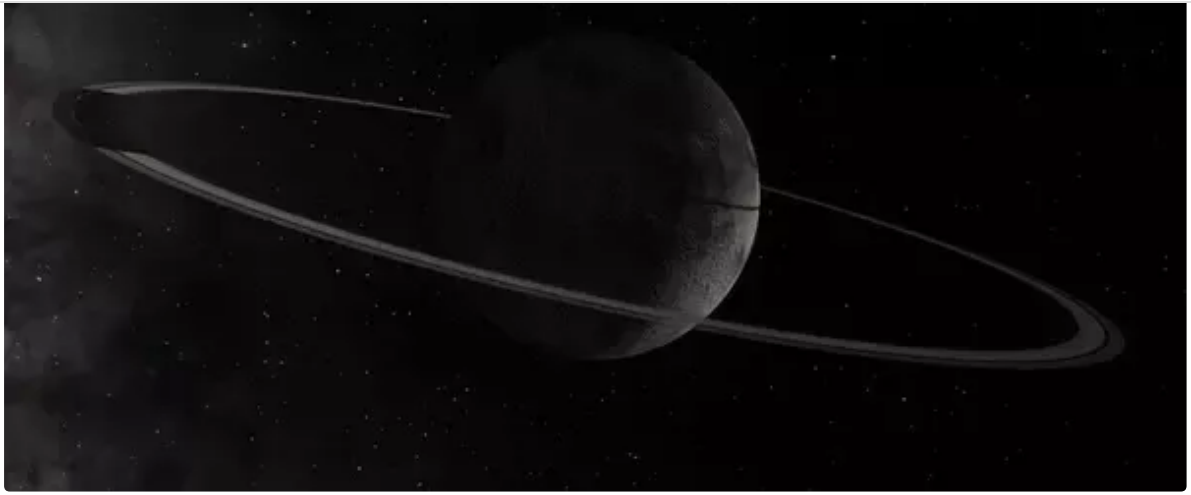
It also gets hit, they estimate, by objects of size 300 - 400 meters every two years, and for objects of size 10 meters, it gets about 30 - 150 impacts a year .

So, the answer seems to be that, by the time a giant comet from the outer solar system has a decent a chance of hitting Earth, it has probably impacted Jupiter already, or the sun, or escaped the solar system. If it has managed to escape those fates, then by then, with many flybys of Jupiter, or of the sun, it has already broken up into smaller comets of around 10-15 km scale or smaller.

One scenario suggested in a recent paper is this: From time to time, we probably do get large 200 km scale or larger comets come into the inner solar system, similar to Chiron in orbit and size. Chiron, is a "Centaur" - one of the minor planets with unstable orbits crossing the orbits of two or more of the large gas giants in the outer solar system. So if you did get a large comet come into the inner solar system, these seem like good candidates for it.



> Orbit of Chiron, crossing the orbits of both Jupiter and Uranus, which makes it a "Centaur" asteroid - a term for an asteroid that crosses the orbits of two gas giants. This is an unstable orbit, and in the future centaurs like this may encounter Jupiter close up.



> Chiron in Celestia , with its ring

So then the idea is that they do a series of flybys of Jupiter over a period of a few thousand years. But rather than hit Earth, what happens is they get broken up by Jupiter. That is if they don't get caught by it, the sun, or ejected from the solar system of course.

So then they may increase the number of 1 - 10 km diameter comets in the inner solar system. Those then hit Earth. See Giant Comets and Mass Extinctions of life . This whole scenario is played out over a timescale of many thousands of years, not the Armageddon 18 days :). And the individual impactors are 1 - 10 km in size, but you get a fair number of them one after another.

There is no sign of Chiron doing this yet, or any of the other known Centaur objects.

One of the largest objects that could hit us is 433 Eros , the second largest Near Earth Asteroid 34.4×11.2×11.2 km.

Eros rotation gif

It is a bigger even than the dinosaurs meteorite - and it has 50% chance of hitting Earth in the next 100 million to billion years. But it's not a problem for us right now, it can only hit us if its orbit changes quite a bit first.

A Jupiter family comet, comes in to the inner solar system rarely, so the chance is small of it hitting Earth. We will soon have all of those mapped out.

So - likely to be lots of quite distant flybys in that case before it comes near to Earth.

Even for a Jupiter family short period comet, or a very large NEO, you probably have several flybys before it hits, because the Earth is an absolutely tiny target.

These are probabilities, can't say it is a certainty, but very likely.

So - when they talk about asteroid deflection strategies, normally is based on that assumption. They assume we have several decades of advance warning and many flybys first, or at least one flyby before it hits.

In that case you just need to change its delta v by maybe a fraction of a meter per second, a long time before the flyby so it misses the keyhole, so then misses Earth next time around (or several flybys into the future).

So then you can use quite gentle methods. Ideas include a gravity tractor, or nudging it, kinetic impact, lots of ideas.

For more on this see my Giant Asteroid Headed Your Way? - How We Can Detect And Deflect Them

Much of this is an extract from that article.

198 views · 1 upvote · Posted Nov 20, 2016

Upvotes 1 Comment

Debunked: Mysterious sphere spotted in NASA's Sun Images

Robert Walker

This is in imagery from NASA's Stereo A satellite which is currently nearly the other side of the sun from Earth taking photographs of the sun looking in our direction. Dazzathecameraman explains what happened:

So - the camera overheated, and shut down, which then confused the software which superimposed an image from another camera, rotated 90 degrees and possibly flipped, on its video stream output.

Here is the link to the corrupted artifacts page STEREO he mentions in the video.

Advice for journalists - when reporting something like this - these sites have contact details, ask

suicidal?

Debunked: A nuclear war would make Earth uninhabitable - and humans extinct

Robert Walker

Summary - a nuclear war would not come even close to making Earth uninhabitable.

BEFORE I START

First I want to say, that I am actually very much in favour of nuclear disarmament. I think that the UK should even disarm unilaterally, see my Is Corbyn Right About The Bomb?- Op Ed . But I think people need to know the truth in any topic like this and make decisions based on truth, not on the basis of people telling them falsehoods that they think will lead them to desired actions.

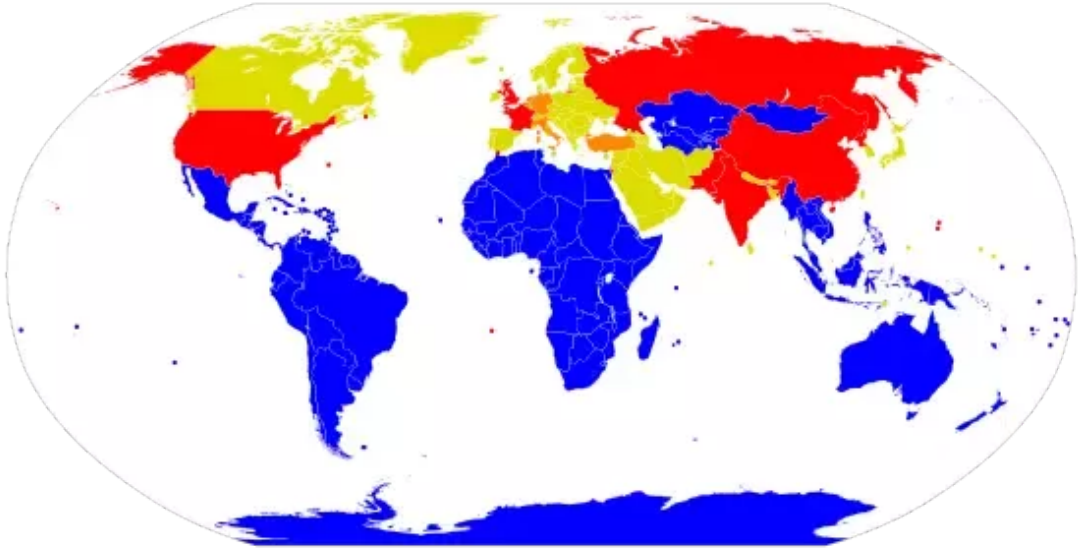
This answer doesn't take away from the arguments against nuclear weapons in my view. After all we no longer think that fire bombing cities as for the fire bombing of Dresden is acceptable

of innocent civilians is enough to make them something that military generals and leaders shouldn't even consider using in warfare in my view.

So anyway back to the topic of this question.

WHY NUCLEAR WEAPONS WOULD NOT MAKE US EXTINCT

First, the entire southern hemisphere is a nuclear free zone, the worst of the radiation is so short lived it is over in half an hour, there is plenty of radiation left to have long term health effects, increased cancers and other health effects, but the levels of radiation that kill people quickly are soon finished with.



> The blue areas here are nuclear free. If we did have a global nuclear war - then there would be no nuclear bombs in those areas at all. Also the harshest radiation is over quickly, the lethal radiation is mostly over within half an hour.

Also in science fiction and popular imagination the radiation from nuclear weapons is far more dangerous than it is in reality.

After all this is modern Hiroshima

The most dangerous radiation is in the form of short lived isotopes which decay over time periods of seconds, to months.

If you are close to the blast then you need to get shelter within half an hour to survive the radiation hazards, and if further away you need to find shelter within three hours.

Worldwide Effects of Nuclear War

A nuclear war would kill millions, directly and indirectly - but it does not leave the Earth by any means uninhabitable and most of the World's population would surely survive. If you are in one of the nuclear free zones, then you'd be hardly affected at all.

The main long term effects would be from longer lived isotopes like caesium. Here in the UK we got iodine, cesium and strontium isotopes on our hills after the Chernobyl reactor explosion. Of those only caesium-137 was still a concern two decades later, but for more than two decades afterwards, the sheep farmers from the worst affected areas - from a reactor explosion 3,000 miles away - had to test their sheep with geiger counters before they could sell the meat. Sheep farmers still stuck under a Chernobyl cloud

So - after a nuclear war there'd be restrictions like that over regions far from the war zones. We'd need Geiger counters for quite some time surely. But it would not make us extinct. The main issue would be an increased risk of cancer from eating radioactive food.

NO NUCLEAR WINTER

This was the big bug bear during the cold war. Carl Sagan and others calculated that an all out nuclear war, both the explosions themselves and the firestorms they created, would put so much dust into the upper atmosphere that it would cool the entire Earth for several years afterwards in a nuclear winter.

Now - their calculations turned out to be accurate for asteroid impacts. This is a significant issue though not an extinction causing one, for large asteroid impacts. But several things happened to cast doubt on their calculations for nuclear weapons.

In particular, when the Iraqis retreated after their invasion of Kuwait, then they set many oil wells alight. These created dense black smoke that turned day to night over large areas

But it didn't have the widespread effects the scientists had expected. As Carl Sagan wrote:

> "it was pitch black at noon and temperatures dropped 4–6 °C over the Persian Gulf, but not much smoke reached stratospheric altitudes and Asia was spared."

This lead to them re-evaluating the models that lead to the nuclear winter prediction, which were rather crude, making many assumptions and approximations.

The conclusion nowadays is that nuclear weapons most likely would not cause firestorms in cities, if they did, the smoke would rarely reach higher than 4 km. Also much more of Earth burns in wild fires every year without putting us into a nuclear winter scenario.

Also modern nuclear bombs are smaller than they used to be. Both US and Russia have

70,000 feet which means the debris will rain to Earth within hours or days close to the point of impact.

Our nuclear arsenals are also much smaller than they were at the time of the nuclear winter calculations.

So in short, nuclear winter was based on poor science, as it turned out (refuted by the Kuwaiti fires), and probably even at the height of the cold war, we would not have been plunged into a nuclear winter. As it is now, certainly not.

Here I'm summarizing Allen E Hall's answer to In a total nuclear exchange where the entire worlds arsenals are used, how long would the nuclear winter last and would we survive?

You can go there to find out more.

REITERATION - I THINK KNOWING THIS DOES NOT MAKE NUCLEAR WAR MORE LIKELY

As I said in the intro, the after effect of a nuclear war is horrific enough without needing to add in nuclear winter to make it even more horrific as a deterrent. I don't agree with Alan Hall on is conclusion that it makes nuclear war more likely to know that it doesn't cause nuclear winter.

I also think myself that if one country was to drop a nuclear weapon on another and the other one didn't retaliate today - that it is very different from the case of the US and Japan.

With Nagasaki and Hiroshima, the military leaders in the US, didn't realize the full horror of what they were doing. They also had got innured to levels of civilian casualties that nowadays would be unacceptable through such things as fire bombing of Dresden. They thought of it as just another fire bombing like the others done before.

countries. Also we are much more interconnected now. In the modern world such an isolated country can't survive long, it would be a political disaster for them, lose all their influence in the world. Would the US have any power in the UN or have any political say in negotiations, any moral clout at all if it had dropped a nuclear weapon on another country either without nuclear weapons, or one that didn't retaliate? Or would the Russia either?

They would surely also get really strong united trade embargoes as well, as other countries would do whatever they could to express there disapproval and not to align with them in any way at all.

If the other country has nuclear weapons and retaliates it's different. So it makes a big difference if both sides in the conflict have used nuclear weapons. I think that makes the most logical response of any leader to first not do a first strike, and second, not to retaliate in kind if another country drops a nuclear weapon on you.

Whether a leader of a country with nuclear weapons would be so logical in the heat of a war I don't know, but there are at least some people prepared to say they wouldn't launch nuclear weapons in any circumstances. If Jeremy Corbyn gets elected as PM of the UK in some future election, we will have such a leader here,

Also, why would nuclear weapons be treated differently from fire bombing? The US could easily threaten to firebomb any city in the world as a deterrent, and we'd think that was a horrific thing to do. So why is it treated as acceptable to threaten to drop nuclear weapons as a deterrent?

Anyway - so hopefully at some point we achieve total nuclear disarmament. Meanwhile, it's good to know it can't make us extinct and that those who live in nuclear free zones would be hardly affected at all even after a global nuclear war involving all the nuclear weapon holding

weapon owning state does not make you safer, we'd be well on the way to total nuclear disarmament I think.

UN NEGOTIATIONS TO ELIMINATE ALL NUCLEAR WEAPONS

The UN is going to start negotiating a new treaty to eliminate all nuclear weapons. 123 nations have signed it, the main exceptions, apart from Australia, are the nuclear weapon holding nations. Basically the nations that currently have nuclear weapons are just about the only ones who think they help preserve peace. So - far from being widely accepted as maintaining peace or desirable, the idea that we should hold nuclear weapons is not the norm at all. The majority of nations don't want them and don't want anyone else to have them either and don't feel they need their protection.

Based on that, I think there is a real prospect of eventual total nuclear disarmament but somehow the small number of nuclear weapon holding states have to get on board with it as well, and get involved in measures for serious arms reductions once more.

UN votes to start negotiating treaty to ban nuclear weapons

See also

- Is Corbyn Right About The Bomb?- Op Ed
- Debunking: A President Of The US Could Order A Nuclear Attack At A Moments Notice On A Whim

833 views · 2 upvotes · Posted Nov 20, 2016

Upvotes 2 Comments 2+

will run out of oxygen to breathe - they are not the “lungs of the planet” in any literal sense

Robert Walker

You see the phrase that the “forests are the lungs of the planet” used so often by people who want to save the forests. And it is easy to get the impression that it means that if we cut down the forests we would no longer be able to breathe.

But - there is ***NO SCIENTIFIC BASIS FOR THIS AT ALL***

I'm all in favour of keeping forests and planting new trees - but let's not argue for this on the basis of the need for trees to provide oxygen - as that is just not true as far as I can see. I think it confuses people to use invalid arguments even for a good conclusion.

I cover some of the many reasons why we need to keep our forests below under “**REASONS TO KEEP TREES - WHY FORESTS MATTER**” - but first let’s see why we will continue to have plenty of oxygen to breathe whatever hapapens to the forests.

> Mato Grosso - a patch of native forest in a cotton plantation area in the northwest of the state, near the region of the Xingu Indigenous Park

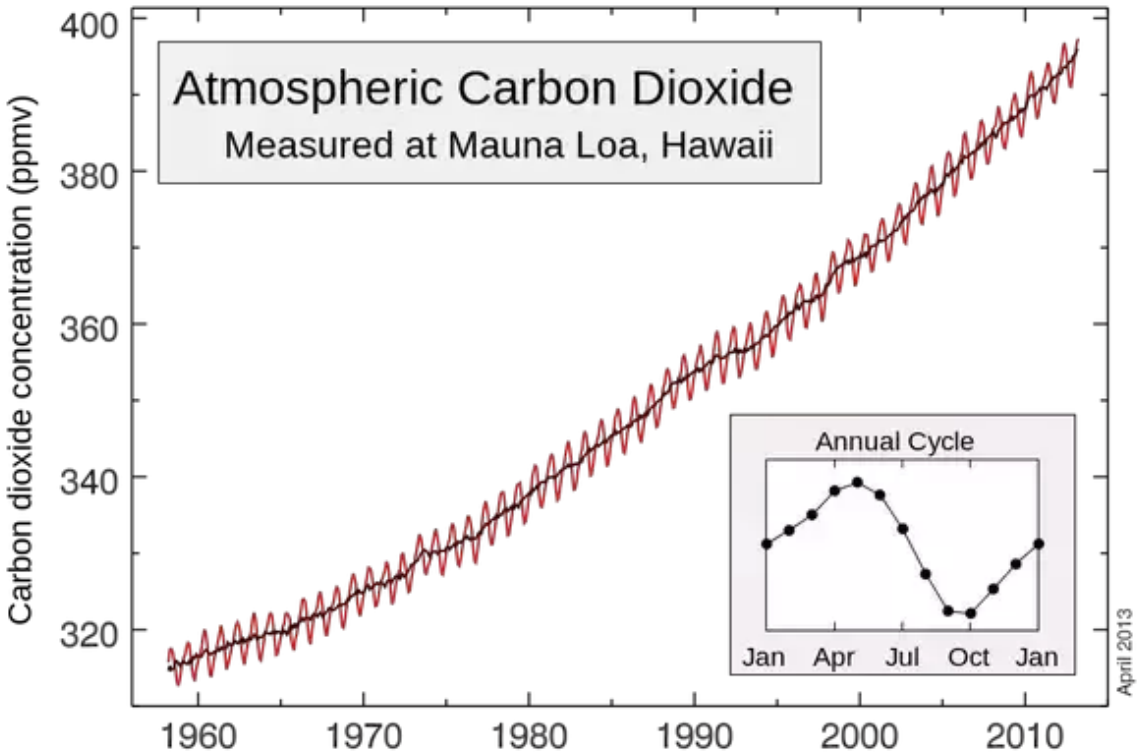
First of all the metaphor is a bit back to front as the jungles continually produce oxygen, and they do not produce CO_2 (except when destroyed). Our lungs of course absorb oxygen and exhale CO_2. So, in that trivial way, they are not really much like lungs at all. But I'm talking here about the way the metaphor is often used in news stories and popular accounts, to say that we depend on the jungles for oxygen. Is that true?

Here are the facts:

- The residence time of oxygen is 2,000 to 10,000 years. So, if all the vegetation on the

So we don't need to worry about problems breathing due to lack of oxygen even if we cut down every tree. Residence times of some atmospheric gases .

- So what about CO2 poisoning?
- CO2 is increasing at roughly 250 ppm per decade due to burning fossil fuels etc:



- This paper recommends increasing allowed inspired levels of CO2 from 0.5 to 2%. Carbon Dioxide Tolerance and Toxicity

percent in inspired air. This level has not been shown too induce decrement in performance or in normal physical activity."

- The lower level of 0.5% corresponds to about 2,000 years of "business as usual" anthropogenic CO_2 increase. So again not something to worry about any time soon.
- If we burnt all the available fossil fuels, (which hopefully we will have enough sense not to do) including shale gas, tar sands and other unconventional reserves, one estimate puts the amount of CO_2 it would generate at 1400 ppm. That's well below the level of 500,000 ppm level which would impact on our breathing.
- Residence times of CO_2 and methane are only a few years, much less than for oxygen, so you might think that this means it would quickly recover if we stop adding CO_2 to it. But the situation is complicated because of positive feedback effects, which could mean the climate gets stuck at somewhat higher levels of CO_2 because due to climate change it can no longer absorb so much and continues to produce same amount as before.

There are many other reasons we need forests. And on the very long term, yes we need them for oxygen to breath, along with the green algae in the sea.

But we are not going to run out of oxygen or die of CO_2 poisoning due to cutting down trees, or indeed, even through burning fossil fuels. We may get global warming due to increase greenhouse gases and many other major effects but not lack of oxygen to breath.

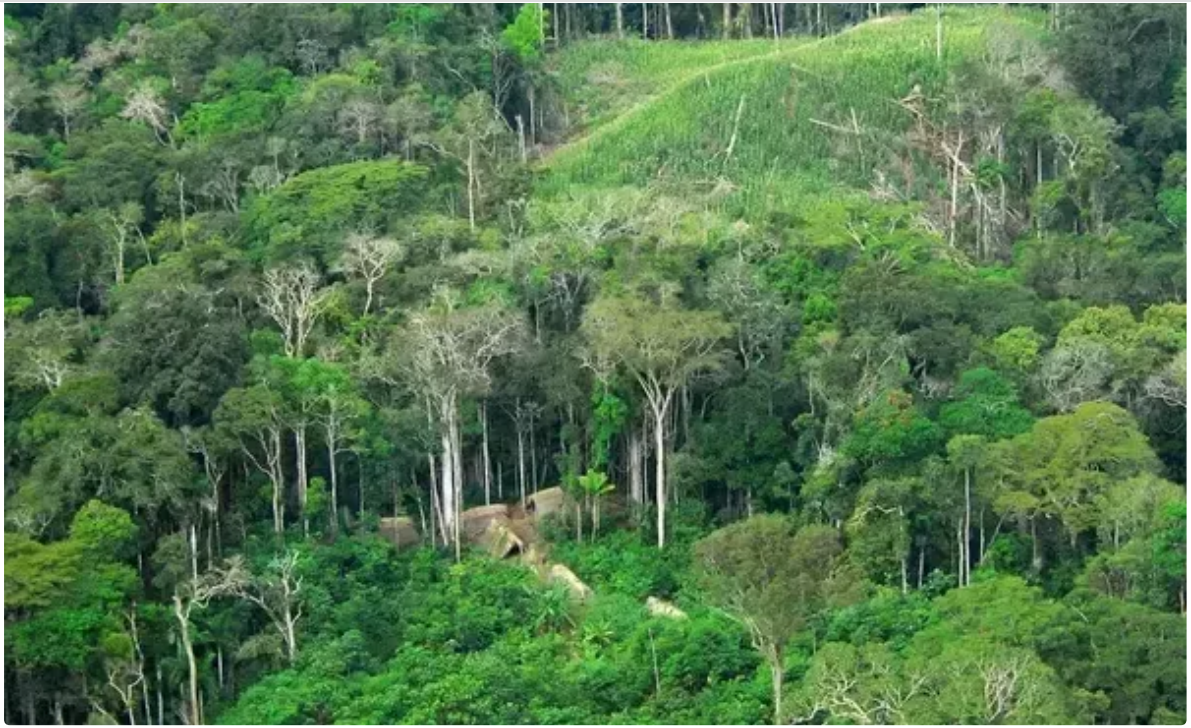
Actually 70 to 80% of our oxygen comes from green algae The Most Important Organism? | Ecology Global Network

But even if we destroyed all those too in some unimaginable eco-catastrophe we'd still be able

Though we don't need them for oxygen, there are plenty of excellent reasons to keep trees:

- Are the homes of about a million hunter gatherers in tropical regions, and a hundred times as many around the edges of the forests depending on their products
- Gene pool and sources of new drugs (tropical species rich rainforests)
- Preventing soil erosion (not everywhere, where I live, West coast of scotland then when you cut down trees all you get is peat bog because it is so cold and wet)
- Local effects on climate - planting forests can bring rainfall to desert regions and we can replant trees also to reverse desertification
- CO_2 sink. If you destroy forests this releases CO_2 into the atmosphere which contributes to global warming. Grow more trees and you can counteract CO_2 emissions.
- Source of timber and other forest products
- Wood fuel
- Water retention
- Home for wildlife and plant species
- Places for spiritual renewal and refreshment.
- Many other reasons to keep trees,

For more about this see Why forests matter



> Dwellings of an uncontacted tribe in the Amazon rain forest - the place is their home. Tropical forests are home to about a million indigenous people, and about a hundred million people around the edges of the forests depend on their products.

And the news is good here, that many countries are taking action to stop and even reverse deforestation. For instance Brazil has cut down the rate of deforestation of the Amazon by 82% already and aims to stop it altogether and reverse it How to stop deforestation? Make 'good stuff' cheaper

But let's make it clear that we will not have any problem at all breathing as a result of cutting down trees.

Debunked: Everyone who says Nibiru is not real is lying

Robert Walker

Summary: Would you believe a stranger who came up to you in the street and said "I'm telling the truth, the world is about to end, don't believe anyone else because they are lying"? If you have any sense you'd say "Nuts" and just walk away. Do the same with these two cents hoaxters.

DETAIL

This is a favourite tactic of conspiracy theorist. They say everyone is lying except themselves. Well this is something you can decide for yourself.

In your everyday life, who do you trust? Would you trust a stranger who comes up to you and says to you “You can trust me, I swear, and nobody else at all is trustworthy”? And if they then told you not to trust your friends, relatives etc, would you then accept what they say? Would you continue to trust them after you find that they say one thing after another that is completely false?

Or do you trust people you’ve known for a long time and who you know from your own experience are trustworthy? Do you trust people who say things that you then find out are true?

I think most people would trust people that have proved themselves to be trustworthy and wouldn’t trust the stranger they know nothing about. Yet somehow when they go on the web and see a video by a stranger who tells them to trust them, that they are telling the truth about Nibiru and not to trust anyone else, their common sense goes out of the window and they trust them and don’t believe what anyone else says on the topic.

They come to believe these two cents hoaxters who know nothing about astronomy and they also believe them when they say that all the astronomers who have spent their entire professional lives studying astronomy are either mistaken, lying or paid to cover up the truth. All astronomers, world wide, the hundreds of thousands of amateur astronomers and tens of thousands of professionals in just about every country of any size. See Debunking: NASA is hiding astronomical information about extra planets and extra suns in our solar system and

everyone else is lying. Even when they begin to realize that they have been duped, often they have a lingering suspicion that perhaps it might be true.

If you go back to the example of a stranger who tells you to trust them and not trust any of your friends and relatives - would you have even a lingering suspicion that they are right? No, of course not, you'd pay no attention to them at all.

HOW DO YOU DECIDE WHO IS ACCURATE AND TRUSTWORTHY IN AN UNFAMILIAR TOPIC AREA

So now part of it of course is that these online strangers are talking about things that your friends and relatives are perhaps likely to know nothing about. So how can you learn who to trust and who not to trust in an unfamiliar topic area?

Well first, do just try grounding yourself in common sense. If someone says we have two suns, no matter how stirring the music they use in the video, no matter authoritative sounding the voice over, no matter how dramatic the images - is this something that is credible? Could we have two suns and nobody notice? If you hadn't seen those videos, surely you'd say no. So it's a matter of grounding yourself in your own common sense.

Then - try testing them, just as you would that stranger. Do the things they say pan out?

As an example, the Daily Star ran a story saying that Obama had warned that solar storms could destroy all life on Earth. It is easy to check that what they say about Obama's executive order on solar storms doesn't match at all to what he actually said. So now you know that the Daily Star is not reliable in this topic area.

The Nibiru people often say things that turn out to be false when you follow them up. I give many examples in this blog. If anyone tells you that IRAS discovered a hidden planet - see my

information on astronomy and planets.

Debunked: How can the videos and photos be hoaxes when so many people believe them?

You will find other people who are reliable, who check their sources. The best of all are the ones that actually share their sources, so you don't have to rely on just trusting that they remembered what they say correctly, you can click through and check for yourself.

For more on this, see Debunking: You can't trust anyone except the Nibiru people - everyone else is a paid shill of the government or in some other way motivated to propogate falsehoods

ASK THEM IF THEY HAVE SUCCESSFULLY PREDICTED ANYTHING ASTRONOMICAL

Ask them, have they ever successfully predicted a comet or asteroid flyby? Have they successfully predicted anything astronomical? Have they ever predicted anything astronomical that the astronomers did not predict? If the answer to all that is no, as it surely would be, why listen to them?

DEBUNK MANY THINGS FROM YOUR OWN EXPERIENCE

You can also check many of the things they say from your own experience. It is easy to check some things. For instance it just takes two observations of the pole star, any clear night, to debunk this one:

Debunking: Inuit elders say that the Earth's poles have shifted position

If you develop an interest in astronomy and learn about it properly, perhaps join your local astronomy club, you can soon come to see that the whole thing is just a tissue of mistakes, hoaxes, lies, and nonsense. For instance it doesn't take all that much experience in star

3600 year orbit can hide behind the sun for years on end

WHY ASTRONOMERS ARE SURE IT IS NONSENSE

For the reasons astronomers are so sure that Nibiru not only isn't real, but that no planet or anything else as massive as a planet can be in an orbit like this, see Debunked: Nibiru will hit Earth on [Insert Date here]

You can also look at Who else says Nibiru is nonsense?

OTHER ARTICLES

Other relevant articles:

- Debunked: How can it be false when so many people share photos of "Nibiru" next to the sun or a second sun?
- Nibiru is so scary because it isn't real - what can you do to prevent something that isn't real?

and many others in my Debunking Doomsday

For support see our new Doomsday Debunked Facebook group and Where can I get support if I'm scared of Nibiru / Doomsday maybe even suicidal?

270 views · 1 upvote · Posted Nov 18, 2016

Upvotes 1 Comment

Sumerians depicts 12 planets including Nibiru

Robert Walker

This image is often shared as an ancient Sumerian depiction of Nibiru. That's Sitchin's interpretation.

They point to the eleven dots around a central larger dot upper middle left. Sitchin claims that this represents twelve planets - which includes, he says, our Moon Uranus, Neptune and Pluto (first discovered in the eighteenth, nineteenth and twentieth centuries) and an extra planet Nibiru which we haven't yet discovered.

> Dubsiga, ir-inat, your/his servant.

The usual interpretation is that the twelve dots represent twelve deities - in a polytheistic belief system rather like the polytheism of the ancient Greeks.

For details see VA243 seal

They did do some astronomical observations. Including a very early series of observations of Venus - the brightest object in the sky after the Sun and Moon.

> Venus tablet of Ammisaduqa - shows the times when Venus disappears behind the sun in the evening, reappears as a morning star, disappears as morning star and reappears in the evening, over a period of 21 years.

This is impressive astronomy for so long ago, especially that they recognized Venus as the same object in the evening and morning sky.

But the idea that they were aware of Pluto or planets beyond what we know of today just goes way way beyond this. Venus is the brightest object in the sky after the sun and Moon. Pluto is so faint it required a long search using early nineteenh century telescopes to find it. It's not remotely visible to the naked eye. They would not have known of Uranus or Neptune either - both just possibly might be seen by naked eye if you have superb eyesight on a very dark night but would be indistinguishable from the very many other very faint stars. Uranus was spotted several times by astronomers with telescopes before it was recognized as a planet, just labelled as a star.

And, if they knew about Pluto and some even more elusive distant planet we haven't seen, why didn't they know about Saturn's rings also?

Ceres and Vesta are easier to see, but again, would just be mistaken for very faint stars if you don't know what they are. Nobody recognized them as asteroids until the nineteenth century.

They also didn't know about Jupiter's moons - you can see them without a telescope if you have

As for the idea that it is ancient knowledge due to their contact with extraterrestrials - well why then didn't they learn a bit of elementary maths from them? The Sumerians used a clumsy system of "unit fractions". It was advanced for their time but they couldn't notate a general fraction like, say, 5/7. Instead they worked only with fractions of the form 1/n e.g. 1/3, 1/4, 1/5 etc and a few special cases of 2/n. Is that what you'd expect of people who had been in contact with extra terrestrials? And no knowledge of zero, etc. Didn't know how to work with negative numbers in the way we do. The ancient maths is very very rudimentary - amazing how long it took for us to develop the most basic ideas in maths. No sign at all of it being "jump started" by contact with extraterrestrials.

Ancient civilizations may well have had wisdom in other ways that we lack or have forgotten. But when it comes to either maths or astronomy, forget about it. No signs at all of ancient wisdom there.

They could however make observations of supernovae, comets, meteorite impacts too. Though they didn't know what they were, the ancient observations of that sort are useful to us now, because they spotted ephemeral events that we can no longer see today. For instance the Chinese in 185 AD observed the supernova SN 185 - Wikipedia

> RCW 86 - the remnants of the supernova explosion which the ancient Chinese observed in 185 AD.

319 views · 1 upvote · Posted Nov 18, 2016

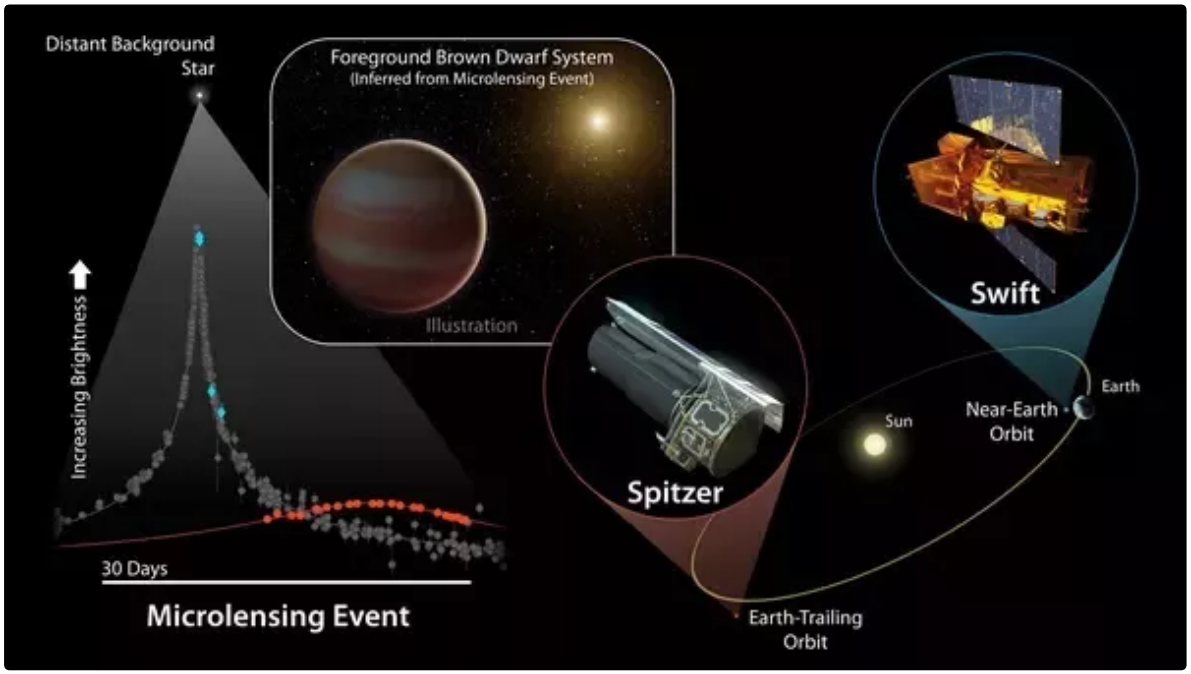
Upvotes 1 Comment

our solar system

Robert Walker

Summary: This is a very distant “failed star” brown dwarf orbiting an orange dwarf star. It is nowhere near our solar system

I can understand the confusion, if you read the announcement they never actually say how far away it is: NASA Space Telescopes Pinpoint Elusive Brown Dwarf - and the illustration talking about a “Foreground brown dwarf” can easily create the impression it is in our solar system.



announcement.

> "By combining data from these space-based and ground-based telescopes, researchers determined that the newly discovered brown dwarf is between 30 and 65 Jupiter masses. They also found that the brown dwarf orbits a K dwarf, a type of star that tends to have about half the mass of the sun. Researchers found two possible distances between the brown dwarf and its host star, based on available data: 0.25 AU and 45 AU. The 0.25 AU distance would put this system in the brown dwarf desert"

A K dwarf there means an orange dwarf star - a bit smaller than our sun but not so small as the red dwarfs. The smaller the star the more common it is, so orange dwarfs are very common.

So - they found a brown dwarf "failed star" orbiting a distant orange dwarf star.

TOO FAR AWAY FOR PARALLAX MEASUREMENTS

Then the rest of the announcement is about parallax. They used two space telescopes, Spitzer which trails the Earth in the same orbit as us but, as far away from us as the Sun, and Swift which orbits Earth, to observe the same background star. They spotted a microlensing event - which means the star got brighter as a result of something passing in front of it. That's because whatever passed in front of it bends spacetime slightly and so acts as a lens through general relativity - all planets and stars do this. Anyway - this causes it to magnify whatever is behind it and any stars behind it get brightened slightly.

By observing this from two different vantage points they should be able to find a distance to the object in future. But they didn't observe any parallax this time, meaning that it is too far away for its distance to be measured in that way.

So - it helped them to determine what the limits are - how close an object has to be for them to

What really happens if Yellowstone erupts as a supervolcano, or if some other supervolcano erupts?

Robert Walker

Here we are talking about a massive “supervolcano” eruption, which happens rarely.

Summary: Yellowstone erupts rarely, with a chance of perhaps 1 in 80 of an eruption every century. It nearly always erupts as a normal eruption with only limited effects mainly within what is now Yellowstone park,. If we do get a supervolcano, the main effect is on the climate. It would reduce the temperature globally by about ten degrees C for a decade. Crops in the region near to the volcano would also be smothered by layers of ash in the year of the eruption - how much of a difference that makes depends on when it happens in the year. Jets would be grounded after the eruption for some time, over a wide area until the dust settles.

The numbers of supervolcanic eruptions for the whole world (not just Yellowstone) vary between 1.4 and 22 every million years, making the chance of a supervolcano in any century between one chance in 500 and one chance in 7000 approximately. That’s quite a low probability.

A super volcano doesn't threaten our survival as a species, and is also very unlikely, but it is something that is worth giving some thought to. So now to go into this in more detail:

DISPELLING SOME MYTHS FIRST

First, it's not at all certain the next eruption would be a supervolcano - indeed it's far more likely to be an ordinary eruption. There have been 80 non explosive eruptions in the last 640,000 years since the last supervolcano eruption. So that's the most likely eruption by far. The last 20 of those were mainly lava flows. An eruption like that would disrupt activities in the Yellowstone national park itself, but it's likely to lead to few deaths and would not be catastrophic.

The average of the two intervals between the last three major past eruptions is 740,000 years and that's the basis of the often quoted 1 in 740,000 chance of an eruption per year - or 1 in 7,400 per century. But that's not a very compelling argument. Some scientists think that it may not erupt as a supervolcano again ever. They think it may be winding down in its activity.

Also our understanding of these large volcanoes has moved forward and with modern understanding they think that if it did happen, the build up to a supervolcano in Yellowstone would be detected weeks in advance, perhaps months or years. Volcano Hazards Program YVO Yellowstone

WHAT IF IT DOES HAPPEN?

However what if there is a supervolcano eruption, what happens then?

> "The term "supervolcano" implies an eruption of magnitude 8 on the Volcano Explosivity Index, indicating an eruption of more than 1,000 cubic kilometers (250 cubic miles) of

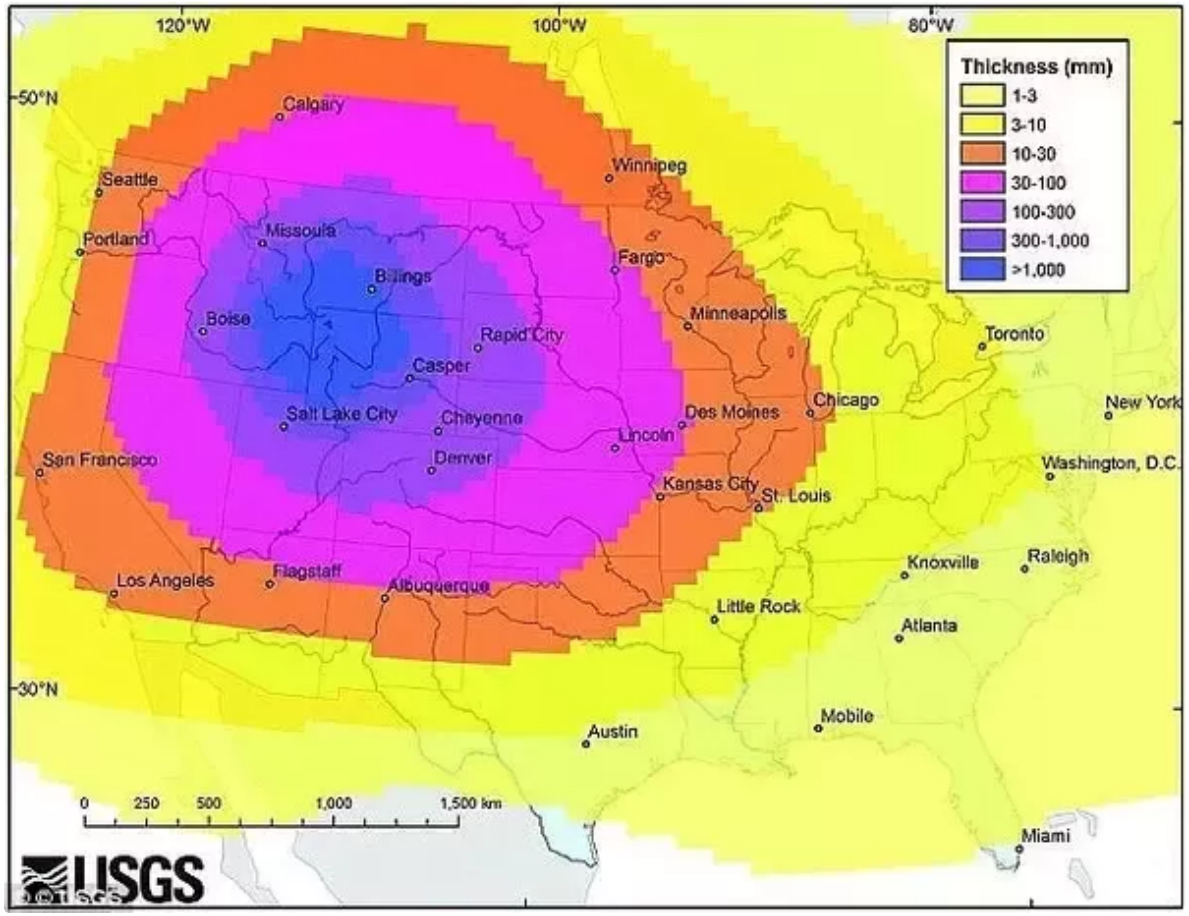
> Grand Prismatic hot spring, Yellowstone National Park. Estimate of 1 in 700,000 chance of an eruption per year (1 in 7,000 per century). which could kill 90,000 people. See What would happen if Yellowstone's supervolcano erupted?

But how much effect would it have? Well the largest supervolcano was 2.1 million years ago. If it was as large as that, it would be very extensive in its effects. If it was as large as the one 640,000 years ago it would also have extensive effects.

It's hard to know from studying the geology as most of the ash would be eroded and not preserved. But a recent study in 2014 used a computer model to try to figure out what the

It's summarized here: Modeling the Ash Distribution of a Yellowstone Supereruption (2014) and the paper itself is Modeling ash fall distribution from a Yellowstone supereruption

This graphic from their paper shows how the volcanic ash would spread out over the US after such an eruption:



You'd get 1–3 millimeters thickness of ash right out to New York, which is enough to "reduce

a meter of thickness out to quite a distance. The worst affected in their list of cites is Billings, population 109,000, which their model predicted would get an estimated 1.03 to 1.8 meters thickness of ash.

Artist's impression here:

SUPERVOLCANOES WORLD WIDE

First, how likely are they? There's an estimate here of the probability of a supervolcano

The worst supervolcano in recent times was the one that created Lake Toba in Indonesia about 75,000 years ago. It's 100 kilometres by 30 kilometres, maximum depth 505 metres.

Danau Toba

> Its ash covered Malaysia to a depth of 9 meters, there's an ash layer from it in central India that's still 6 meters thick today, and ash from it is detected as far away as Lake Malawi in East Africa.

It injected 2500–3000 km³ of debris into the atmosphere, and probably killed 60% of the human population worldwide, mainly through climate change impacting on their food supply.

That's the picture generally, that the main effect is through global climate change, which reduces the temperature globally by about ten degrees C for a decade, together with the direct effects of the deposits of ash on their crops. A large supervolcano like Toba would deposit one or two meters thickness of ash over an area of several million square kilometers.(1000 cubic kilometers is equivalent to a one meter thickness of ash spread over a million square kilometers). If that happened in some densely populated agricultural area, such as India, it could destroy one or two seasons of crops for two billion people.

It would also mean that you can't fly jets in the affected area for as long as the air is filled with ash, but that's a minor effect compared with the rest of the devastation. As for the "noxious gases" such as sulfur dioxide - these mainly make a difference to the upper layers of our

We could prepare for this. With just a couple of years of warning, we could do large scale tests to work out which crops we'd need to grow in the cooler world for that decade, and store crops that are currently used to feed cattle or for production of ethanol, for human consumption instead, which would be enough to give us a buffer for the first year. In that way we would be able to avoid perhaps all deaths from starvation, so impact would be far less than it was for early man.

For details, see Extreme Geohazards: Reducing the Disaster Risk and Increasing Resilience from the European Space Foundation, and for the Yellowstone park eruption simulation,: Modeling the Ash Distribution of a Yellowstone Supereruption (2014) which summarizes Modeling ash fall distribution from a Yellowstone supereruption

This answer is based on those two sources, together with the USGS FAQ here Volcano Hazards Program YVO Yellowstone plus I used some details from the Wikipedia article on Lake Toba - you can check the citations there for more details.

(originally published as my answer to What will really happen when the Yellowstone supervolcano erupts?)

380 views · 1 upvote · Posted Nov 17, 2016

Upvotes 1 Comment

Debunked: Carlos Muñoz Ferrada discovered

This is one of the videos.

This video and story seems to date back to 1999 when amongst other things he claimed that this planet would be visually the size of the full Moon by August 1999

Tribute to the memory and work of the great Chilean astronomer CARLOS MUÑOZ FERRADA

That's full of nonsense. For instance

> " it was rediscovered in the 80s by the orbiting infrared telescope IRAS, whose head was Dr.

Robert Harrington didn't have anything to do with IRAS as far as I know, and his hypothetical "planet X" was disproved a few months before he died when Myles Standish recalculated the mass of Neptune based on the measurements of the trajectory of Voyager as it flew past Neptune. See Debunked: NASA has been tracking "Planet X" for decades and Debunked: Astronomers get murdered by the secret agencies if they "speak out" about Nibiru

COMET DISCOVERER??

The video claims amongst other things that he discovers comets. But he is not in this list of the amateurs who discovered comets from 1978 onwards - even to this day though most comets are found with large automated professional programs, amateurs still find a few each year. But not him.

Comet discoverers

Also he isn't in the Wikipedia list of discoverers of comets Discoverers of comets

ORBIT MAKES NO SENSE

Astronomically his orbit doesn't make any sense at all.

Yes, it would be possible for one star to orbit another and a planet to orbit both of them at least for a while - that's a "distant retrograde orbit". Such orbits are stable for a fair while though not for billions of years. The asteroid return mission suggested by NASA was to return a small asteroid to a similar distant retrograde orbit around the Earth and the Moon.

But not to have three speeds 92 km/sec, 300 km / sec and 76 km / sec - it would have a continuously varying speed.

join in tracking it and refining its orbit.

NAMING OF COMETS

Also - comets are not named after the person who calculates the orbit, not any more. Halley's comet was named in that way as were a few of the earlier comets but ever since the early twentieth century they are named after their discoverers. So the claim in the video that they are now named after the astronomers who calculate the orbits and were previously named after the discoverers gets it back to front.

Naming of comets - Wikipedia

PREDICTION OF THREE DAY ECLIPSE AUGUST 1999

According to this article he predicted a three day eclipse in August 1999, which obviously never happened and again doesn't make astronomical sense. It's in spanish - this is with google translate:

> "At the end of the 1940s the Chilean Carlos Muñoz Ferrada supported the strange hypothesis that There would be a three-day eclipse on August 11 1999, this event would be triggered by a Strange planet-kite that would approach Dangerously to the Earth12, which generated in Some people some expectation. Since Then, sporadically notes Newspapers in several national newspapers. in 1986 During the passage of the comet Halley, La Prensa Gráfica published a notice of Muñoz Ferrada in Where he speaks of the "influence" that the comet would bring to the earth. A similar news was released again In La Prensa Gráfica on October 7, 1991, with Responsibility of journalist Adrián Roberto Aldana, under the title "Evidence of God Will constitute the possible events during eclipse 99 ", evidently the supposed eclipse of three Days never took place."

Debunked: Niku is Nibiru

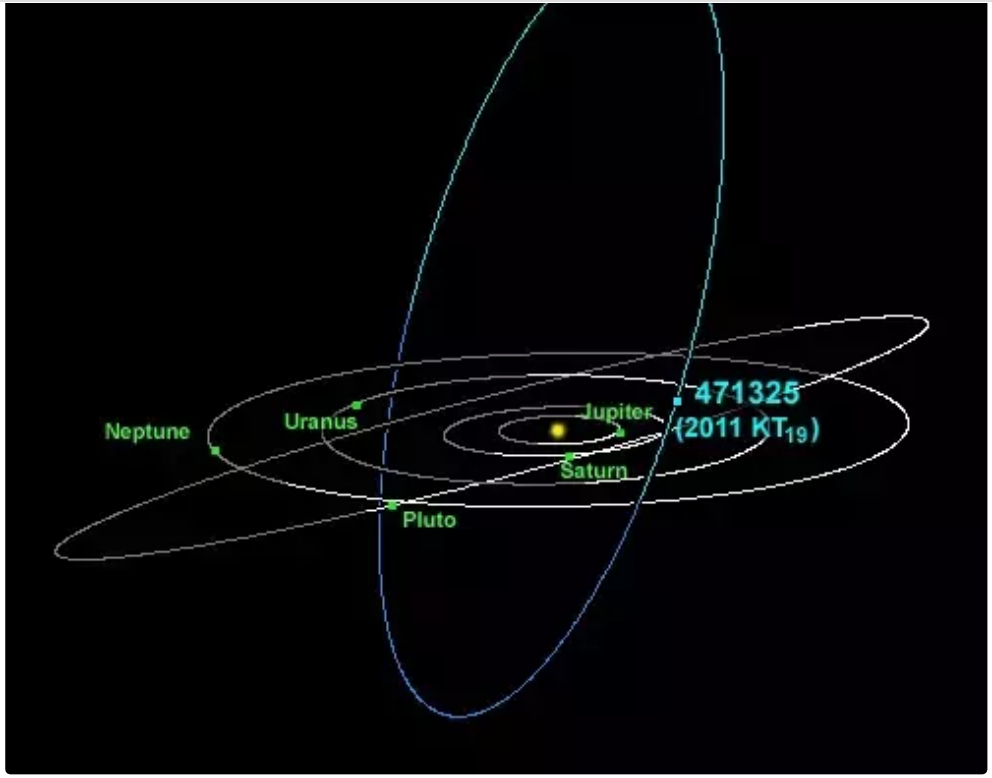
Robert Walker

Summary Earlier this year, astronomers found a dwarf planet in a strange orbit. They called it “Niku”. Conspiracy theorists claim it is Nibiru - this is just another example of them claiming any new astronomical strange discovery as “Nibiru”. It is no threat to Earth.

Details:

Example story to debunk: NASA confirms that planet Nibiru is falling towards Earth

This is the orbit of Niku:



As you see it is a very strange orbit. It's almost perpendicular to the solar system and actually goes around the sun in the opposite direction to the planets, so "retrograde". It crosses the ecliptic (the plane of most of the planets) just inside of Neptune's orbit.

But it never comes anywhere close to Earth.

Find out more: Retrograde Rock "Niku" Defies Orbital Trend - Sky & Telescope

Meet Niku, the Weird Object Beyond Neptune That Nobody Can Figure Out

(471325) 2011 KT19 - Wikipedia

Debunked: Soon we won't be able to feed everyone because the world population is growing so quickly

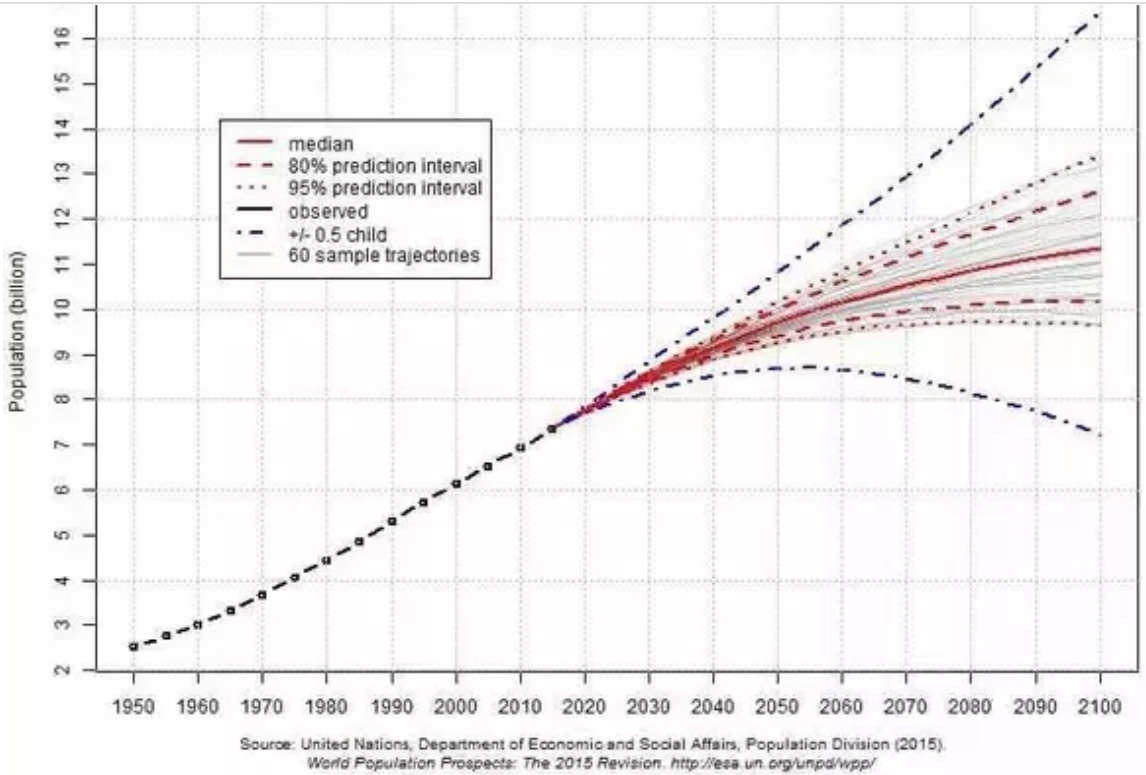
Robert Walker

This is not so much a particular story as something you hear over and over in internet discussions. It's not true.

First, our population growth is leveling off, towards a population of perhaps ten or eleven billion by the middle to the end of the century.

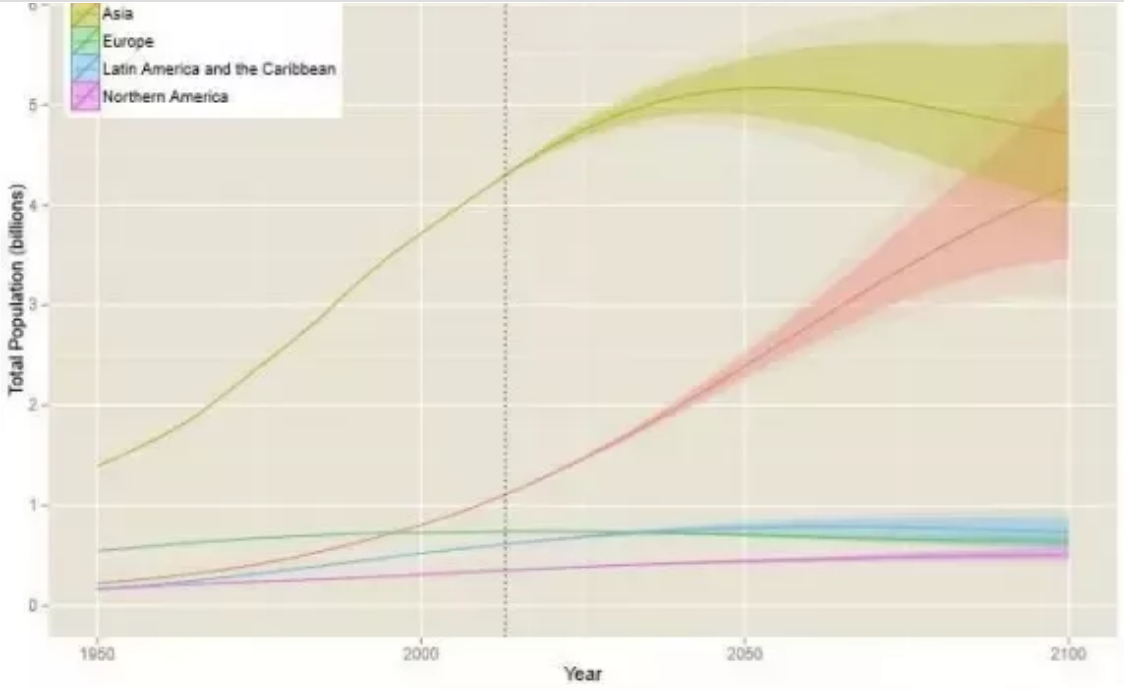
We have already reached peak child, and most areas of the world now have fertility levels at or below replacement, and feature a slowly growing, steady or declining population. Our world population continues to grow only because with better health world wide, people on average live longer each year.

The middle of the range projections have the Earth's population trending towards 11 billion by 2100 while lower projections have it level off at ten billion or even start to decline towards the end of the century.



> So whatever happens, we aren't headed for Malthusian type exponential growth because we have reached peak child already. In the graph above, the red dotted lines show the upper and lower limits for the 95% prediction interval. The blue lines are for +- 0.5 children per couple average. You can look up the data here, the graphs page for the UN population division .

Though we may not reach peak population this century, most parts of the world have a good chance of stabilizing before then, especially the more developed countries. The least developed countries are the ones that would get most population growth. The most rapid growth is in Africa in the projections. You can see a break down for each region of the world here,



> Older figures from 2014. Most of the population growth is in Africa by the end of the century by these figures, with everywhere else leveling off by then, the least developed countries are the ones that grow most rapidly, so that's a reflection of the situation in Africa

So, things are actually looking brighter than one might think. Which isn't to say it will be easy, but there is no reason why we have to ruin ecosystems on Earth.

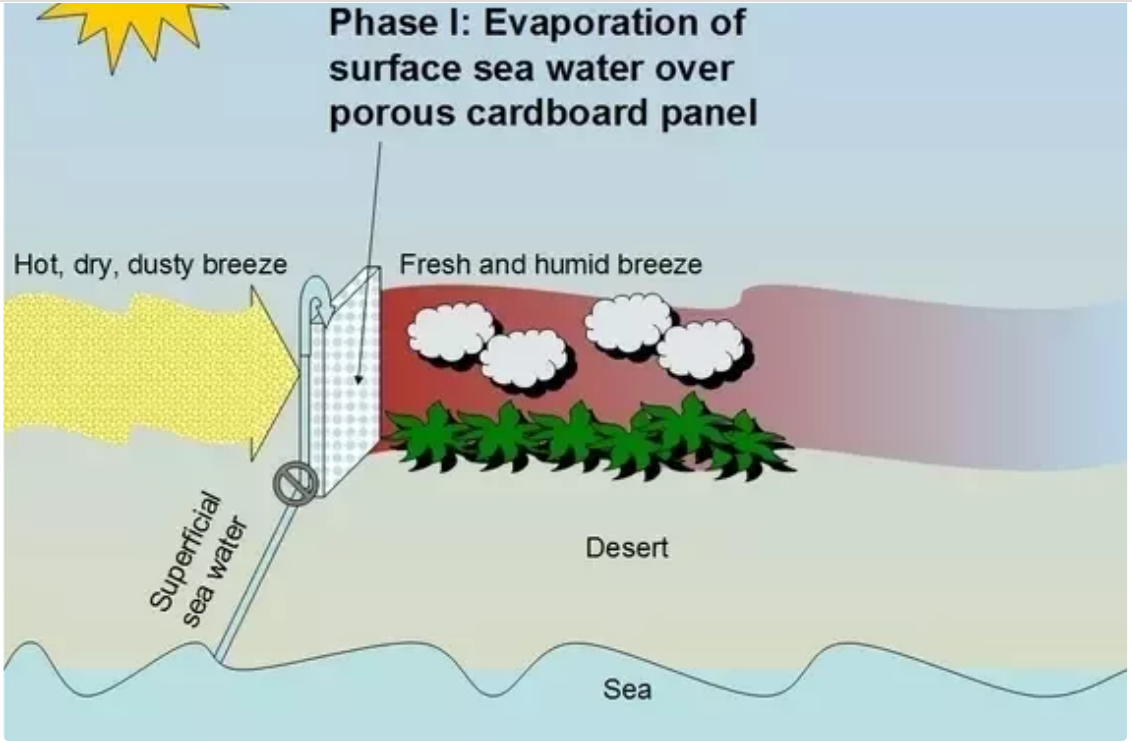
Then, it may surprise you to know that we actually produce more than enough food to feed the world. We have starvation for political reasons at present. It's an income and distribution problem .

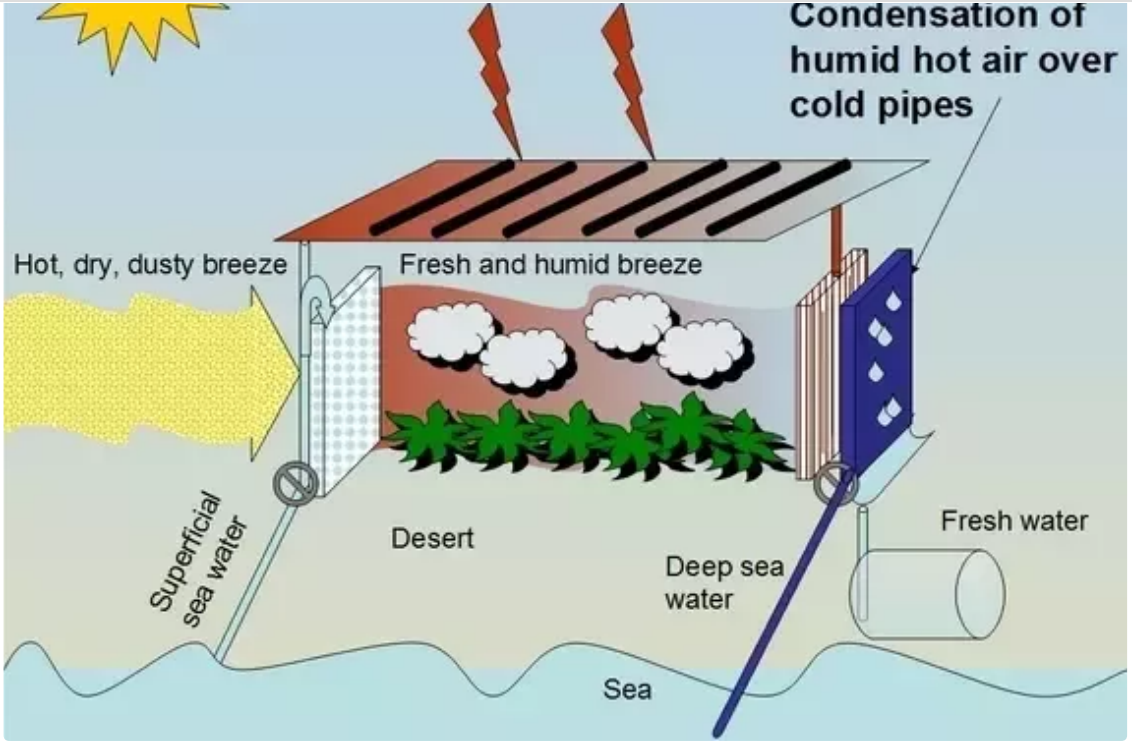
As an example, the world had a food surplus of 510 kcal / cap / day in 2010 increased from

We are nowhere near to running out of enough land to feed everyone. Most of the Earth is desert or ocean. We don't have to cut down rainforests to feed people. We just need to reverse desertification and make more efficient use of what is there.

We are actually doing this already in a small way, with the salt water greenhouses, so I think you can say that not only should we do it, but we already are. This is an Australian desert project. The sea water is used to make water through the sunlight in the desert, and cool down the greenhouses.

These ideas could be used to reverse desertification in the Sahara desert and other deserts. This is how it works:


Phase I: Evaporation of surface sea water over porous cardboard panel
Hot, dry, dusty breeze
Fresh and humid breeze
Superficial sea water
Desert
Sea



> Diagrams by Raffa be from wikipedia

It not only lets you grow crops in the greenhouses - it can also help make the surrounding areas more habitable, so you'd get trees and crops growing in an area around the greenhouses as well. Doesn't extract anything from desert aquifers, rather, it adds to them.

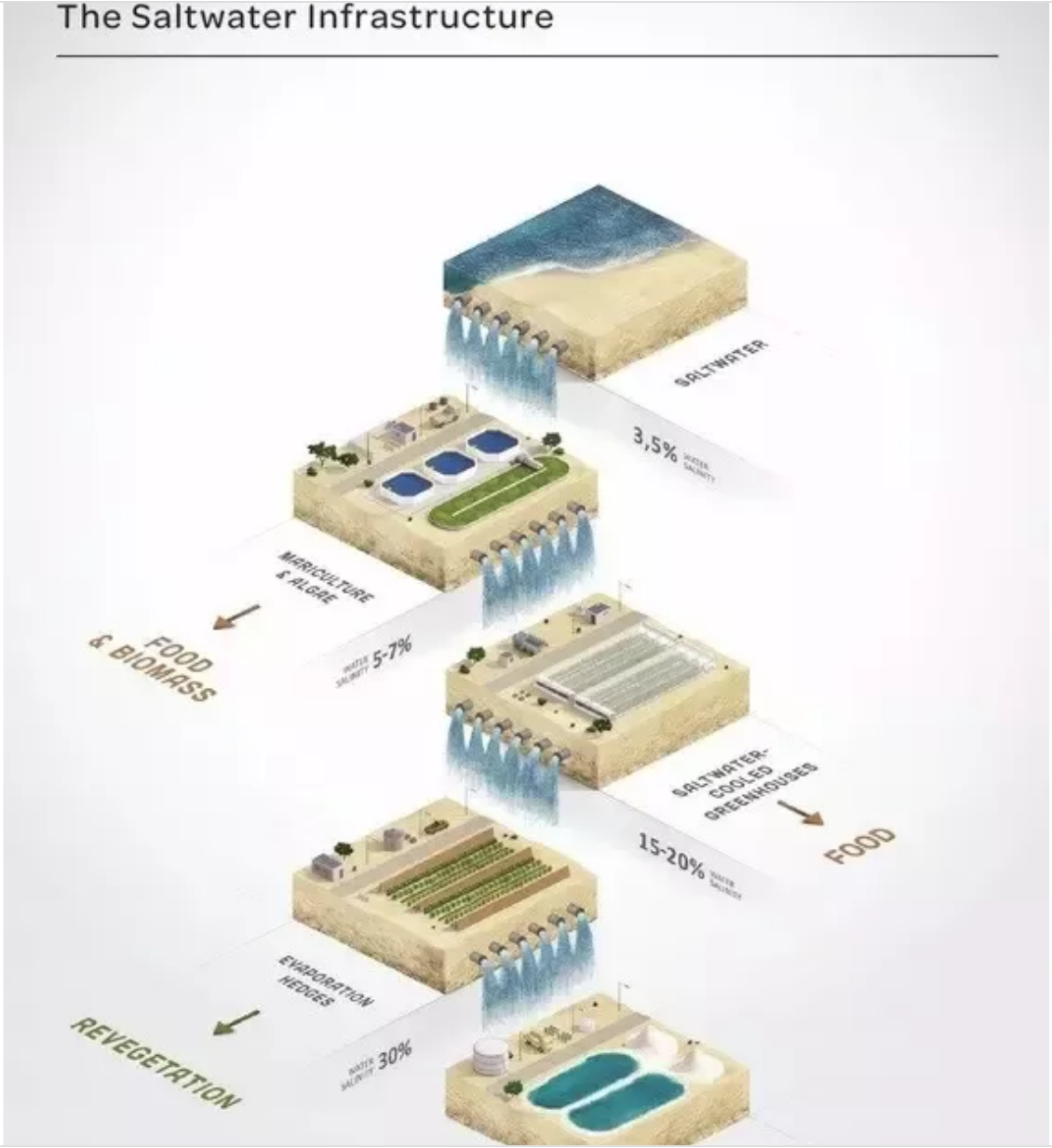
Sundrop farms have a large area set out for greenhouses like this now, in the middle of a desert, so this is taking off in a big way in Australia. Early days yet though.

This video just shows the greenhouses, and when they go inside in the video there is nothing growing there yet, not sure why, maybe it is a new installation, but it shows how it's quite big in

There are many countries working on reversing desertification Israel does a lot of reversing of desertification.

One of the worst areas of encroaching desertification is the southern edge of the Sahara desert. The first priority there is to stop the spreading desertification - then to reverse it. Many African countries are collaborating in the Great Green Wall project to plant a forest along the southern edge of the desert.

Then, there is a similar project underway there now to the Australian Sundrop farms, using seawater greenhouses.


The Saltwater Infrastructure
SALTWATER
3,5%
MARICULTURE & ALGAE
FOOD & BIOMASS
5-7%
SALTWATER-COOLED GREENHOUSES
FOOD
15-20%
EVAPORATION HEDGES
REVEGETATION
30%

Technologies - Sahara Forest Project

This gives far more food and living space for the same amount of cost, compared with the billions of dollars to set up a few people in a space habitat. It's also far far easier to build a greenhouse in a desert on a planet with abundant sea water, and breathable air, than to do it on Mars. And as we just saw, with the BIOS-3 system, we would need only 2.5% of the Sahara desert to feed the world. So if we grew plants on Earth in as small an area as we could do for space habitats, we could feed the entire world easily with minimal impact, at least on the mainly vegetarian diet we would need for space colonies.

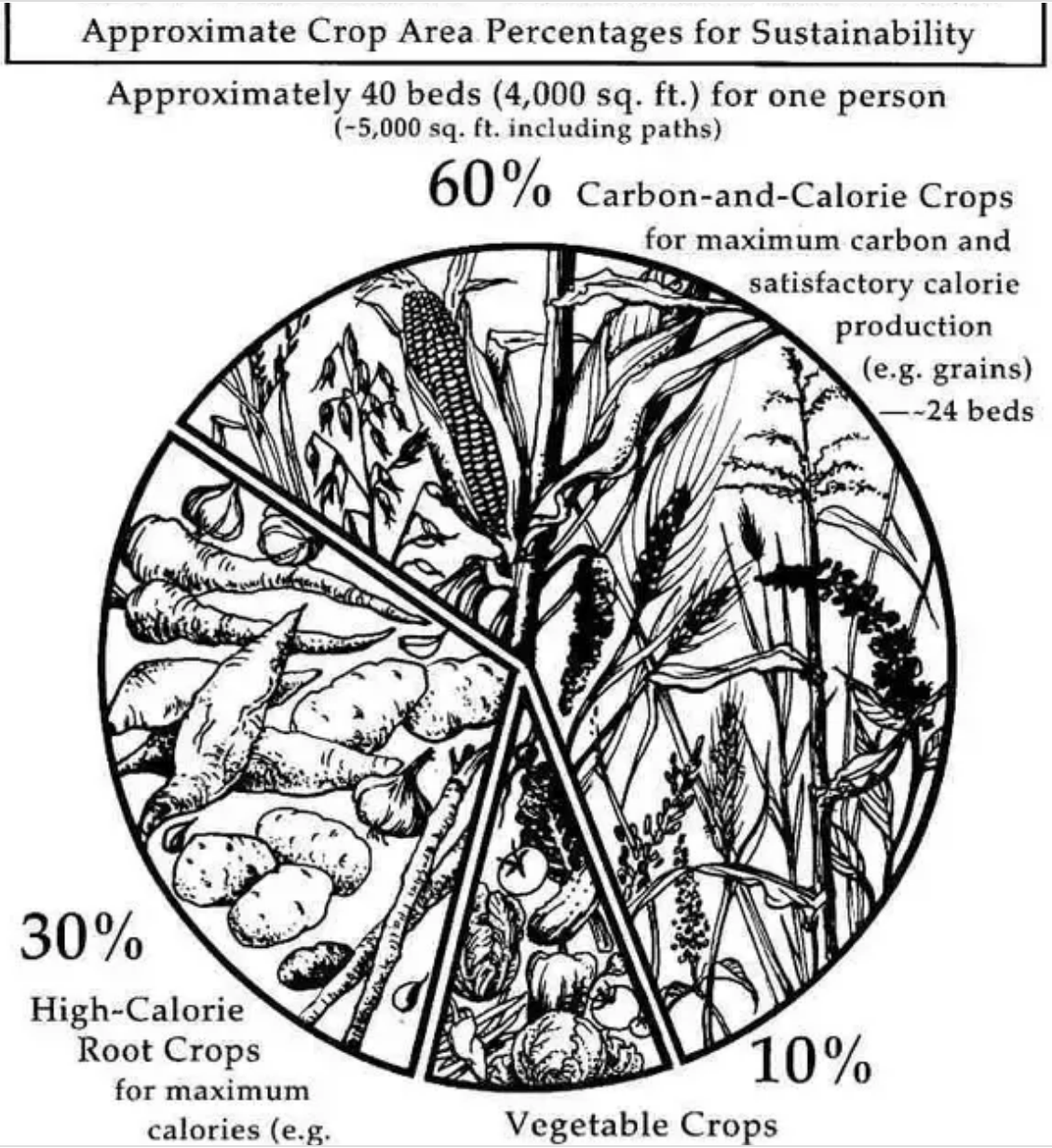
MORE EFFICIENT AGRICULTURE

If we use ideas developed for space colonies, then we can grow food in a very small area. Conventional agriculture requires one acre of fertile land for each person supported typically.

The easiest way to grow plants for food in space is to use soilless gardening with hydroponic solutions or with aeroponics where plants are grown with roots suspended in a fine mist (uses much less water).

This leads to huge savings in the precious area you need to grow crops. Instead of one acre of farmland needed per person for conventional agriculture (4000 square meters approximately), you can grow 95% of the food, water and oxygen for an astronaut from just 30 square meters, with a conveyor belt system, of rapidly growing crops such as wheat, sedge-nut, beet, carrots, etc. For details see Sending humans to Mars for flyby or orbital missions - comparison of biologically closed systems with ISS type mechanical recycling (also relevant to long duration lunar missions) .

Soil based gardening can also be used with the methods of biointensive mini gardening. By using good gardening practices and by careful choice of crops you can grow all the food for one


Approximate Crop Area Percentages for Sustainability
Approximately 40 beds (4,000 sq. ft.) for one person
(~5,000 sq. ft. including paths)
60% Carbon-and-Calorie Crops
for maximum carbon and satisfactory calorie production (e.g. grains)
—~24 beds
30%
High-Calorie Root Crops
for maximum calories (e.g.
10%
Vegetable Crops

> Grow biointensive - sustainable mini farming - this method needs only 372 square meters of growing area per person.

We can get an idea of how efficient these methods are by working out the total land area needed to feed the world on a vegetarian diet by all the methods. With a million square meters to a square kilometer, then we just need to multiply the numbers by 7,500 to get the area in square kilometers needed to feed a population of 7.5 billion . We get

- BIOS-3, 30 m^2, so 225,000 km^2
  (smaller than the UK, see list of sovereign states and dependencies by area)
- Biointensive mini gardening. 325 m^2 per person, so 2.44 million km^2
  (smaller than India at 3.288 million km^2)
- Conventional agriculture, 4000 m^2 per person, so 30 million km^2
  (a little under the area of the US, China and Russia combined)

By comparison, the Sahara desert is 9.2 million km^2 . With the BIOS-3 system, we would need only 2.5% of the Sahara desert to feed the world. The total land area of the Earth is 148 million km^2 . But of course much of that is desert, mountains, ice etc, some is uncultivated and animals require more land area than plants.

SEASTEADING

If we fill all the deserts, or you just don't have a handy desert in your country that's suitable for building on, you can build on the sea,

The Seasteading Institute | Opening humanity's next frontier

We could have sea cities covering much of the seas if we really need more space for people to live.

By a sea colony here, I mean one that only uses the sea water and the air, with a few imports from Earth - as that would be the equivalent of a Mars habitat. There'd be no need for fishing or anything else, just air, and sea water, and the materials to build the original city, and some imports, and if advocates are right about Mars colonies, there would be little by way of those too.

Four fifths of the surface of our planet is ocean, so if we could live on the sea, in more or less self contained habitats, as with the ideas for Mars, that's be like finding four new planets to live on.

The surface area of the Pacific is 165.2 million km². Four times the population of Earth would

> "After the concept design is finished, the next challenge is to find the appropriate adaptation strategy – a strategy that creates a safe and livable urban environment on the sea, while minimizing impact on the ecosystems and making efficient use of the available resources. In this section, we explain the Blue Revolution concept and apply it to the seasteading concept"

They explain it in detail there, With its use of aquaponics and aeroponics, it resembles ideas for space habitats.

A sea city would have minimal impact on sea life if done in the same way as for a space colony, growing all their own food inside the habitats. Perhaps this could be one outcome of space settlement, that by learning how to live in space, with such a high priority on efficient recycling, we can also learn to live on Earth as well, with minimal impact. Perhaps both approaches will influence each other.

WHAT ABOUT LIVESTOCK?

This is something you might well ask if you have watched “cowspiracy”. And yes, it takes a lot more land to keep animals than to grow vegetables. So, yes, it will make it easier to feed everyone if we have less meat consumption per head. The figure of 0.5% of the Pacific to feed four times the Earth’s population assumes space colony type technology, so a basically vegan diet, with supplements, but most of the diet has to come from vegetables.

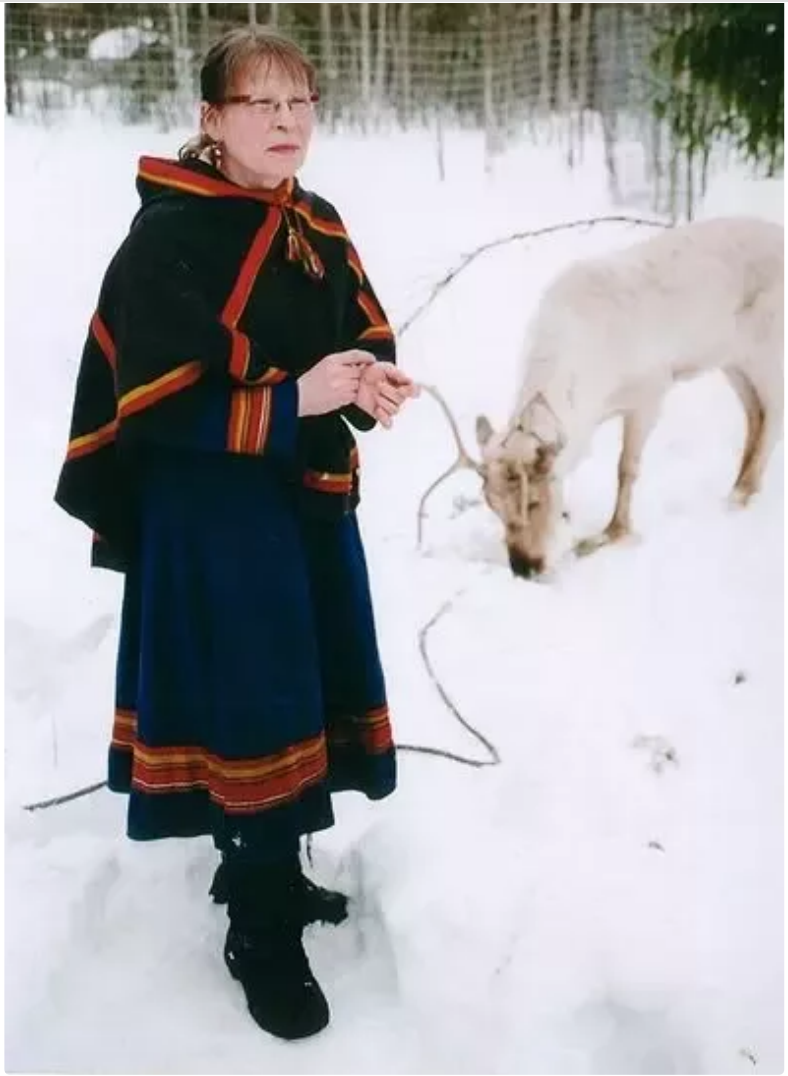
If most people eat large quantities of meat, then that needs more land, of course. However if you’ve watched “cowspiracy” then it exaggerates the situation. For a criticism of the film by the union of concerned scientists: Movie Review: There’s a Vast Cowspiracy about Climate Change .

Livestock produce 8-18% of greenhouse gas emissions according to the paper they cited - that

Farmers often keep sheep and cows on land that is not used for agriculture. I live on the Isle of Mull in Scotland and much of it is used for sheep. If the sheep were removed, then the land wouldn't be used for agriculture. In principle it could, the ground is peat bog mainly, actually potentially good for agriculture if it was drained - but there are far easier and less expensive ways to grow food than to cultivate mountain slopes, so in practice it wouldn't. It would be labour intensive also and it would be hard to find anyone wanting to do all that hard work to grow food.

Now, if they did stop rearing sheep here, it could return to forest, but only if they culled all the deer, as those would take the place of the sheep. And even if it returned to forest, that's a CO_2 sink for as long as the forest grows, but not after that and anyway the grass also and peat bogs are CO_2 sinks too, the land here is covered in large areas of peat that take up CO_2 from the atmosphere and store large amounts of it.

So - yes if you replace good crop growing land with pasture and keep cows and sheep instead, then it is contributing to CO_2 and they use water that may be in short supply, and land that could be used for growing crops. But you can't say that as a blanket statement e.g. to say to the Sami people that they have to stop keeping reindeer - they aren't going to grow crops there instead.



Sami woman with white reindeer

(this includes material from my MOON FIRST Why Humans on Mars Right Now Are Bad for

Debunked - Stephen Hawking puts an expiry date on humanity

Robert Walker

The article is here: Stephen Hawking Puts An Expiry Date On Humanity Stephen Hawking is a well respected excellent theoretical physics in the field of general relativity, black holes etc. He is famous for such things as “Hawking radiation”. When writing on general relativity he writes carefully and accurately.

But he has something of a tendency to exaggerate threats and say that the Earth is doomed in one way or another. When you follow up the things he says on those topics, they just don’t pan out. If you do that for the things he mentions in that article, you find that none of them threaten survival of humans.

Brilliant physicists, however clever, are just people like anyone else. They are just as fallible as anyone else. We should never just accept something as true because the person who said it happens to be very clever, much more clever than we are.

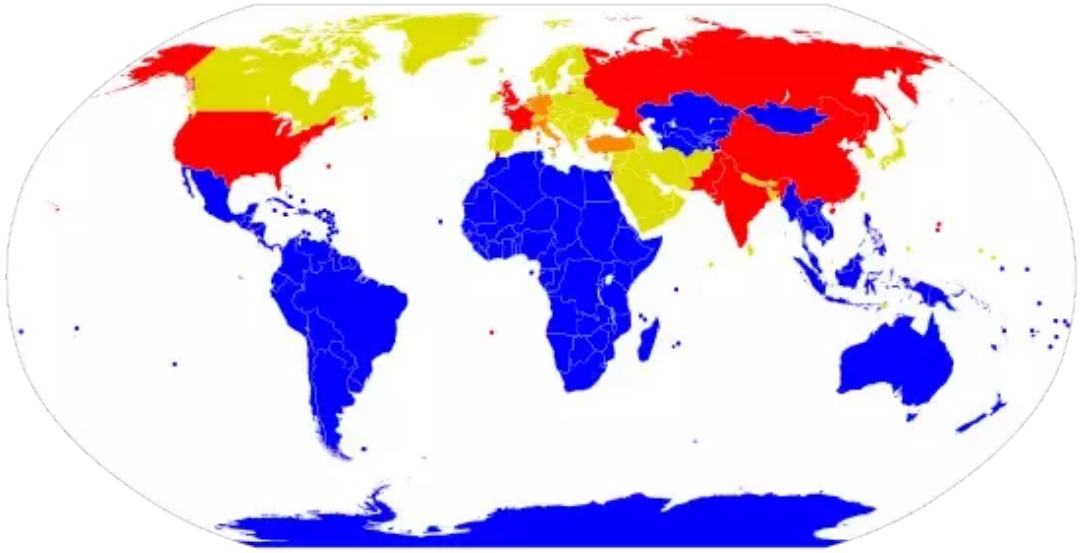
Let me explain:

GLOBAL WARMING WILL NOT MAKE EARTH UNINHABITABLE

terrifying apocalyptic scenario - risking something not far off Venus - story in the Independent

A NUCLEAR WAR WILL NOT MAKE EARTH UNINHABITABLE

A nuclear war would not come anywhere near to making the Earth uninhabitable. The entire southern hemisphere is a nuclear free zone, the worst of the radiation is so short lived it is over in half an hour, there is plenty of radiation left to have long term health effects, increased cancers and other health effects, but the levels of radiation that kill people quickly are soon finished with.



> The blue areas here are nuclear free. If we did have a global nuclear war - then there would be no nuclear bombs in those areas at all. Also the harshest radiation is over quickly, the lethal radiation is mostly over within half an hour.
>
> The idea that nuclear weapons would cause a nuclear winter has been shown to be false.

VIRUSES WOULD NOT MAKE HUMANS EXTINCT

And viruses if they kill their host quickly don't spread far. So a virus that spreads will also have people who are carriers that are less affected by it. It's in the interest of both virus and host that the host survives so if the virus can adapt to keep the host alive also, it will do that.

If it happens slowly, then there's time to find a cure. If it happens quickly then it can't spread to everyone.

Then there are the isolated communities including those in submarines, just remote places with few or any visitors and even the uncontacted tribes. Unless implausibly you have the viruses somehow spread so that they reach every square meter of the Earth it's not a likely scenario. And after all who would engineer a virus that is going to kill the people who engineered it?

Viruses and other diseases can make a species extinct if it is already threatened and close to extinction. But we are not in that situation. Humans are amongst the species least of risk of extinction in the world.

EARTH MAKES THINGS SO EASY FOR US

Our Earth makes everything so easy for us, compared with space colonies. Perhaps one thing they might do is help us to appreciate quite how valuable and wonderful our Earth is, and how rare, as we look back at the beautiful Earth from the Moon or further afield.

> Earth rise over the Moon as photographed from Apollo 8, first mission to orbit the Moon, on Christmas Eve, Dec. 24, 1968

As Carl Sagan in Pale Blue Dot

> "The Earth is the only world known, so far, to harbor life. There is nowhere else, at least in the near future, to which our species could migrate. Visit, yes. Settle, not yet. Like it or not, for the moment, the Earth is where we make our stand."

care to make sure the microbes can't survive in the wild. Similarly I think we have to take great care if we ever return life based on a different biochemistry from another planet. See my Could Anything Make Humans Extinct In The Near Future?

And for the idea of Earth as its own backup in more detail: Earth best for a "backup"

We could do a backup of knowledge in space. I can see value for that. We could build a repository of all human knowledge on the Moon, see

- Backup on the Moon - seed banks, libraries, and a small colony

The Moon is so stable that a backup there could last for billions of years, long after our civilization is forgotten on Earth. It could be an insurance for events here on Earth that lead to us forgetting our civilization. I see that as of value.

But humans themselves going extinct? I don't see any value going into space to prevent that. As Carl Sagan said, Earth is where we make our stand. If we preserve Earth and keep it in good shape, then we also will be in good shape for the future.

276 views · 3 upvotes · Posted Nov 16, 2016

Upvotes 3 Comment

Debunked - an alignment of the visible planets behind the sun on 23rd September 2017 is a

Short summary - planetary alignments can be a pretty sight in the night sky. But they are of no astronomical significance and can't harm us in any way at all. This particular alignment is an alignment with the sun as well, which means that there is not even anything to see. It's rather an absence of anything interesting for astronomers who like to observe planets.

The book of Revelation is meant a a message of hope, not despair. It's so enigmatic though, that you can fit almost any message to it and claim that's what it is saying. The Bible is not noted for its astronomy, and they didn't even know that meteorites came from space, thought comets were like high clouds, and they didn't know that Earth orbited the Sun so didn't know it was a planet. It doesn't even have eclipse predictions in it, although a few astronomers at the time could do them (though not nearly as accurately as us). It's just not a work of astronomy at all. It has much to say in other ways that many people find of great value, but to look to the Bible for a guide to astronomy is to look in the wrong place I think.

DETAILS

There is a very rough alignment with the planets and the Moon spread out over the sky from Leo to Libra. However, there will be nothing to see in the sky because the sun is right in the middle. It's a non event visually, most interesting as one of the few times when you won't see any of the planets or the Moon.

Amateur astronomers like alignments though they have no astronomical significance, just because they look interesting and they can get nice pictures of them. This is the most uninteresting sky you could possibly have if you are interested in visual alignments.

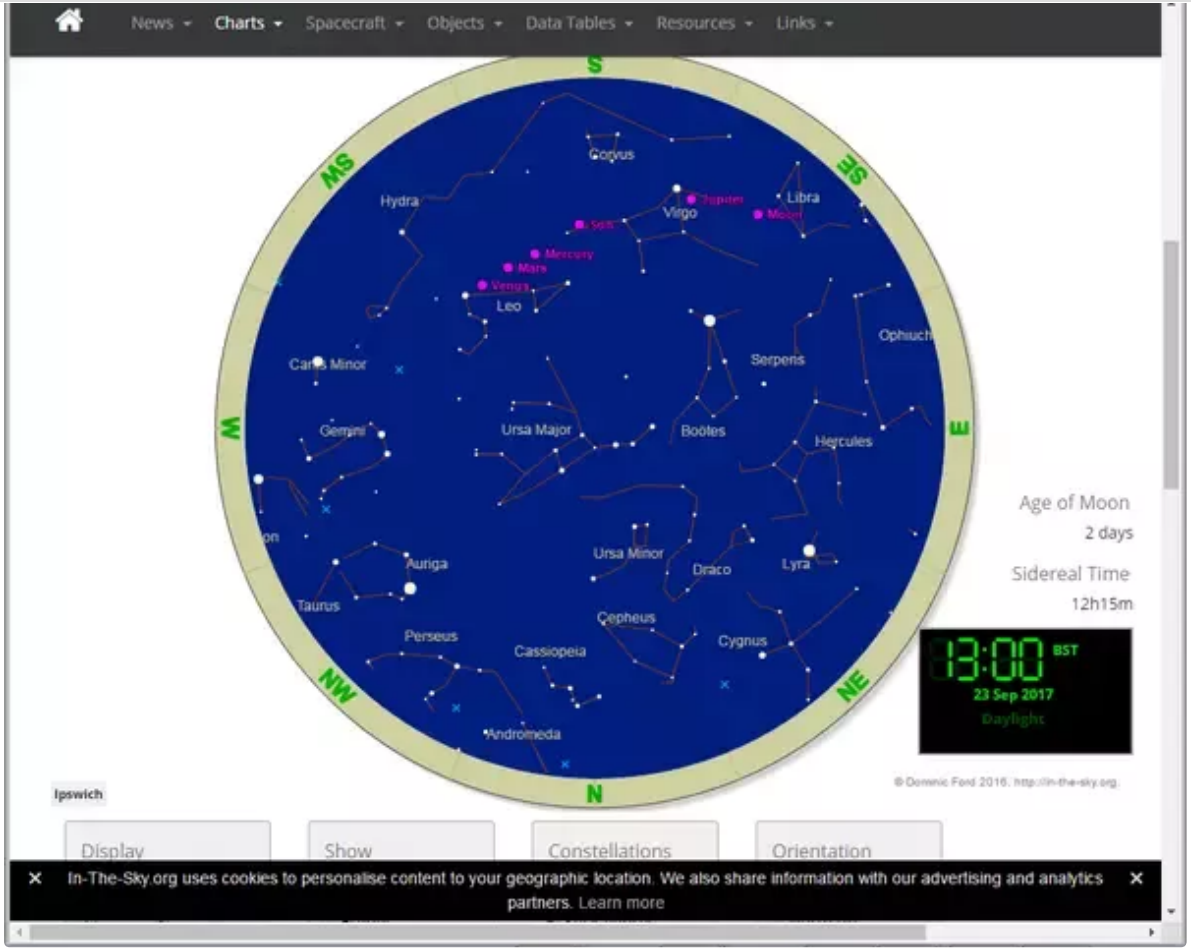
As for the idea of it being a "sign" - this is just a work of imagination and numerology. His page is here: Signs of the End . It spins a story out of the book of Revelations, which is notorious

- Perhaps it describes events that happened already in the first century AD.
- Perhaps it is about how to lead our lives and the events described have no location in time or space.
- Perhaps it does describe future events.

If you aren't a Christian then you don't need to interpret it at all. After all, it was written specifically for Christians.

It is generally agreed it is meant as a message of hope, so if you find it scary, something has gone wrong. The Eastern Orthodox church has gone so far as to exclude it from its lectionary - passages that can be read from the pulpit, because it is so easily misunderstood.

There's nothing of any astronomical significance on that date. Yes, all the brighter planets are hidden in the bright area around the sun in the sky, so won't be visible. That's all. Here is a screenshot



> Charts of the Night Sky - shows how all the main visible planets will be hidden in the bright area of the sky around the Sun briefly on 23rd September 2017.

It has no meaning at all. Unless you think you can read signs in the sky like reading signs in tea leaves. It's not even a pretty sight to look out for in the night sky. It's rather an absence of anything of interest as you won't be able to see it because the sun blots it out.

different distances from us.

This shows how the big dipper is changing:

And this is Orion

More examples here: The fault in our stars: Why the Big Dipper could become the Big Duck

Most of the constellations are not made up of stars that are close together in space either. Look at the constellation from a slightly different angle, if we could travel away from the Sun and it would look different again.

> The camera begins with a pan across the sky to Orion. The lines of the stick figure constellation are drawn in, which unfortunately gives the viewer an impression of a 2D drawing. As the camera slowly begins to circle around the centroid of the stars, the stick figure quickly breaks into a long extended 3D structure. The camera backs up to keep the entire figure onscreen for the complete circle. At the end of the circle, the camera pushes forward to finish back at the location of the Earth/Sun.
>
> "Note that the stars are rendered with 3D distance dimming relative to the camera position. Stars get brighter or fainter as they are closer or farther from the camera viewpoint. Also, to avoid an obvious distraction, the Sun is not included in the visualization."

The planets are much closer to us than any of the stars. To say that Jupiter is "in Virgo" is like pointing at a distant mountain and saying your finger is in the mountain. It just means that your finger is between your eyes and the mountain.

It's like looking at a cloudy sky and seeing clouds that look like fortresses or houses, or boats or animals - and then making up a story about it. Google's "Deep Dream" generator can turn clouds into images of various creatures:

> Inceptionism: Going Deeper into Neural Networks

That could be a fun thing to do but the clouds are not affected by your story in any way. In the same way making up stories about the stars and planets makes no difference to the stars or planets and doesn't mean that they endanger us in any way at all.

Planetary alignments are very common. For instance there was one early this year with all five visible planets Five planets align: how to see this spectacular celestial show . They are of no astronomical significance but amateur astronomers enjoy watching them.

This is about Muslim views on the Bible Books of Revelation - for them the "Book of Revelation" is not one of their "Books of Revelation". Islamic view of the Christian Bible . And it's obviously not a Jewish sacred text. And for any other religion, well they don't accept the Bible as a sacred text at all, not for themselves, just for Christians, so why should they pay any attention to it?

The book of Revelation, it's a notoriously enigmatic book and you can fit almost any "prediction" you like to it, and many Christians don't think it was meant to predict the future, and others think it was meant as a warning of events that happened already in the first century BC. Whatever the truth of that, at any rate there's a huge problem of false prophets in modern Christianity, with the Bible itself warning about them, and numerous false prophecies for the last 2000 years of the end of the world. The Eastern Orthodox church has gone so far as to exclude Revelations from its "lectionary" - passages of the Bible that can be read from the

even Jews or Muslims accept Revelations as a sacred book.

And the Bible is not noted for its astronomical predictions. Remember that back then, they didn't know that meteorites came from deep space but thought they came from volcanoes or stones picked up by strong winds. They thought that comets were atmospheric phenomena like high clouds. They didn't know that Earth orbited the Sun, so they didn't know it was a planet.

The Bible doesn't even have predictions of eclipses in it, or anything astronomical at all, as far as I know. It's just not an astronomical prediction book. There are ancient texts that do, not nearly as good as modern predictions but good for their time. But this is simply not the Bible's strong point.

See also Debunked - The world will end because the Bible (or some other sacred book) says so - which goes into more details about Revelations.

787 views · 4 upvotes · Posted Nov 16, 2016

Upvotes 4 Comment 1

Debunked - The world will end because the Bible (or some other sacred book) says so

Robert Walker

Often made fun of, and features in several Simpson's episodes for instance:

Most of these prophecies of a Christian Apocalypse are based on the book of Revelations, which is regarded as one of the most enigmatic books in the Bible. Anyone can read almost anything into it.

It causes so many problems that the Eastern Orthodox church doesn't include it in ts lectionary - the passages from the Bible that can be read from the pulpit. It was a late addition to the Bible anyway - early versions of the Bible didn't include it.

IF YOU BELIEVE IN A DEITY WHO CAN MOVE PLANETS INSTANTLY OR CREATE THEM FROM NOTHING

He said

> “God can do whatever He wants. He can move a planet, put it back in. We have to be aware that there are different scenarios. Hashem prepared all options.”

I got quite a few comments about that one from people scared the world would end last October. Even though only one rabbi is saying this, and for sure most rabbis were not saying the world was about to end. Yet people who don’t even share their religion get scared by it.

So anyway, if you think that a deity could move a planet to a collision course with Earth, well why even call it Nibiru? Why postulate some new planet that no astronomer can see when there are plenty of planets in our solar system already for him to use? Why not just throw Jupiter at us?

If you believe God exists and that he can suddenly put Jupiter into a collision course with Earth, and is of such a nature and personality as to do such a thing, well we wouldn't have a chance of course. Or indeed he could just create a planet from nothing, or transport a planet from the other side of the galaxy instantly. If you have miracles like that, moving planets, as this rabbi said he believed were possible, well, all bets are off.

The only way to answer a religious answer based on supposing miracles is a religious reply and I'm not very well versed in Judaism. In Christianity however, you can certainly do a religious reply as there are lots of warnings about false prophets and by definition all the dozens of people who have predicted the world would end (and more examples here) over the last couple of millennia are all false prophets as the world didn't end.

It's obvious that there is a significant problem in Christianity of false prophets of doomsday, despite the warnings in the Bible about it.

a house with shelves upon shelves piled high with theological books, many different translations and commentaries on the Bible, theological works by many authors, and so on. I had a lot of interest in the subject too when I was young, read many of my father's books. I also studied philosophy at university as a second undergraduate degree.

So though I am not a theologian, and indeed am no longer a Christian either, I'm a Buddhist now, I feel I do have enough background here to point you in direction of some of the basic ideas.

BIBLE IS ONLY ONE OF MANY SCRIPTURES

So, first, the Bible is only one of many scriptures in the world.

The Hindus have their scriptures too for instance which they regard as highly as Christians regard theirs.And there are many other traditions about what happens in the future.

For instance, as an example of another tradition, which I can say a bit about as I'm a Buddhist myself, many Buddhists believe that the historical Buddha is the fourth of a series of a thousand Buddhas that arise from time to time, their teachings last for a few thousand years, then fade away and eventually after many thousands of years new teachings arise again. There are many ideas here but in those traditions, there are 996 Buddhas still to come in our world system, so we have got a fair while yet before the world will end. These are not thought of as "revealed truths" in Buddhism and there is no need for a Buddhist to believe these things, but are rather, just traditional ways of thinking about the cosmos in many Buddhist cultures. They are like stories that Buddhist teachers may teach that have a message within them, but you don't have to take them literally (though many may do so).

In these traditions also, this particular world system with its 1000 Buddhas is a part of larger and larger cycles ending with destruction indeed, and renewals, because nothing is permanent

So, if you are brought up a Hindu or a Buddhist - or indeed in many other religious traditions, you don't have anything corresponding to the idea of a near future impending apocalypse. The idea simply isn't there.

But within the Christian traditions also, many Christians don't interpret the book of Revelation this way. Let's just take a short look at it.

THE BOOK OF REVELATION WAS ORIGINALLY WRITTEN AS A MESSAGE OF ENCOURAGEMENT AND HOPE FOR EARLY CHRISTIANS

Amongst Christians, there's a wide range of views on how to interpret the book of Revelation, summarized in "From Adam to Armageddon: A Survey of the Bible", page 178 as

1. "A view that **Revelation must be understood in the context of its own time** and the events symbolized in its pages as having already taken place.
2. " A view that **only a portion of the revelations have occurred** and that the work offers clues to the remaining portion of human history.
3. "A view that **the book is best understood spiritually**, and no attempt should be made to interpret it in the context of history.
4. " A view that **the book is prophetic** and its prophecies are yet to be completely fulfilled.""

The idea of a literal Armageddon is the fourth of those common ways of interpreting the Bible.

The book of Revelation was added to the Bible at quite a late date. It was originally regarded as heretical by some of the early Christians.

> value for those who use it as an authority for their lives.
>
> "Its vision may have been intended primarily to support Christians facing death for their first century faith, but it has served a much broader purpose for continuing Christianity. A book of comfort and devotion, it has called people to faithfulness over the years, while assuring them of the faithfulness of the God it proclaims."
> (From Adam to Armageddon: A Survey of the Bible - page 180)

So, it seems it is intended primarily as a message of hope, originally written for Christians who faced death as a result of their faith and now a general message of hope to Christinas in trouble.

That's why the view 1, that the events described in the book of Revelation have already taken place is also a reasonable view to take, Or indeed the view 3, that it is best understood spiritually.

In both cases it has no future predictive power since it either describes events of the first century AD, or it is meant to be taken spiritually, as a message of hope, with no intention of prophecy of actual events in the world.

Many Christians do take it in those ways.

TEACHINGS TO INSPIRE US

Teachings like this are surely meant to inspire us to look at our lives and treat them as more precious and of greater value and inspire us to live better and more meaningful lives.

If it becomes a message of despair and suicide, then it is seriously being misapplied.

If you end up getting scared and upset - for no reason, especially repeatedly, for one predicted but failed Armageddon after another - I'm sure that can't be Jesus or God's message. Whatever

Also the Bible warns against false prophets. By definition all the people who have prophesied an end to the world for the last 2000 years, and there have been dozens of them, are false prophets because the world didn't end. And these Nibiru people have falsely prophesied the end of the world numerous times too, so they are definitely false prophets too, no matter what excuses they make for their false predictions.

So, there is absolutely no reason at all to pay attention to alleged prophecies of doomsday if you are Christian. Why should you? They are surely just more false prophets to add to the dozens that have come before. For the large number of false prophets that we've had, see this List of dates predicted for apocalyptic events . It's not complete either.

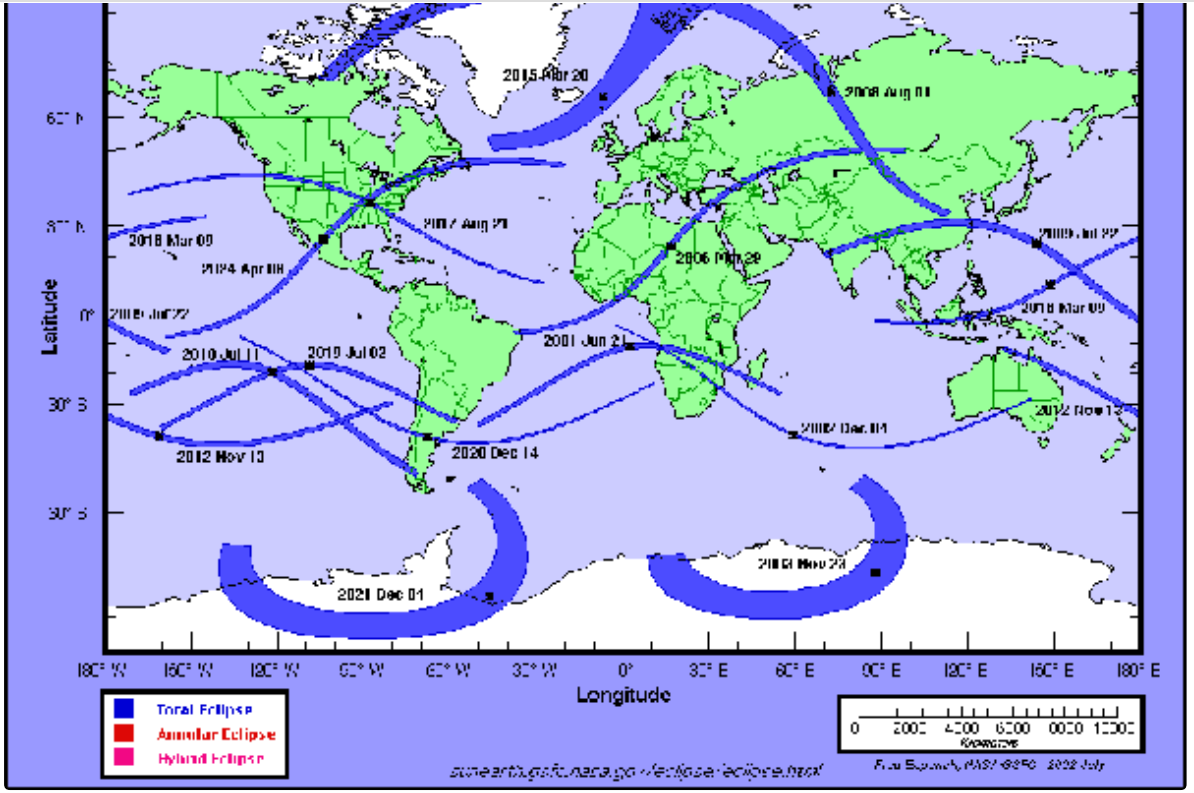
Some of these people will forecast an apocalypse over and over. They swear blind that their latest prediction is the real thing and will certainly happen. Even their own predictions made just a few months or a year before - they say those were false predictions but this one at last is correct.

If you start to fall for this sort of thing, you will never want for predictions of doomsday and will be scared of it for the rest of your life or until you realize you've been had and just give up on it.

While if you are not Christian - well what do you care what Christians prophecy? The book of Revelations is clearly meant as a message for Christians, whatever it might mean. Why pay any attention to it if you happen to be a Hindu or Buddhist or Jain or Taoist or whatever religion you are? And if you are atheist even more so.

ASTRONOMY IS NOT A STRONG POINT OF THE BIBLE

The Bible has never predicted any major astronomical event. Indeed astronomy is not it's strong point. And no previous civilization has ever had the accuracy of prediction of astronomy that we have.



> World Atlas of Solar Eclipse Paths
>
> An eclipse track map like this one is way beyond the capabilities of any previous civilization on Earth, no matter how astronomically gifted. They just didn't have the theory, the computers, the telescopes etc needed to make them.

Also, anything you might try to unearth from the Bible can't possibly be a prediction of meteorite impacts or hidden planets, as they didn't know that asteroids or meteorites existed back then.

stars circled around Earth. Back then they didn't know that the stars were other suns like our one.

So, far from having a superior understanding of how our universe worked, they had a very inferior approximate understanding.

Now of course they did have a good understanding of human nature, the Bible has a good ethical message. We aren't superior to them in terms of ethics probably. But they just weren't astronomers or cosmologists. Even by the standards of their time, the authors of the Bible do not stand out as having a particularly good understanding of astronomy. It is barely mentioned. That's just not what you go to it for.

So the idea of going to the Bible to try to unearth hidden secret messages predicting astronomical events is absurd. They just didn't have the level of astronomical understanding to make such predictions back then.

SEARCHING FOR SECRET MESSAGES FROM GOD IN THE BIBLE

To go the Bible to find secret messages about God's will for humanity might make sense if you are a devout and fundamentalist Christian. However, then you have to bear in mind all the warnings about false prophets which make it clear that the books are not intended to be used in this way. Also it's worth bearing in mind the practical experiences of all the people who have falsely prophesied the end of the world.

If you are Christian and what I've said so far doesn't reassure you - I suggest it might help to find a Christian pastor or minister who you respect. Most Christian teachers will be sure to say exactly what I say here - that you don't go to the Bible to find exact dates for the end of the world. There are exceptions. Jehovah Witnesses have predicted the end of the world many times. Failed date predictions of Jehovah's Witnesses — If you are a devout Jehovah's Witness

But most Christians don't interpret their faith this way. So you may find that going to a minister or pastor in one of the mainstream Christian sects helps you to take a different view on revelations and get another perspective on these alleged predictions from the Bible..

THIS DOESN'T MEAN SCIENCE CAN ANSWER ALL QUESTIONS

I think there are many claims that are not falsifiable by current science at all - without needing to invoke miracles. Especially philosophy - I'd argue that the whole field of philosophy is not scientifically falsifiable. Trying to make philosophy into a science, as with the logical positivists , is itself a philosophical view, and one with many problems. The logical positivist movement is generally regarded by most philosophers as a failure. It raised interesting questions and ideas but did not succeed in putting philosophy on a scientific footing. Indeed science itself is based on many assumptions you can look at with the lens of philosophy.

That's true also for most things to do with the mind, science can only address those things at the most superficial level in my view. Particularly - when you die - then whatever happens next, all our science in this life becomes like experiments you did in a dream when you wake up, if there is something next after this life.

Dreams can be vivid and realistic sometimes, for some people so vivid that they can't tell if they are asleep or awake, "waking up" multiple times each time just into a new dream, and still find that they are in a dream after apparently proving to themselves that they have woken up. Richard Feynman, the Nobel prize winning famous physicist is one example of someone who had very vivid dreams, so vivid he could examine them with a scientist's eye. So with that background, how could science ever say anything definitive about what happens when you die?

Maybe it can but if so I think this has to be in some future where science is extended to include some aspect of understanding mind, sort of meld of science, philosophy and maybe some kind

as much a belief system as any religion, I think. I go into that more in my answer to "Is there life after death" on quora.

So, I think religion does have a proper place. The idea that some scientists have that when you die that's it, is as much of a belief system as any religion. The best thing as a scientist is to keep an open mind there.

But when it comes to astronomy, planets, and so on, well there science rules supreme. In ancient times astronomers had many ways of understanding the stars and planets that worked after a fashion. But none of them was a patch on modern astronomy There is no other way of understanding how the stars and planets work that is anything like as good as science. It is one of the best and most accurate applications of science that we have.

See also Debunked: Ancient astronomers knew things we don't about planets and stars

WORLD ENDING EVENTUALLY

As to why the world would end eventually astronomers predict it will become so hot that it is uninhabitable about 500 million years from now, unless we find a way to do something about it, as the sun heats up on the way to becoming a red giant.

But "eventually" there means so far into the future for life to evolve from the smallest multicellular lifeforms you can only see in a microscope, all the way to humans again.

There are things that an advanced technological race could do to protect that distant future Earth - to use large thin film shades in orbit around Earth for instance - or to move it to a wider orbit around the Sun using repeated flybys of large asteroids. It won't be us anyway probably evolved into something else long before or extinct and new species and civilizations will have arisen by then.

could evolve all the way to humans many times over.

What happens billions, or trillions of years into the future, or even over timescales that are hard to express in ordinary terms? The end of the universe perhaps. Or just that parts of it become uninhabitable.

Maybe on such huge timescales, it gives birth to new baby universes or maybe it ends and then a new universe arises out of its ashes as it were. Or, according to Penrose's idea, it expands, dissolves into light, and then it forgets its size, and turns into a new "Big Bang" at a point in the past where our universe also didn't have a well defined size or forward direction in time, starting the process again.

There are many ideas about what could happen eventually. Nothing lasts forever. But our future is sure to be hundreds of millions of years, and the universe, surely billions of years, probably much more. That it surely would end eventually doesn't make the universe and our Earth any less precious.

I think teachings like this are surely meant to inspire us to look at our lives and treat them as more precious and of greater value and inspire us to live better and more meaningful lives. If you end up getting scared and upset - for no reason, especially repeatedly, for one predicted but failed Armageddon after another - I'm sure that can't be Jesus or God's message,if that is indeed what this book is. Whatever it means.

399 views · 2 upvotes · Posted Nov 16, 2016

Upvotes 2 Comment

can you do to prevent something that isn't real?

Robert Walker

I think this is one of the worst things about the Nibiru hoax, that the people who get scared of Nibiru feel there is nothing they can do.

IF YOU WERE SCARED OF SOMETHING REAL YOU COULD FIND OUT DETAILS ABOUT IT

If it was a real predicted asteroid impact or comet impact, you could follow it every day. Astronomers would know exactly where it is and could give detailed predictions of its position. They'd have been following it for more than a decade and would say, e.g. "Look in the night sky three hours before sunrise and you will see it in such and such a constellation". They would know where it is every night of the year, and as they refined their observations, could predict exactly where it would hit on Earth and when exactly to the minute. They would know what the effects would be, and there would be people working on ways to deflect it too. As the impact date came closer, if we hadn't managed to deflect it, you would have instructions to evacuate the impact zone, warnings for those further away to stay indoors, keep away from windows to avoid flying glass, and so on.

BUT YOU ARE SCARED OF SOMETHING SPUN OUT OF SOMEONE'S IMAGINATION

But instead what you are scared of is a made up thing, like HCT2014 (Huge Chocolate Teapot). This is a paraody of many of the Nibiru videos, by Dazzathecameraman - shows how easy it is to

Because it is not real, like HCT2014, there are no details about it, can't be. Or rather there are plenty of details but they are not consistent. There are just lots of people saying contradictory things. You could make another video about HCT2015 and HCT2016, and following this pattern could make HCTnnnn videos for ever.

SO THERE IS NOTHING YOU CAN DO EXCEPT PANIC

There is nothing you can do about it either, except panic again because it isn't real. You have no idea where to look for it in the sky except a vague instruction that you might see it near the sun at sunrise or sunset - but there again it might appear briefly in the West at sunrise or North, South, East, or anywhere in the sky, keep looking and you never know when you might spot it. There are lots of what seem to be details about it, and lots of dates given but they are always wrong, again because it isn't real and the people who make up those dates are just spinning stories out of their imagination.

want to scare you.

That's absurd given that there are hundreds of thousands of amateur astronomers worldwide in just about every country worldwide, probably millions of amateurs, and tens of thousands of pros. For more about the huge numbers of astronomers, amateur and professional worldwide, see Debunking: NASA is hiding astronomical information about extra planets and extra suns in our solar system and even an entire extra solar system

ASTEROID DETECTION IS DONE IN AN OPEN WAY - EASY TO CHECK THE LATEST PREDICTIONS

And asteroid detection is done in an open way, and there is no way that such a thing could be hidden, not when anyone can point a decent sized amateur telescope towards a comet or asteroid and see it for themselves. A planet would be a naked eye object, visible for all except one month of the year when it hides behind the sun. There is just no way it can be hidden. It is easy to check for yourself. Just go to the Sentry Risks Table here Current Impact Risks . It is colour coded, and sorted with the highest risk at the top, so easy to check. Anything white or blue is no threat at all. If you ever see a yellow entry at the top, that means it is a potential risk, but the chances are high that it is a false alarm. Only if you get an orange or red is there a real risk. That has never happened to date. If it goes orange or red, you won't need to hunt around to find out information, it will be on international news and all astronomical web sites. And if there is an actual impact predicted, you'd get warnings to evacuate the impact zone.

This is very unlikely to happen though. In all of recorded history we have had many volcanoes, earthquakes, tsunamis, but never had a major asteroid impact on a populated area. Indeed not even in a desert apart from meteor crater in Arizona 50,000 years ago.

> This is the most recent large impact on land, Meteor Crater - Wikipedia in Arizona. It happened 50,000 years ago. It landed in a desert and most of Earth is desert or ocean. An impact this large if it landed in the middle of a city would be devastating and kill millions. But such impacts are very rare indeed, and the chance of one hitting a populated area is even smaller. We've had many disasters in history due to volcanoes (e.g. Pompei), tsunami, earthquakes. But we haven't had a single recorded example of large numbers of people dying due to a meteorite impact. That shows how rare impacts are.
>
> Though they are so rare, it is well worth our while to do astronomical searches for asteroids that could hit Earth. Unlike any other disaster we'd be able to predict the time and position of the impact to the nearest minute and to within kilometers given a long enough timeline to refine the orbit. We'd also be able to deflect it too. It's the only natural disaster we can predict so precisely and can also prevent. But it's not something to be scared about, less likely to die this way than from lightning, or tornadoes. Also traffic accidents of course or medical issues are far more common than either of those.

See Debunking: All going to die as a result of impact of Asteroid 2009ES or 2000 ET70 or [insert name of asteroid here] or a "Level 3 Planet Cracker"

WHAT HAPPENS IF YOU BELIEVE ALL ASTRONOMERS ARE LYING TO YOU

But if you don't have much background in astronomy, you may come to believe that all astronomers are lying to you. You desperately want to know where it is, and when it will hit

If you do this you will end up being scared for the rest of your life or as long as it takes to realize that you have been had. The conspiracy theorists are not limited in the way astronomers are. They don't need to work out orbits, or to track it with telescopes. They just make up dates out of their imagination. Which means they can pick any date. Sometimes they will pick dates that have some astronomical meaning, e.g. an eclipse of the Moon or a super Moon, or eclipse of the sun. Sometimes they just pick a date at random. Sometimes they give a range of dates, e.g. it will happen some time in the spring. Debunked - Nibiru will hit Earth between January and March 2017 - or any range of dates like that

THE HOAXERS AND CONSPIRACY THEORISTS CAN IMAGINE ANY DATE THEY LIKE - ARE NOT LIMITED IN THE WAY ASTRONOMERS ARE

So, again because it is not real, there won't be any end to people making up dates. Because there is no real data to limit them in any way. They can keep on making up these dates and there is no sign of them giving up. It's increasing if anything. Originally it was just Nancy Lieder in the business of making up dates for Nibiru to hit Earth. Now dozens of people have joined in and it's become a money earner on Youtube. If you can make a doomsday video that scares lots of people you can earn hundreds of dollars a month from the ad revenue or even thousands of dollars if you can get into the millions of views a month. It may also get picked up by journalists in search of "silly season" stories and then you have it made financially for a month or two.

So that's why it ends up being so scary - precisely because it isn't real and makes no sense astronomically. That's also why you can't do anything to stop it, because it isn't real. Praying and hoping won't help either, as the people who make up these stories won't be influenced by your prayers and hopes. That's also why it is impossible for anyone with astronomical expertise to give any details about it. There are no details for anyone to give because it doesn't exist.

get the government to do something about Nibiru - again - that nonsense is distracting both you and the people who receive your pleas away from the many real things that you could be trying to get something done about.

WHAT CAN YOU DO?

Well take a look at what astronomers say about it. We are telling the truth. Eventually hopefully you can come to realize that we are telling the truth. See also

Debunked: Nibiru will hit Earth on [Insert Date here]

for the reasons astronomers are totally sure it can't be real.

I understand that Nibiru is not real but still feel scared all the time - what can I do? if you are still scared although you know it is not real.

Who else says Nibiru is nonsense? for the reassurance that big name astronomers say it is nonsense

Where can I get support if I'm scared of Nibiru / Doomsday maybe even suicidal? to get support

Debunking: Inuit elders say that the Earth's poles have shifted position - for one of the conspiracy theory myths which you can debunk with your own eyes, easily, any clear night. This may help you to understand how astronomers can be so sure that the conspiracy theories are just nonsense. They are all as daft as this one, but this one is one of the easiest to see is false for yourself with your own eyes with minimal understanding of astronomy.

Debunked: A planet in a 3600 year orbit can hide behind the sun for years on end - a bit of basic astronomy which many amateur astronomers would learn in their first year of their new

And - generally I'd suggest learning some astronomy, real astronomy, not this "pick a date and invent a story around it" parody of astronomy that you see on the Nibiru websites.

Debunked - Nibiru will hit Earth between January and March 2017 - or any range of dates like that

Robert Walker

I've been asked about this as yet another internet rumour, someone has said that Nibiru will definitely hit Earth some time between January and March 2017. I'd like to explain how you can immediately dismiss any rumour of this sort, where a range of dates is given for an impact of any sort.

The thing is that the Earth moves a quarter of the way around the Sun between January and March.

It moves 30 kilometers every second - that means it moves by its radius in 3.55 minutes. If

> The famous Earth Rise photo taken by the crew of Apollo 8 from orbit around the Moon. Earth moves around the sun so quickly that it traverses a distance equivalent to its own radius in less than four minutes. If something was headed towards the Earth from outer space and you got the time of the encounter wrong by as little as four minutes, that turns a direct hit into a miss. With this background it is absurd to predict any encounter with Earth if you don't know not only which day it will happen but also the exact time on that day, accurately to within minutes.

So now the Nibiru enthusiasts are saying that they believe that someone just by observing a bright light in the sky that no astronomers have been able to see knows that it is going to hit Earth between January and March next year.

going to be a flyby.

171 views · 1 upvote · Posted Nov 15, 2016

Upvotes 1 Comment

Debunked - California could fall into the sea or the Earth split open through earthquakes or continental drift

Robert Walker

The answer is no, nothing like this can happen. First to explain continental drift. All the continents are moving slowly, all the time.

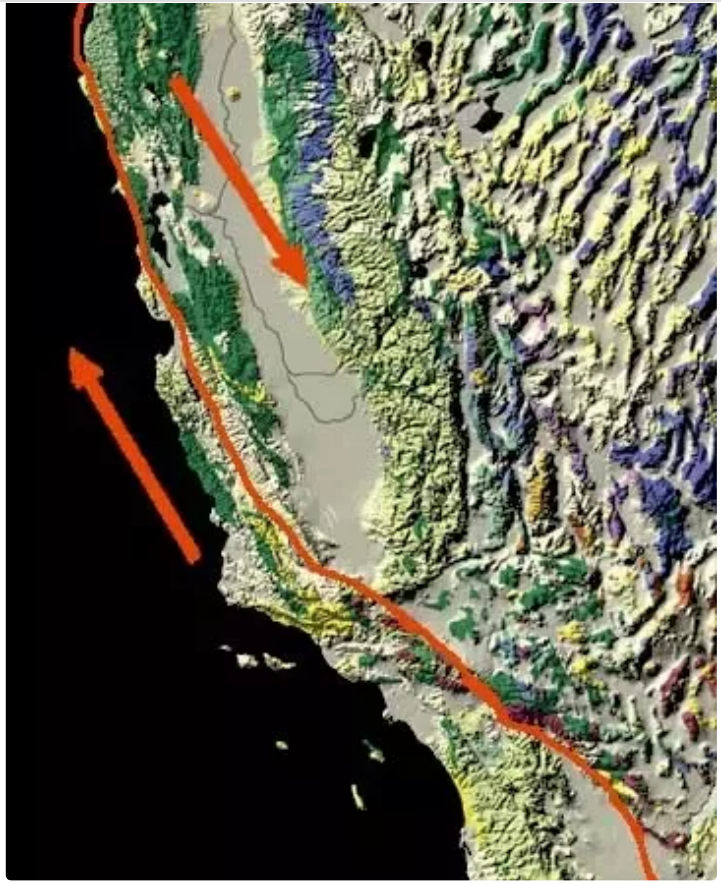
> That idea seemed very extraordinary to the early geologists. But now it is generally accepted. The continents are rigid plates that are less dense than the denser mantle below. The mantle is not quite liquid, and indeed the top 100 kilometers is solid rock , but the motion is so slow that even solid rock can be soft enough to move. The whole thing is driven by the heat of the Earth's core and convective motion.
>
> This animation by the geologist Christopher Scotese shows the continental drift first backwards from the present to 240 million years ago, then it goes forward all the way to 250 million years into the future. Notice how the continents formed a single large continent 240 million years ago and they are predicted to come together to make another large continent in 250 million years in the future. This is thought to have happened over and over, many times in the geological history of our Earth.

So anyway as part of those motions, then some of the plates rub against each other, or collide or pull apart, or one plate will submerge beneath another one - and this causes earthquakes. (Details of the various ways the plates can move .)

Here is a summary for kids about how continental drift works .

If you live far away from any fault line, then the chance of an earthquake is usually very low.

The San Andreas fault in California is an example of a place where two plates are sliding in opposite directions like this.



> San Andreas Fault

And, there is a risk of a big Earthquake in California at some point, yes. May happen some time in the next 30 years or so.

Magnitude 8 or larger. New Long-Term Earthquake Forecast for California (3/10/2015 12:30:00 PM)

That really did happen and was hugely devastating. But remember the skyscrapers then weren't as well built to withstand earthquakes in the way modern California skyscrapers are, though they had already designed buildings to be earthquake resistance.

Also 90% of the damage to the structures was due to fires.

> "One of the reasons that fatalities in the earthquake were a fraction of one percent of the population and complete collapses were so few is that well before 1906 engineers and architects attempted to build structures with earthquake-resistant features.

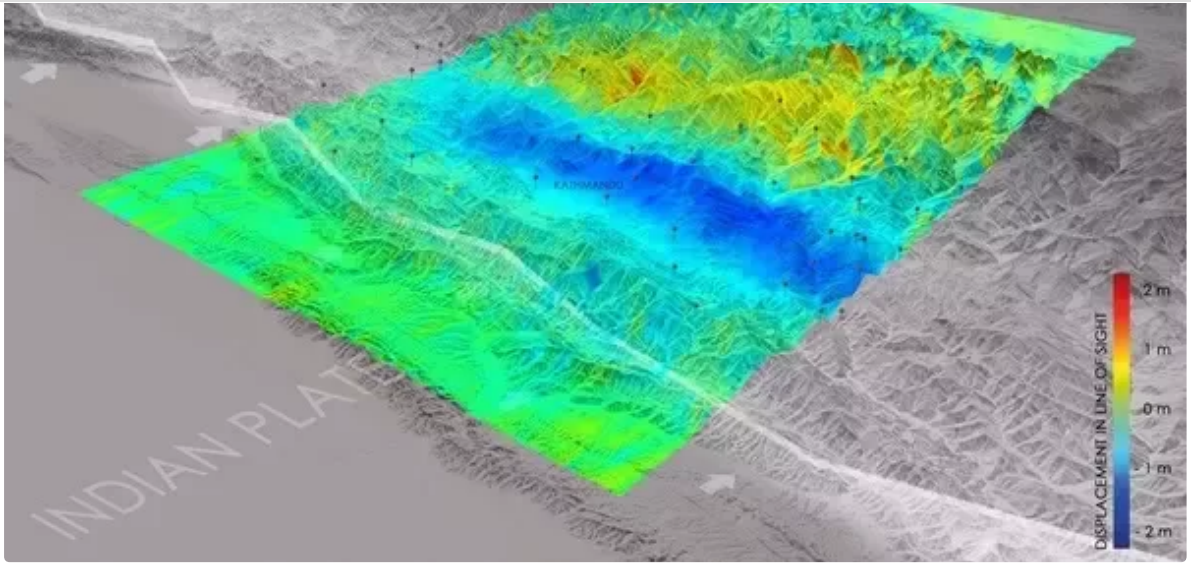
> quietly continued to build earthquake-resistant buildings, and put into effect a strong \building code that addressed earthquake danger. After the earthquake, the citizens responded by voting to build a huge water system dedicated to fighting fires, which was earthquake-resistant as well."
>
> 100th Anniversary 1906 San Francisco Earthquake Conference

Nowadays houses and skyscrapers are much better built than they were then. So that would be a mitigating factor but still it would be devastating and surely many would die.

As for the idea that California would fall into the sea - that's impossible.

One geologist worked out that to have an earthquake that big, you'd need a fault line 6,000 miles long all the way from the pole to the equator, and you would need the entire fault line to slip at once (with all the energy of the slip focused on California). Apart from the improbability of such a vast fault line slipping simultaneously - such a long fault line doesn't exist in our world. See California Geological Survey - Earthquake

Even major earthquakes like the Nepal one shift the land by meters at most. The Nepal earthquake moved the land upwards by between 1 and 2 meters.
Nepal earthquake may have raised all of Kathmandu by 3 to 6 feet - and moved Katmandu about 3 meters southward Nepal earthquake moves Kathmandu but Everest height unchanged



> An interferogram showing vertical displacement of land a result of the April 25 earthquake. Here red = vertical displacement of 2 meters - so a few spots were raised by 2 meters. There were horizontal movements also of a few meters.

The geologist I mentioned says this about these types of movies in the introduction

> "Whether we view movies as an educational experience or simply entertainment, we all value the ability of movies to help us escape reality for a little while. Sometimes, however, because a movie uses science and technology as a backdrop, the story will be more believable to its viewers, helping them form opinions that might affect their view of reality and, ultimately, the way they live their lives."
>
> "Some moviemakers have relied on a perception of reality that has been fostered over the years by, in many cases, watching other movies. They do this instead of developing equally interesting story lines based on the truth."

been prepared for it by previous movies.

It's known as the California Collapse - TV Trope

CLUSTERS OF EARTHQUAKES

As for clusters of earthquakes - well they can't set each other off, they are too far apart. This is just natural random clustering.

See List of earthquakes in 2015

If you look a the table, then there were 143 earthquakes magnitude six upwards. So it must be quite common for two to happen in a day. There are only 20 magnitude 7 upwards. Still there's a strange mathematical result - if you have a party with 23 people in a room, though the chance that ***you*** share a birthday with one of the others is only 22/360, the chance that **any two of them share a birthday with each other**, when you take account of all possible pairings, is 50%. See Birthday problem .

So at 20 or so a year, it must also be quite common that you get two of the magnitude 7 and upwards earthquakes in a day too.

Earthquakes often cause other aftershocks as they send tremors through the earth that can cause other faults to slip - and occasionally they can be as large as the original earthquake. So earthquakes could cause each other - but probably only over ranges of hundreds of miles, not so likely over thousands of miles. See this story from 2012: Are 4 Big Earthquakes in 2 Days Connected?

Earthquake Facts & Earthquake Fantasy

See also: Debunked: Every time we have a cluster of earthquakes, we must have a planet

Debunked: Supermoon on 14th November is the beginning of the end of the world

Robert Walker

We have a full Moon every 29 days. This one is slightly closer. It's not hugely closer - it's like the difference between someone 114 meters away and someone 100 meters away. As so often with astronomical events, we get the conspiracy theortsts claiming it somehow endangers the Earth, this time based on numerology related to the date that separate state of Israel was created. Here is a screenshot of the google search results . It is absolutely no danger at all.

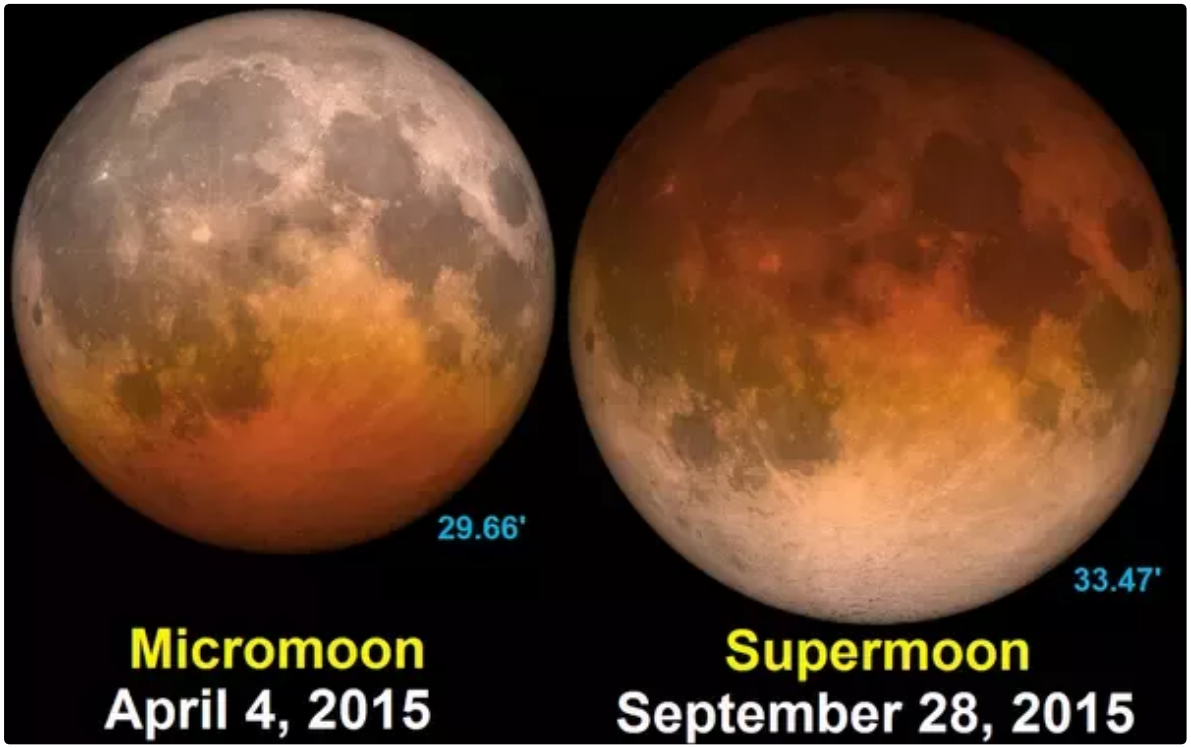
It's not an approach in any sense of the word. The Moon is in a stable orbit around the Earth which is in a stable orbit around the Sun and both have been in those orbits for billions of years. And the Moon used to be a lot closer when it first formed. It is very very slowly spiraling outwards. It is not moving inwards at all.

Also supermoons themselves are common too. This is just a particularly close supermoon. The distance between the center of the Earth and the center of the Moon will be 221,524 miles (356,509 km).

It gets even closer on November 25, 2034, a distance of 356,445 km or 221,485 miles. And even

Great to watch it if we get a starry night. But don't expect too much. It is only slightly bigger and you may notice no difference. More noticeable if close to the horizon. For more about it, a scientifically accurate article, see We're about to see a record-breaking supermoon - the biggest in nearly 70 years

However it's also 30% brighter than usual so that is a bit more noticeable. It's most striking if you contrast it with its opposite, the micromoon, when the Moon is as far away as it can be:



> Supermoon lunar eclipse 2015

It is a great time to test to see if you can see colour by moonlight :). Some people can, easily.

to try. If you are like the majority of people you probably can't but some can. Can ask your friends see if any of them see colour. Obviously in a dark place without streetlights for a fair test.

As for why it is so close - well the Moon is in an elliptical orbit around the Earth. This means it has to have a closest point, the perigee and furthest point, the apogee.

Now when it's orbit is aligned with the sun, the tug of the Sun's gravity increases its eccentricity a bit more. The distance between the closest and furthest points doesn't change (because it's orbital period doesn't change, which depends on the distance between the perigee and apogee), but the closest point gets closer to Earth and the furthest point gets further away.

So, when you have a perigee Moon exactly on the line from the Earth to the Sun (on the far side of the Earth from the Sun), then its orbit is also as eccentric as it gets, so it is also as close to Earth as it can get.

This also means you get the highest tides possible on a supermoon day.

So in short, look out for a bright Moon. Also, if you live near the sea, expect the high tides to be as high as they ever get.

5 keys to enjoying the closest supermoon | EarthSky.org

184 views · 1 upvote · Posted Nov 13, 2016

Upvotes 1 Comment

and how does astrology really work?

Robert Walker

Once you get caught up with this idea that Nibiru exists, you are likely to find that there is no way to refute it. You see numerous videos and images shared on line that they say confirm it. The astronomers will say it is nonsense, that the whole idea is BS, but you don't understand their arguments. Experts on Sumerian say it is Jupiter. But why can't it just be refuted in some easy way?

Well, let's look at the instruction you are given by the conspiracy theorists. The message is something like this:

> "Look in the sky, if you see a bright object that you don't understand, wherever it is in the sky, that's a planet called Nibiru. If you don't see anything, keep trying and you will see it eventually"

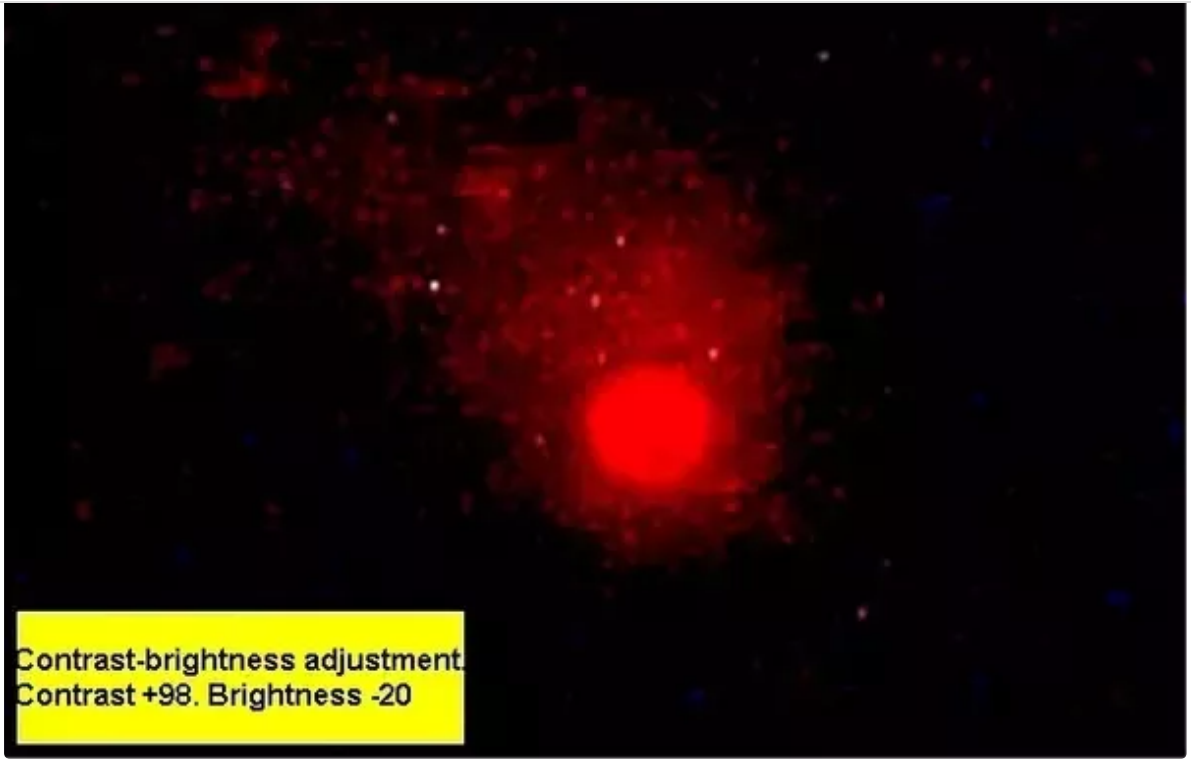
That's guaranteed to get lots of false observations. The main problem with this as science is that it doesn't give you any way to refute it, it's got irrefutability built into it.

ANYTHING BRIGHT IN THE SKY, IF YOU DON'T UNDERSTAND IT, IS "NIBIRU"

- If they spot anything bright which they don't understand, that's Nibiru.
- It doesn't matter where it is in the sky, East, West, South, North, directly overhead
- It doesn't matter if it appears for a few seconds or minutes, or is only visible as an image on your mobile phone.

Here are some examples of images shared as “Nibiru”

This is shared as “Nibiru”. It’s probably an offset lens reflection.



The white dot in this image is supposed to be Nibiru. The author of it - or at least someone claiming to be the author - posted to forums soon after saying it was a hoax. It would be a very easy hoax to do, just add a white dot to a photo. But many didn't believe him and it is still available online as an alleged photo of Nibiru.

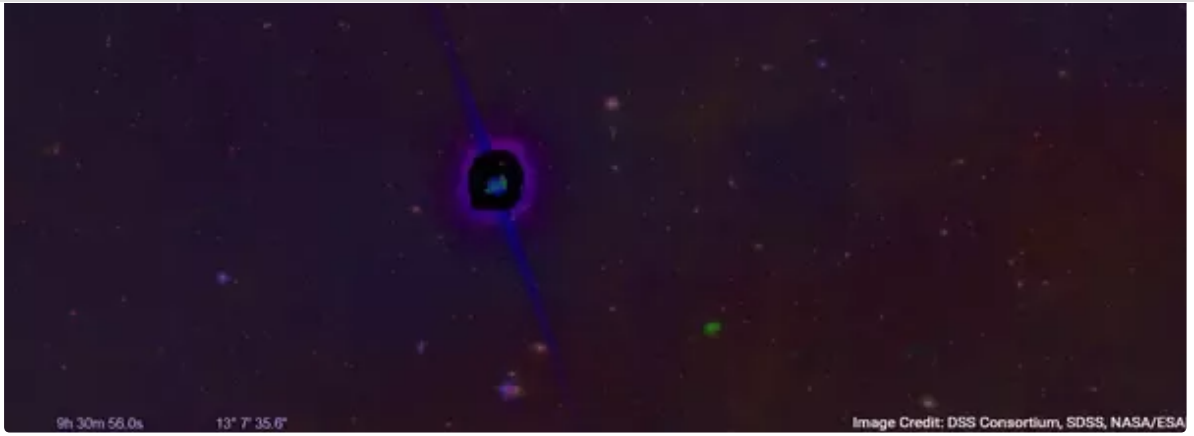
This is an artist's impression of a double sunset on an exoplanet, often shared as "Nibiru"

You'll find many more such images shared as "Nibiru" and there is no consistency or pattern to them. "Imaginary Bullshit Planet" Nibiru - Lens Flares, Sun Mirages, Hoaxes & Just Plain Silly

ASTRONOMY NEWS AND GOOGLE SKY

They also monitor astronomical news and if astronomers announce that they have indirect evidence of a planet orbiting way beyond Neptune - that's Nibiru.

They also search online photographs, for instance Google Sky and if they find something unusual there, instead of looking it up to find out that it is, say the Peanut Nebula - they just use their blogs to announce to the world that they have found Nibiru.



> The Peanut Nebula - one of many deep sky objects shared as “Nibiru” see Debunked: The IRAS infrared satellite found Nibiru in 1983

So for them, there are countless ways to “prove” Nibiru exists.

NO PREDICTIONS

Meanwhile, because nobody ever makes any predictions about where you should look in the sky to see this “Nibiru” then there is no observation you could do to prove Nibiru doesn’t exist. Even if you just see a bright patch on a cloud that proves that it exists, for these people. No need to check to see if anyone else saw a bright patch in that same direction either. After all anything bright and unexplained is Nibiru no matter where it is in the sky, so what’s the point in checking where someone else saw it?

Is it no surprise that following this approach many people think they have proved that it exists? They don’t know to check for lens flares or offset lens reflections. Many of them have never paid much attention to the sky before. If you start paying close attention to the sky for the first time in your life, then you are bound to notice many things you never noticed before and wonder

the sky, day or night, looking for confirmation of Nibiru.

BIRD SPOTTING

They treat planet spotting as like bird spotting, looking out for some rare elusive creature such as the Bittern, a shy bird that is well camouflaged and hard to spot in thick grass:

> A rarish sighting of a bittern at RSPB Leighton Moss

However planets don’t behave like birds. There is nowhere for them to hide except behind the sun, and they typically can only hide behind the sun for about one month of the year.

SUGGESTION - TRY WATCHING REAL PLANETS

That's why I suggest, if you have got caught up in this nonsense, that you try your hand at a bit of simple star gazing. Learn how astronomy actually works. Start following the planets. This is something you can do even with naked eye observation. Learn to find the pole star. Look up the positions of the planets in the sky. Read some basic astronomy books, get astronomy magazines, join your local astronomy club, make friends with people who watch the sky as astronomers. Anything of that sort will help you become a bit more grounded and to understand this better. With only a small amount of experience and understanding of real astronomy, there's no way you can be fooled by this stuff ever again.

> centuries into the future indeed. They move through the sky slowly, night after night. And if they are visible, then anyone can see them, any clear night, look in the right place at the right time and you see them. With this experience of watching real planets, you should soon come to see how absurd the Nibiru suggestions are.

Here is a sky chart, which automatically detects your location and shows the positions of the planets, the Moon, and the brightest stars in the sky

Charts of the Night Sky

Try using those charts, and go out and observe the Moon, Jupiter or Venus or the other planets as they become visible. They appear in the sky exactly at the times predicted, in the positions predicted. That may help you get an idea of how planets work. If Nibiru was a real planet - it would have a position on those sky charts too, and we'd all be following it. Anyone would just need to look up and see it with their own eyes. The instructions would be something like this:

> "Nibiru is visible in the dawn sky, rising at 03:35 (GMT) – 3 hours and 34 minutes before the Sun – and reaching an altitude of 25° above the south-eastern horizon before fading from view as dawn breaks at around 06:44."

That's today's instruction for Jupiter (on Saturday 12th November 2012). Indeed, since the ancient Sumerians used Nibiru to refer to Jupiter amongst other things you can just substitute "Nibiru" for "Jupiter" and that's probably the most accurate way to understand the term.

> "In the texts that follow, Nibiru was regarded as a planet (specifically, Jupiter, but once as Mercury), a god (specifically, Marduk), and a star (distinguished from Jupiter). If you're confused, you aren't alone. This tri-fold (fourfold if you count Mercury) designation for Nibiru is why scholars of cuneiform astronomy have not been able to determine with certainty what exactly Nibiru is. We'll go into the problem more in later sections. One thing

> Jupiter as photographed by Cassini. The Sumerians used the word “Nibiru” to refer to Jupiter amongst other things.

So now, this is something you can confirm or refute. If you have a clear Eastern horizon go and see if you see a bright object rise in the early morning a bit before 4 am. You can also look at it’s position in the sky chart - it’s in the constellation Virgo. You can verify the prediction for yourself.

REAL ASTEROIDS AND COMETS

As for real asteroids and comets - it's possible for them to hit Earth. But they are far smaller than planets. We already know all the asteroids of 10 km and larger that do regular flybys of Earth. None of them can hit Earth before 2100.

A comet ten kilometers in diameter, on a Nibiru like orbit would be possible but very very unlikely, around 99.999999% certain it won't happen this century, and they are easy to spot in our big telescopes several years in advance. You'd be able to find it in a decent telescope every night except for about one month every year.

For a comet in the same plane as the other planets, near the celestial equator, everyone would see it, world wide, on every starry night. If it approaches from the south or the north, it's viewed from an entire hemisphere, e.g. if it approaches from the North it is visible anywhere where you can see the pole star and similarly if it approaches from the South it's visible from the entire southern hemisphere except perhaps right at the equator.

> Siding Spring Observatory - the comet Cpmet Siding Spring - 2013 A1 was discovered by one of the telescopes in this Australian observatory a year and a half before its flyby of Mars. It was only 400 - 700 meters in diameter and was discovered a year and a half before the flyby. If there was even a small comet headed for Earth it would be discovered at least a year or so before the flyby. A larger one would be discovered many years before flyby.
>
> Anything as big as a planet would be spotted decades before flyby and would be an easy naked eye object for years before flyby - but it is impossible for a planet to be in such an orbit because it is not stable for as long as a million years and our solar system is billions of years old. Comets can be in such orbits because there are large numbers of them, and they are so light weight they don't destabilize the solar system in the way similar numbers of planets would.

Real flybys also are predicted exactly to the minute. The Earth moves 30 kilometers every

So there is no way an astronomer who observes a comet as a bright light in the sky will predict a flyby or a hit, until they know its orbit so accurately that they can predict whe nit will fly past Earth to within a few minutes. They have to be able to do that, as otherwise they wouldn't know that it is going to be a flyby. Nearly all asteroids and comets come nowhere near the Earth - interplanetary space is vast and the Earth is tiny in comparison.

See also my Giant Asteroid Headed Your Way? - How We Can Detect And Deflect Them

You can check out the astronomical predictions on this page: Current Impact Risks . It's ordered with the greatest risk at the top. So if the top entry is blue or white, you know for sure that there is no impact on Earth predicted through to 2100. Occasionally it has a yellow entry - that means there may be an impact but the chance is low and it is far in the future. Yellow entries normally turn white once we have more information.

See also Debunked: Ancient astronomers knew things we don't about planets and stars

Debunked: How can the videos and photos be hoaxes when so many people believe them?

Debunked: How can it be false when so many people share photos of "Nibiru" next to the sun or a second sun?

For why astronomers are sure that Nibiru is just nuts, see Debunked: Nibiru will hit Earth on [Insert Date here]

Also Debunked: A planet in a 3600 year orbit can hide behind the sun for years on end

235 views · 1 upvote · Posted Nov 12, 2016

Upvotes 1 Comment

Debunked: Global warming as terrifying apocalyptic scenario - risking something not far off Venus - story in the Independent

Robert Walker

This is a recent dramatic post about climate change in the independent. Donald Trump's victory isn't the most terrifying news today. There's something even worse - I've been getting messages by scared people about it.

There's a lot of journalist hype there and click bait. Especially the last bit

> "It sounds on the apocalyptic side of bad and, in some ways, it is realistic because 'business as usual' just got more likely as Trump wants to rebuild the pipelines ... the complete 'fossilisation' of the US," he said.
>
> "It was game over at six [degrees] to be honest. I don't think there was much more to add, other than turning the planet into Venus."
>
> "The only way out is to reduce greenhouse gas emissions as soon as possible," concluded Friedrich.

But - this is just way over hyped. Maybe they cherry picked quotes from Friedrich or maybe he got a bit carried away emphasizing the risks of climate change?

For whatever reason, even a 7 C rise is not remotely apocalyptic. Earth right now is warmer than it was during the ice ages but on a larger timescale it's the coldest it has been for 450

ice in Antarctica for centuries, probably thousands of years into the future.

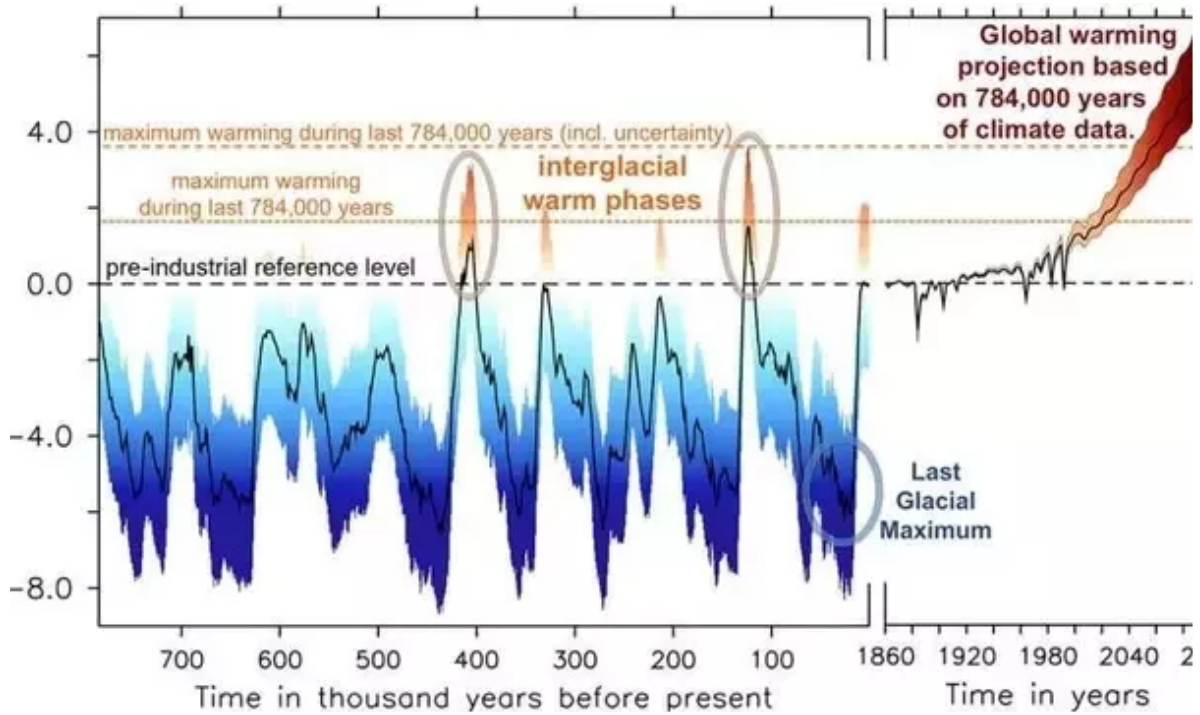
Even as recently as 200,000 years ago Earth was warm enough to have lions and macaque monkeys in the region that is now London and Essex, with probably more of a Mediterranean climate. Macaque fossils have been found as far north as West Runton in Norfolk. Professor S Elton - Durham University and paper here: http://eprints.nottingham.ac.uk/...

> Fossil of a lion's lower jaw from 200,000 BC, Crayford, Essex. Exhibition of early human history at the Natural History Museum

So we have a fair bit of warming before we even reach the climate of the middle Pleistocene, never mind the earlier much warmer climates.

> greenhouse gas emission scenario. The researchers project that by the year 2100, global temperatures will rise 5.9°C (~10.5°F) above pre-industrial values. This magnitude of warming overlaps with the upper range of estimates presented by the Intergovernmental Panel on Climate Change (IPCC)."
>
> "The results of the study demonstrate that unabated human-induced greenhouse gas emissions are likely to push Earth's climate out of the envelope of temperature conditions that have prevailed for the last 784,000 years.

This is their graph:



So, in summary the study suggests that global warming may be more than expected for the

may be more than previously estimated if we have a "business as usual" situation.

Also it is recently published leading edge research so one shouldn't take it as confirmed. Things like this often get changed after other scientists get a chance to look at it more closely and occasionally they may find flaws in it, even though peer reviewed. It surely needs more research before they agree on it generally if it is true.

As an example, of how leading edge science can change with more research - some time back a scientist published research that seemed to show that if we burnt all the fossil coal, oil, gas, shale oil etc in the world then our climate woudl become like Venus. Later on other scientists found mistakes in his work and deduced that to get a runaway greenhouse effect like that would require ten times the total reserves of coal, oil and gas in the world. The original scientist agreed with that conclusion and retracted his claim.

Debunked: How can the videos and photos be hoaxes when so many people believe them?

Robert Walker

real, yet, as you can see, many believed they were.

WHY DO SO MANY PEOPLE BELIEVE THIS IF IT ISN'T TRUE?

Often lots of people do believe hoaxes. One of the most famous is the Spaghetti harvest April Fool in 1957.

Back then we didn't have the internet and many people believed this hoax, especially as it was narrated by a very respected presenter in the UK, Richard Dimbleby, as respected in the UK as, say, David Attenborough is today. Also spaghetti wasn't nearly as common or as easy to get hold of in Britain as it is today, and back in the 1950s many people in Britain simply weren't aware that spaghetti is made from pasta. It was so convincing, some people phoned in asking

hoaxers out there, who do this sort of thing either for fun, or to advertise a product or a movie, or just for the ad revenue on the video. They may get a significant income from ads if they can make a video that gets shown to millions of people.

This is an example of a well known recent internet hoax which fooled a lot of people.

The person in the video has never even flown in a wingsuit, as he later admitted.

This is about how it was faked

And the whole thing was done just for the product placement in the shower scene part of the way through.

HOAX IMAGES AND VIDEOS OF NIBIRU DONE AS A PRANK

With all this nonsense about Nibiru, some people have done what they intended to be harmless pranks, just to have their videos and images propagated all over the internet as real.

Dramatic Chipmunk :)

PROFESSOR KAPLAN - ABDUCTED UNDER MYSTERIOUS CIRCUMSTANCES WHILE OBSERVING NIBIRU

If you read the conspiracy stories about Nibiru, you've probably heard of the mysterious kidnapped and murdered Professor Kaplan, and the chip with a recording of his observations of Nibiru which was found by someone and uploaded to YouTube.

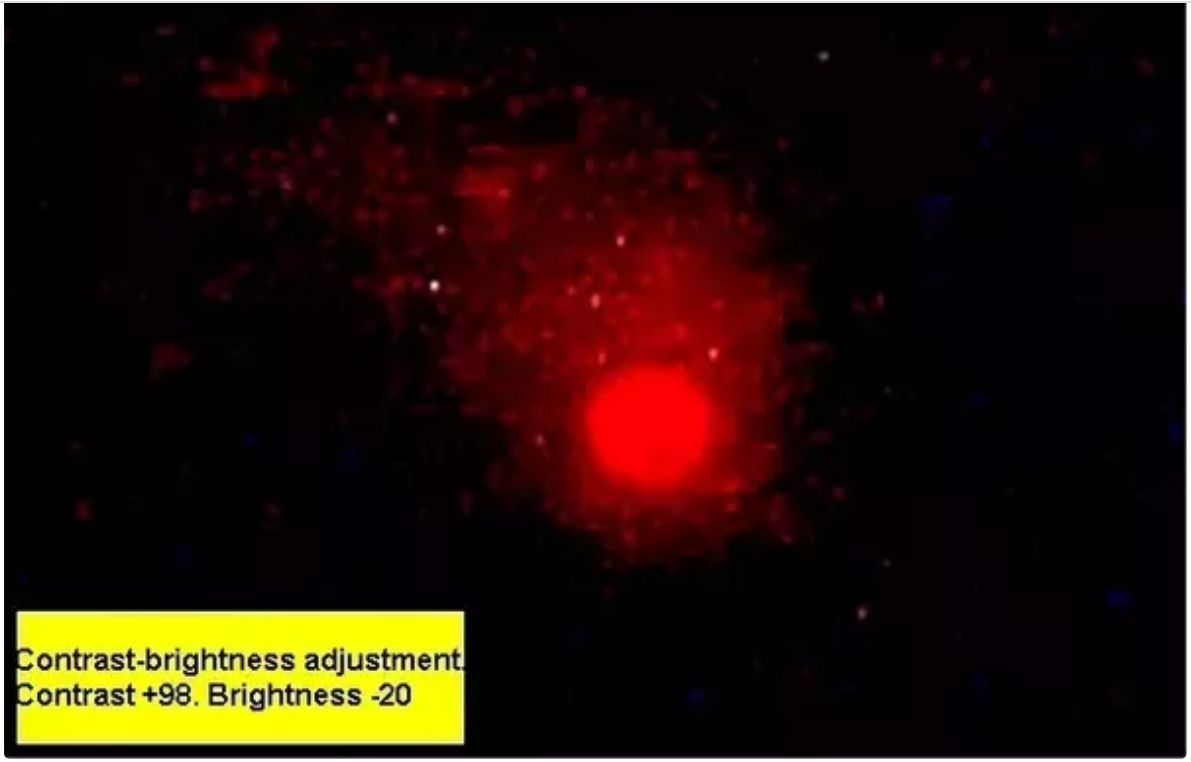
Here "Professor Kaplan" talks about why he did this hoax video originally as a silly prank for his pals, and his attempts to get it taken down - which only fueled more conspiracy theories about the video.

of those long waits twiddling his thumbs with nothing to do. So he wasn't wasting precious observatory time or his own time when he did it. It looks very authentic because it is not a set, it is recorded at an actual observatory. But he didn't do it for YouTube or for public viewing.

He left two clues that it is a joke in the video including an email allegedly from someone else shown as addressed from "Me" to "Me" in a close up shot, and a quiet chuckle at the end of the video as he gets "abducted". Plus of course him being still alive and giving a skype interview after the joke "abduction" at the end shows it is a joke :)

HOAX IMAGE

This is an early hoax image from 2003, very rudimentary. The tiny white dot is supposed to be Nibiru.



The author of it - or at least someone claiming to be the author - posted to forums soon after saying it was a hoax. But many didn't believe him and it is still available online as an alleged photo of Nibiru.

I'm not sure which of the more recent photos and videos are out and out hoaxes like this, but surely some of them must be. Or digitally enhanced to make it look more like a second sun or planet.

ARTIST'S IMPRESSION USED AS A PHOTOGRAPH.

This rather dramatic image has gone the rounds a bit and been posted as a photograph of a double sunset in China . There was indeed a double sunset in China as we'll see, but this is not it. It's actually an artist's impression from NASA of a double sunset over an alien planet .

EXAMPLE BLOOD MOON HOAX VIDEO

Many news stories ran this one, based on a youtube video which someone uploaded, this time with the title "EXCLUSIVE BLOOD RED MOON and NIBIRU August 21st 2016". This is a detail of a screenshot from the video .

The authors claim that this video shows a planet next to the Moon casting a red shadow on it, and that it was taken on three separate nights in August from Pennsylvania showing a bright object visually as large as the Moon next to a blood red Moon. It may seem quite impressive unless you've heard of offset lens reflections.

This is how to simulate it with a glass slide on an iPhone.

It can also happen accidentally - the transparent protector for the lens may be misaligned, or with more advanced equipment you may have a misthreaded filter, or you take the video through a window. In most of those situations (except the video through a window), you will notice that if you rotate the camera, the offset lens reflection rotates with it.

For more about this see Kudos To "The Independent" Newspaper For Debunking Nibiru "Blood Moon" Hoax

fooled you can see that this is nonsense rather easily.

They claim that the ISS photographed a 3000 mile wide UFO hovering over Earth and somehow nobody else noticed it except the ISS crew

Most of the youtube hoax videos are really low quality like this.

Here is another one, not sure if anyone believed it :), very amateur stuff:

I might share a few more if I can find them. But sometimes as with that “blood moon” video people still get fooled by them.

And yes, people do do hoax videos of Nibiru.

Debunked: Ancient astronomers knew things we don’t about planets and stars

Robert Walker

Another idea that comes up so often is that Nibiru is predicted by ancient astronomers. They certainly could have had advanced philosophical ideas. But as for maths and astronomy - no, doesn't seem likely that they ever had advanced far in those fields.

EARLY MATHS - THEY COULDN’T EVEN USE RATIOS

First their maths - though advanced for their time - was rubbish by modern standards. The Sumerians, amongst the most advanced mathematically in the entire ancient world, had this clumsy way of thinking about ratios. They couldn't write 7/10 - for some reason had never thought of the idea of "seven tenth parts" in maths. Instead they would write it as 1/2 + 1/5. I.e. a half and a fifth. Imagine trying to multiply two ratios in that system! Even adding ratios is tricky. They didn't have negative numbers yet, or zero, or logarithms, or hardly any maths at all by modern standards. So were severely handicapped if they ever needed to calculate anything in astronomy.

DIDN’T KNOW THAT EARTH WAS A PLANET OR ASTEROIDS COME FROM SPACE

strong winds. They thought comets were in the atmosphere, a bit like clouds.

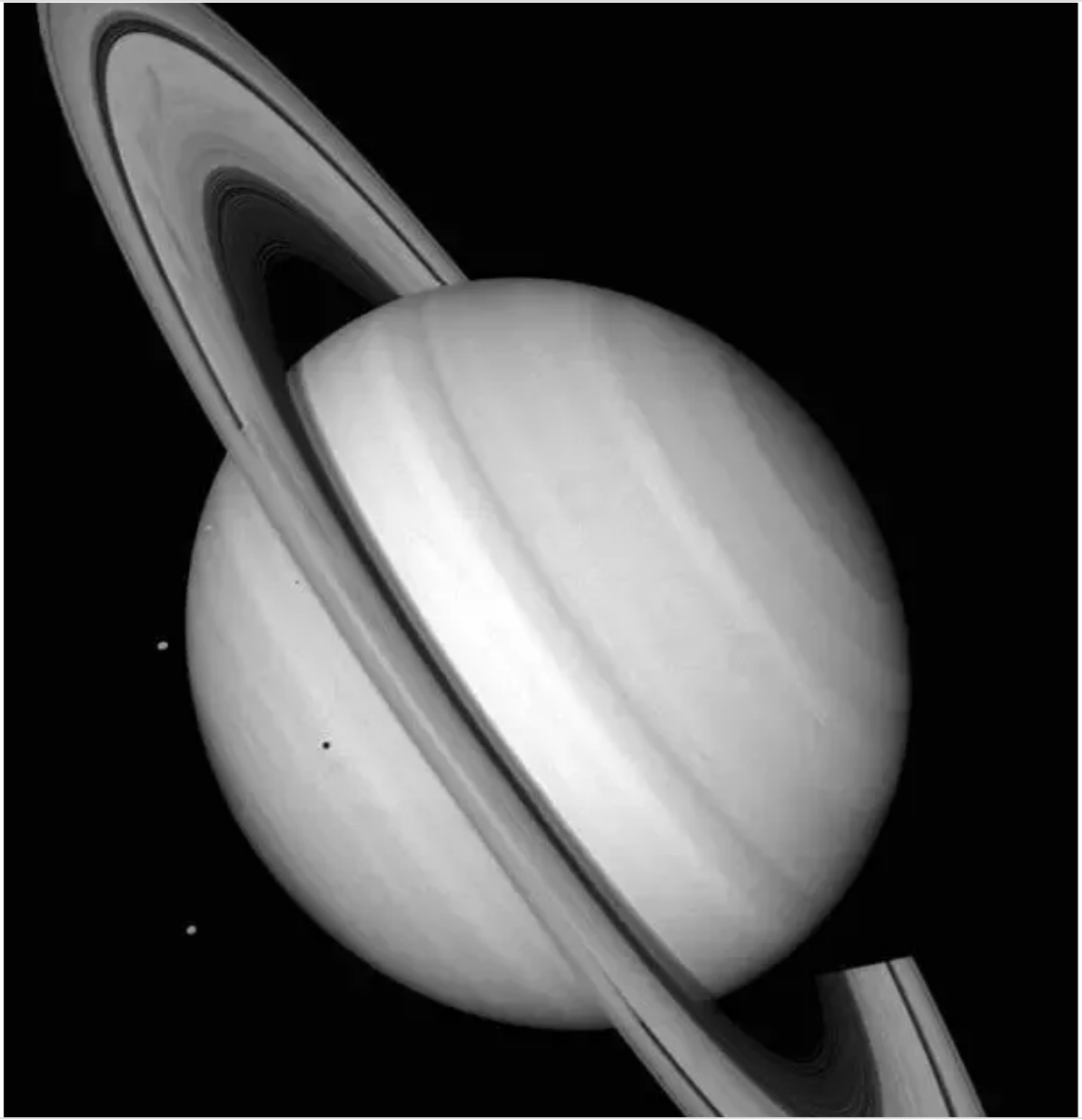
They didn't know about Ceres and Vesta, both of which are visible in the night sky if you know where to look, as very faint stars they could have seen on a dark night. As is Uranus which was plotted as a faint star, several times in different positions on night sky maps before it was shown to be a planet.

> Close up photograph of Ceres by the Dawn spacecraft. It's a faint naked eye object but is hard to distinguish from the many faint stars in the sky. Ancient astronomers never noticed that it moves and so never discovered it as an asteroid / dwarf planet.

They didn't know about the moons of Jupiter. If you hide Jupiter with something, say behind a building, a keen eyed astronomer can see its moons. So in theory they could have spotted them, but never did.

So how could the ancient astronomers know about the even fainter Neptune (on the very edges of visibility- theoretically possible for a very keen eyed astronomer in perfect conditions) and even Pluto which is never naked eye visible?

If you think that they were told about this by extra terrestrial astronomers visiting Earth - then why did they not tell the Sumerians about Ceres, or the moons of Jupiter or Saturn's spectacular rings?



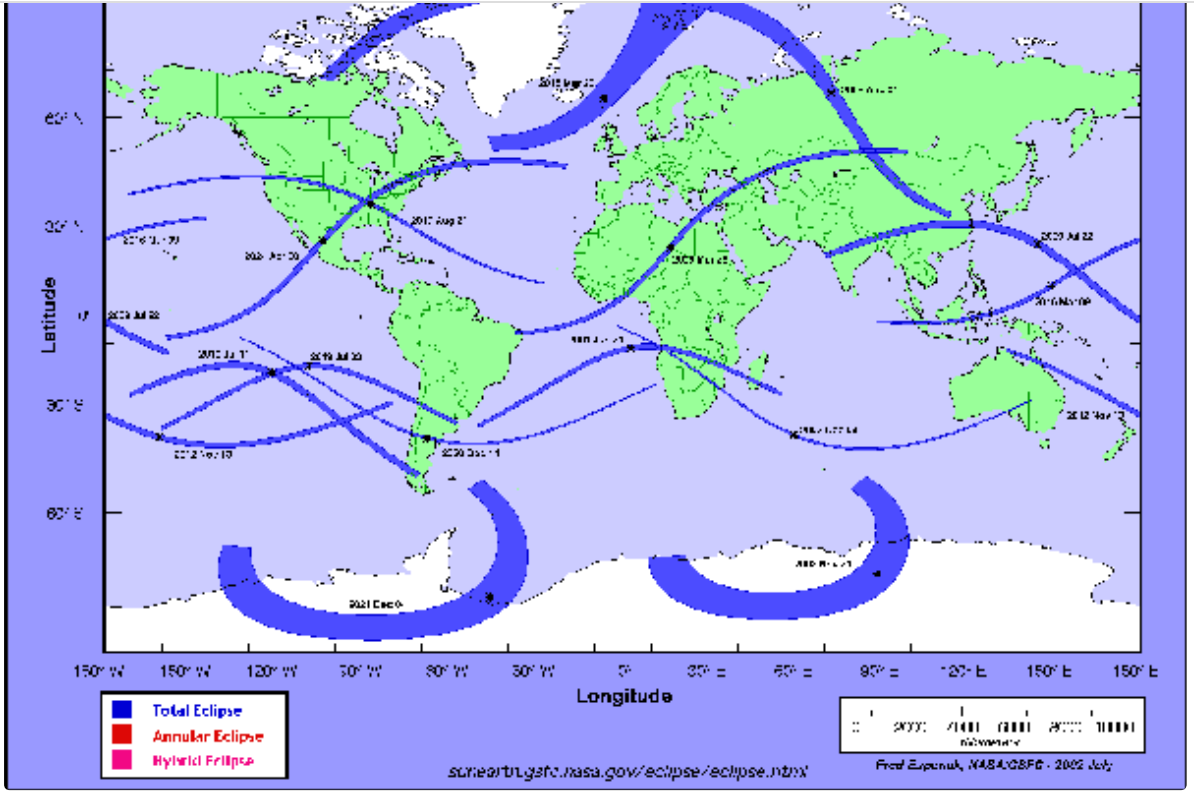
> Saturn, with three of its moons, Tethys, Dione and Rhea from top to bottom, and its spectacular rings. If you believe that we were visited by extra terrestrials that told us about extra planets in our solar system that we haven't discovered yet, as Zacharia Sitchin believed - then why didn't they also tell us about the spectacular rings of Saturn amongst other things?

Or tell them that the moon is cratered? When Galileo turned his telescope to the moon he expected to see a perfectly smooth sphere, the craters were a great surprise to him .

And don't you think we'd have picked up a bit of maths from them - at least some simple ideas like ratios or negative numbers or zero?

This is not to show any disrespect for ancient texts. It is just that astronomy is not their strong point. Except for occasional observations such as observations of supernovae which we can now interpret.

Yes they could predict solar eclipses by observing patterns to them. But they could never have produced a map like this:



> from World Atlas of Eclipse Paths .

So why expect ancient astronomers to be able to predict things we can't predict ourselves?

180 views · Posted Nov 10, 2016

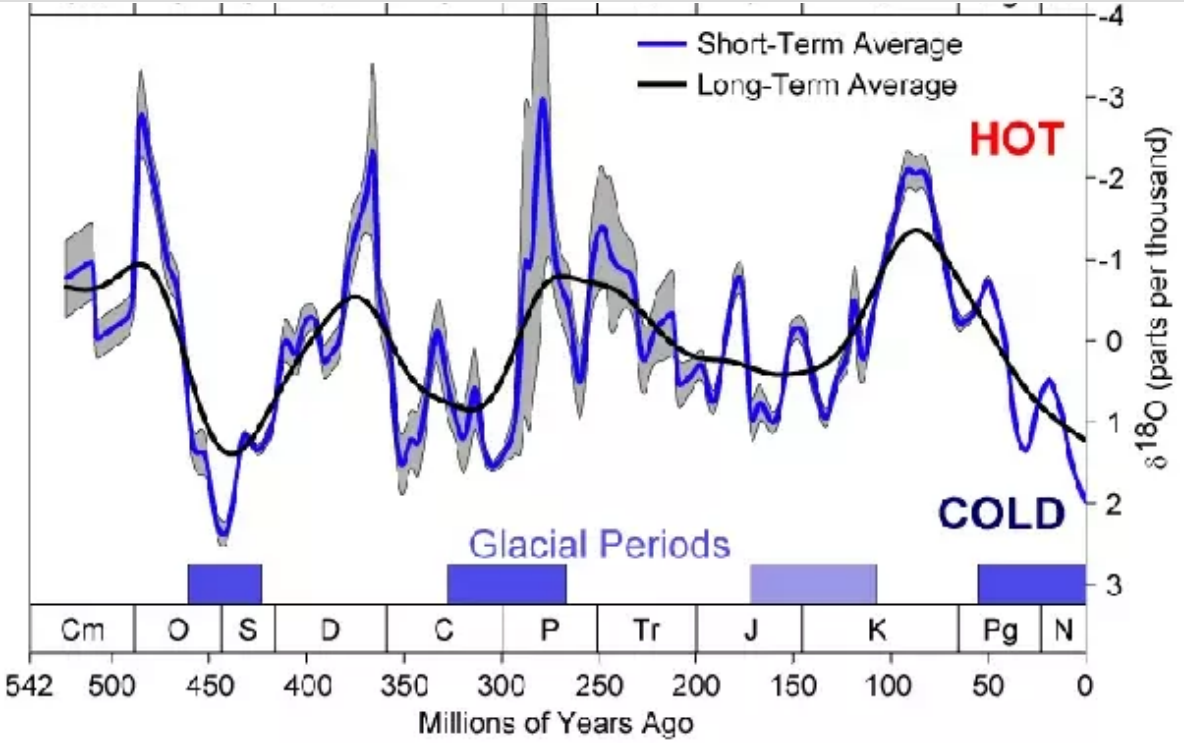
Upvotes 0 Comment

too hot for humans

Robert Walker

Summary: in the short term the worst case scenario is that the world gets 4 C hotter by 2100, and the Paris climate change agreement measures so far will reduce the rice to 3.4 C - all temperature rises here are relative to pre-industrial levels.

So that's obviously not going to make it too hot for us. The main issues are due to the speed with which the climate is changing, not the final climate which may be more habitable in some ways. Earth is actually unusually cold at present. At times in the geologically recent past the world has been so hot that there were palm trees as far north as the Arctic circle, no ice at either pole and typical polar temperatures 10 C.



Phanerozoic Climate Change

500 million years of climate change. As you can see, on the timescale of millions of years. Earth has never been this cold for the last 450 million years. In this diagram, one part per thousand of oxygen 18 corresponds to around 1.5 - 2 C

Most of the time Earth has no ice at all at its poles, no permanent ice at all except at the top of high mountains. Compared to that, the Earth is unusually cold at present. We are in the middle of an interglacial but geologists would say we are in the middle of an ice age still, technically, since we have permanent ice at the poles.

world.

The reason that so many countries signed the climate change agreement in Paris is not to protect humans from extinction, which was never a risk. Nor is it to prevent Earth's climate changing, which it does slowly all the time anyway.

It is because the speed of the change is going to have effects on our environment (e.g. bleaching of coral) and it's also going to be expensive to deal with the issues later. If we act now, it doesn't even need to impact on our standard of living. It's a case of policy change mainly. Promoting clean energy and measures to reduce carbon dioxide. If we act later, it probably will impact on quality of living and more than that, many people will need to relocate and it will impact on the environment in various ways

It's a case of paying a bit more now, or even maybe not paying much, just planning now, to avoid much larger costs a few decades into the future and at the same time to protect fragile environments too, which are at risk because of the speed of the change..

Even the speed of change isn't that unusual - our climate has been relatively stable for 10,000 years so it is a fast change compared to the last few thousand years - but during the ice age between 18,000 and 180,000 years ago then it fluctuated rapidly even within a few decades. Abrupt Climate Change During the Last Ice Age

IN DETAIL

The world will be more habitable if anything in a warmer world, e.g. Siberia, Arctic, even Anatarctica eventually habitable.

It's not about a greenhouse runaway disaster, that just can't happen. Nor is it about things like Antarctica melting. The temperature rises even with no restraint on global warming aren't

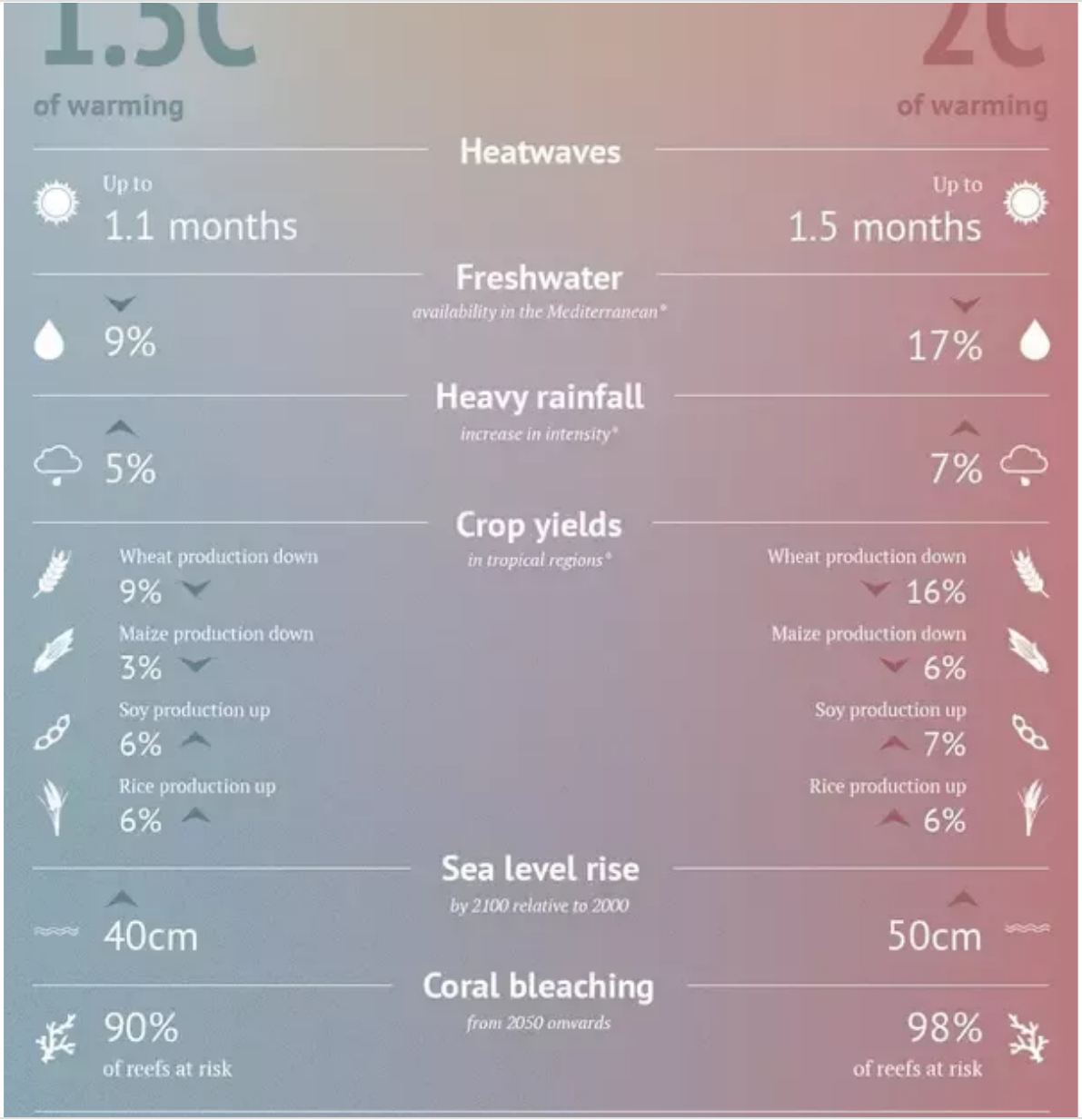
relocating people, building new foundations to replace the ones destroyed by melting permafrost in Alaska and Canada, building houses to withstand flood damage, more severe hurricanes, better disaster reliefe and so on - we can cope with it. But it would be expensive.

Rather, the idea of the climate change agreement is that it is far more expensive to respond to climate change like that - than it is to prevent it from happening in the first place which we can do mainly through policy changes. The Paris agreements might even have economic benefits too, e.g. transition to clean energy leading to new industries. The nations that work hardest on mitigating climate change, e.g. Germany, and for that matter China which is also putting a lot of finance into clean energy, are building up an industry that the rest of the world will want.

Also if we just let the temperatures rise and mitigate the effects, it has environomental effects too which can't be reversed, e.g. 99% of all corals affected by a 2 C rise compared to 90% for 1.5 C.

There's a summary here: "For example, an extra 0.5C could see global sea levels rise 10cm more by 2100, water shortages in the Mediterranean double and tropical heatwaves last up to a month longer. The difference between 2C and 1.5C is also "likely to be decisive for the future of coral reefs", with virtually all coral reefs at high risk of bleaching with 2C warming."Scientists compare climate change impacts at 1.5C and 2C | Carbon Brief

There's a summary here


1.5C
of warming
2C
of warming
Heatwaves
Up to
1.1 months
Up to
1.5 months
Freshwater
availability in the Mediterranean*
9%
17%
Heavy rainfall
increase in intensity*
5%
7%
Crop yields
in tropical regions*
Wheat production down
9%
Wheat production down
16%
Maize production down
3%
Maize production down
6%
Soy production up
6%
Soy production up
7%
Rice production up
6%
Rice production up
6%
Sea level rise
by 2100 relative to 2000
40cm
50cm
Coral bleaching
from 2050 onwards
90%
of reefs at risk
98%
of reefs at risk

Rice production however goes up 8% instead of 6% so some crops benefit from a warmer world.

And it has the same figure there that we lose our chance to limit to 1.5 C by 2020 if we haven't taken enough action by then.

4.5 years from this summer. So end of 2020 I think. .

This is about the Paris agreement, pledges so far should keep temperatures by 2100 to between 2.9 and 3.4 degrees C.

Paris climate deal enters force as focus shifts to action - BBC News

The sea hasn't risen much but in the tropical oceans some islands are really low and have submerged.

Five Pacific islands lost to rising seas as climate change hits

None inhabited yet but others have had to retreat.

I think the thing is that coral reefs build up to just the sea level exactly, so a small rise over that, if the island is based on a coral reef, will flood it.

There is no risk to life at all, so long as we are willing to pay up the costs to relocate people, flood defenses, grow more crops etc. None of the scenarios mean that. But they could be very expensive, or if we don't pay to compensate for the things that go wrong, then humanitarian disasters can occur. And they can make vulnerable species extinct as some can only tolerate tiny changes in temperatures - while humans can tolerate huge temperature changes and there is no risk of even the hottest places getting too hot for us especially with our technology. It's

EFFECTS ON THE US

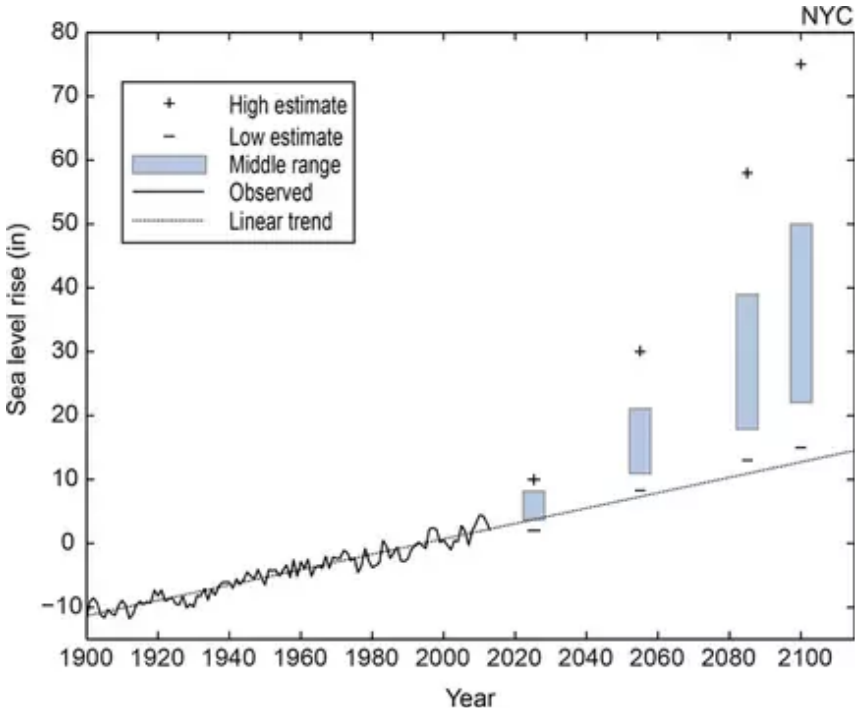
You can look up the predicted effects of climate change on your country, also globally. Once you do that you may understand why so many nations signed the Paris Climate Change agreement.

In the US the main changes projected include:

(quoting from the US Environmental Protection Agency

report Future of Climate Change) -

- **“Summertime temperatures** in the United States that ranked among the hottest 5% in 1950-1979 will occur at least 70% of the time by 2035-2064**“**
- **“Northern areas are projected to become wetter**, especially in the winter and spring. Southern areas, especially the Southwest, are projected to become drier**“**
- **“Heavy precipitation events will likely be more frequent**, even in areas where total precipitation is projected to decrease.**“**
- **“Heavy downpours** that currently occur about once every 20 years are projected to occur between twice and five times as frequently by 2100, depending on location**“**
- **“The intensity of Atlantic hurricanes** is likely to increase as the ocean warms.**“**
- **“Cold-season storm tracks** are expected to continue to shift northward. The strongest cold-season storms are projected to become stronger and more frequent**“**
- **“Permafrost is expected to continue to thaw** in northern latitudes, damaging buildings, infrastructure, and ecosystems in Alaska.**“**



- Projections for **sea level rise** in New York City are 11 to 21 inches by the 2050s, 18 to 39 inches by the 2080s, and could reach as high as 6 feet by 2100.

New York City Panel on Climate Change 2015 Report Executive Summary

HOW HOT CAN THE EARTH GET?

We can get an idea from the "Palaeocene-Eocene Thermal Maximum " (PETM), 55 million years ago. The Earth got so warm that the average temperatures of the sea at was up to 10 °C at the poles , compared to -2 °C today .

As summarized on the BBC page, How hot could the Earth get?

> release if we burnt all recoverable fossil fuels . Those gases warmed the planet by at least 5 °C and maybe as much as 8 °C , probably over a few thousand years”

COULD IT BE POSSIBLE TO TURN EARTH INTO A SECOND VENUS

This idea stems from a book “Storms of my Grandchildren” by James Hansen where he wrote

> “If we burn all reserves of oil, gas, and coal, there is a substantial chance we will initiate the runaway greenhouse. If we also burn the tar sands and tar shale, I believe the Venus syndrome is a dead certainty."

However other scientists were skeptical, for instance, as quoted by National Geographic, Raymond Pierrehumbert of the University of Chicago said

> *"If we were going to run away, we'd probably have done it during the PETM."*
>
> See: Will Earth's Ocean Boil Away?

Colin Goldblatt of the University of Victoria in British Columbia followed this up by actually running the numbers, with a paper in Nature Geosciences, published in 2013. Low simulated radiation limit for runaway greenhouse climates. You can read the article in full if you click through the link from the National Geographic page Will Earth's Ocean Boil Away?

The abstract ends:

> “A runaway greenhouse could in theory be triggered by increased greenhouse forcing, but anthropogenic emissions are probably insufficient”

The paper itself says it more clearly, making a similar comment to Raymond Pierrehumbert

> greenhouse is unlikely."

He also makes a comparison with an earlier geological period, snowball Earth, about 650 million years ago , when possibly nearly all or most of Earth was covered in ice and snow. The concentrations of carbon dioxide built up through this period, over millions of years, as volcanoes continued to emit it into the atmosphere. This is the slow carbon cycle and normally the CO_2 would dissolve back into the ocean, taken out of the atmosphere from rain or directly absorbed into the sea. But during a snowball Earth, there's no open water, or almost none, to absorb the CO_2. Meanwhile the snow and ice has no effect at all on volcanoes, which continue to add it to the atmosphere as usual, and that's why the carbon dioxide builds up. Eventually enough forms to warm up the world again and the ice melts.

He remarks in the paper that when the ice melted finally, after snowball Earth, there could have been as much as 10% of CO_2 in the atmosphere - compared to 0.04% right now. The sun was also 6% cooler than it is today. This didn't lead to a runaway greenhouse either which is pretty conclusive evidence that it can't happen easily.

He mentions in the paper that if we had 10% CO_2 in the future - after a snowball Earth, and with our 6% warmer sun, then perhaps it would trigger a runaway greenhouse when the ice melted. However, that's hardly likely to happen, so it is a very theoretical idea, perhaps relevant to planets orbiting other stars?

He also talks about this in the National Geographic interview

> "What my results show is that if you put about ten times as much carbon dioxide in the atmosphere as you would get from burning all the coal, oil, and gas—about 30,000 parts per million—then you could cause a runaway greenhouse today. So burning all the fossil fuels won't give us a runaway greenhouse. However, the consequences will still be dire. It won't

> **But your model does not consider the moderating effect of clouds.**
>
> That's correct. You start off with the simplest model you can, and then you build in complexity. We've calculated the maximum amount of sunlight Earth will absorb and the maximum amount of thermal radiation it will emit. So the next step will be to do some modeling with clouds in, which will probably modify the answers.
>
> Clouds reflect sunlight, but if you put them high enough in the atmosphere, they'll also have a greenhouse effect. On Earth today, the reflection effect dominates—clouds overall have a cooling effect.

Matej Malik1 and Colin Goldblatt investigate it further in this later paper in 2016 . They find that the clouds cool the Earth down by reflecting away the heat, more than they warm it up by blocking the escape of infrared into space. The end of this article has a useful summary of research in the topic up to the date of publication.

They mention another more recent paper which takes account of clouds in a detailed 3D model. This paper calculated that to have a runaway greenhouse effect, then the Earth would need to have 375 Watts per square meter from sunshine. They conclude

> "With this new estimation, the inner edge of the habitable zone for Earth like planet in the Solar System is pushed inward to ~0.95 AUs which means that the Earth should not enter a runaway greenhouse state before at least 1 billion years".

The main thing preventing a runaway greenhouse in this model was not the clouds, as it turned out, but rather, atmospheric dynamics of the water vapour. As a parcel of moist air is heated, with no other source of water to replenish it, it becomes drier, because warmer air can hold more water vapour. As warm air rises in the tropics, it is warmed further and dried out in this way. Then the hot air is compressed as it descends in the sub tropical regions. This creates

> the role of "radiative fins" where the emission can exceed the maximum emission for a saturated atmosphere”

What’s more, they get drier and more extensive as the sun gets warmer. The stratosphere also gets cooler (page 6).

The debate continues, as to when in the future the sun will get warm enough for a runaway greenhouse. Maybe half a billion years from now? Maybe a billion years from now? However they are generally agreed that it’s nowhere near warm enough for this to happen at present.

It needs some science fiction scenario where we import oil and gas, from Titan say (which has oceans of methane and ethane), and even then, not sure we could trigger it. We would have to be very stupid to do that. So not something to worry about.

In the distant future, billions of years from now, the Earth will become too hot for humans as a natural effect of the sun getting hotter. But you are talking about timescales here, long enough for humans to evolve a second time all the way from the smallest microscopic multicellular creatures.

On such huge timescales - whatever civilization there is around then may well be able to something to prevent it.

They could

- Shade the sun with shades orbiting Earth (probably easiest) - vast sheets of mylar or similar
- Or physically moving the Earth using repeated flybys of asteroids or some other method

Debunked: We are doomed because Earth will pass through the galactic plane during the winter solstice on December 21st - and the Sun will be aligned with the galactic center on that date

Robert Walker

This was a hoax from 2012 and people still worry about it every year during the winter solstice. It's just not true at all. First there are two things that get confused here - our position relative to the galactic plane, and alignments of the Earth with the galactic center and galactic equator as seen from the Sun. The first is just plain false, we are not passing through the galactic plane or anything like it, indeed we have been moving away from it for millions of years. As for the galactic alignment, yes there is an alignment, that's true, but it is of no danger to us whatsoever. It is no more dangerous to you than pointing your finger or hand towards the Moon. Indeed, the galactic center is so far away that light that left it during the last ice age is only reaching us

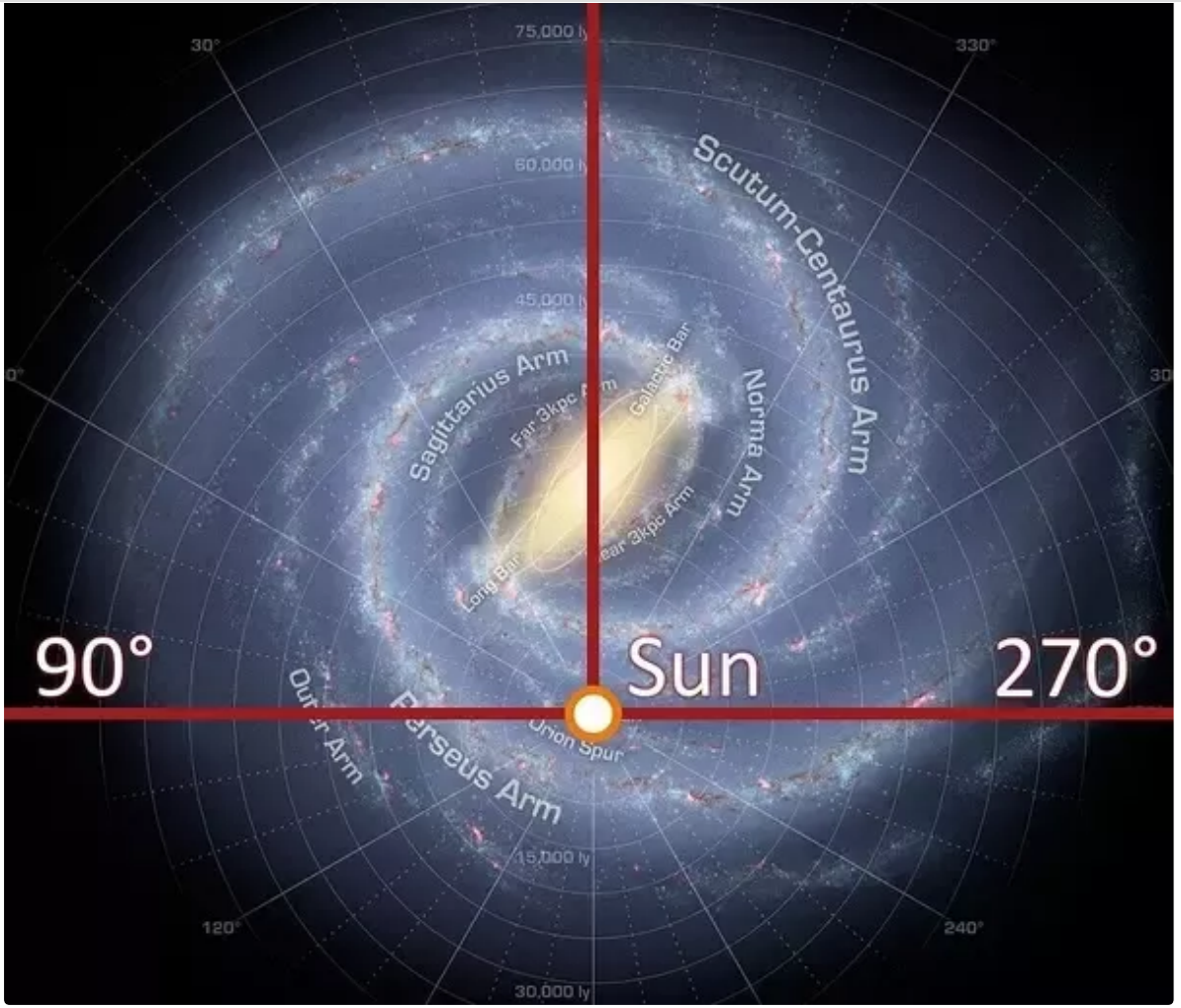
This is different from galactic plane crossing. Galactic alignment is real. But of no significance to us.

It's true that the sun does align with the galactic core in autumn. But it does that every year, It just means that Earth is the opposite side of the sun from the galactic core once a year and has no astronomical significance at all.

In the same way if you point your finger at the Moon you will create an alignment between your head, your finger, and the Moon.

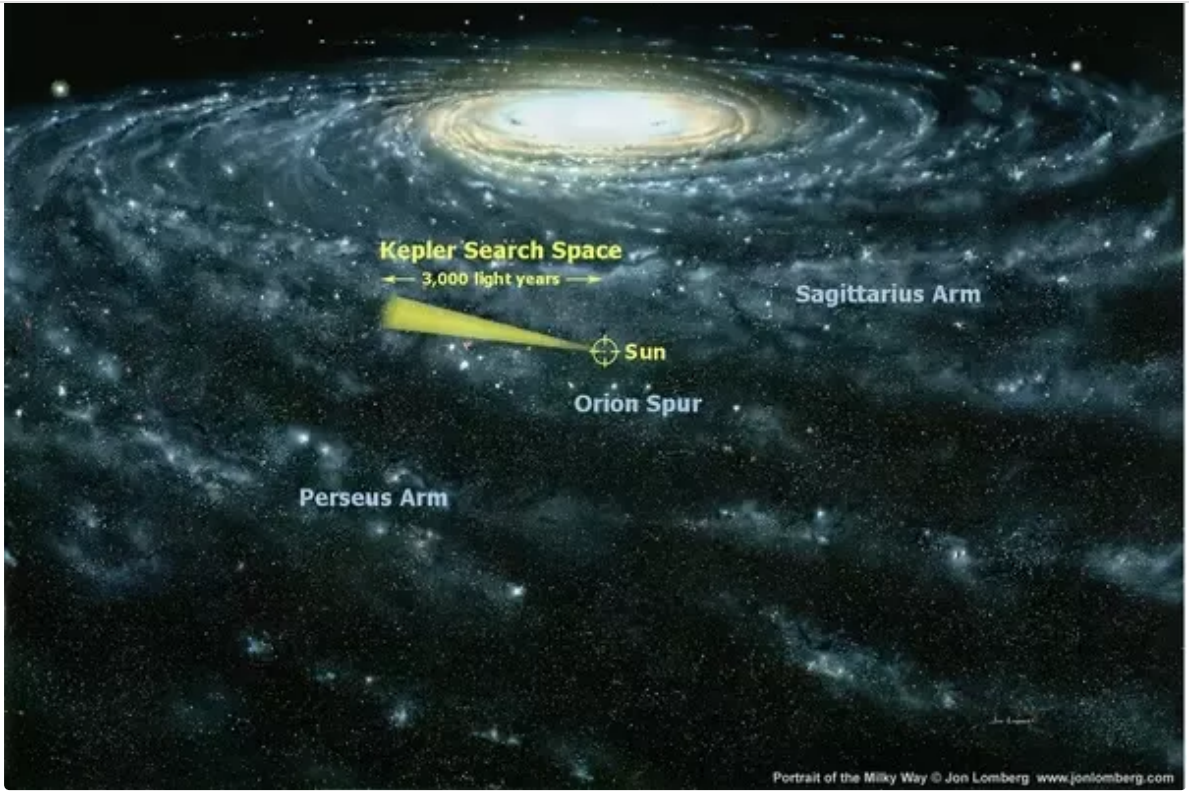
December 12 is just a winter solstice, shortest day in the northern hemisphere, and this is the same every year. There is also an alignment with the galactic equator and a rough alignment with the center of the galaxy - but this also happens every year, indeed, twice a year, and is just a line of sight effect - like the way that your finger is between you and a mountain if you point at a distant mountain.

We are nowhere near the center of the galaxy. A couple of artist's impressions may help. We can't actually photograph the galaxy from outside because we are inside it, but we have a pretty good idea of how it is arranged through our observations of stars and gas clouds and the distances to them. It's like this:



File:Galactic longitude.JPG - Wikipedia

Another view on it here



> Kepler Search Space - this is an artist's impression to show the direction in which the Kepler mission did an intensive search for exoplanets by looking for dips in starlight from planets passing in front -anyway it gives a good impression of our position in the galaxy.
>
> Earth is orbiting the sun, roughly parallel to the plane of the galaxy. Sometimes it is on the far side of the Sun from the center of the milky way (at winter solstice) and sometimes on the near side of the Sun (summer solstice). It is so close to the Sun that on this scale you wouldn't be able to tell it apart from the Sun itself.
>
> Can you see that whether it happens to be between the Sun and the galactic center or vice

center around 25,000 to 28,000 light years away. All those stars are between us and the galactic center along with many others that are too faint and distant to be seen. The light that reaches us just now from the galactic center left it at a time when London and New York were covered in ice sheets kilometers deep in the depths of the last ice age.

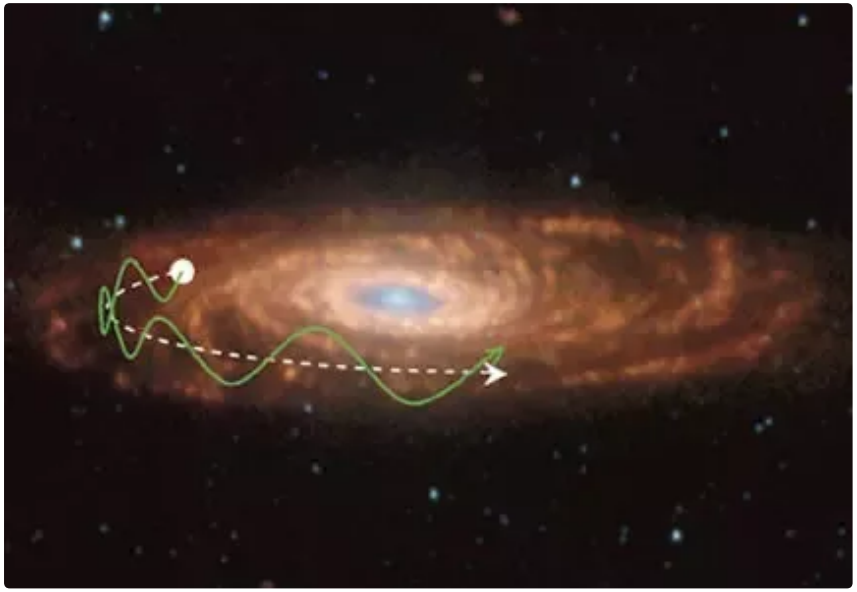
> Galactic Center

Here is a video about the galactic center:

GALACTIC PLANE

As for the galactic plane, we are several dozen light years above it at present, and moving away from it. We probably won't cross it for another 30 million years or so according to this article in EarthSky: Did Earth cross the galactic equator in 2012?

Here is a discussion on astronomy stack exchange , one of the participants links to a 2016 paper which makes it 56 light years above the galactic plane (17.1 parsecs) and the sun moving



> We are currently moving away from the galactic plane and the sun will cross it perhaps 30 million years inot the future. So if there is any increased risk of asteroid impacts during galactic plane crossings, it's a long time into the future.

As for whether there are more asteroid impacts when we pass through the galactic plane - well there was some data seemed to support that idea back in 2008, but it no longer seems likely.

This is part of the general idea that we go through periodic extinctions - with lots of reasons suggested for why that might be. Passing through the galactic plane is just one of many hypotheses.

If you look at the data - there does seem to be a rough periodicity of extinctions. Some people think it is real, others, maybe more of a coincidence. It's quite striking but not compellingly so.

million years. So next maximum impact rate would be perhaps 10 million years into the future.

Different authors will come up with different figures for when they think it will happen next, but they all have periods much larger than 16 million years which puts the next extinction event millions of years into the future if the theory is correct.

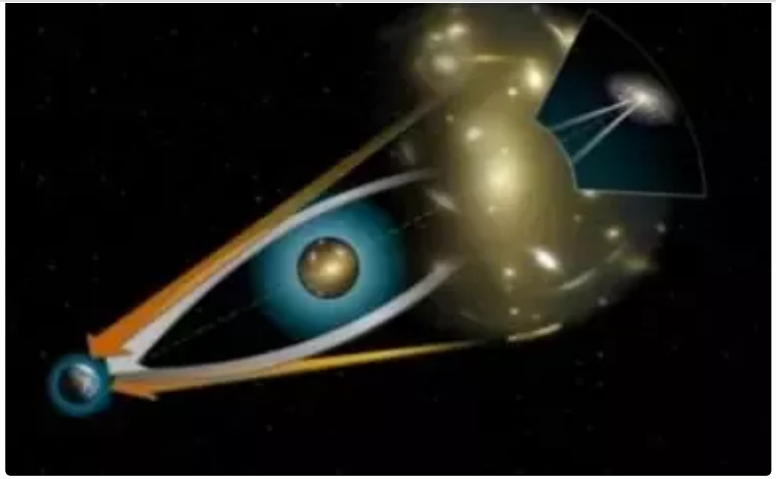
SUMMARY

We are nowhere near the galactic plane and in fact are moving away from it at present. Some astronomers think we may get more comet impacts on Earth when it passes through the galactic plane. If that is right, it will happen millions of years into the future.

The Sun and Earth roughly align with the center of the galaxy, by coincidence, during the winter and summer solstices. This has no more astronomical significance than the alignment of your hand with the Moon if you wave hand in the direction of the Moon, or indeed the Sun in daytime. You wouldn't expect to be blasted by deadly radiation when you happen to align your hand with the Sun :). The light from the Sun is not influenced in any way by your hand and the light from the Galactic center is not influenced in any way by the Earth orbiting the Sun. It's just a line of sight effect and neither Earth nor the Sun is anywhere near the galactic center which is a very distant object, 25,000 to 28,000 light years away.

GRAVITATIONAL LENSING - POSTSCRIPT

I wonder if this is in any way related to gravitational lensing? The Sun does act as a lens. When the Sun is between us and the galactic center then as seen from the Earth the stars in the galactic center will be very very slightly closer together. This is however a minute effect. And the focus of the gravitational lens is 550 AU away or over 18 times the distance to Neptune.



The FOCAL Mission: To the Sun's Gravity Lens

There is a plan to send a spacecraft out there. It would not be fried by distant radiation :). But the Sun would act like a giant extra lens in a telescope.

The way it works is that you would of course see our planets around the Sun from a distance of 550 au. Just dots of light. But along the cylinder of observation - a narrow cylinder the diameter of our Sun, then - a Hubble space telescope at the sun gravity lens focus could spot Mercury around our Sun, as just a pinpoint of light - but also it could spot something as small as Mercury at any distance, even thousands of light years away, just as if it were only 550 au away. It's especially useful for reasonably bright objects, depending on how well you can block out the sun's light. Could give us detailed close up observations of the atmospheres of distant stars for instance.

So makes a great telescope for rather specialist observation - but to use it you have to be 28 times the distance of Neptune and it still would not produce harmful levels of radiation even at the focal point, just a brighter more accurate image in a small region around the Sun heavily

198 views · 2 upvotes · Posted Nov 9, 2016

Upvotes 2 Comment

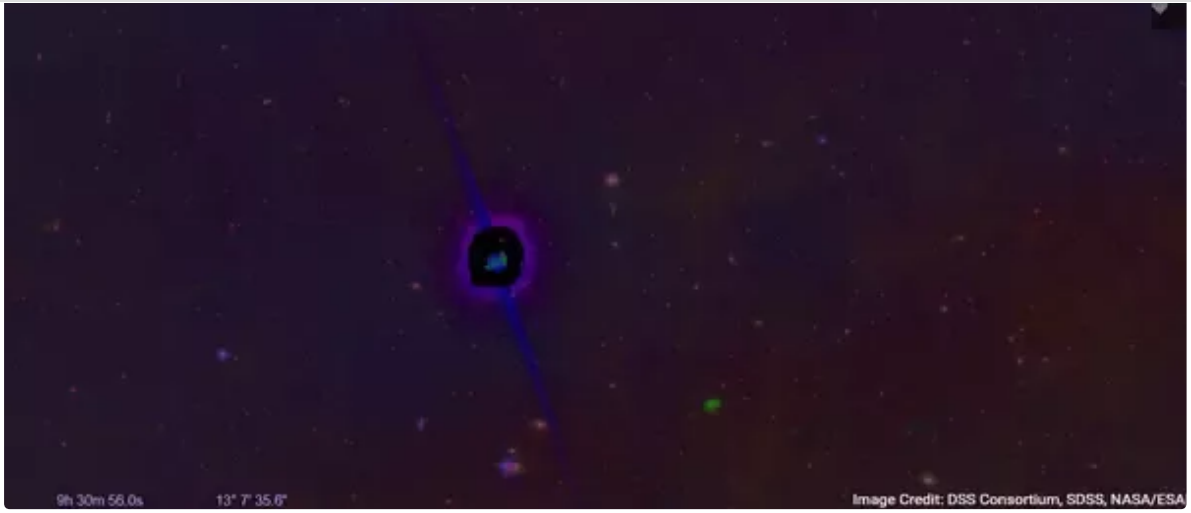
Debunked: The IRAS infrared satellite found Nibiru in 1983

The 1983 IRAS observation claim comes from a press conference. IRAS looked into the far infrared for the first time ever (blocked by our atmosphere on Earth). The astronomers said it could be anything from a tenth planet to a distant galaxy. This was the first time they were able to observe the night sky in this fequency range - and they had just got a few observations - not enough time to work out if the objects were moving or stationary in the night sky (any planets in our solar system will move across the night sky). This is what the paper reported:

> "A heavenly body possibly as large as the giant planet Jupiter and possibly so close to Earth that it would be part of this solar system has been found in the direction of the constellation Orion by an orbiting telescope aboard the U.S. infrared astronomical satellite. So mysterious is the object that astronomers do not know if it is a planet, a giant comet, a nearby "protostar" that never got hot enough to become a star, a distant galaxy so young that it is still in the process of forming its first stars or a galaxy so shrouded in dust that none of the light cast by its stars ever gets through. "All I can tell you is that we don't know what it is," Dr. Gerry Neugebauer, IRAS chief scientist for California's Jet Propulsion Laboratory and director of the Palomar Observatory for the California Institute of Technology said in an interview." Washington Post, December 30 1983 .

Later they found out that some were distant galaxies with a star burst of new galaxies and some were dense gas clouds in our galaxy. Check out Phil Platt's "Planet X Saga: Science" .

For more details, see Tom Chester's account - he is one of the members of the original team that found the far infrared sources. The WISE survey eventually proved there is no planet larger than Saturn up to 250 times the distance to Pluto and a Jupiter sized one has to be at least 650 times the distance. Any new planets have to be further away than Pluto right now, and larger ones should be far far away from the sun or we'd detect them by the reflected light from



It’s not a planet. It’s the Peanut Nebula around the carbon star CW Leonis . It's a striking object in infrared, the brightest object in infrared outside of our solar system. But it is absolutely no threat to Earth. It's between 390 and 490 light years away.

It's so far away that when we look at it, **we see it as it was four centuries ago** because that's how long it takes light to get here from there. You can see it on google sky here

It's huge, yet it's one of the few deep sky objects that changes visually in a short period of time. This cycles back and forth through the changes over a period of three years.

Animation from here. **IRC +10216**

It's a fascinating object. But absolutely no risk to Earth at all! See also Nibiru it is Not . Indeed it's stars like this that created many of the elements that are the basis for life, such as carbon, and explosions like this that brought those elements into the interstellar space, so that eventually they got incorporated into the clouds of gas and dust that collapse to form new solar systems. So - it's actually a life giving star.

Carbon stars like this are stars like our Sun that are a bit heavier and hotter and so are able to burn helium into carbon in large quantities, but not heavy enough to go supernova. They are deep red in the visual spectrum. And just as our sun will do after it goes red giant, they throw off much of their mass as huge nebulae as they get to the end of their life, and that's exactly what we see here. They produce much of the interstellar dust, and in the early galaxy there must have been many of them (they have short lives as stars go). And rather poetically they also seed interstellar space with diamond dust :) .

/ Doomsday Maybe even suicidal?

Robert Walker

First, if at any time you are feeling suicidal and wants someone to talk to - say in the middle of the night or some time when he has no friends to speak to around - there's always the telephone lines to the Samaritans (in the UK) or another suicide prevention charity where you can speak to volunteers trained and experienced in talking to suicidal people and helping them. For details see Befrienders international .

There are a several facebook groups where you can post for feedback from knowledgeable people who will help debunk a video or image you have seen which scares you:

- Dazzathecameraman
- Voices Of Reason To Explain X - V.O.R.T.E.X
- Cosmophobia

You can also join our new and lively

- Doomsday Debunked Facebook group

:)

You can also comment on any of my Science20 posts which often have long threads of comments. Also reading answers to other posts there may help. At the moment I'm getting most posts on these two articles, usually a post every day or two:

- Journalists - Please Fact Check Your "Doomsday" News Stories - They Terrify Young

If you prefer to contact someone in private, I'm available on Quora though I may not reply instantly, I try to reply within 24 hours - unless I get cut off the internet as happened once a few months ago and can happen as I'm in a remote part of Scotland.

If I'm online, messaging me on quora or facebook is the quickest way to get to me. My quora profile is here, it's easy to join and then you can message me via a link on my profile page.

Quora is easier than facebook because you can message me right away as soon as you join. On facebook you have to ask to be friends first which may lead to a delay - and I do get quite a lot of obviously spam facebook friend invites, as many do there.

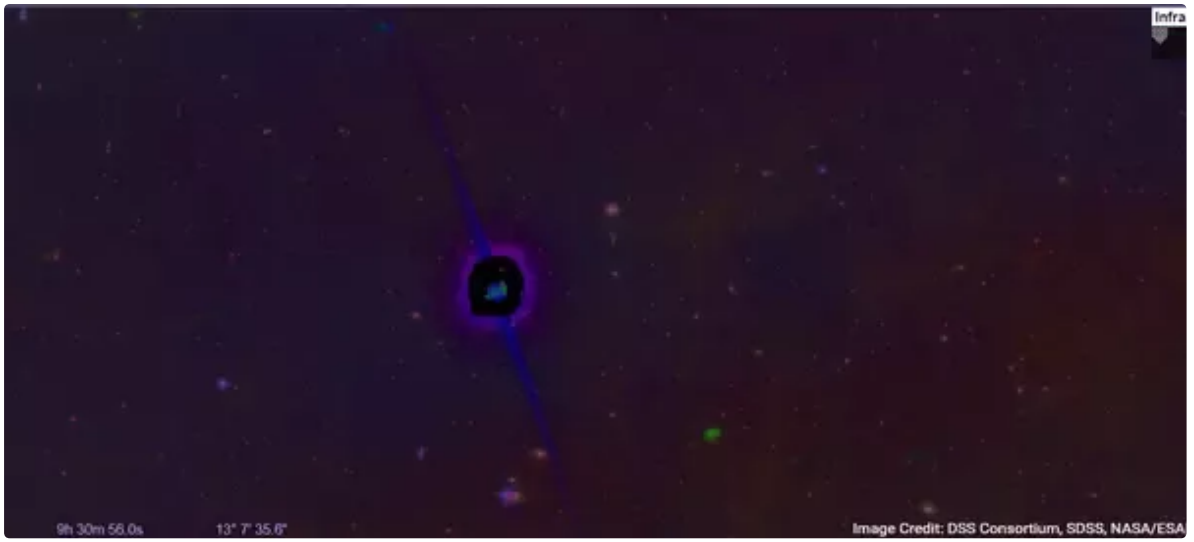
I will friend anyone who is genuine so if you want to be facebook friends, do message me about Nibiru. Do be sure to explain why you are contacting me as on facebook - just mention doomsday or Nibiru or whatever in your first message as you get a fair bit of facebook messaging spam. I'd probably ignore it if you just say "Hi" or at least not answer quickly as that's what spammers often do.

Anyway, my facebook profile is here: Robert Walker

Debunked: Nibiru has been found on Google Sky

Robert Walker

Nibiru enthusiasts often find unusual looking objects in Google Sky and claim they are Nibiru. For instance, here is a very long post by a Nibiru enthusiast claiming to have found Nibiru in Google Sky in the Infrared



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Animation from here. **IRC +10216**

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It's a striking object in the infrared and no surprise that someone coming across something visually extraordinary like this would build a story around it, supposing it to be a planet in our solar system. Indeed when they did the first surveys of the infrared from space, using IRAS, in 1983, astronomers themselves didn't know what many of the things they saw were, when they spotted many infrared sources they had never seen before (our atmosphere filters most of the infrared out, so they were best seen from space).

You may see this shared as “Nibiru”

Rather striking isn't it :).

It's actually a distant nebula (I can't remember the details now, so will look it up)

[MID EDIT]

238 views · 1 upvote · Posted Nov 9, 2016

Upvotes 1 Comment

Debunked: How can it be false when so many

Robert Walker

These photos and videos are nearly all lens flares. Some are offset lens reflections. If you haven't tried it before and attempt to photograph the sun then the extremely bright light overwhelms your camera optics and causes all sorts of strange effects.

Some of them are photos of the sun lighting up clouds in bright spots. Apparently many people have just never looked at the sky much before and are not familiar with the way the sun can light up patches of cloud anywhere in the sky.

It is easy to check that we have only one sun and that there is no other bright object close to it. Go out any clear sunny day and block out the sun with one finger (don't stare at the sun as it can damage your eyes without you knowing until later). Do you see a second sun next to it? Look to either side then hold a finger in front of it horizontally and look above and below as well.

IN DETAIL

If you look online you will see many alleged photographs of a "planet" next to the Sun. So first, let's see why the very idea that you could photograph a planet next to the sun is absurd. If the planet is closer to us than the Sun, then it will be lit from behind.

A very young new Moon looks like this, as seen from the ISS:

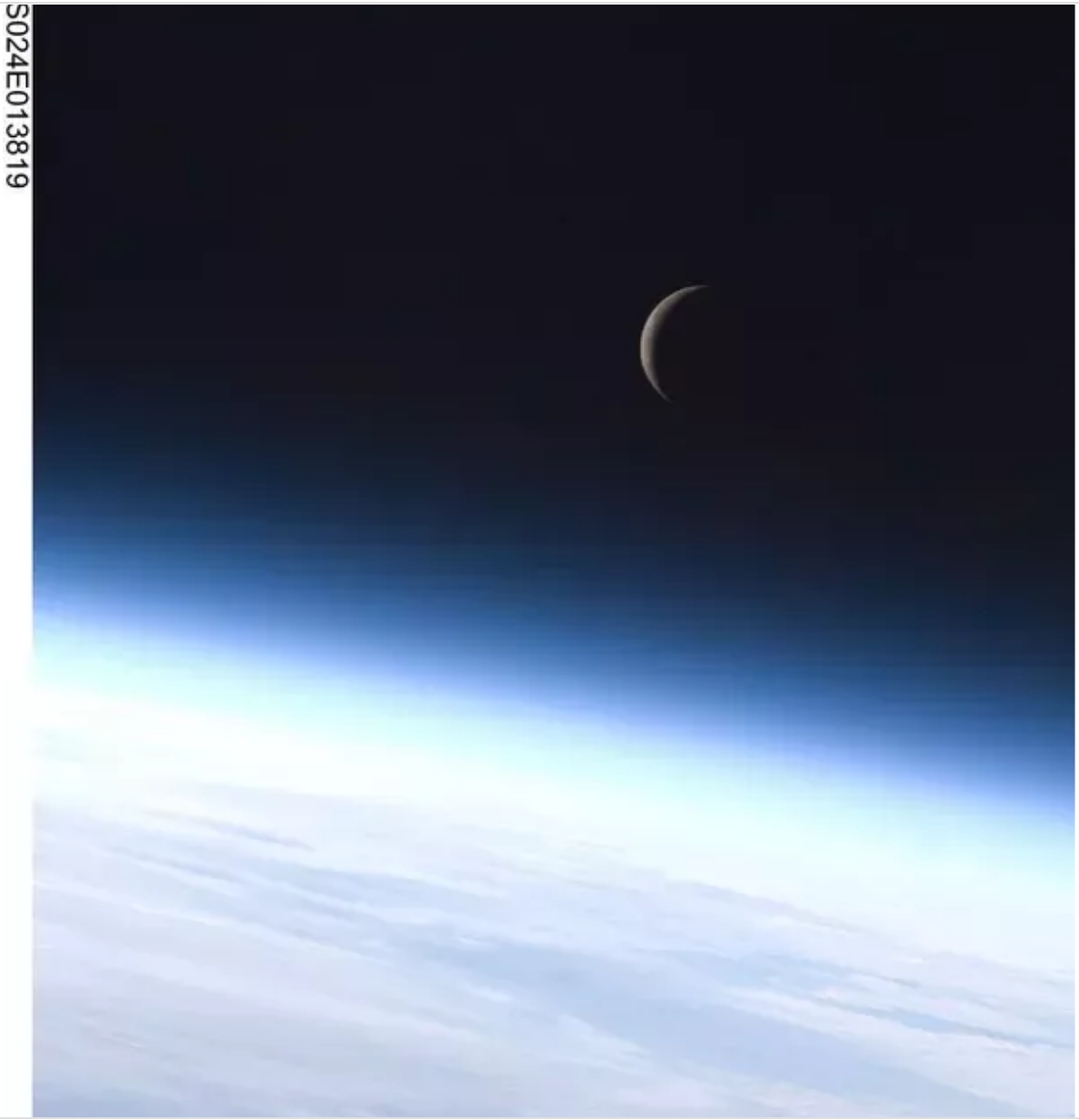

S024E013819

Photo-iss024e013819

The sun must be just off the picture to the left of the Moon since it is lit from the left and behind.

If you are lucky enough to watch a partial or total eclipse, you see the Moon pass in front of the Sun, and it is totally invisible until it starts to block out the Sun because it is lit from behind, and the clouds and the scattered light that makes the sky blue is between us and the Moon:

> Partial Solar Eclipse, North Manchester... (C) David Dixon

You can also see this with satellites - here is the ISS crossing in front of the Sun, notice that you only see it when it crosses the Sun itself and then you see it as a shadow not a bright object

So if you see something like this, Melissa Huffman's video which got a lot of attention from those who believe in Nibiru:

Then whatever it is, it can't be a planet close to Earth.

> Lunar Occultation of Venus

As you see, Venus is a tiny tiny speck of white. You can see it if it is far from the Sun and the sky is a bit dark. You can even see Venus and Jupiter in the daytime sky, but to see it you need to block out the Sun and then you may spot it as a white spot against a blue sky that is nearly as bright as it is. It's hard to spot, you need to block out the sun and know exactly where to look to see it. It's even harder to photograph.

For more about seeing Venus, or Jupiter in daytime with photos, see 10 surprising space objects to see in the daytime sky | EarthSky.org

So, whatever Melissa Huffman saw, it was not a planet. So what was it?

EXPLANATION OF MELISSA HUFFMAN'S VIDEO BY MICK WEST

If you look at it carefully you can see that her sun sized "planet" is actually moving slightly relative to the clouds. Not nearly as much as the obvious lens flare, but in the same direction. So it can't be a sun mirage but has to be something much closer to the camera.

He then showed that you can get the same effect by putting a sheet of glass in front of a camera at an angle. So it would be easy to hoax a video like this.

This doesn't mean her video is a hoax - it could easily be that it's a result of misthreading a filter on the camera. Or a result of taking the video through a window.

If you engage the threads incorrectly, at an angle, then the glass of the filter will be at an angle to the lens, and then you'll get this effect. He shows that with a cross thread on his own camera

> Cross threaded filter - easy to do when you put it on in a hurry - causes a similar double sun effect. Photo by Mick West

Just as with her video, when you zoom in on the image, it expands. And is sharp and clear like hers.

It is easy to check something like this if it happens to you. You can do the same test as for lens flare, put your finger in front of the sun and it will disappear - that is unless it is behind a window, in which case, just open the window.

Also if you rotate the camera then it will move if it is a cross threaded filter. It only stays in the same place in the sky if you keep the camera reasonably vertical all the time.

He goes into details here: Explained: Two "Suns" Sanibel Causeway, Florida [Offset Lens Reflection]

Incidentally it's more strictly speaking, an offset double reflection. The light comes into the

This is one of the Mick West's images, where he created an offset lens reflection artificially:

Note that the main image of the sun is irregular and fuzzy because the sun is so bright it overwhelms the camera. The offset reflection is much less bright so can be photographed as a perfect circle. It's round because the sun is round. The offset lens reflection can even seem to be behind leaves as in this example - that's because the original is behind leaves as well which you can't see because it is so bright. See Explained: Two "Suns" Sanibel Causeway, Florida [Offset Lens Reflection] for the details

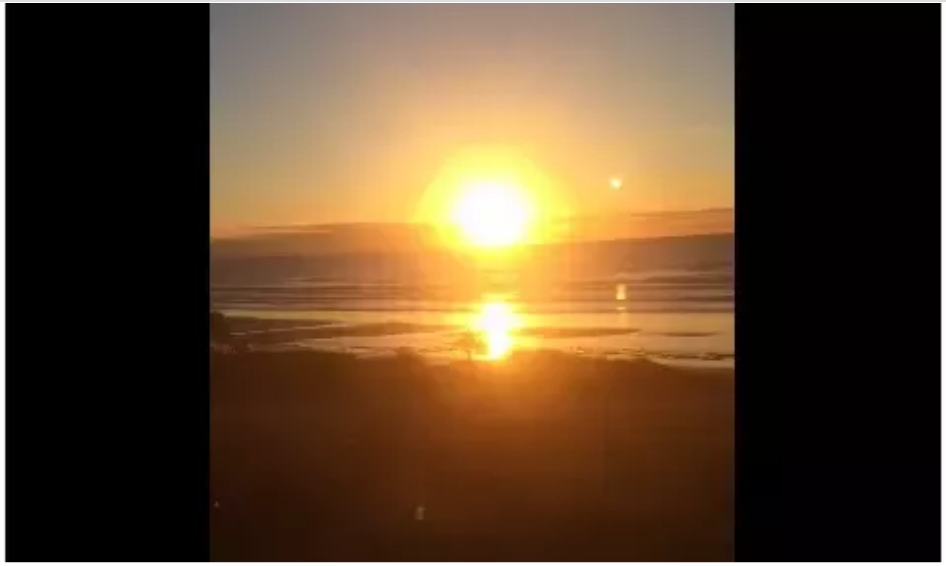
This is another example of an artificially made offset lens reflection using glass attached at an angle in front of the camera

However that's only if you have a sheet of glass attached at an angle to the lens -either to do it deliberately, or a cross threaded filter, or a transparent lens protector (on a mobile phone camera, say) attached at a slight angle.

If you take the photograph through a window, then the offset lens reflection will stay in the same position as you move the camera.

See also my Simple Ways To See Nibiru Is Totally Nuts - And Limits On Planets Hiding In Our Solar System

Offset lens reflections can be particularly puzzling if the sun is reflected in the sea or a lake, because the reflection in the lake can get offset and reflected in the lens as well to create an effect like this:



It may look as if the light to the right of the sun is reflected in the sea. But it's in the wrong position for that. The bright light is higher above the sea, so if it was a real reflection its reflection should be further down like this:

What's happening here is that the real reflection of the sun is very bright and is copied to the new position above and to the right of the sun.

If you look really closely at the supposed reflection of the second sun, it is not matched with the ripples behind it:

> The supposed reflection of the “second sun” here is just an offset lens reflection of the real reflection to the left, shifted up and across. The real reflection looks larger because it is so bright it overwhelms the camear.

This photo comes from a quora question: What is this bright object next to the sun?

LENS FLARES

Many of the videos and photos are of lens flares. Since some lens flares move and others don't, or not so much, it is easy to think that the one that doesn't move is "real" but it isn't.

It is easy to test for lens flares.

As he says, so many people get fooled by this. Some are probably intentional hoaxes, some confused, in any case they don't have a clue.

When you get effects like this, it shows that there was too much light for the camera to handle and the bright light bounced around inside the lens system creating lots of bright spots and lights. This happens very easily if you point a camera at a bright object.

The basic reason for this is first, because the different frequencies of light are refracted by different amounts. So if you just used a plain glass lens, then maybe red is in focus and blue isn't, leading to rainbow effects. Cameras use complex lens systems to make sure all the light focuses at the same point. Also it may have a telephoto lens which obviously is going to be much more complex to allow it to focus and magnify as you zoom in.

Even with a simple lens, light can bounce around inside it through internal reflections. With a complex system of lenses such as modern cameras usually have, then it's no surprise at all that you get lots of complex patterns of light like this when you point it at something bright enough for some of the light to bounce back from the many internal surfaces inside the lens.

SUN SHINING ON CLOUDS

Another thing you often see, shared as “Nibiru” is just the sun shining on clouds. If you live in a

sun & clouds , photo from Flikr by funca88. This shows rays of light from the sun shining through gaps in the clouds and lighting up other clouds. On a day like that you may well get bright patches all over the sky - often directly opposite the sun too. I live in the West coast of Scotland, a place that gets lots of cloud of this type - this is just a normal sunset for me. However from the youtube videos of “Nibiru” shared online it seems that to many people, this sort of thing is not so familiar to them. They share any bright light shining on clouds as “Nibiru”.

OTHER THINGS - REFLECTIONS ON BUILDINGS

You can see what it is from this zoom in on the apparent second sun at the left:

It's just a reflection of the sun in the windows of a skyscraper. I was totally baffled by it when I first saw it, having lived most of my life in rural areas or small cities without skyscrapers. But if you live in a place with skyscrapers you probably recognized it immediately.

For more on this see Debunked: This is a photograph of two suns

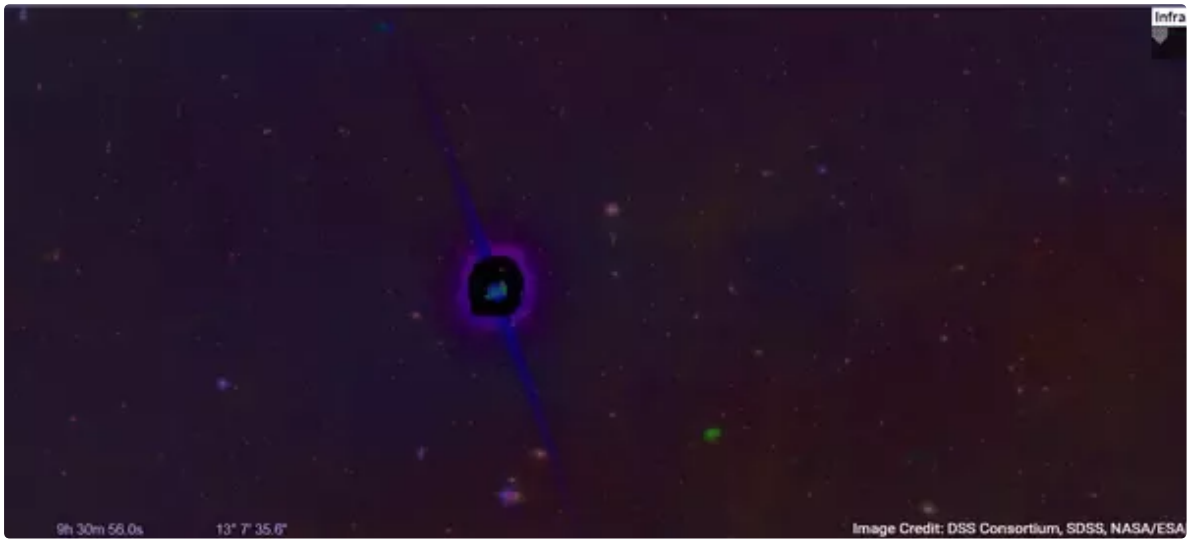
OUT AND OUT FAKES

But you'll find many such. If you've seen any science fiction movies you probably know how easy it is to fake videos of things in the sky with modern CGI techniques. Indeed, what's surprising about the Nibiru hoax videos is really how lame many of them are. It is really easy to do a Nibiru hoax and people will do it just for fun as in this example - I think it is just a joke because there are no ads showing on the video.

Or they may be done for the ads - trying to get lots of views and clicks on the ads which can earn the uploaders thousands of dollars of youtube ad revenue if they get millions of views.

Debunked: How can the videos and photos be hoaxes when so many people believe them?

Google Sky in the Infrared



It’s actually the Peanut Nebula around the carbon star CW Leonis . It's a striking object in infrared, the brightest object in infrared outside of our solar system. But it is absolutely no threat to Earth. It's between 390 and 490 light years away. It's so far away that when we look at it, we see it as it was four centuries ago because that's how long it takes light to get here from there. You can see it on google sky here

MANDATORY STARE AT SUN WARNING

Don't stare at the sun to see if you can see Nibiru. Newton stared at the sun for an experiment and he lost some of his vision for a fair while. Eventually he got it back but you might not be so lucky - some people get permanent vision loss in this way.

The radiation that damages your eyes is mainly UV light - and this is not visible. So even if the sun looks dim, behind clouds for instance, you don't know if it is safe without a UV light

Just don't do it. It is reasonably safe when the sun is right at the horizon with a flat open horizon - which is why people don't lose vision staring at a beautiful sunrise or sunset - but even then best not to stare for long.

So don't stare at the sun. If you want to check if we have two suns, just block it out with your finger. Then, do you see another sun next to the sun? No? Then you have disproved this idea that there is a second sun visible in our sky, which some of the Nibiru believers think. Some of them believe it is not just an extra sun, or a planet, but an entire separate solar system consisting of a sun with several planets, hiding behind our sun, but from time to time visible next to it.

SO WHY DO THEY SAY THIS?

It is of course possible for lots of people to believe something that's false. Up to the middle ages nearly everyone was totally sure that the sun circled the Earth as did the planets and the stars too. In 2012, by some figures 10% of the Earth's population thought the world would end. For more on this, see debunked: How can it be false when so many people share photos of "Nibiru" next to the sun or a second sun? by Robert Walker on Debunking Doomsday

This is just nonsensical BS. For more about this, see Debunked: Nibiru will hit Earth on [Insert Date here]

300 views · 2 upvotes · Posted Nov 9, 2016

Upvotes 2 Comment

Earth's Magnetic Field

Robert Walker

The original story is here: A Solar Storm Put A Crack In Earth's Magnetic Field

This is not doomsday. The word “crack” there is journalistic poetic license, not a scientific term. These are new measurements of something that happens with solar storms anyway. And the “wrecking havoc” in the article also is not quite what you’d think.

Solar storms can’t harm us on Earth though a really powerful solar storm can cause long lasting electricity blackouts and temporary glitches with GPS satellites. Some think we need to be hardened against those more than we are now.

The main effect of solar storms is that they can cause vivid aurorae

RADIATION - NO PROBLEM FOR US AT ALL

Our atmosphere protects us from cosmic radiation and solar storms. It's the equivalent of 10 tons of water shielding above us in mass. Nothing that happens to the magnetic field can do anything about that radiation shielding. We just don't need to be worried about radiation from space at all.

We do get cosmic radiation - very penetrating, gets to the ground and you see it in cloud chambers. We are adapted to be able to deal with that background level of radiation which is constant 24/7 year round.

But the solar storms are much more slowly moving and they simply can't penetrate our atmosphere at all.

Even when the Earth's magnetic field flips, as it does often, last time only 41,000 years ago, it doesn't harm us.

The main predicted effects are a weakening of the ozone layer, more aurora of course and compasses pointing east / west instead of north during a reversal which takes over a century. Oh, and migrating birds wouold get puzzled and might end up in the wrong continent etc.

In the middle of the flip the field doesn't vanish altogether but is much weaker than it is now. That doesn't make anything extinct as far as we can tell.

But this is not about magnetic reversal either. Our magnetic field is still stronger than usual and both magnetic poles are close to the geographical poles.

We are not even in the middle of a magnetic pole flip. It is just a normal solar storm when magnetic field levels are nominal.

SATELLITES

If we got a major solar storm like the Carrington event, in the C19, then the main effects are on long distance cables. Back then telegraph operators observed sparks from the devices and some were able to send telegrams without need for power because the storm itself powered the cables.

That's because though the magnetic fields are weak, they do have a noticeable effects on multiple kilometer long cables.

Not on your laptop etc. But could knock out the very expensive multi million dollar main transformers that convert very high voltage long distance transmission down to intermediate levels for sending on to step down again to domestic levels.

It's only the really big transformers that need to be protected, big millions of dollars units. They can definitely be hardened against storms. It's mainly a matter of whether they need to

The experts don’t seem to think the smaller transformers that route power on to your home are likely to be affected. I think the cables attached to them are just not long enough to matter. You need really long cables many kilometers long to get the most damaging effects.

POSSIBILITY OF BLACKOUTS

So it could cause blackouts, possibly for months. That's the main concern of magnetic storms.

Experts disagree on how hardy the transformers are to this effect and whether this would happen and they are investigating and may have to harden them, is last I read about it.

It could also knock out GPS - not permanently, just gliches causing the satellites to reboot and so be on the blink for a while. Can't actually damage them but can change the state of computer

See also Debunking: Solar Storms to end all life on Earth

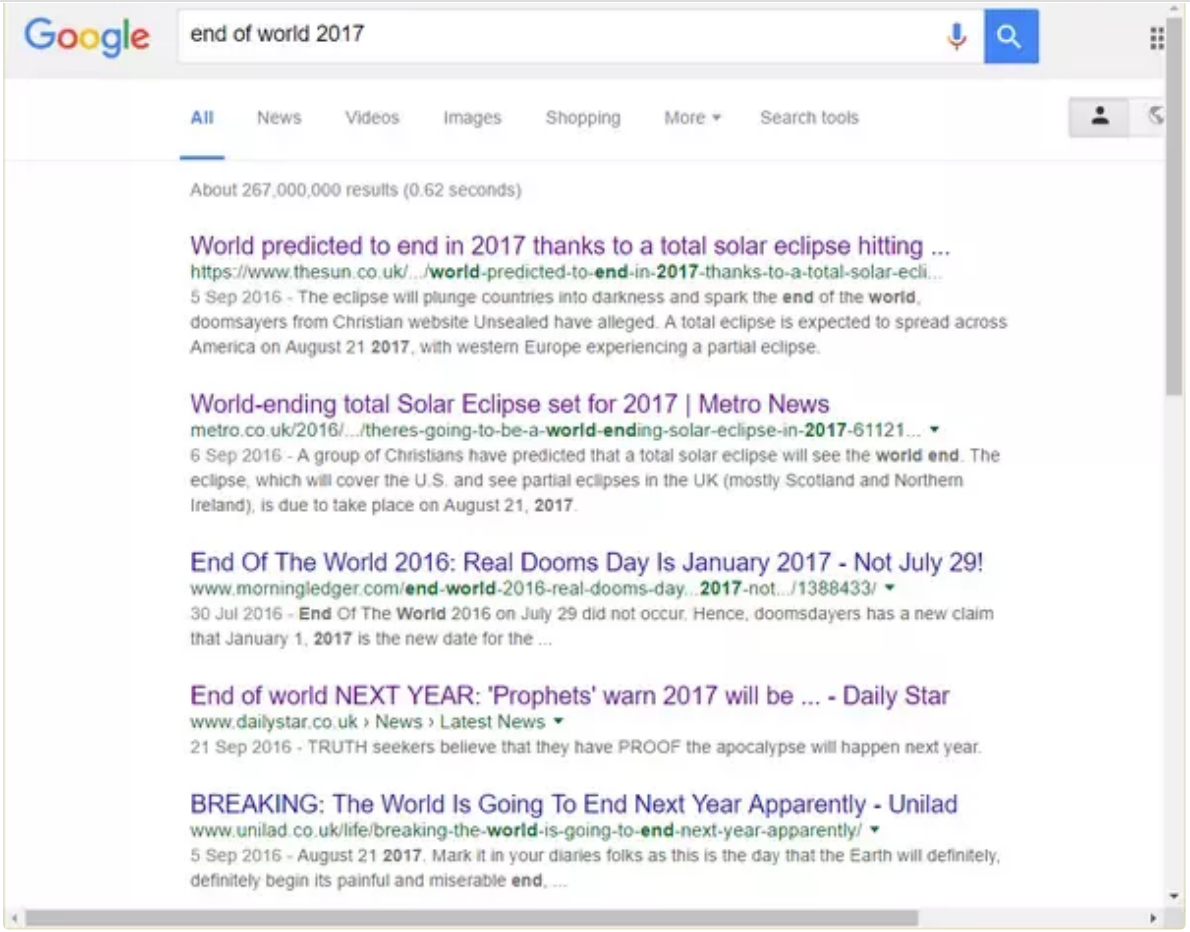
191 views · 1 upvote · Posted Nov 4, 2016

Upvotes 1 Comment

Debunked: The eclipse in the US in August 2017 will mark the start of the end of the world

Robert Walker

This is another of these stories where a small group of christian fundamentalists seize on some astronomical event and claim that it will mark the end of the world. And then for some reason newspapers decide to run with the story, the “red top tabloids” especially. Do a google search and you will see something like this:



It’s so sad, because total eclipses are a wonderful astronomical phenomenon and we can enjoy them rather than worry that they mean the end of the world :).

So anyway - it’s hard to debunk a religious “prophecy” like this because they claim mythological things, Jesus, or angels and such like suddenly appearing and destroying the world.

We never see such things in our telescopes. There is no evidence that celestial beings destroy

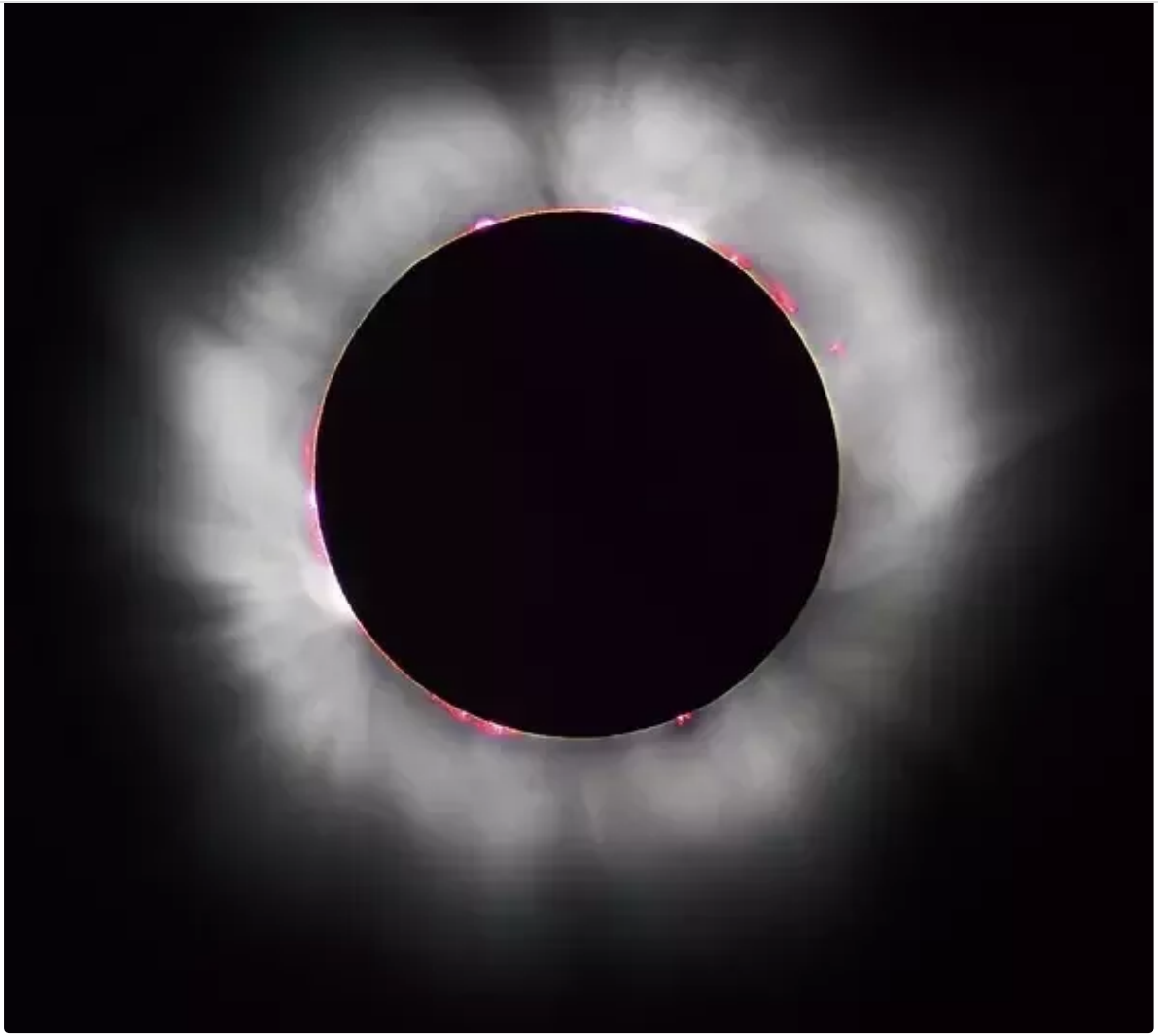
But if someone says as a matter of religious belief that they believe such events will happen - well - evidence from physics and astronomy won't help them, you probably have to respond in religious terms.

So I'll do that, but first, let's look at the astronomy and see why a solar eclipse is of no danger at all to us.

The solar eclipse happens when the Moon passes between the sun and Earth. By a coincidence the Moon is visually almost exactly the same size as the much larger sun. Sometimes it passes in front of the Sun rather further away and we get an annular eclipse. Here you can see that the Moon is visually smaller than the sun:

> Annular Eclipse. Taken from Middlegate, Nevada on May 20, 2012.jpg - Wikipedia

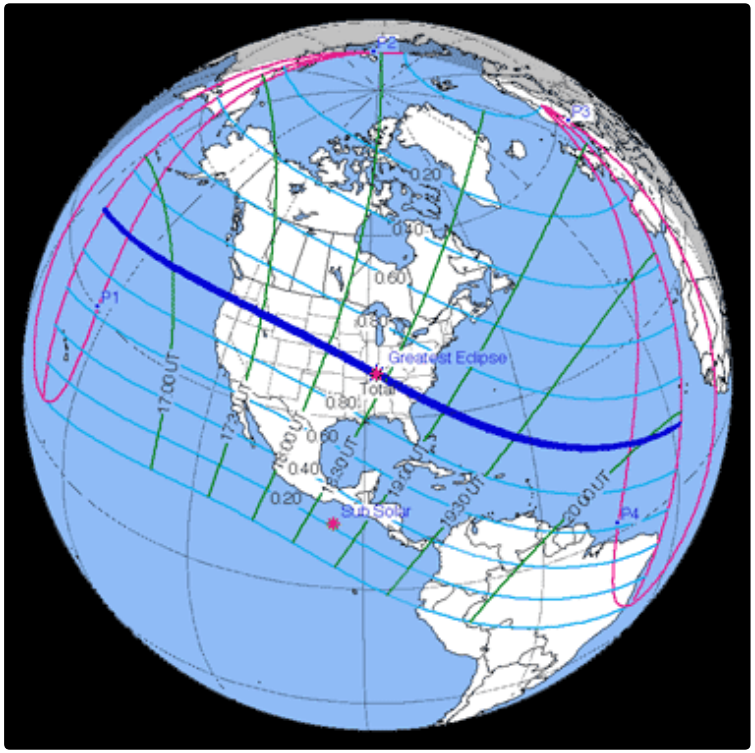
And sometimes it is total, and that’s one of the great spectacles of nature



> Solar eclipse 1999

As the moon blocks out the sun from our view, then you see the red prominances and the subtle white corona, features that you normally can't see at all because the details are flooded out by

shows the eclipse track for the August 2017 eclipse. To see anything at all you will need to be somewhere along that line during the event.



If you are within the region of that line you will see a total eclipse. But if you are a bit away to one side or the other, this is what you see.

> Partial solar eclipse Oct 23 2014 Minneapolis 5-36pm Ruen1

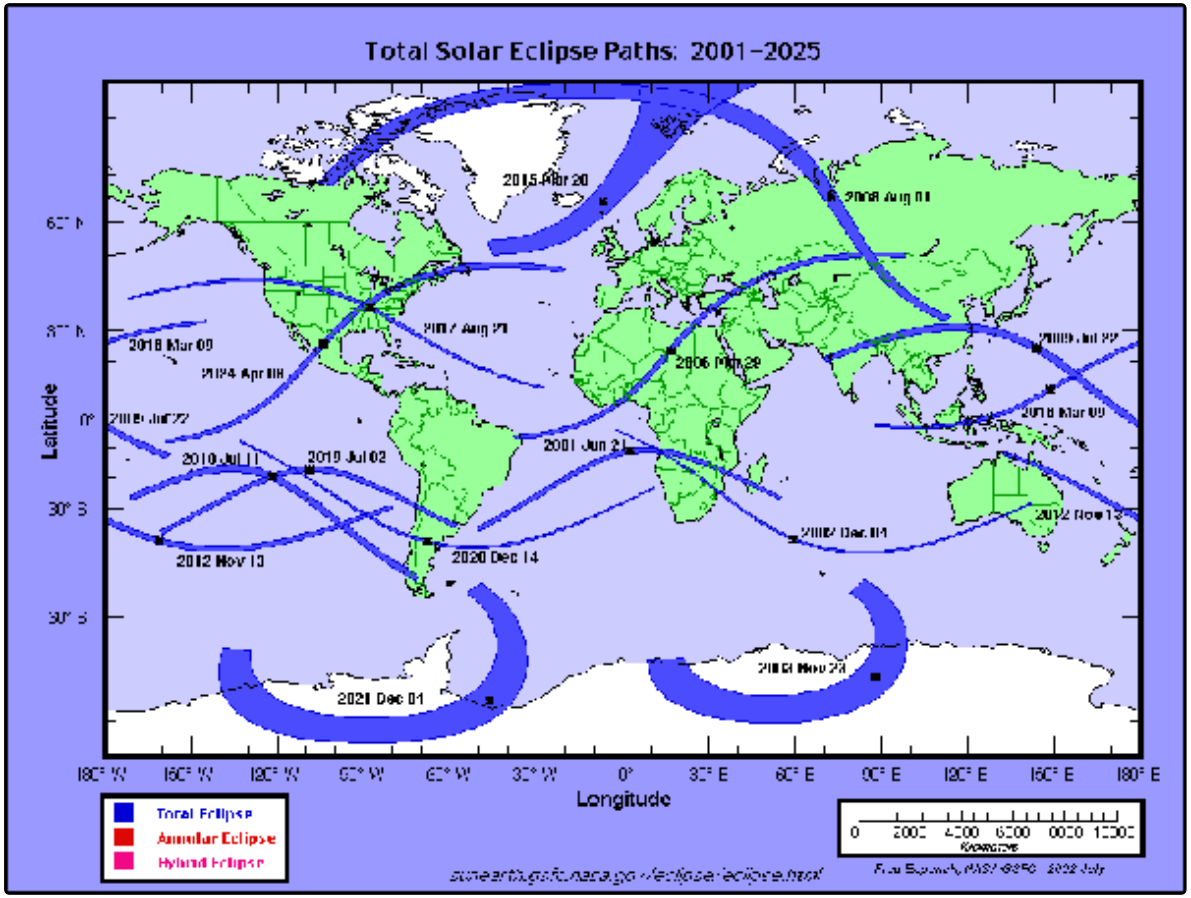
And if you are further away still, you won't see anything.

the position of stars during a solar eclipse were used to confirm Albert Einstein's theory of relativity.

The Moon goes between the Earth and the Sun every full Moon but it normally passes above or below the Sun. From time to time it passes exactly in front, when its orbit is aligned with the Sun as seen from Earth.

The solar eclipse is just the Moon's shadow passing over the Earth. This video of a solar eclipse as seen from a geostationary satellite explains:

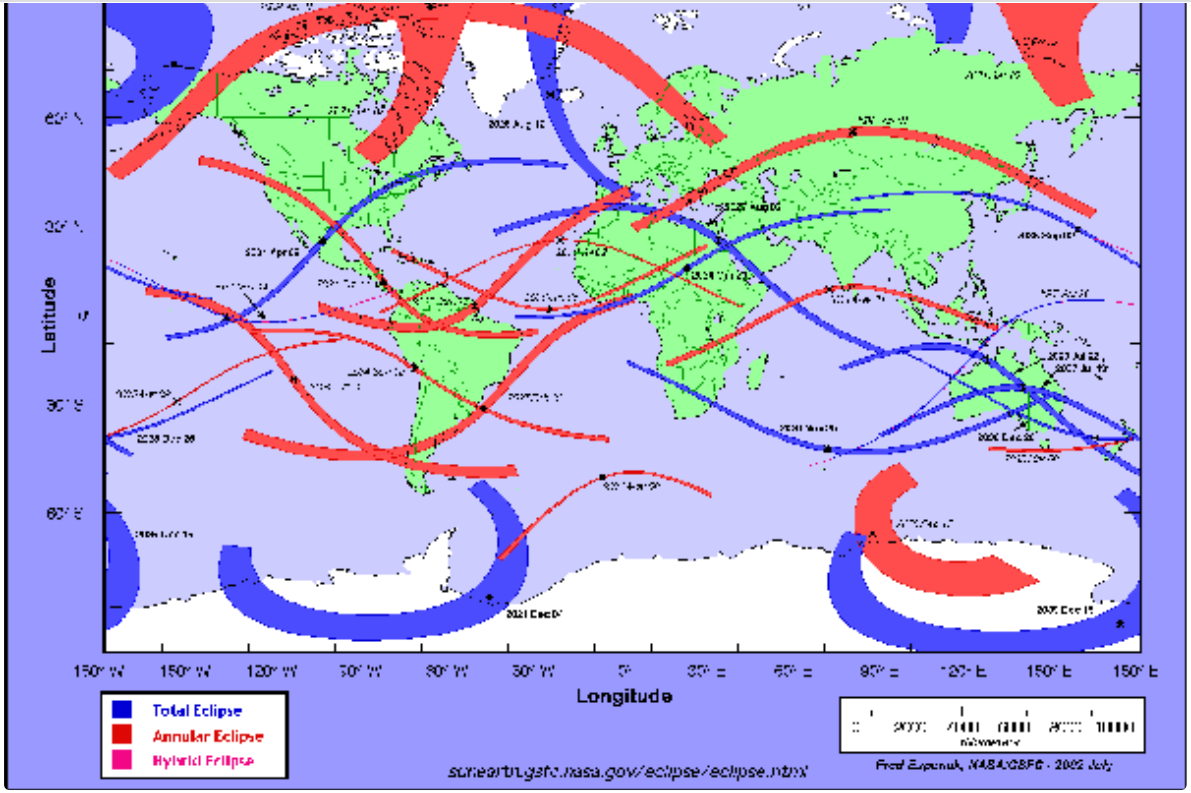
So - there is no way this is any threat to us. The shadow passes over the Earth and then is gone. I hope understanding the astronomy can help with some of your fear if you are one of those



Those blue ones are all total eclipses. No annular eclipses during this time.

They've made these maps for centuries into the past and the future from the 30th century BCE to the 30th century CE

This for instance is from 2021 to 2040 - many annular eclipses during this time span:



World Atlas of Solar Eclipse Paths

So, it's a perfectly natural event, not in any way unusual. The Moon has been doing this for billions of years, since it formed. Billions of years ago it was much closer and the eclipses would have been much more frequent.

I hope this helps you understand that solar eclipses are not in any way world threatening. It's a wonderful, beautiful thing to see. I've seen partial eclipses but never seen a total eclipse and hope one day to be able to see one with my own eyes :).

into it.

It causes so many problems that the Eastern Orthodox church doesn't include it in its lectionary, the passages from the Bible that can be read from the pulpit. It was a late addition to the Bible anyway - early versions of the Bible didn't include it.

Christians interpret Revelations in many different ways, with the four main interpretations

1. "A view that **Revelation must be understood in the context of its own time** and the events symbolized in its pages as having already taken place.
2. " A view that **only a portion of the revelations have occurred** and that the work offers clues to the remaining portion of human history.
3. "A view that **the book is best understood spiritually**, and no attempt should be made to interpret it in the context of history.
4. " A view that **the book is prophetic** and its prophecies are yet to be completely fulfilled.""

Only the last approach of those four leads to the idea it might be describing real world events in our future. Many think that 1 is true, that it describes events that already happened in the first century AD.

Also the Bible warns against false prophets. By definition all the people who have prophesied an end to the world for the last 2000 years, and there have been dozens of them, are false prophets because the world didn't end. And these Nibiru people have falsely prophesied the end of the world numerous times too, so they are definitely false prophets too, no matter what excuses they make for their false predictions.

So, there is absolutely no reason at all to pay attention to alleged prophecies of doomsday if you are Christian. Why should you? They are surely just more false prophets to add to the dozens that have come before. For the large number of false prophets that we've had, see this List of dates predicted for apocalyptic events . It's not complete either.

Some of these people will forecast an apocalypse over and over. They swear blind that their latest prediction is the real thing and will certainly happen. Even their own predictions made just a few months or a year before - they say those were false predictions but this one at last is correct.

If you start to fall for this sort of thing, you will never want for predictions of doomsday and will be scared of it for the rest of your life or until you realize you've been had and just give up on it.

While if you are not Christian - well what do you care what Christians prophecy? The book of Revelations is clearly meant as a message for Christians, whatever it might mean. Why pay any attention to it if you happen to be a Hindu or Buddhist or Jain or Taoist or whatever religion you are? And if you are atheist even more so.

The Bible has never predicted any major astronomical event. Indeed astronomy is not it's strong point. And no previous civilization has ever had the accuracy of prediction of astronomy that we have. An eclipse track map like the ones above is way beyond the capabilities of any previous civilization on Earth, no matter how astronomically gifted. They just didn't have the theory, the computers, the telescopes etc needed to make them.

Also, anything you might try to unearth from the Bible can't possibly be a prediction of meteorite impacts or hidden planets, as they didn't know that asteroids or meteorites existed back then. Also, the idea that a planet could hit Earth would have been totally foreign to them. They thought of the sky and stars as separate from Earth. They thought meteorites were created in volcanic eruptions or blown up into the air in strong winds before falling again. They also

they had a very inferior approximate understanding.

Now of course they did have a good understanding of human nature, the Bible has a good ethical message. We aren't superior to them in terms of ethics probably. But they just weren't astronomers or cosmologists. Even by the standards of their time, the authors of the Bible do not stand out as having a particularly good understanding of astronomy. It is barely mentioned. That's just not what you go to it for.

I write about it some more in the second half of this article, which if he is Christian may be helpful: September 24th, 2015 - Just Another Day In Space - Asteroid Flybys, "Blood Moons" And Armageddon Demystified

Debunked: NASA warns that 1000 asteroids might hit Earth in the next five years

Robert Walker

This is a very bizarre story. It appeared on various news sites online including this example: **NASA warns 1000 asteroids hurling towards Earth and might collide in next five**

> “Nasa knows of no asteroid or comet currently on a collision course with Earth, so the probability of a major collision is quite small. In fact, as best as we can tell, no large object is likely to strike the Earth any time in the next several hundred years,” said a Nasa spokesperson. “NASA has also made asteroid detection a top priority, and are developing strategies for identifying asteroids that could pose a risk to our planet.”

So how do you make sense of that? They claim that NASA warns that there are 1000 asteroids due to hit Earth in the next 5 years, but the only quote from NASA in the article says this is nonsense. Why do journalists publish such nonsensical self contradictory stories? I got a few pm’s and comments about it and tried to find what the source was that lead to this but couldn't find any explanation.

That 1000 is similar to the number of asteroids of diameter 1 kilometer or larger in the NEO database. NASA have found 90% of those and shown that none of them threaten Earth. There are 10% of them still to find and they are finding them at a rate of about one a month. By the 2020s they will have found 99% of them and that will pretty much retire the risk from a 1 kilometer asteroid - unless of course for the unlikely possibility that they find that one of them is headed our way.

I suspect that some journalist just misunderstood a press release or a statement about the 1000 asteroids of 1 km in diameter and then wrote it up in this way, and the others then all copied them (as they often do). But impossible to know for sure as the articles don’t give a source for the story.

It’s about the same time as the announcement that astronomers have reached the tally of 15,000 asteroids discovered so far Tally of known near-Earth asteroids and comets hits 15,000

> NASA Survey Counts Potentially Hazardous Asteroids - all the orange asteroids in this illustration are ones that do flybys of Earth, so “Potentially hazardous”. However we also know that none of those ones will impact Earth any time before 2100. Interplanetary space is vast and Earth is tiny and it’s not easy for an asteroid to hit such a small target in the vastness of the space between the planets

So it might be related to that. Discovery of more near Earth asteroids, all of which miss Earth, of course does not increase the risk of hitting Earth. :They were there all along, it is just that our more sensitive telescopes can now spot them. They discover about 30 new asteroids per week, or more than three a day nowadays.

Dazzathecameraman's amusing parody about HCT2014 (Huge Chocolate Teapot)

Robert Walker

Some of you may enjoy this, it's a paraody of many of the Nibiru videos, by Dazzathecameraman - shows how easy it is to make a hoax video like this.

Debunk: Our Sun or Earth could be hit by a rogue planet, neutron star, black hole, brown dwarf or star

Robert Walker

Summary - This is just exceptionally unlikely. Theoretically it is possible but as far as worrying about it, forget about it.

The chances of any celestial object even getting as close as Neptune in any one million year time period are minute:

- 1 in 1.4 million for a rogue planet
- 1 in 2.8 million for a star
- 1 in 16 million for a brown dwarf
- 1 in 48 million for a neutron star
- 1 in 2.8 billion for a black hole.

The chances of any of these getting as close to the sun as Earth, hitting Earth or hitting the Sun

Let's start with neutron stars, as amongst the hardest to detect. There are several hundred million neutron stars in the galaxy as a rough estimate (see Compact Objects in Astrophysics) . Most of them would be very old and cold, due to supernova explosions billions of years ago and an old cold neutron star would be very hard to detect, that's true. You might think that with so many of them, that we'd have a chance that one of them would hit us. But the galaxy is also very huge, as worked out by Phil Plait The volume of the Milky Way, our galaxy, is roughly 8 trillion cubic light years

HOW MANY OF THEM ARE THERE WITHIN TWELVE LIGHT YEARS?

With the volume of the galaxy 8 trillion cubic light years, the calculations are simplified if we look at a volume of 8 thousand cubic light years, i.e. in a sphere of radius twelve light years.

So those several hundred million neutron stars correspond to about ten neutron stars within twelve light years. By comparison our galaxy has 400 billion stars (you get various estimates here, some say 100 billion, I'm going by the higher estimate) which makes it around 200 normal stars in that same 8,000 cubic light years. There may be twice as many rogue planets as stars so that makes it 400 rogue planets in that same region. About one star in a thousand is a black hole. See Black Holes . So that same 8,000 cubic light years would have 0.2 black holes on average.

As for brown dwarfs, there may be as many brown dwarfs as stars according to recent research, see How Many Brown Dwarfs in the Milky Way? However the WISE survey found that we in a region of the galaxy with very few brown dwarfs, about one brown dwarf for every six stars. NASA - WISE Finds Few Brown Dwarfs Close To Home

So in short we have

- 0.2 black holes

- 400 rogue planets

within that twelve light years radius.

Stars are from several hundred to a thousand times more common than neutron stars. That might surprise you given that many stars have short lifetimes and of those many end in neutron stars - so what has happened to all those stars that reached the end of their lifetime billions of years ago?

The thing is that those bright stars are far outnumbered by the numerous fainter stars. Most stars are red dwarfs with trillions of years long lifetimes - Red Dwarfs: The fascinating stars that live for trillions of years).

SO HOW LIKELY IS IT THAT A STAR DOES A FLYBY?

Stars, even though they are much more common, are also very unlikely to do close passes of the solar system. Never mind hitting the Earth, or the sun, they are extremely unlikely to get as close as Pluto. The closest flyby of a star in recent past is Scholtz's star, which passed 0.8 light years (around 9.6 light months) away 70,000 years ago. https://www.sciencedaily.com/rel...

By comparison Pluto is 5.5 light hours away. So - when a very rare close encounter may take a star 9-10 light months away - how likely is it that a star would pass as close as 5.5. light hours away? With neutron stars a thousand times less common than stars, how likely that a neutron star would come anywhere near our solar system?

To get close enough to pass between Earth and the Moon it would need to pass just one light second away. To hit Earth it would need to hit us accurately to the nearest 0.02 light seconds - within two hundredths of a light second. The sun's diameter is 4.64 light seconds, so to hit the

IMPOSSIBILITY OF CAPTURE

And it is just a single pass, because if any rogue planet, or neutron star, or black hole or anything were to pass through our solar system - it would be going too fast to do anything except just fly out again.

Capture into solar system orbit by Jupiter - tracing the path of Voyager 2 or Voyager 1 backwards - is so very improbable you can forget about it. It is easy for a solar system to eject a planet, and very hard for it to capture one. That's a bit like the way it is easy for a cup to break but very hard for a cup to spontaneously assemble from the broken pieces on the floor.

Another analogy - it would be theoretically possible to drop a pin on a hard polished floor and for it to land point down balanced exactly. And if all the tiny drafts of air pushed in the right way to keep it balanced, it could stay balanced like that for an hour or more. It's possible but surely even with the thousands of pins dropped on polished floors, it's surely never happened in the history of humanity!

EXACT CALCULATION OF THE CHANCES

So now, what is the chance that Earth or the Sun is hit by any of these, or that they come into our solar system?

I've found a way to do an exact calculation

> There's a formula, we can use here, from Perturbation of the Oort Cloud by Close Stellar Approaches . Our sun has approximately 4.2*D^2 encounters with other stars every million years.
>
> There D is the diameter in parsecs of the spherical region around the star.

There may be twice as many rogue planets as stars , so that means one chance in 1.4 million of one of those passing closer to the sun than Neptune every million years. Over the 4.5 billion years of history of our solar system, this is so unlikely it has almost certainly never happened, a one in three thousand or so probability that any star has got as close as Neptune since our solar system formed.

For brown dwarfs, with one of those in the local region for every six stars that makes it one chance in 16.8 million.

So then back to our neutron stars, then there is less than one of those to every 20 normal stars, so that makes it one chance in 48 million of a neutron star passing closer to the sun than Neptune in a million years.

For black holes, then as only one star in a thousand forms a black hole, then that makes it once chance in 2.8 billion of a black hole coming closer than Neptune.

So to summarize, chances of getting closer than Neptune are

- 1 in 1.4 million for a rogue planet
- 1 in 2.8 million for a star
- 1 in 16.8 million for a brown dwarf
- 1 in 48 million for a neutron star
- 1 in 2.8 billion for a black hole.

These are almost vanishingly small chances already.

Now for the chance of a star hitting the Earth. Now D is 12,742 km, which is 1.1304919e-10

We can also look at the chance of a star hitting the Sun. Now D is 1.3914 million km, or 4.5092203 × 10^-8 Parsecs 1/(4.2*(4.5092203e-8)^2) makes it 1 chance in 117,000,000,000,000.

So to summarize, every million years there is a

- 1 in 1,400,000,000 billion of a star hitting Earth
- 1 in 117,000 billion chance of a star hitting the Sun

So about one chance in 117,000 billion of it happening every million years. With 400 billion stars in the galaxy, we get one chance in 117,000/400 or about one chance in 300 that we get a collision between two stars somewhere in the galaxy every million years. With the galaxy 13.21 billion years old, then it may have happened 13,210/300 times or about 44 times since the galaxy formed, that one star has hit another star.

For rogue planets double those figures, so about 88 collisions of a rogue planet with a star in the whole galaxy. For brown dwarfs, divide by 6, 7 collisions. For neutron stars, divide by 20, so we might have had a couple of collisions of neutron stars with another star. For black holes divide by a thousand - probably no black hole has hit another star in our galaxy since it formed.

So we have the figures for anywhere in our galaxy, over the entire time period since it formed:

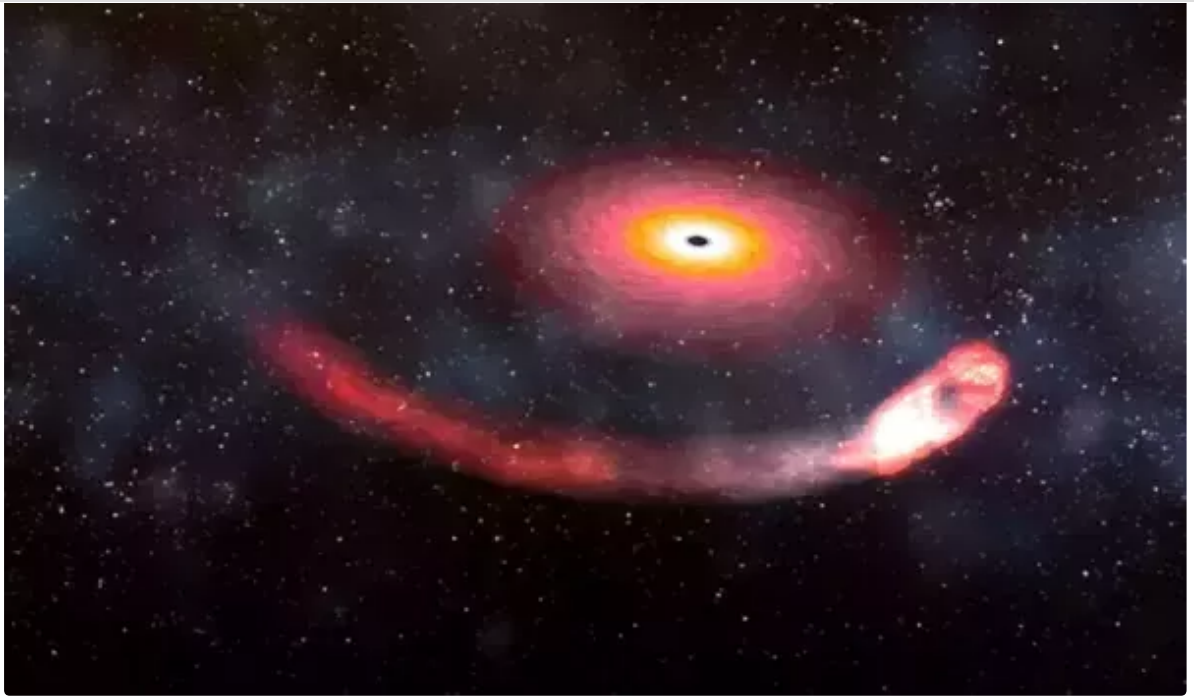
- 44 collisions between two stars
- 88 collisions of a rogue planet with a star
- 7 collisions of a brown dwarf with a star
- 2 collisions of a neutron star with a star

The stars are much more densely packed in the center of the galaxy, so stellar collisions there should be more common. The galaxy also has a giant black hole in its core, and stars must collide with it quite often.

I've also assumed that there is not enough gas or dust to cause significant drag on the approaching object. That's true for our sun but not true for newly born stars or stars that hit the accretion disk of a black hole.

However, we are at no risk of getting anywhere near the galactic center, for the same reason that there is no risk of Earth hitting the sun. We orbit the galactic center at a vast distance of 25,000 light years, in a long term stable orbit.

In the universe as a whole, there are so many stars that such collisions are common. There are about as many galaxies in the observable universe as there are stars in our galaxy. In such a vast region of space, even rare objects like neutron stars and black holes can collide. By way of example, collisions of a neutron star with a black hole cause some of the enigmatic gamma ray bursts - the shorter ones.



> Artist's impression of a neutron star captured by a black hole. In a Flash NASA Helps Solve 35-year-old Cosmic Mystery

This is of no danger to Earth whatsoever

247 views · 2 upvotes · Posted Oct 31, 2016

Upvotes 2 Comment

poles have shifted position

Robert Walker

This is the easiest of all the Nibiru beliefs to debunk. Go out any starry night, find the pole star, go out a few hours later and the pole star is in the same place and all the other stars have shifted around it. This shows that the Earth's axis still points towards the pole star, as it has for centuries.

(If you make sky trails you'll notice that the pole star is actually about two thirds of a degree from the celestial pole).

IN DETAIL

This is another central belief of the Nibiru people - that the Earth's poles have shifted or are going to shift. This is one of those sites, saying that the Earth's axis shifted back in 2003 . You'll find this sort of thing all over the web. Many people believe the Earth's axis has already shifted, killing many people, and that this is what causes many earthquakes, and that it will continue to shift until it points south instead of north. Here is another such story, often repeated by those who believe in the pole shift idea, "Earth has shifted"-Inuit elders issue warning to NASA and the world"

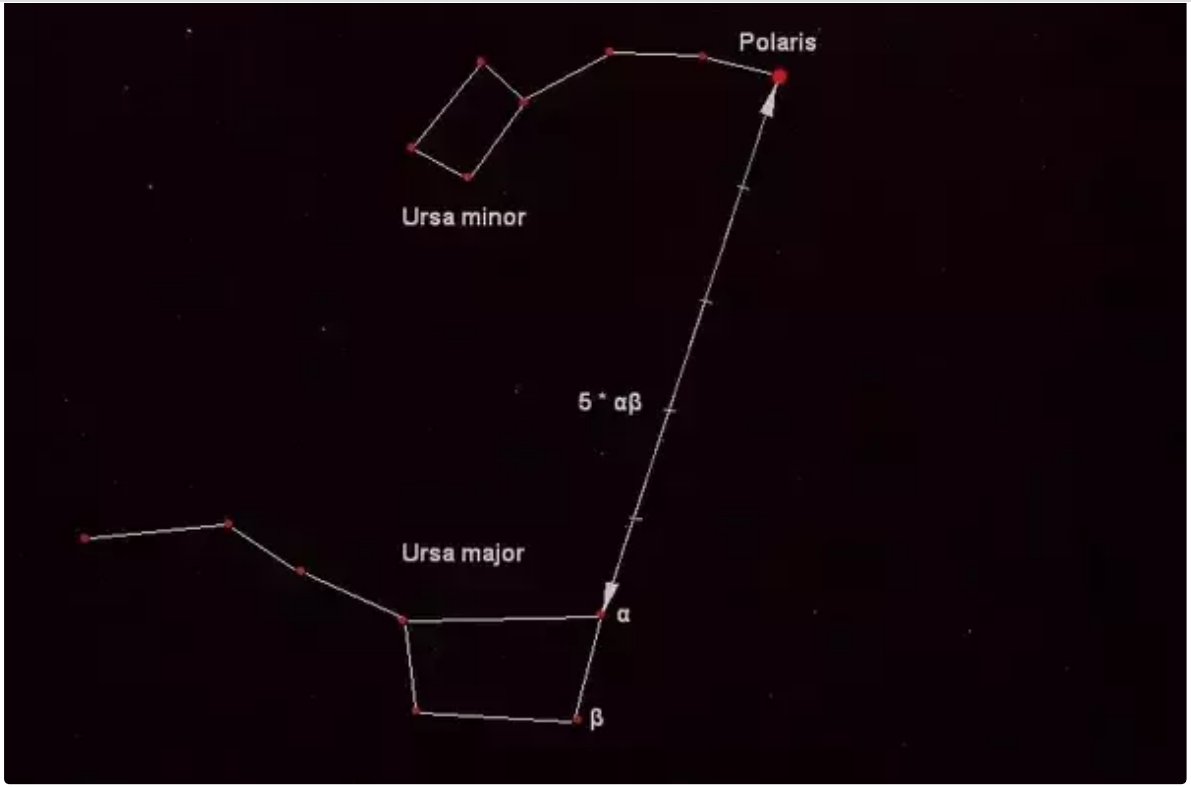
That may seem very impressive, you'd expect Inuit elders to be familiar with the sky and to understand things like this. But no, it seems they are not. Maybe a new generation that lives in houses as none of them live in the traditional way any more, less familiar with nature? Who knows, it's an intriguing question.

Or it might be that what they said is mistranslated. All we have there are subtitles. I'd be interested to know what they actually say from anyone who speaks Inuit.

Anyway whatever they say, the idea that the Earth's poles have shifted is just plain wrong. This is the easiest of all the Nibiru people's beliefs to debunk, you can do it for yourself, any starry night.

You don't need to take a look at where the Sun rises and sets, as these sites suggest. That changes throughout the year anyway, and who remembers where it rose before 2003 or whenever it was they say the shift happened?

It's easy to spot the pole star (this is for the Northern hemisphere - if in the southern hemisphere you'd use the southern cross as a starting point to locate the celestial south pole). You can find polaris using the two stars at the end of the big dipper (or plough) - it's quite a faint star, but easy to spot as it's in a rather blank area of the sky, no bright stars there. With a clear night you'll also see the other stars making up Ursa Minor, a sort of smaller scale version of Ursa Major.



> How to find the pole star (sketch from wikipedia)
>
> Once you've done that, take a note of where it is in the sky. And then just come back a few hours later. You'll spot that it is still in the same place in the sky, and that Ursa Major and all the other constellations have moved around to another position relative to it.
>
> BTW this way of finding the pole star is the flag of Alaska .

Whenever there's a clear night you'll be able to look up and see "yes that's the pole star in its usual place".

And here is a similar one from the southern hemisphere.

Maroondah Reservoir Star Trail from arteliz on Vimeo .

You can check easily that the pole star stays in the same place all night and is visible every clear night of the year.

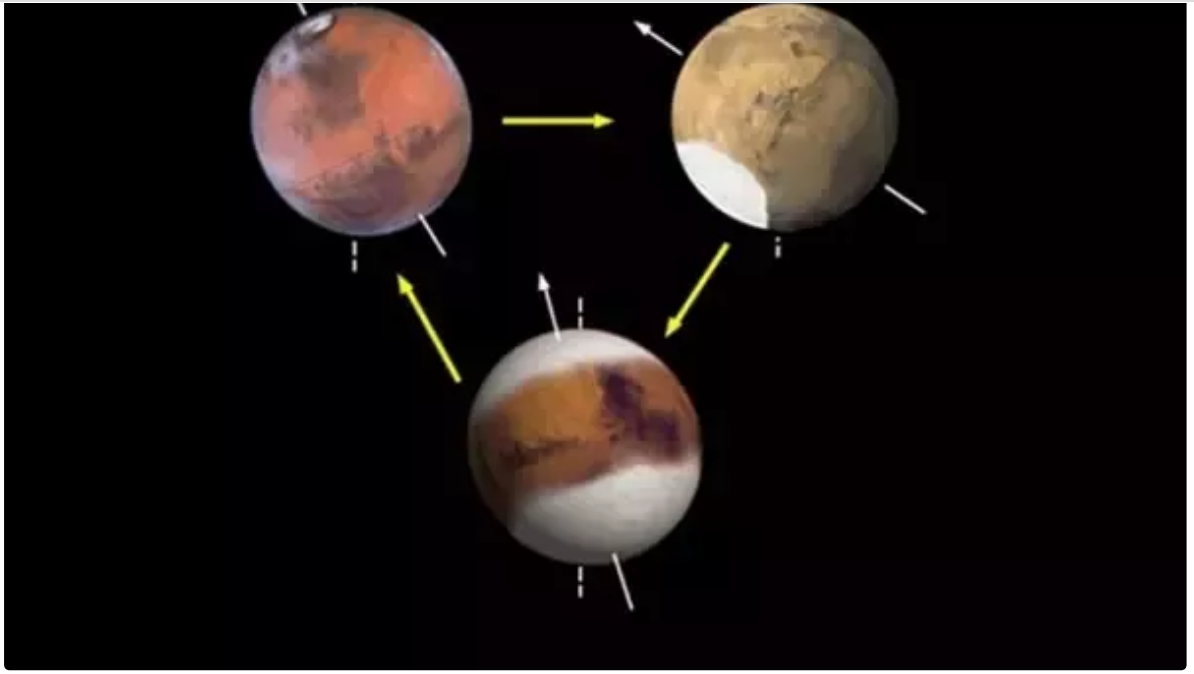
Dave Greg (Dazzathecameraman) has a video which goes into this in more detail:

That immediately debunks all this nonsense about the Earth's poles shifting and the idea that we have had more earthquakes than usual due to Nibiru shifting the Earth's axis.

It is also easy to check that navigators for centuries have used Polaris to find due north and that it is still due North as it always was. You can even go back through the historical records and plot the drift of position of the pole star due to the 52,000 year cycle of the precession of the equinoxes.

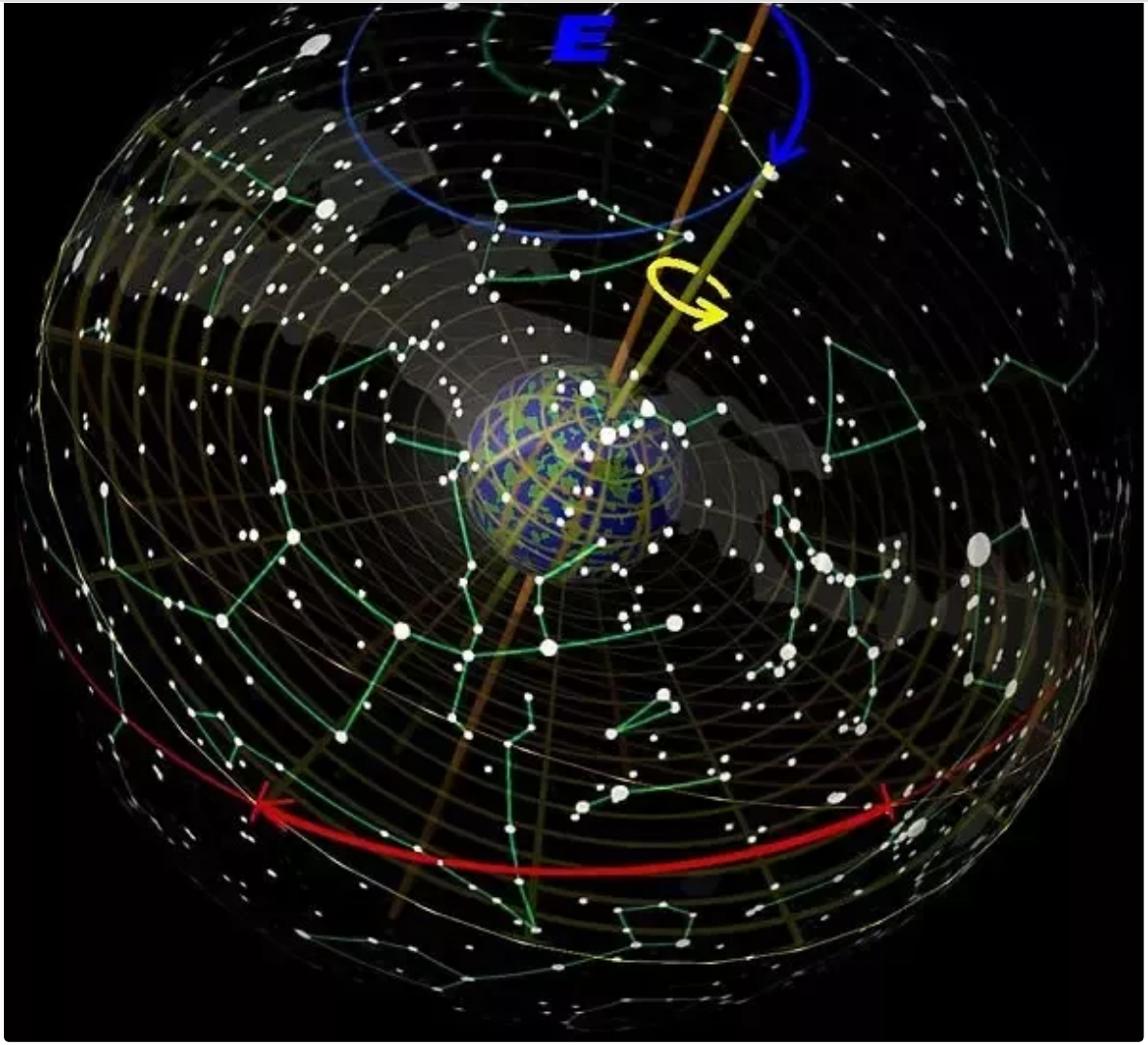
Also, the night sky is not attached to the Earth in any way. If the Earth's axis shifted, Polaris would not shift with it. It's 434 light years away, light from Polaris has spent centuries getting here. So if the Earth's axis shifted, it would no longer point at Polaris.

There's nothing we can do at present that would affect the tilt of the axis of the Earth. The axis is stabilized by the Moon. Mars has no large moons, only small ones and its axis continually changes like this, but very showly, over timescales of millions of years:



Changes of tilt of the Mars axis

Earth's axis though keeps the same tilt, and all that changes is the direction of its axis



This changes the direction of the North pole very slowly over a 25,700 year cycle. See Polar Shift and Equinoxes drift .

This simple observation of the pole star or the southern cross, which anyone can do, any clear night (unless right on the equator) also immediately debunks all the ideas about Nibiru being only visible from Antarctica or the Arctic. There is no need to travel to Antarctica to see the southern cross or to travel to the Arctic to see the pole star. If anything was visible from those places, it would be visible from the entire southern hemisphere, or northern hemisphere, respectively.

Anything that was due north of us in the night sky, in the same direction as the pole star, would be visible every clear night from everywhere in the northern hemisphere, just as the pole star is. Similarly anything due south would be visible every night from everywhere in the southern hemisphere (apart from regions close to the equator where both the north and south pole stars are close to the horizon).

If anyone tells you that Nibiru is only visible from the North pole or the South pole, or they tell you that the Earth's axis has already shifted, and that many earthquakes are caused by the Earth's poles shifting, as so many of the Nibiru people do, then you know immediately that they don't understand the most basic ideas in astronomy. Either they have never learnt how to find the pole star, or if they did, they didn't understand its significance. Either way, they are not reliable sources in astronomy, and it is best to ignore anything they say about astronomy.

TRUE POLAR WANDER AND NUTATION

This idea may have arisen as a result of a confusion of pole shift with magnetic pole shift. Or it could be due to confusion with true polar wander.

The Earth's poles do shift very slightly each year, a phenomenon called "true polar wander". But this is a minute effect, a motion of centimeters per year. At its fastest the poles can move ten meters in a century. This is due to such things as the continents shifting and ice caps

This tiny effect can't cause earthquakes or create any noticeable effect on the apparent position of the sun or the stars in the sky.

The Earth's axis also shifts in position by an extra half a degree on an 81.6 year cycle (half a degree is about the same as the visual diameter of the Moon).

This is due to the influence of the Moon, and is a phenomenon known as nutation. The Moon's axis also shifts, precesses, by a rather larger 1.5 degrees over the same period. Details here

Again, this causes no problems to us at all. This is a much larger effect than true polar wander - you could actually measure it, by naked eye even, with good tools, but you would need to do precise astronomical measurements to notice this effect.

MAGNETIC POLE SHIFTS

As for magnetic effects, that needs to be a separate debunking post, but in short, our magnetic poles are close to the geographic poles and move all the time. This is nothing new. The north magnetic dip pole which hoaxers say is in Siberia is in fact traveling towards the geographical North pole at present across the Arctic sea. The magnetic field strength is decreasing, but that's from a level above normal. So there is no sign at all at present that our magnetic poles are shifting. It's something that does happen, last time 41,000 years ago and it does not cause extinctions. Will happen some time in the next few hundred thousand years and in the middle of the shift, for a while our compasses will no longer work to show north but will sometimes point East or West etc. It reduces the amount of ozone in the ozone layer, so you'd need more sun barrier cream on sunny days, and it may confuse migrating birds. That's about the sum of its effects and is not a problem at all, it would take a century to happen, and there is no sign of it even starting yet.

Debunked: Universe will end with a “Big Rip”

Robert Walker

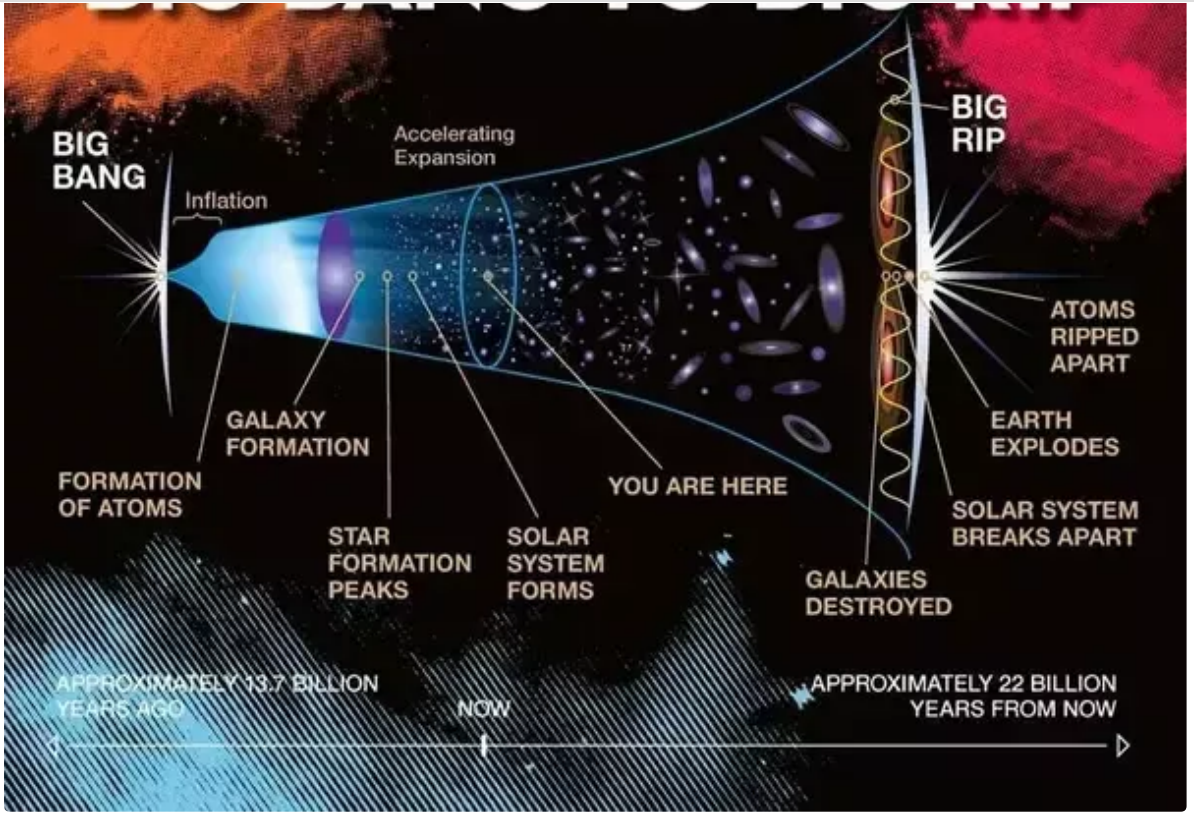
So, this is yet another of many very theoretical ideas about how the universe (not our world) might end. If this theory is correct, the universe may end at some point many billions of years in the future, after a time period several times longer than the age of the universe, as a result of “dark energy”.

We have good evidence that the universe as we know began about 14.5 billion years ago. Some think that was the beginning of time and there were no other previous universes, and others think it is just the latest in many such events. Whatever the explanation, if you look far enough back in time you just see very high temperatures everywhere throughout space. As the universe expanded those high temperature photons stretched out and became microwaves which we can detect to this day.

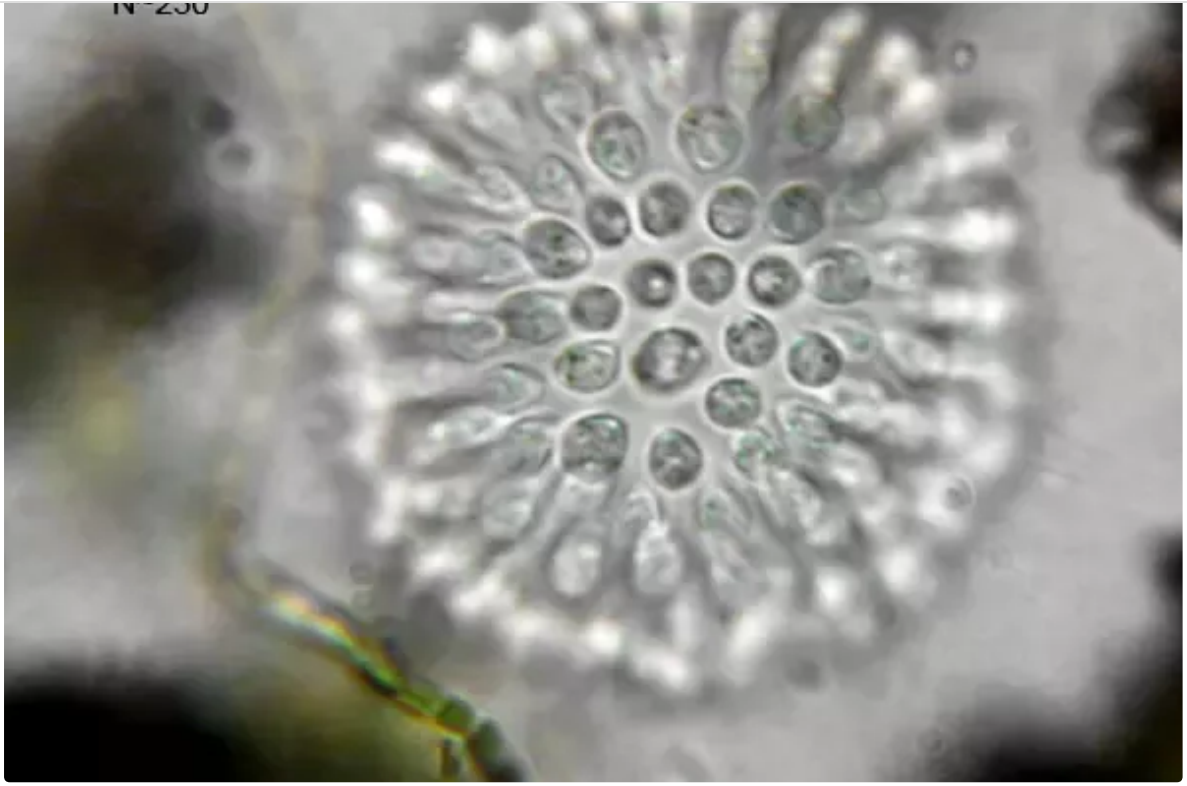
However what is not nearly so clear is how the universe will end.

Some think it might just continue to expand endlessly. Others think it may end in various ways. So the “Big Rip” theory is one of many ideas about how it might end.

As you can see from this diagram, according to this theory we are not even half way between the beginning and the end of the universe. The end of the universe in this theory is 22 billion years into the future.



To put that into perspective, half a billion years is how long it took for the most simple of microscopic multicellular creatures like this to evolve to a human being:



So it's enough time for that evolution to happen again 44 times over. And it is just one of numerous theories.

According to another recent article on this theory, the time is 100 billion years into the future, so time enough for that to happen 200 times over, see Dark energy could force the universe to gradually unzip itself

Yes, eventually perhaps our universe does come to an end but there are many different theories. Others think it would take more than hundreds of trillions of years. I like Roger Penrose's idea - he thinks that as it expands, all matter eventually decays into light (even the proton) - and that

new stars. Star birth will become a rare event - and galaxies will consist mainly of old stars that will eventually over really immense timescales run out of fuel and then fade away.

Some think we could escape from the universe by manipulating space time. Create a new baby universe or travel into whatever comes next.

Freeman Dyson had another idea. He thinks that it is possible that as the universe gets older, then everything gets colder and slower but that beings will adapt to that by getting slower and slower, more and more sloth like - of course they don't see themselves as slow or see the universe as cold, it just seems normal to them.

So his idea - that even though each subjective "second" gets longer and longer so eventually e.g. their seconds are as long as our years, you can make the future infinite (so long as the protons don't decay - if they do then eventually everything will turn into light - nobody knows if they do or not - they last a long time and nobody has observed them ever decay, but is possible they do on huge timescales).

Anyway, so there are many ideas about what might happen in the long distant future. This is just one of them. But whatever happens, it’s for way into the distant future. It’s clear that our universe is very young. And it’s also got very energetic things happen in the hearts of galaxies, black holes swallowing whole stars. Enormous release of energy. Has been doing that for billions of years. This seems to cause no problem at all, to the rest of the universe.

So it seems our universe is robust, young, and got a long future in front of it, on the basis of what we know of it so far.

This is a good summary about the various main theories. Nobody knows which is most likely though the "Big freeze" is the most popular theory I'd say. They are all about events billions of years into our future.

Who else says Nibiru is nonsense?

Robert Walker

Speak to anyone with a decent background in physics or astronomy or science - and they will just LOL at the very idea that we might have two suns or an extra planet hiding behind the sun. Here are some famous astronomers who have talked about how nonsensical the idea is:

Brian Cox who colourfully called Nibiru "the imaginary bullshit planet"

Here is Brian Cox's tweet about Nibiru.

> If anyone else asks me about "Nibiru" the imaginary bullshit planet I will slap them around their irrational heads with Newton's Principia" - tweet by Brian Cox

- he is a particle physicist associated with the Large Hadron Collider in Europe - and he is a very popular TV expert presenter on astronomy in the UK who has done many television programs and TV series on astronomy

Neil deGrasse Tyson called it "A marvelous work of fiction" by people who flunked physics at high school. He is a very popular TV astronomer in the US, also an astrophysicist and director of the planetarium in New York City .

- Planet Nibiru is not real . by Earth and Sky chief editor Bruce McClure
- Phil Plait's debunking article: The Planet X Saga: The Scientific Arguments in a Nutshell . This goes into a lot of detail Phil Plait worked on the Hubble space telescope and is author of many books on astronomy and writes an entertaining accurate science blog on astronomical topics called "Bad Astronomy" .
- Michael Hiesser's Sitchin is Wrong about how the Sumerians didn't talk about a twelfth planet.
- David Morrison 's pages, he is a former NASA astrobiologist (now retired) and former director of the Sagan Institute, and his "Truth about Nibiru". See also the 2012 cosmophobia conference and website .
- Don Yeomans , NASA senior research scientist and former manager of NASA'S Near Earth Asteroids program, A Scientific Reality Check
- I do not ♥ pseudo-science by Mike Brown by Mike Brown - he is the discoverer of many of the trans neptunian objects and the one who came up with the latest “planet 9” hypothesis for a planet X.
- Dave Greg (dazzathecameramam) is an amateur astronomer who frequently posts videos debunking Nibiru and other such ideas

For a short overview of this from NASA: Why the world didn't end in 2012 .

On Nibiru they just say

> "Q: What is the origin of the prediction that the world will end in 2012?
>
> "A: The story started with claims that Nibiru, a supposed planet discovered by the Sumerians, is headed toward Earth. This catastrophe was initially predicted for May 2003, but when nothing happened the doomsday date was moved forward to December 2012 and linked to the end of one of the cycles in the ancient Mayan calendar at the winter solstice in 2012 - hence the predicted doomsday date of December 21, 2012.
> ...
>
> "Q: Is there a planet or brown dwarf called Nibiru or Planet X or Eris that is approaching the Earth and threatening our planet with widespread destruction?
>
> "A: Nibiru and other stories about wayward planets are an Internet hoax. There is no factual basis for these claims. If Nibiru or Planet X were real and headed for an encounter with the Earth in 2012, astronomers would have been tracking it for at least the past decade, and it would be visible by now to the naked eye. Obviously, it does not exist. Eris is real, but it is a dwarf planet similar to Pluto that will remain in the outer solar system; the closest it can come to Earth is about 4 billion miles.
>
> See Why the world didn't end in 2012 .

For debunking right now

- Lots of posts on Quora including posts by professional astronomers

- Voices Of Reason To Explain X - V.O.R.T.E.X.(Facebook)
- Doomsday Debunked
- Nibiru Debunked 2017

Debunked: Nibiru is invisible because it is a brown dwarf and “only shines in infrared” - FALSE - or made of dark matter

Robert Walker

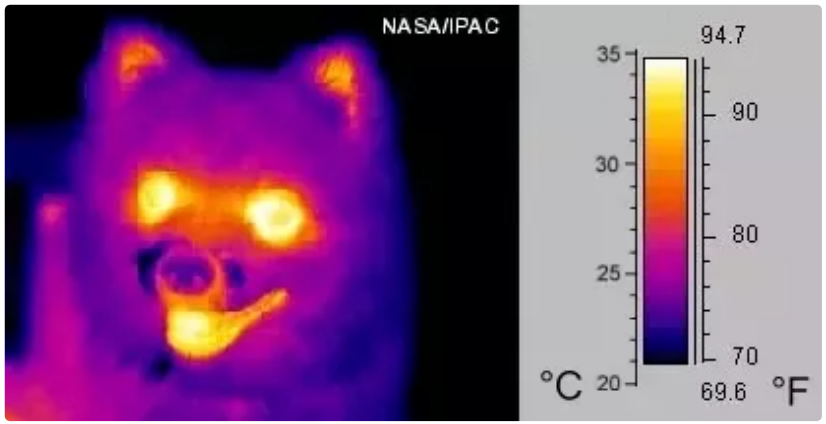
The idea of a dark matter planet is a very far out idea, but first, normally the Nibiru people say it is invisible because it is a brown dwarf. That is easily dismissed.

You can see humans in the dark with an infrared goggles. That doesn't mean we are invisible in daylight. Similarly, a brown dwarf is not invisible in the light of our sun either.

WHY BROWN DWARFS ARE NOT INVISIBLE

They are planets that never got quite hot enough to shine like a star. But still got hot enough for some fusion to occur, so that they do radiate a bit in the infrared.

To say they are invisible is a bit like saying that you are invisible because you are warm and radiate in the infrared. In a dark room with no light you would be invisible to the naked eye but easy to spot with an infrared camera.



> Infrared dog. Though a dog is very bright in infrared, shining by its own generated infrared light even in a pitch dark room, this does not make it invisible in visible light

You shine a bit more in infrared than a lizard does, unless the lizard has been warming itself all day in the sun, because you are warm blooded. Does that make you invisible? No.

In the same way brown dwarfs are more visible in infrared than some planets. But that doesn't make them less visible in visible light.

It’s the same with brown dwarfs. They can’t be seen when they are a long way away from any star, because it is so dark there. But they are still easy to spot in the infrared. So brown dwarfs,

When close to a star they are easily seen by reflected light like any other planet.

All brown dwarfs are about the same size as Jupiter, incidentally, however heavy they are - a remarkable property . As they get heavier they also collapse in on themselves a bit so don't get much larger.

Some brown dwarfs are very dark. But our Moon is too, it’s as dark as worn asphalt, and yet is bright in our sky because the Sun is so bright and it reflects just a fraction of that light to us, but it is enough to make it the brightest object in our night sky. It does not produce any light intrinsically, it is all reflected light from the Sun. It only looks so bright because the sunlight shining on it is so very bright and because the night sky is dark.

> When we see the bright moon in the sky - this is what we are looking at, dark rocks as dark as worn asphalt. It looks so bright because the sunlight hitting it is bright, and because we see it against a dark night sky. This is a rare lunar meteorite, a meteorite found on Earth that comes from the Moon. Lunaite (lunar breccia)

BRIGHTNESS OF A BROWN DWARF AT THE DISTANCE OF JUPITER

This paper gives a figure. It says brown dwarfs can be from 0.4 to 0.05 for the albedo. Lower numbers there are darker. The Moon's average albedo is 0.12 . So that's darker than the Moon.

A brown dwarf would be roughly same size as Jupiter (as gas giants get more massive than Jupiter they get denser but not much larger).

Jupiter's albedo is 0.343. So a brown dwarf at the distance of Jupiter would be about a seventh of the brightness of Jupiter.

Given those albedos we need to find how much dimmer it is than Jupiter in apparent magnitude. As usual I'll indent the calculation to make it easy to skip.

> One magnitude corresponds to multiplying by 2.512 (fifth root of 100) for historical reasons.
>
> So to find the magnitude of the darkest possible brown dwarf by reflected light at the distance of Jupiter, its dimmer by a factor of 0.343/0.05, or 6.86
>
> So we want to find x such that (2.512)^x = 6.86. So x log(2.512) = log(6.86) so x= log(6.86) / log (2.512) or 2.09. So it would be 2.09 magnitudes fainter than Jupiter

Jupiter at its dimmest has magnitude -1.6 .

So the darkest brown dwarf, at the distance of Jupiter would have apparent magnitude 2.09-1.6 (as stars get fainter the magnitude increases) or 0.49.

So the darkest brown dwarf, if at the distance of Jupiter when it is furthest from the Earth,

Deep sky image of Orion by Mouser . Betelgeuse is the red star at top left. It has apparent magnitude 0.42 , close to the apparent magnitude 0.49 of the darkest possible brown dwarf at the distance of Jupiter at its furthest.

So, no, we couldn't miss a brown dwarf, even in visible light.

> Betelgeuse is the bright slightly reddish star towards the middle of this picture , by Till Credner , marking out the left shoulder of the constellation Orion. This is one of the first constellations an amateur astronomer learns in the Northern Hemisphere. It is easy to spot, and Betelgeuse is one of the easiest stars to find in the sky and amongst the brightest and easiest to see.
>
> The darkest brown dwarf at the distance of Jupiter would be as bright as Betelgeuse

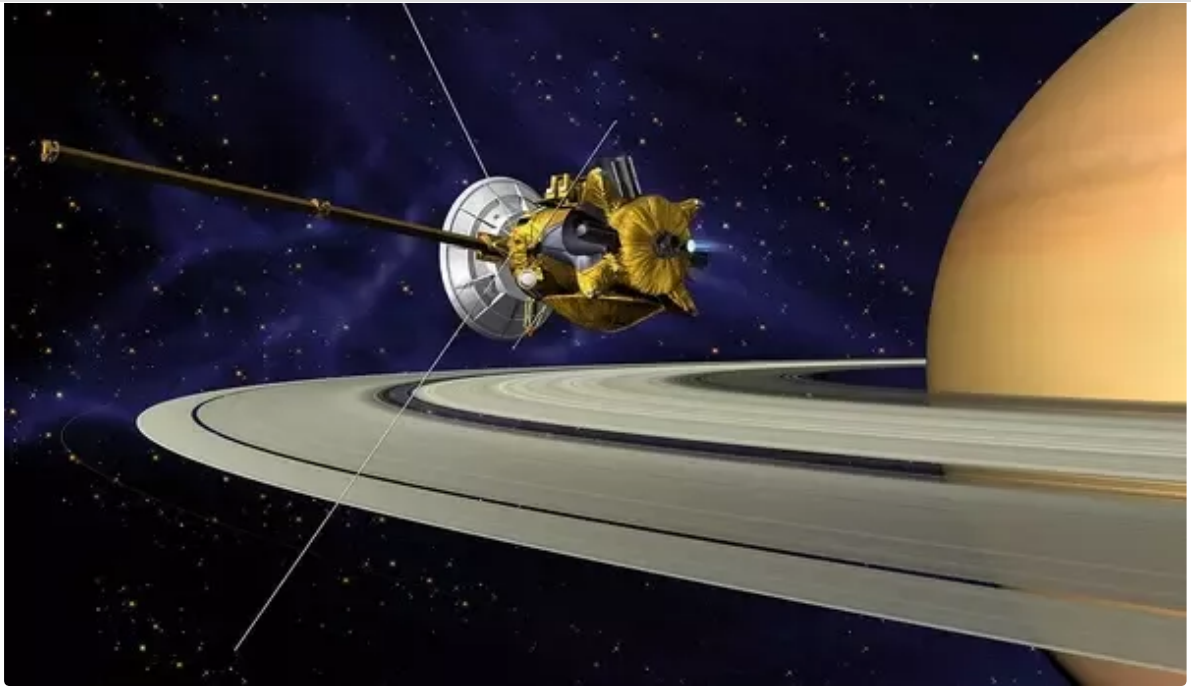
theoretical idea - there is some evidence for it but the evidence is interpreted in different ways and there are man experiments searching for it, but so far with no success. It may well exist but if so, it is very hard to spot.

The idea of dark matter is main stream, many think it is possible. But it's hard to see how dark matter could form planets. Ordinary matter can "stick together" with friction and electical effects - but dark matter only interacts with ordinary matter, and itself too, gravitationally. So how could it stick together to make a planet? There is no way for it to lose energy. All it can do is to annihilate itself creating energy. There is this rather far out idea that dark matter could heat up planets far away from any star in areas that have very high concentrations of dark matter (if it exists) like the center of our galaxy, Dark matter could make planets habitable But - that's a halo of dark matter gravitationally interacting with an existing planet. There is no way for it to form planets, see Does Dark Matter Form Dark Planets?

However we can look at this in a more general way. Instead of dark matter as understood by theorists, let's look for any form of matter not yet known including asteroids, gas clouds, as well as the hypothetical "dark matter". So it's also relevant to things like "Nibiru".

Any matter inside of Saturn would be easy to spot from its gravitational effects on Mars, Saturn and the Earth. The reason they chose those three planets is because we have had Cassini in orbit around Saturn for years, and many spacecraft sent to Mars, and of course with Earth also - it means we have very precise measurements of their position in their orbits going back many years now.

Then, taking account of the effects of all the known matter in the solar system, they concluded that we are missing less than a seventh of the mass of Ceres. Ceres is in turn less than 1/78 of the mass of the Moon.



> Artist's impression of Cassini's Saturn Orbit Insertion . Cassini is currently orbiting Saturn and has done so for many years. We have very accurate distance measurements to our spacecraft around Saturn, Mars, Jupiter and other places.
>
> To explain their observed positions exactly we have to take account of all the known matter inside of Saturn's orbit of any size, even many of the larger asteroids. If there was as much as a seventh of the mass of tiny Ceres missing in that entire region, we'd notice the effect on the positions of our spacecraft which are exactly where they are predicted to be.

To put it another way, if you had an asteroid with same density as Ceres, with this amount of mass, then its diameter would be 950*cube root(1.17/8.958) km or about 480 km in diameter.

That's an upper bound, so we probably don't have as much missing mass as that, and what there is that's missing is probably in the form of small asteroids as we know there are lots of small asteroids still to be discovered.

So there are certainly no planet mass objects inside of Saturn that we don't know, or our spacecraft's orbits would be influenced in ways we could detect easily.

For more on this see Constraints on Dark Matter in the Solar System but it's a bit techy so for an explanation of it in detail see my "Imaginary Bullshit Planet" Nibiru - Lens Flares, Sun Mirages, Hoaxes & Just Plain Silly

The other issues with a planet massed object in the solar system also apply. A planet's orbit just can't be stable over a millions of years timescale. Either it's orbit or our planet's orbits would have been disrupted billions of years ago.

For more about this see Debunked: Nibiru will hit Earth on [Insert Date here]

290 views · Posted Oct 29, 2016

Upvotes 0 Comment

Debunked: A planet in a 3600 year orbit can hide behind the sun for years on end

Robert Walker

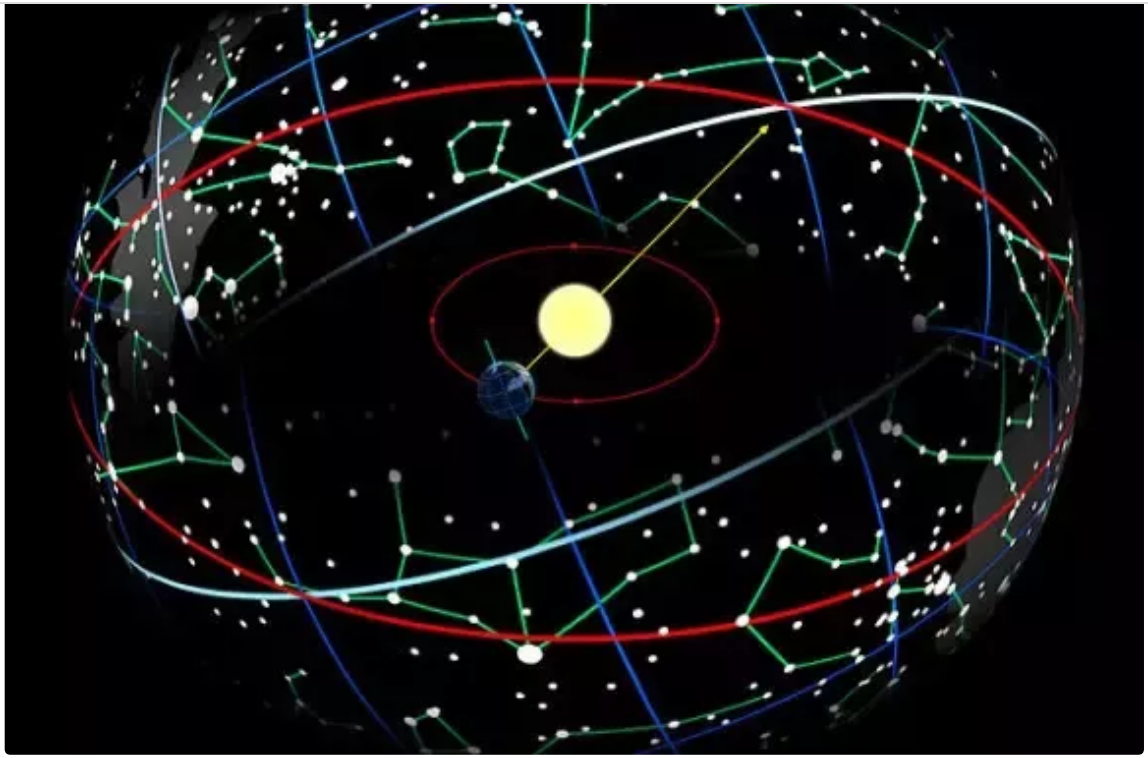
years - since after all they have been saying that it is hidden behind the sun since 2003. Actually, a planet or comet in a long period orbit like Nibiru can only hide behind the sun for about one month of each year during its many years long approach to the Sun or Earth.

For many reasons why the whole idea of Nibiru is just BS, see Debunked: Nibiru will hit Earth on [Insert Date here]. But here we will just look at this idea that it can hide behind the sun.

To understand why this particular idea in their belief system is nonsense you need to know that the sky is divided up into constellations, which are rather like countries on a map of the Earth, but in the sky. Any celestial object, including the Sun, has to be in one of those constellations.

Because the Earth spins, the stars seem to cross our sky once every day. And because the Earth orbits the Sun, the Sun seems to move against the fixed stars once a year. You can confirm all this with your own eyes easily by tracking the sky through the year.

The Sun only hides one constellation of the zodiac each month.



You can find out which constellation it is in for any month from this EarthSky page.

Dates of sun's entry into each zodiac constellation | EarthSky.org

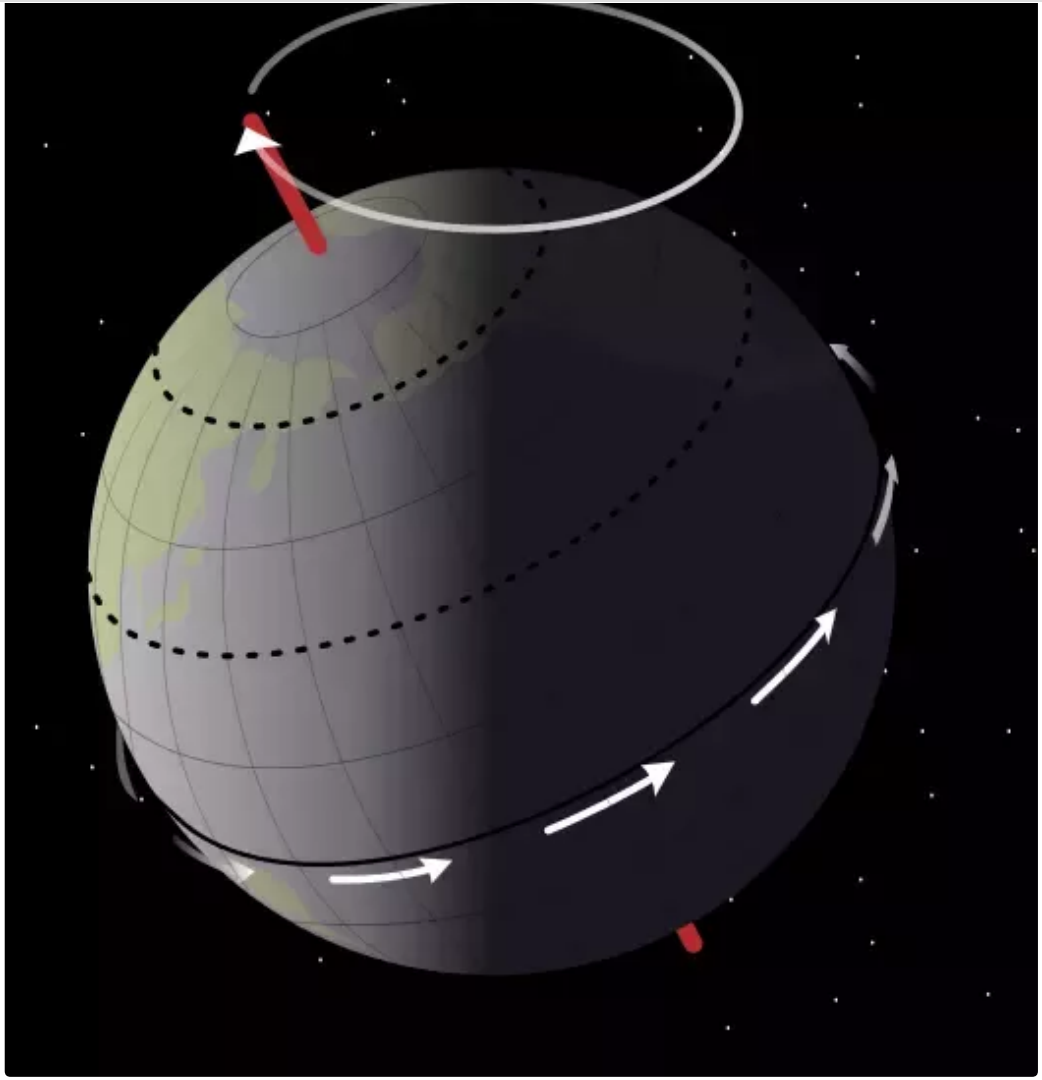
Those dates are for 2015, but the pattern is the same each year, you"ll be at most a day or so out if you use those same dates for 2016.

ASIDE ON THE CONSTELLATIONS - WHY THE ASTRONOMICAL CONSTELLATIONS DON'T MATCH THE ASTROLOGICAL ONES

By the way, the constellations there don't match the ones used in Astrology. The constellations

Zodiac). *B*ut it is in the astronomical constellation of Virgo Sep 17 to Oct 31,

The reason for this is because first, the astrologers divided the sky into twelve equal parts, so the astrological signs never matched with the star groupings exactly anyway, and they also ignored Ophiucus. Also the Earth's axis slowly changes direction tracing a circle in the sky, the phenomenon known as precession of the equinoxes.



> Axial precession . The Earth spins around its axis but the axis itself traces out a small circle in the sky over a period of 26 million years. This changes the position in its orbit where each hemisphere experiences its longest and shortest days, and the position of the equinoxes

> becomes one that hides behind it in autumn, then winter, then spring, then 26,000 years later it gets back to its original position as a constellation that hides in summer. Virgo has shifted in this way by nearly a month towards autumn as a result of precession of the equinoxes since the system of astrology was first developed. Astrologers however continue to use the old divisions. So if you were born with the sun “in Virgo” according to astrologers, actually it is more likely to be “in Leo” according to the astronomers.
>
> For details about all this from the viewpoint of astrologers, see Ophiuchus – a 13th Zodiac Sign? No!

So, as of writing this, end of October, the sun is in Virgo. That means you can’t see anything in the constellation Virgo right now, and Libra, the next constellation in the list, is an early evening constellation, indeed, because the sun is about to pass int Libra, it is also pretty much hidden from view. The previous constellation in the list, Leo is an early morning constellation.

HOW TO FIND THE CONSTELLATION WHICH IS IN THE SKY ALL NIGHT

To find the constellation which is in the sky all night, you want the one diametrically opposite Virgo, six months earlier, and that’s Pisces. So right now, Virgo is hidden, also Libra (most of it), and Pisces is visible all night.

All the other constellations of the zodiac are visible some time during the night.

You can check this out by looking at a star chart for your region. Here is the star chart for the UK, typical for the Northern hemisphere. UK Sky Chart - Astronomy Now

Try setting it to different times of the night for today - and different times of the year, to see which constellations are visible when. It is easy then to check with your own eyes that these star charts are accurate - go out any time of night and just check that what you see is what is shown

> **In detail,** right now, then Pisces, Aquarius, Capricornus, Sagitarius and Ophiuchus are all visible at 6 pm where I live. Libra is in bright twilight at 5 pm.
>
> By 5 am, Aries, Taurus, Gemini and Cancer and Leo have joined Pisces in the sky and Aquarius, Capricornus, Sagitarius and Ophiuchus have set.
>
> So of the thirteen constellations of the zodiac (including Ophiuchus which for some reason astrological star charts don't mention), Pisces is visible all night, so if a planet was in that constellation you'd see it all night.
>
> In fact Uranus is in Pisces right now so if you have a good telescope you can see it all night. It will be hidden behind the Sun for a month or so six months from now.
>
> Jupiter is in Virgo so is currently hidden from view. But it won't be hidden for long, and six months from now, it will be visible all night.
>
> Neptune is in Aquarius so is an evening through to early morning object at present. It will be hidden behind the Sun in February, and visible all night in a good telescope six months later, in August.

All planets in long period orbits behave like this. They are hidden for one month of the year, are visible as either evening or morning objects for the remaining eleven months, and they are visible all night six months after the month when they are hidden.

COMETS ARE VISIBLE NEARLY ALL YEAR ROUND TOO

We don't get planets like Nibiru because it just doesn't make sense as a planet, at this stage in our solar system, billions of years after its formation for all the reasons explained in Debunked: Nibiru will hit Earth on [Insert Date here]. But we often do get comets in similar orbits and they are visible nearly all year too, apart from about one month of the year.

19th October 2014

> Artist's impression of Siding Spring doing a close flyby of Mars on 19 October 2014

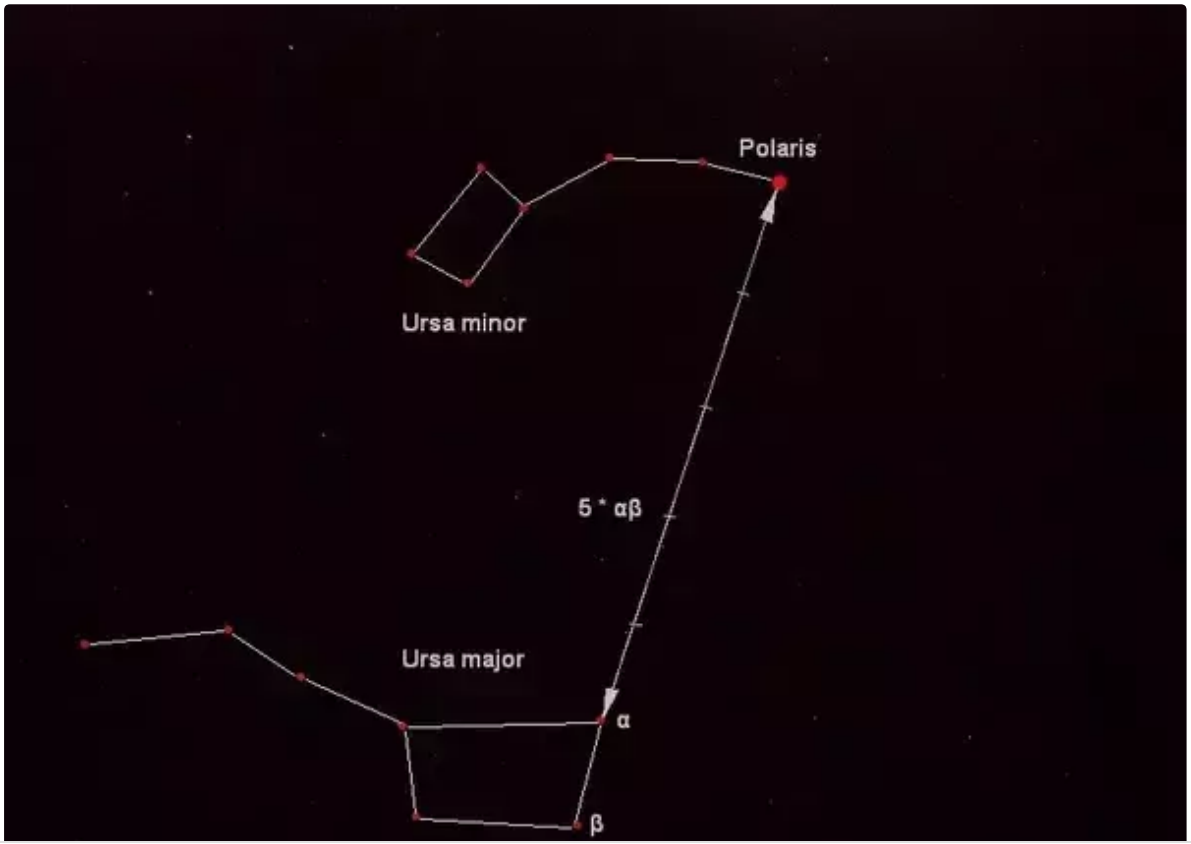
It is a small 400 - 700 meter diameter object and was discovered 7.2 au away from the sun in the constellation Lepus, or further away than Jupiter. It was discovered well over one and a half years before its flyby of Mars. A comet would take longer than that to reach Earth. And that's a tiny comet. One as big as say 10 km in diameter would be discovered several years before its flyby of Earth or Mars.

So the idea of even a comet hiding behind the Sun for years on end before a flyby of Earth just

WHAT IF IT APPROACHES FROM THE NORTH OR SOUTH?

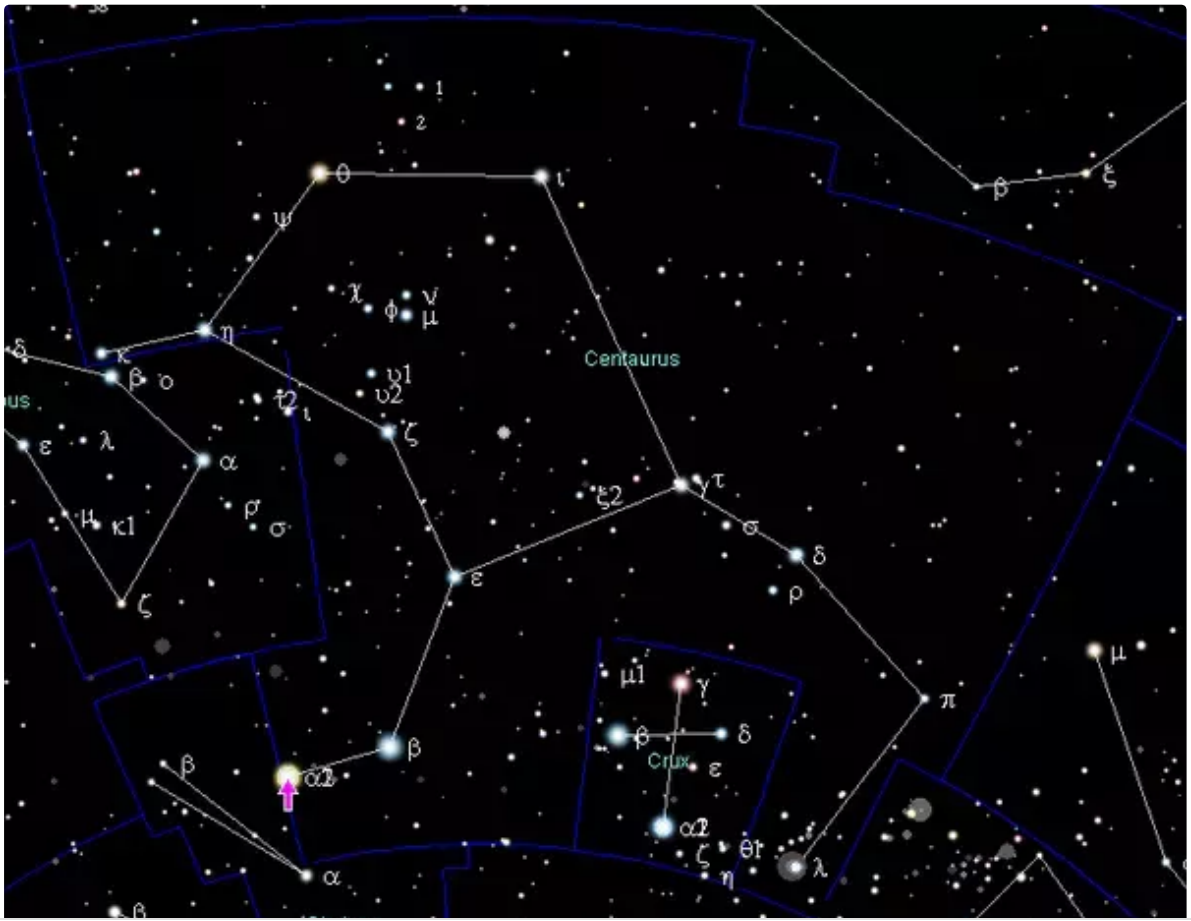
Sometimes people will say - “Aha - but what if it approaches from the North or the South - can’t it hide then”.

No, that just makes it worse. If it approaches from the North pole for instance, then it will be in the constellation Ursa Minor so is visible all night every night of the year in just about the entire Northern hemisphere.



If it approaches from the South pole, then it is in the constellation Octans which is visible all night all year round throughout most of the southern hemisphere

The new Earth sized planet that was announced as discovered indirectly around Proxima Centauri actually was found near the south pole, in the constellation Centaurus not far from the southern Cross.



> southern hemisphere (except right close to the equator) can see Alpha Centauri with naked eye on a clear night, every night of the year.

Similarly a planet (impossible) or a comet (can happen) approaching from a direction close to the South pole would be visible all year round, any clear night, throughout all of the southern hemisphere apart from regions close to the equator

WHAT IF IT TRAVELS FASTER THAN MOST PLANETS OR COMETS

First, the Nibiru people have been saying that it is hiding behind the sun since at least 2003.

But anyway, there's a maximum speed at which planets or comets can approach the sun. They can't go faster than the solar system escape velocity, or they would no longer be bound to the Sun and would head off into interstellar space and never come back again (this happens sometimes to comets that come into the inner solar system just a bit too quickly).

Here is a List of hyperbolic comets here - a comet through perturbations of the planets can end up going a bit faster than solar system escape velocity - and as a result it gets ejected from our solar system.

If it is gravitationally bound to our sun, as a planet in a 3600 year orbit would be, it has to take at least a decade to get from beyond Neptune to the Earth / Sun (that's how long the New Horizons spacecraft took to get from Earth to Pluto traveling at faster than solar system escape velocity).

WHAT IF IT DOESN'T HAVE A REGULAR REPEATING ELLIPTICAL ORBIT LIKE THE OTHER PLANETS

The Nibiru enthusiasts say that Nibiru has been hiding behind the sun for years, which means

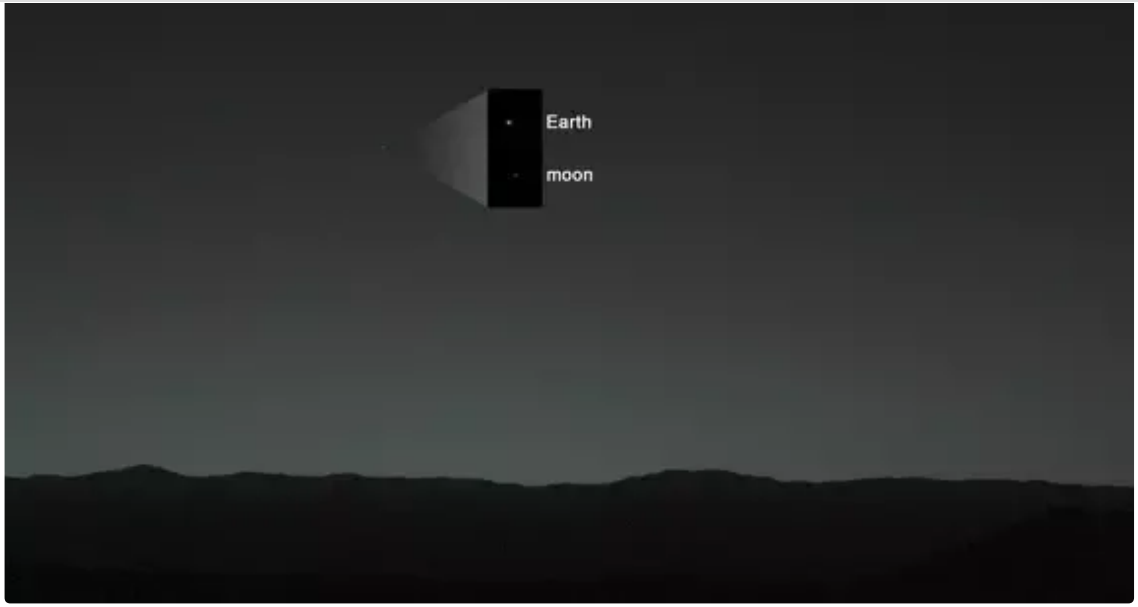
tear up all our understanding of gravity. This is why Brian Cox, famous UK astronomer and particle physicist - our equivalent of Neil deGrass Tyson, so memorably said

> If anyone else asks me about "Nibiru" the imaginary bullshit planet I will slap them around their irrational heads with Newton's Principia" - tweet by Brian Cox

Newton's Principia is his great work where he demonstrated that the inverse square law of gravitation could explain the motion of all the planets. With some minor tweaks and refinements due to General Relativity, which mainly affect Mercury, every planet, comet, asteroid, minor planet, follows the laws Newton outlined in his Principia.

Basically to stay hidden behind the sun it needs some kind of an engine to drive it like a spaceship.

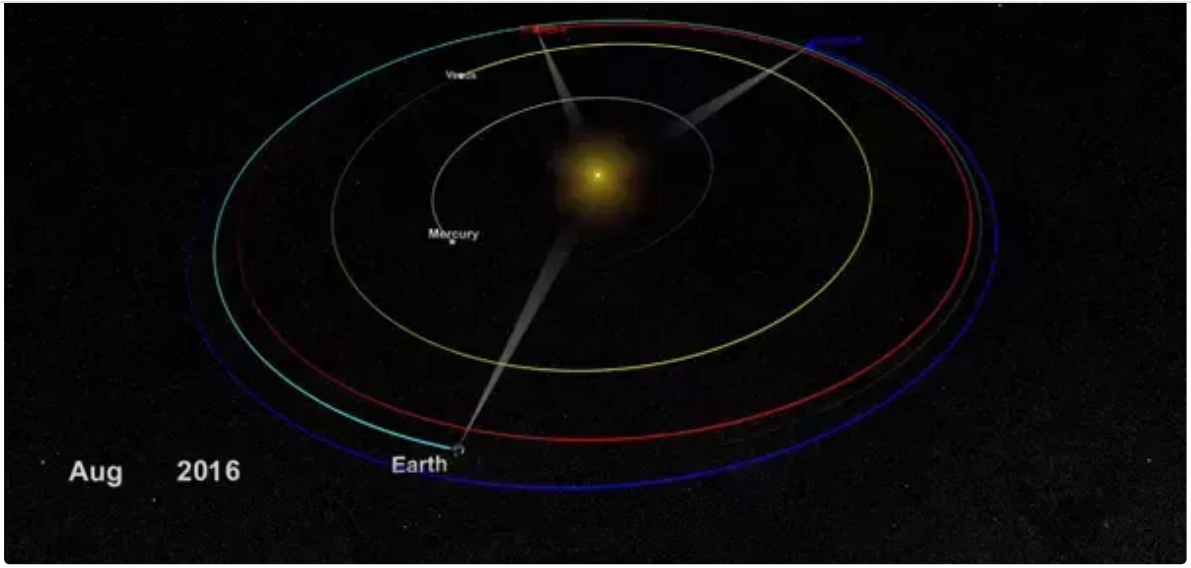
We also know that there is no planet sized alien spaceship doing that either, as we do have several spacecraft the other side of the Sun. Mars for instance is often the other side of the Sun and our spacecraft on the surface take photographs of the night sky from time to time.



Curiosity’s first photograph of Earth and Moon, photograph taken shortly after sunset

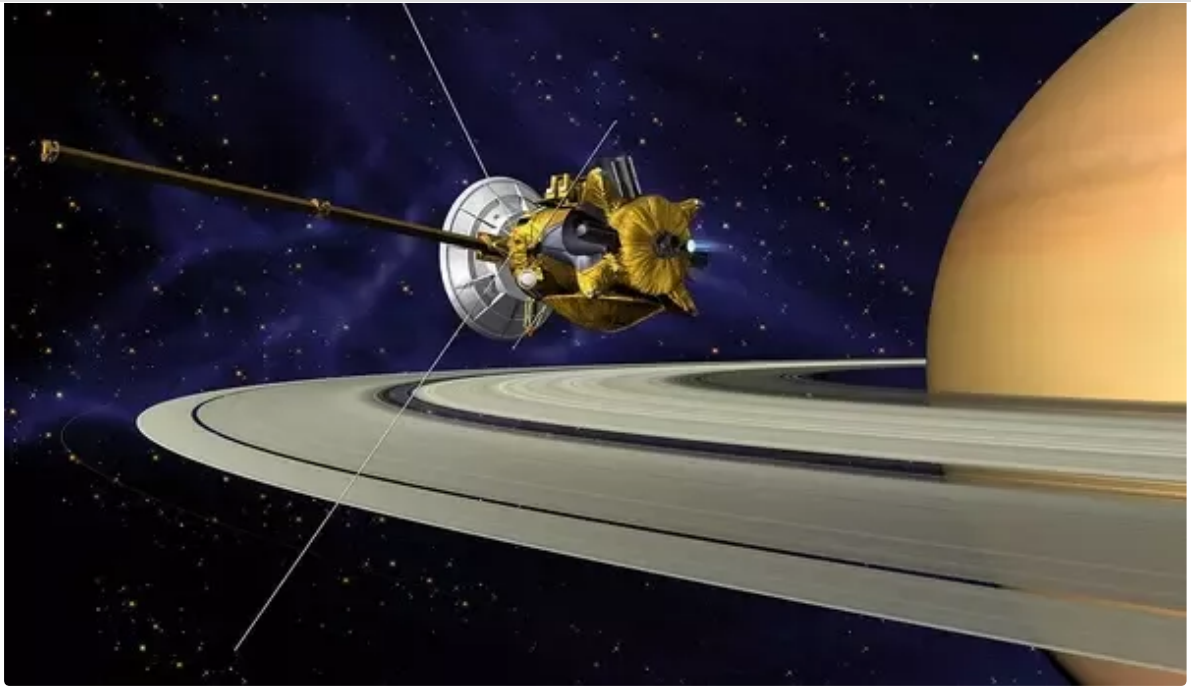
Here is another photograph of the night sky with sun just below the horizon, from the surface of Mars. You can see Earth, Mars' moon Deimos, and Mercury. These photographs never show Nibiru. No planet sized alien spaceship there :).

Also we have two telescopes, Stereo A and B which are currently on the other side of the Sun from us looking towards the Sun.



NASA lost contact with one of them for a year due to a mishap as it passed behind the sun but has re-established contact now NASA Reestablishes Contact With STEREO-B

But as well as that, we know that it is impossible for there to be a planet sized mass anywhere inside of Saturn's orbit as it would have perturbed our spacecraft's orbits noticeably. Indeed the total amount of missing mass in that region is less than a seventh of the tiny Ceres which in turn is a seventy eighth of the mass of the Moon. We probably don't have as much missing mass as that, and what there is that's missing is probably in the form of small asteroids as we know there are lots of small asteroids still to be discovered.



> Artist's impression of Cassini which is currently orbiting Saturn and has done so for many years. We have very accurate distance measurements to our spacecraft around Saturn, Mars, Jupiter and other places.
>
> To explain their observed positions exactly we have to take account of all the known matter inside of Saturn's orbit of any size, even many of the larger asteroids. If there was as much as a seventh of the mass of tiny Ceres missing in that entire region, we'd notice the effect on the positions of our spacecraft which are exactly where they are predicted to be.

For more on this see the second half of Debunked: Nibiru is invisible because it is a brown dwarf and "only shines in infrared" - FALSE - or made of dark matter

Debunking: Think how stupid you will feel if Nibiru is real

Robert Walker

I get this often, people say - what if it is real, won't you all feel so stupid?

Well that's like someone saying to me "What if it turns out that you have had a cow in your kitchen all your life and you never noticed, how stupid you will feel?"

Yes I would feel very stupid if I suddenly found a cow in my kitchen which had been there all my life, for sure. But it ain't going to happen :).

And instead, think how stupid you will feel, 20 years from now, if you've been scared of Nibiru for twenty years and nothing happened.

It might help to hear this account of someone who used to be very scared of Nibiru, upturned their entire life as a result, and then gradually realized that they had been had by a hoax. An intelligent guy too, a computer programmer, used to logical thinking, he talks about how that logic went out of the window once he got so scared of Nibiru.

See also I understand that Nibiru is not real but still feel scared all the time - what can I do?

And for why astronomers are sure that Nibiru is just nuts, see

Debunked: Nibiru will hit Earth on [Insert Date here]

Debunked: NASA has been tracking “Planet X” for decades

Robert Walker

"Planet X". The "X" there stands for unknown.

> Planet X, a planet he thought existed beyond Neptune,
>
> The idea wasn't a daft one. Neptune was discovered by a mathematical analysis of the orbit of Uranus.
>
> But it turned out that his theory was incorrect. Clive Tombaugh continued the search after he died and found Pluto 14 years after his death, but later on when Pluto's moon Charon was discovered and they calculated the mass of Pluto, it was too small to be his planet X.
>
> Since then, by tradition, astronomers refer to any hypothetical undiscovered planet beyond Neptune as "planet X". The X there stands for "unknown", not the Roman numeral X for 10, after all Pluto the ninth planet, as they thought of it then, was planet X before it was discovered. If astronomers refer to planet X this means it has not been observed at all. So no, NASA have not been tracking planet X. If any of these get proved to be real, it will be given a name, like Pluto, and the X means it is not known to be real yet.
>
> Percival Lowell's three early searches for Planet X
>
> Though they didn't call it "Planet X" the search for planets beyond the ones we know goes back to Urbain Le Verrier in Paris and John Couch Adams who predicted Neptune in 1845. So you could say that Neptune was the first "Planet X". So astronomers have been tracking "planet X" since September 23–24, 1846

The Nibiru enthusiasts take all these hypotheses, no matter what the orbit, even Nemesis which if it existed would be more than a light year away in a very distant orbit around the sun - they say they are all the same planet and are in fact Nibiru in a 3600 year orbit crossing the path of all four gas giants, an astronomically absurd orbit for a planet, that can't be stable for as long as a million years.

They often elaborate the story by saying that Robert Harrington discovered planet X in 1983 and was murdered by NASA or by the government, in order to hide his discovery from the general public.

The truth is that Robert Harrington did indeed hypothesize a planet X beyond Neptune. But six months before his death, Myles Standish used new data from the Voyager 2 flyby of Neptune. As a result the mass of Neptune was revised downwards by 0.5%. The data he had been using to hypothesize planet X depended on a more massive Neptune and when you redo the calculations with Neptune a bit lighter,the need for planet X vanishes. See Planet X - no dynamical evidence in the optical observations

Myles Standish's article was published after Robert Harrington's death, but submitted long before it and Robert Harrington would have known that his theory was disproved when he died.

And we know for sure that he was not murdered. He died of cancer of the throat. His obituary is here: Bob Harrington Obituary - that's the more detailed obituary from his observatory. The NY times obituary is here, just says he died of cancer: Robert Harrington, 50, Astronomer in Capital

So, the reason that Nibiru conspiracy theorists are able to say that astronomers have been searching for Planet X since the 1980s, is because they first identify "planet x" with Nibiru even though all the planet X searches are for planets with orbits beyond Uranus and the Nibiru idea is for a planet that crosses the path of all the four gas giants, an impossible orbit not stable for a million years.

They then treat "planet X" as a single real planet although there were many different planet X searches, most of which have been proved not to exist. The idea of searching for planets beyond the ones known at the time goes back to 1845 with the search for Neptune. So you could say

Debunked: Every time we have a cluster of earthquakes, we must have a planet approaching Earth to cause them

Robert Walker

We have just had two major earthquakes in Italy on the same day - Italy earthquakes: Strong tremors shake central region - BBC News - whenever we get a cluster of earthquakes I get the question - does this not prove that Nibiru exists?

That's a fallacy called Affirming the consequent - Wikipedia

> If someone owns Fort Knox , then he or she is rich .
>
> Bill Gates is rich.
>
> Therefore, Bill Gates owns Fort Knox.

There are many other ways to be rich.

Because of this “prediction”, every time we get a couple of earthquakes on the same day, or a few major earthquakes within a couple of days, the Nibiru enthusiasts all start chattering away saying that this means Nibiru is on its way and about to hit Earth.

So their reasoning is

> If Nibiru exists, there would be clusters of earthquakes
>
> We have just had a cluster of earthquakes
>
> So Nibiru must exist

There are many other reasons for earthquakes. Also, they often cluster together, either through chance, so many earthquakes every year some are bound to happen within hours of each other, or if they are close together, one can trigger another or they can both be caused by the same thing, e.g. movement of some sort.

A FLYBY WOULDN’T CAUSE EARTHQUAKES ANYWAY

So, the Moon (nearest thing we have to a planet doing a flyby of Earth) causes tides. Our Earth is quite squishy on the large scale and it deforms this way and that every day - the tides go all the way around the Earth once a day. The sea tides we all know about, but smaller "earth tides" too. The Sun raises tides but only because it is so absolutely massive, and it doesn't cause earthquakes either, and its tides are smaller than the Moon's.

The Moon may cause some of the larger earthquakes to be larger than usual, a recent study suggests - every full or new Moon. So that’s every 14 days. Moon’s pull can trigger big earthquakes

The idea of a planet doing a flyby of Earth is nonsense anyway in our solar system. But in some other solar system or in the early solar system when planets did do close flybys of each other, they would have raised tidal bulges but only when so close they would be big easy to see visible disks in the sky. And not disks that appear and disappear according to whim as if hidden in a "star trek invisibility cloak".

So even a huge planet unless it came very very close, would not cause earthquakes. It would cause tides first, before it could trigger Earthquakes. We don't have any unexpected tides.

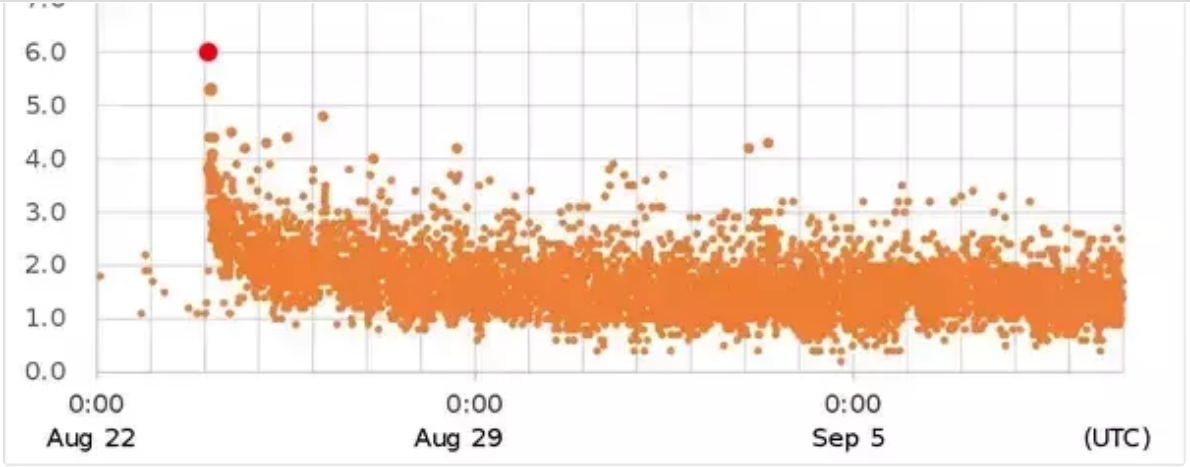
Earthquakes on Earth, the ones of any size, are usually the result of continental drift, or of volcanic eruptions, motion of magma etc. And the sun or moon don't do things like that to our Earth. It's driven from the interior by the excess heat in the interior finding its way to the surface

WHY DO WE GET CLUSTERS OF EARTHQUAKES?

Well first, you get earthquake swarms, lots of earthquakes all triggered by the same cause, but not related.

Earthquake swarm

You also get earthquakes that trigger each other, aftershocks. This shows the aftershocks of the magnitude 6 earthquake in Central Italy on August 22ns of 2016.



> 2016 Central Italy earthquake (magnitude) - by Phoenix777

BIRTHDAY PROBLEM - WE WILL GET CLUSTERS ANYWAY BY CHANCE

Then, the total number of earthquakes per year is much more than you might think. The number of magnitude 6 or larger earthquakes per year, on average is 120. Earthquake Statsitics - Statistic Brain

That means that there's a magnitude 6 earthquake every three days on average somewhere in the world. But that doesn't mean that they happen equally spaced every three days. If you have only 23 events in a year, there is a 50/50 chance that you get two of them on the same day, that's the Birthday problem . That's much higher than the chance that one of 23 people has their birthday on the same day as you.

With 70 events then it is a near certainty, 99.9% certain that you have two of them on the same day at some point in the year. It's also very likely that you have three or more on the same day at some point in the year.

However if there is a magnitude 6 or larger earthquake that actually kills many people or causes damage to buildings then reporters for a few weeks will tend to report every magnitude 6 earthquake in the world, so then you get the false impression that suddenly we are seeing more earthquakes than usual. It is just that more are getting reported than usual. If you have friends in earthquake prone regions they may tell you about earthquakes too, tremors that shake their house, say, when normally they wouldn't mention them as they are an everyday occurrence for them.

Debunked: This is a photograph of two suns

Robert Walker

It’s certainly very striking to look at :).

I thought surely it must be a photoshop fake, - no natural phenomenon I can think of and it’s not a camera glitch evidently.

But it turns out it is a genuine photo. Just not a photograph of a second sun.

One of the best and most puzzling double sun photos I've seen. Can you figure out what it is before I reveal the answer? I’ll add in some space so you need to scroll down to see the answer.

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ANSWER

It’s the reflection of the sun off a glass building in Manhatten :). Photo taken from a kayak I think.

> All those glass buildings have their uses. ;)

and here: But I Saw It on the Internet… where the author, Vladimir Brezina , explains that after releasing this photo in 2015 they got thousands of visitors intitially from Malaysia, searching for pictures of two suns:

“Needless to say, this makes no sense whatever, and our picture just shows the sun’s rays reflected off the glass wall of a building… “

Here is a zoom in on the high resolution version of the image to prove it:

Vladimir Brezina has lots of other striking and lovely photographs. Many are of kayakers in the sea next to New York, or are taken from close to sea level height, as from a kayak.

feel scared all the time - what can I do?

Robert Walker

That's normal. The people who contact me about this often feel scared for a fair while after they realize intellectually that it is nonsense.

The best thing to do, once you are sure it is nonsense, is to just stop clicking through to read the stories. They have an effect like propoganda, or like advertising, especially as they also use stirring music, a lot of them, and impressive sounding voice overs and images that you find impressive. All this works on you and if you don't have the astronomical background to see that it is just BS, then you come to get scared just through repetition. You can come to believe things that common sense would tell you is nonsense such as that we have two suns, just through repetition like that. If you stop clicking through, then they will gradually disappear from your feed. You can also do other things to help.

You may get a false impression if you tend to click through to read stories like that, because Google adapts to your personal preferences, if you are logged into a google account at the time, and it does that even if you are logged out too. So you may well get many more stories about those things appearing in search results than most people. Normally these stories just don't turn up at all in normal searches unless you search for them explicitly.

You can deal with that if logged in by clearing your web search history or just pausing it, and if logged out, you can disable the feature to use your logged out search history to customize searches.

Of course this may mean that you get more search results that don't interest you in other topic

The information there though is out of date. When signed out you go to

https://www.google.co.uk/history...

to opt out of personalized searches

and when signed in, you go to https://myaccount.google.com/act... which lets you pause youtube search history (using the blue slider) and also Web and App activity. But I don't think that will deal with this issue (correction, sorry, earlier version of this page said it would).

If you want to make a complete fresh start, you can delete your search history. This means that for a while your searches of course won't be tailorized to your preferences. It also means you can't use the search history to find videos you watched before you deleted it.

You should then just see normal search results without these stories like everyone else who has not got caught up in this.

You don’t need to delete your search history though, if you need to keep it.

Tiy don't need to do anything except to just stop clicking through and over a period of time, they will disappear from your search results as you show that you are not interested in them.

Also if you get scared about such things easily, I recommend that you don't visit "Before It's News" because that's a notoriously conspiracy theory slanted site where anyone can post anything with no vetting and no checks at all about whether they are truthful or if the whole thing is just made up for clicks.

On facebook, you can customize how it prioritizes stories for your news feed. You can also click on the menu at top right of any story in your news feed and choose to hide it and to show less of this type of story.

YOUR DOCTOR

If you are scared all the time, or a lot, as happens so often to many of the people who contact me, it's also definitely worth seeing your doctor if you haven't already.

As an example of the sort of thing many people nowadays have generalized anxiety disorder, just tendency to be anxious all the time. If so, there's a lot they can do to help - self help, cognitive behaviour therapy, meditation, medicine which help with the serotonin levels in your brain. Details here: Treating generalised anxiety disorder.

Some of the people who contact me about these fears find it helps to visit a doctor so it may be worth a try. Gets you over the difficult rough patch when you are just scared all the time, to get

Surely we all know of examples when we were afraid of things that were not dangerous to us. One of the funniest is when young children become afraid of their own shadows.

As another example, probably not the same thing at all but as an example of how we are dependent on our bodies, and how you shouldn't believe that you are going to die just because suddenly you feel convinced that you are about to die - you can become totally convinced you are about to die if you get stung by a particular tiny jellyfish the irukandji jellyfish

> Small box jellyfish, possibly Carukia barnesi , one of the jellyfishes responsible for irukandji syncrome. Photo Carukia barnesi - by Forgez Wikipedia (there are many other photos of Carukia barnesi but I can't find one right now that has a suitable sharing license tp include here)
>
> You can read the story of its discovery here: Irukandji Jellyfish. Carukia barnesi

This jellyfish is not dangerous to most people, if you get out of the water and get treatment, but for some reason people who are stung by it become convinced they are going to die, although they don't.

See Apparently There's a Jellyfish Whose Sting Causes Feelings of Impending Doom

You can get a similar feeling if you eat too many nutmegs, like huge numbers of them. See feeling of impending doom .

INTERVIEW WITH A FORMER NIBIRU BELIEVER

It might help to hear an interview with a former believer who managed to work through the

You are also of course welcome to talk to me, via the comments threads on any of my articles, and if it helps to contact me via pm you can contact me via my profile page on Quora. It is easy to join and then you should see an option there to message me.

SUPPORT NETWORK

There are several facebook groups too where you can post for feedback from knowledgeable people who will help debunk a video or image you have seen which scares you:

- Dazzathecameraman
- Voices Of Reason To Explain X - V.O.R.T.E.X
- Cosmophobia

You can also join our new and lively

- Doomsday Debunked Facebook group

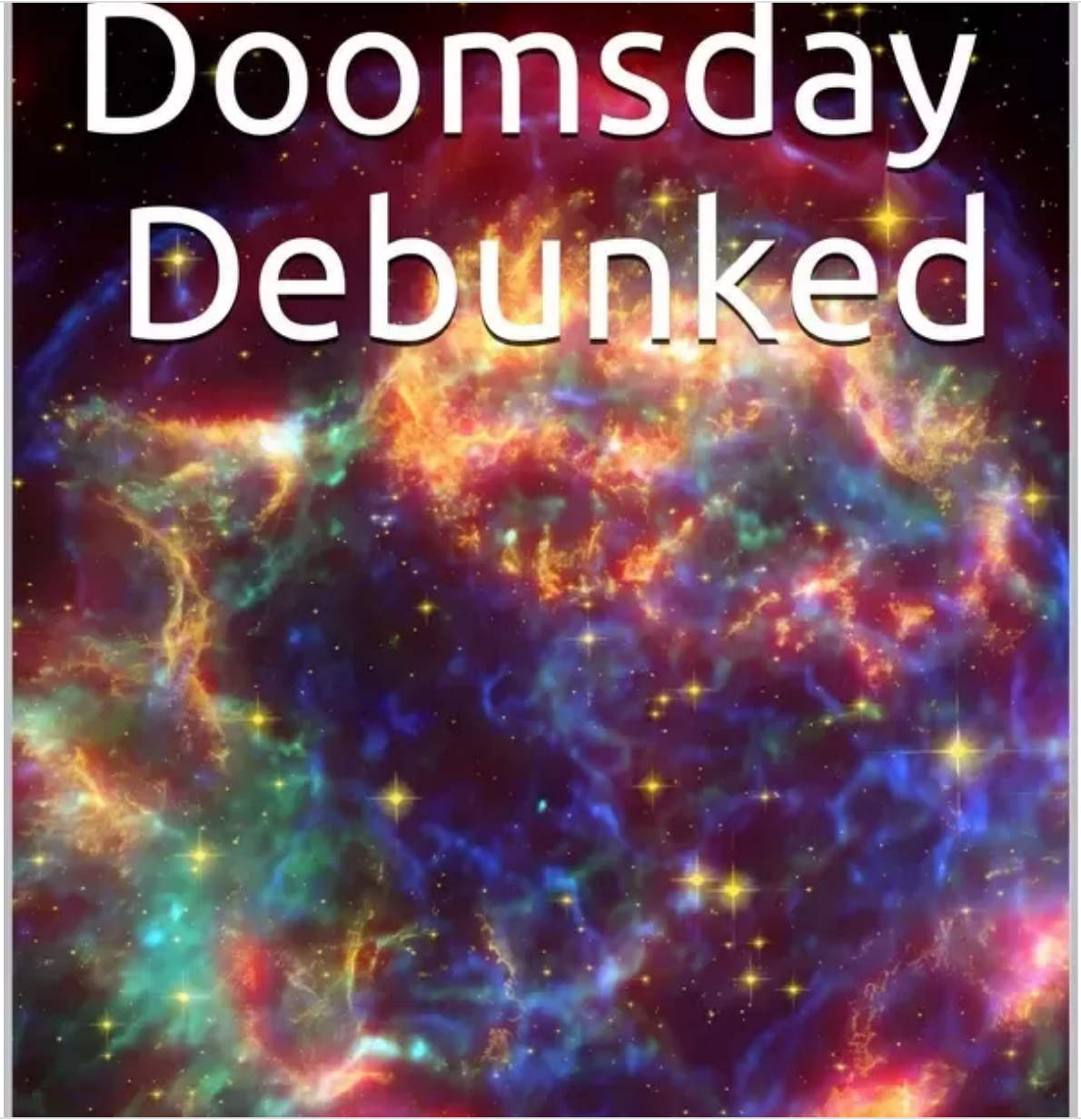
See also Where can I get support if I'm scared of Nibiru / Doomsday maybe even suicidal?

225 views · 1 upvote · Posted Oct 26, 2016

Upvotes 1 Comment

Doomsday Debunked Kindle Book Draft Cover

Just done a cover draft for my Doomsday Debunked book which I hope to write some time in the next week or two.


Doomsday
Debunked

> The cover shows Cassiopeia A - Wikipedia , a supernova remnant approximately 11,000 light years away.
>
> A blurred out version of this image is sometimes used as the cover picture for Doomsday Stories, though it is of no conceivable threat to Earth. The stories generally don't explain why they are using a blurred out image of Cassiopea A.
>
> The blurred out image actually originated as an image for a story for the Big Rip theory,, where it is tangentially related because distant supernovae were used as data for that theory. It is of absolutely no danger to Earth.

I've got lots of material, and the draft outline for the book is here:

Debunking Doomsday - Nibiru, Pole Shift, California falling into the sea, Supervolcanoes, black holes, ... - idea for new online / kindle book. by Robert Walker on Science 2.0 posts

Draft preface:

> "Humans have a great tendency towards hyperbole - vivid exaggeration to get a message across, or to make a story more vivid. We get bombarded by so many doomsday scenarios in the press and in youtube videos. Some are scientifically plausible, and some are just hoaxes

> "In this book I go through them all and examine them closely. The aim is to find the truth behind the stories, unexaggerated, just present them as is. I think there is plenty that we do need to be concerned about, such as climate change, extinction of species, environomental degradation, human rights and so on.
>
> Exaggerated ideas of future doom distract us from real challenges which we can actually do something about. They also lead some people to be really scared and in some cases even suicidal. There is no need to be scared of this at all, as I hope will become clear as you read the book.
>
> I've written this book and also did my many online doomsday debunking posts as a result of hundreds of comments and personal messages by scared people who ask me to debunk one or other story of the end of the world.
>
> "All proceeds from the book will go to suicide prevention charities. At present the plan is to donate them to Befrienders International.."

149 views · Posted Oct 26, 2016

Upvotes 0 Comment

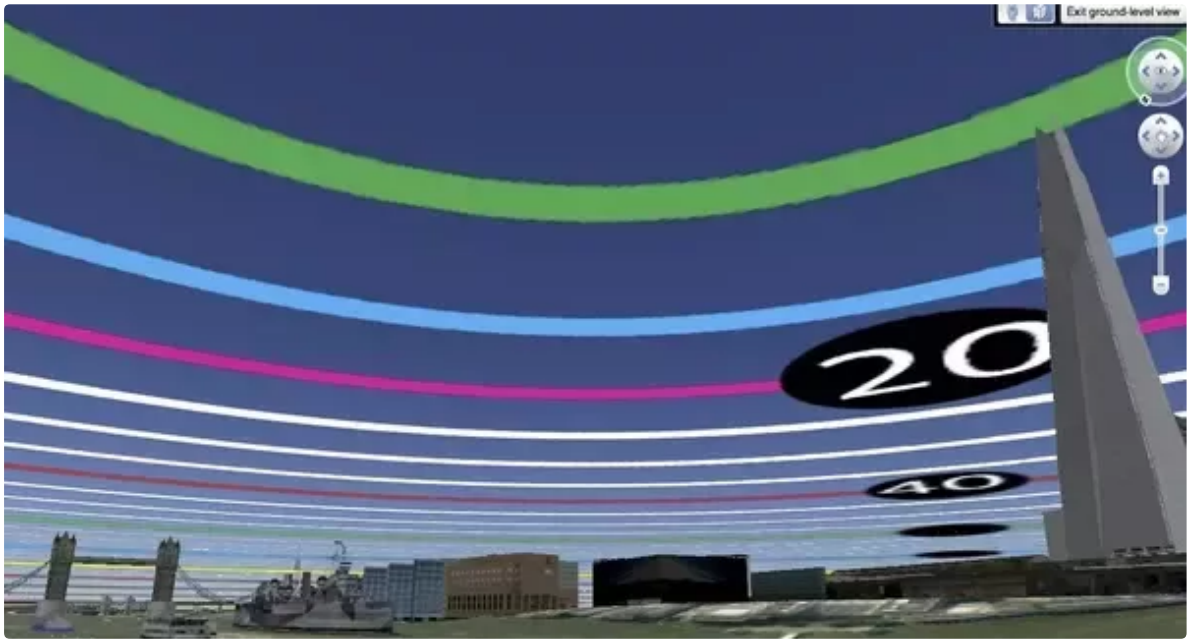
Debunked: The government is deliberately flying planes back and forth in front of the sun

sunrise and sunset?

Robert Walker

If you live in a place with many planes flying around, you may notice that at sunrise and sunset, you get lots of planes flying back and forth in front of the sun obscuring it with vapour trails. For those who buy into the Government covering up Nibiru conspiracy idea, it's quite natural to then wonder if somehow they are doing this to obscure the sun.

This image helps to explain what is going on here



Those are equally spaced circles five kilometers apart at typical heights that jet planes fly, superimposed on Google Earth. Discussion here .

You often notice this effect with clouds. If there are clouds dotted over the landscape evenly, with big gaps in between them, the sky is likely to be clear overhead - but as you look in the distance the clouds seem to get closer and closer together and near the horizon it looks as if there is just an uninterrupted bank of clouds:

> Mixed cloud formations, Karthaus Township, Clearfield County - photo by Nicholas A. Tonelli

This does not mean that the clouds are closer together at the horizon. Someone standing over there, taking a photograph and looking back this way would get a similar view and where you are standing, to take the photograph, to them looks as if it is beneath a solid bank of clouds.

Here is another example, this time taken from slightly above the clouds

> Cumulus Clouds above Hertfordshire by Anders Sandberg

So, if the planes are equally spaced, you'd expect to see far more of them close to the horizon than overhead. If you happen to be in a spot that few planes fly over, even just say 20 kilometers away from the nearest flight path for planes, you would only ever see planes flying near the horizon, of the commercial planes in normal flight paths.

So, seeing planes only near the horizon is a perfectly normal thing to happen. If you try looking in the middle of the day when the sun is high in the sky, don't expect you'll get many planes fly in front of it then.

As for the idea that they are deliberately obscuring the sun from you - that just can't be, unless you think the whole operation is directed for your own personal benefit. After all someone who

It's just not possible for a plane to fly in such a way as to obscure the sun for more than a few people in a very narrow path - the path basically of the faint shadow cast by its vapour trail on the ground.

If you aren't in that shadow it won't obscure the sun for you. To obscure the sun for everyone, planes would have to fly constantly, releasing so much vapour that you never see a clear sky, just clouds.

It's normal to have more clouds near to the horizon and including vapour trails -for a similar reason to the railway tracks again. If you have a few clouds scattered here and there over the landscape at random, and you are on the ground, then just as for the vapour trails, nearly all the clouds will seem to be close to the horizon.

That is indeed what you see here in Scotland if you go up a mountain and can see for miles and miles on a clear day and you may have clear skies overhead and a few clouds here and there and then clouds around the horizon in all directions. It's just this perspective effect. Someone else 50 miles away who to you seems to be in a region of total cloud would look back in your direction and think you are in a region of only cloud also. Because the clouds cluster together so much in the distance.

17th February 2017: Shocking Facts

Robert Walker

Update: The youtube account has been closed, hurray! This is the link to the video - with the "account closed" notice.

Summary: This is just some random guy or gal who typed a date into a youtube video title and made a custom youtube thumbnail. The video itself is an unauthorized copy of someone else's video which didn't have a date. This is the third date change. Originally it read 29th July, then 31st October, now 17th February 2017.

income for someone, for a few minutes work every few months. It's no wonder that people with no moral scruples do such things, and there are other Youtube doomsday video channels that are run only for ad revenue.

For some inscrutable reason, journalists run stories about these videos, so helping them to get millions of views and clicks and thousands of dollars of ad revenue.

If we could get youtube to stop ads on these videos, they would no longer have any motive for them and would stop. If we could get journalists to stop being so gullible and just posting a story about any youtube video by anonymous people with a striking sounding title and video thumbnail, it would make a big difference too.

If you want to try to do something about it please sign and share my two petitions:

- Petition to Youtube to Halt Ads on Doomsday Videos
- Plea to Journalists: Please Debunk Rather than Dramatize "Doomsday" Stories - The Vulnerable Get Suicidal

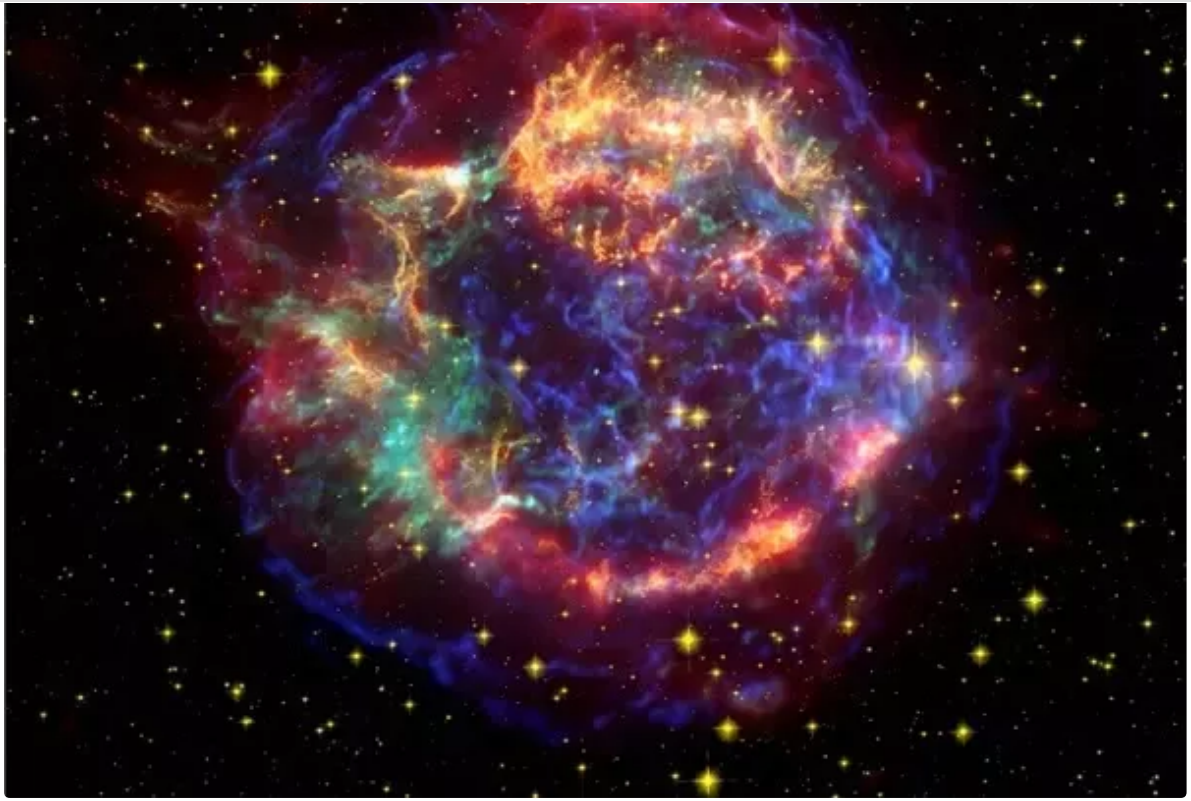
DETAILS

This is a re-run of a hoax from 29th July this year, with a new date in the title of the video. The video was originally launched with the title "Why the World will End Surely on July 29th - Shocking Facts". Journalists ran it as a story in many of the online news sources that don't do much fact checking, but most shockingly, it was run in the online version of the Telegraph . This is a respected mainstream broadsheet newspaper in the UK. The story said that the world would end on the 29th July 2016 .

The Telegraph version of the story had a count down timer to the end of the world at the top of

down timer reached zero.

This is the image used by the Telegraph story. It's become one of the generic images used for doomsday stories. It’s actually a fuzzed out version of this image of Cassiopeia A, a supernova remnant 11,000 light years away by the Chandra X Ray observatory. Nothing at all to do with Earth or our solar system!



> Photo Album :: Cassiopeia A :: 13 Jun 05

A fuzzed out image of Cassiopeia A was originally used as a cover image for stories about the "Big rip" theory. The only connection with the big rip theory is that the research for it involved study of the red shifts of distant supernovae, and I've no idea why they fuzzed it out. This image is now often used for Doomsday stories, with no connection with supernovae and no explanation of why it was used, as for the Telegraph article.

The only basis for the date in the story was the video title text typed in by an anonymous youtube video uploader, "Why the World will End Surely on July 20th - Shocking Facts" and a

The video itself was an unauthorized copy of someone else's work, using amateur graphics, elaborating on events described in the book of Revelations, one of the most enigmatic books in the Bible. This book is so easy of misinterpretation that the Eastern Orthodox church has excluded it from the list of Bible passages that can be read from a lectern.

The original authors of the video posted a disclaimer :

> *"Someone is re-uping our videos and saying that the end of the world is July 29th. It seems to have got some publicity in online news sites, who are saying WE said the world would end on the 29th. Nothing is going to happen on July 29th. We have never claimed such a thing, this date is just another false date being promoted online."*

for more about this see my World Did NOT End On 29th July! AWFUL "Silly Season" Story - Journalists Please Be More Responsible

This story, based entirely on a date in the title typed in by some anonymous youtube user for their unauthorized copy of someone else's video ran as a major "Doomsday story" on many news sites online, and the video racked up six million views.

The video now has nearly 7 million views, and all their copies of it in total have over 9 million views, enough to earn the anonymous perpetrator an estimated $12,200 to $30,000 from Youtube ads revenue , from this hoax so far, and it had around 16,000 subscribers at its peak, - naturally many have unsubscibed when nothing happened but it still has over 14,000 and as of writing, they got 1,200 new subscribers in the last month. This is for a youtube channel "End of Times Prophecy" with only that single video on it with different titles. They have now changed the doomsday date to a date in October and continue to accrue views and ad revenue.

They are currently earning between £55 - £886, or around $67 to $1000 per month see their

Statistics

Incidentally if you go to the video itself (which I won't link to directly here, don't want to boost their link count) then you'll notice that comments are disabled. It used to have a long list of comments, and many replies to the comments too by scared people. I posted a debunking comment and they immediately (same day) disabled comments for the video, so that they all disappeared. Which surely confirms it is a hoax done just in order to earn ad revenue, they can't be genuine or they'd have replied to my debunking comment.

The youtube ad revenue clearly encourages unscrupulous hoaxers to create Doomsday videos which scare vulnerable people. So I've done a petition for youtube is to stop running ads on Doomsday videos altogether.

This is not an unusual step as they already do halt ads on videos when they think it would be immoral to earn anything from them themselves. I would say that this falls into that category. It's immoral to earn from videos targeted at vulnerable people who become scared and suicidal as a result of watching them. So please just halt ads from these videos. Those who genuinely believe that the world will end can still upload their videos, so it is not any kind of restriction on freedom of speech, just a decision on what forms of income are morally acceptable for youtube ads.

PETITIONS ON Change.org

If you agree on this point, do sign and share the petitions which I started on The world's platform for change . They are:

- Petition to Youtube to Halt Ads on Doomsday Videos

PLEA TO JOURNALISTS AND SCIENTISTS

The main plea for journalists is just to be aware that your stories are read by vulnerable scared people. Imagine that a ten year old girl is reading your story and going to ask her mother or father about it, and then write your story for her, and that might help.

More specifically, do avoid using words like Doomsday and Apocalypse in the title or the text itself for that matter. Those who get easily scared by such things sometimes send me links to stories about e.g. financial crisis predictions after Brexit, and if the story uses the word Doomsday in the title, they will ask me "is this something to be scared of". They are worried that it is some sign of the end of the world.

Of course this is a perfectly respectable literary trope, the use of hyperbole for dramatic effect. There is nothing wrong with it per se. But those particular words are very scary to some people and I think are best just avoided altogether.

Also please consider writing debunking stories. As the Independent showed, a debunking story can often get more clicks and views than the doomsday ones. Such stories can be written in an engaging fashion. Use all the power of language, and vivid imagery, but use it for the purpose of debunking, rather than to promote doomsday ideas. There are plenty of doomsday stories published every month and if we had an equal number of doomsday debunking stories published each month it would go a long way towards addressing this issue.

DEBUNKING STORIES

Those who worry about these things often tell me that they can't find any doomsday debunking stories apart from mine, since 2012. Please consider writing stories that they can read so they don't get the very false impression that everyone thinks the world is about to end.

If you aren't sure how to write a Doomsday debunking story my outline for a future book.

presentation. You might be surprised about how it differs from the message that scientists like yourself and your colleagues get.

- Plea to Journalists: Please Debunk Rather than Dramatize "Doomsday" Stories - The Vulnerable Get Suicidal

This is a shortened version of my article: Journalists - Please Fact Check Your "Doomsday" News Stories -They Terrify Young Children And Vulnerable People

539 views · Posted Oct 25, 2016

Upvotes 0 Comment

Debunking: Stephen Hawking Says Universe is on the brink of instability and could collapse - metastable, in a false vacuum state.

Robert Walker

Example: Stephen Hawking Says 'God Particle' Could Wipe Out the Universe

Stephen Hawking does indeed say this. But what he doesn't make clear is that this is a very academic scientific debate about an unlikely scenario that can't really happen right now.

one every 100 million years.

But this scenario is just vastly unlikely, improbable beyond belief that it could happen right now. Let me explain:

First, if it could happen, then you'd expect it to have happened already in the first 1/10,000,000,000th of a second along with the other symmetry breaking when gravity split off from the other forces, when it was tremendously hot. For an example timeline for the other forces, see Unification of the Fundamental Forces .

Since that hasn't happened, the false vacuum has to be very stable, or else, probably as we find new physics we find out that it is not in a false vacuum state at all.

And yes, on the basis of the measured mass of the Higgs boson, the false vacuum has to be very stable. Joseph Lykken says that an event that triggers a patch of true vacuum, if the theory is correct, happens on average once every 10, 000, trillion, trillion, trillion, trillion, trillion, trillion, trillion, trillion years.

That means it is nothing to be worried about. This is so improbable that it can't really happen at all. The chance of winning the Euromillions jackpot for instance is 1 in 139,838,160. The chance of a false vacuum in any particular century is less than the chance of winning a string of twelve Euromillions jackpots one after another without a single miss. Just to win it once is incredibly unlikely. And I don't mean the chance of anyone winning them all.

Rather, it's as if you bought twelve tickets for Euro Millions, those were the only lottery tickets you ever bought in your lifetime, and you won it every single time. Do you think that could happen?

For those of you who live in the States, with a chance of 1 in 292 million of winning the US

How tiny are your chances at winning the Powerball jackpot? This tiny.

To put it another way, you'd have to have an immense lifetime to be concerned. If you lived as many million years as a normal human lifetime has seconds, and then as many of those time periods as a human lifetime has seconds, and as many of those vast time periods as ... nine times, then you might have some cause for wondering if perhaps it would happen in your lifetime. It still probably wouldn't.

In detail:

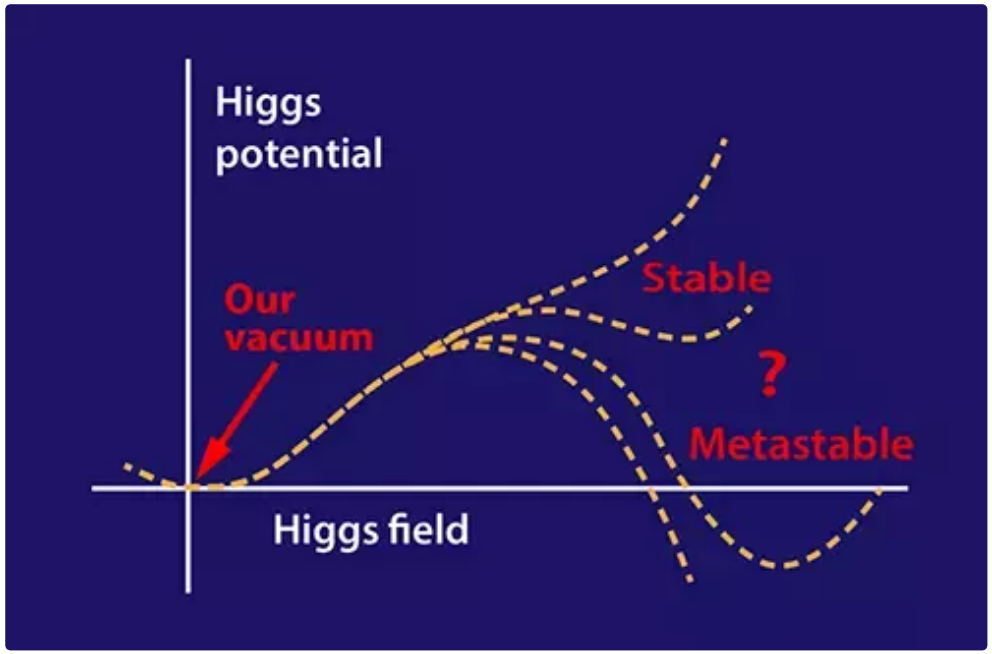
So, this is just an idea that some scientists have. Normally they think of it as something that, if it happens at all, happens not just trillions of years into the future but vast time scales so vast you need 1 followed by a hundred zeros to express the number of years between then and now.

Stephen Hawking said that in theory it could happen now through "quantum tunneling". Lykken said in response that the situation is strange if matter is on such a knife edge between stability and metastability and that it may be a sign that the calculation may be wrong. He gives the example of supersymmetry - a theory according to which particles we know about have other paired much heavier particles we haven't discovered yet. According to that theory our universe would be stable.

We know in any case that the standard model of particle physics is wrong, because it doesn't explain, for instance, gravity. It’s not compatible with general relativity. So I don't think one needs to put much credence on the theory. Stephen Hawking also is fond of saying dramatic things like this.

The first answer here goes into it a bit What did Stephen Hawking mean when he said that the Higgs Boson could become metastable at energies above 100bn GeV, and why would this

nudged in the right way.



> This shows the idea, how if somehow we could be nudged over tht hump in the higgs potential we might fall down the other side into another state which would have different laws of physics from the ones we enjoy now. We would not survive that transition. It might go to another stable state or just fall endlessly changing all the way with no final state.
>
> If the only other available minimum is higher than our current one then ours is a stable state and we don't need to worry about a nudge sending our universe into another state. But if it is a lower level than ours then in principle we could be nudged over the hill as it were into that lower state so then our current state is metastable.
>
> Viewpoint: Are We on the Brink of the Higgs Abyss?

So the thing is that the stability depends on the mass of the Higgs boson. And when they found it, with the LHC, they calculated that our universe might be completely stable, or it might be that it is metastable with this lower energy state available. It is just on the edge, according to standard particle physics.

So that got physicists rethinking this question - if our universe is metastable then just possibly there may be some way it could collapse into a lower energy state. It's a rather academic question as most think if that is possible, it happens at vast time scales into the distant future.

Anyway the calculations suggest that the universe is borderline metastable though it could be stable within the margin of error, within 1.3 standard deviations. That's not much, so it is quite possible that it is stable. To find out exactly they need more precise values of the mass of the Higgs boson, and top quark and various other parameters.

If our universe is in a false vacuum state, then you have to ask how we got there. It's especially puzzling because our universe was much hotter earlier on, so if it was possible for it to get out of its false vacuum state, why didn't that happen already in the first fraction of a second? Here is Professor John Ellis talking about it:

He is saying he thinks this means that we need new physics, because otherwise why didn't the universe get out of the false vacuum in the early universe when it was much hotter? He thinks that the new physics is supersymmetry and that we have a chance to find this with the next run of the LHC. In other words he thinks that curve graph is wrong.

Here is Joseph Lykken talking about it

The relevant part is 30 minutes in, he says

> *taxes.*
>
> *On the other hand it may already have happened and it might be on its way here now. And you won't know because it is going at the speed of light so there's not going to be any warning.*
>
> *Now more interesting to us as physicists is fact that when you do this calculation, using standard physics which we know about, it turns out that we are right on the edge between a stable universe and an unstable universe. That's essentially why it will take so long. If you change those numbers a little bit we would have been wiped out already., or it would never happen. But we are sort of right on the edge, where the universe can last for a long time but eventually it should go boom. So that's very interesting to physicists, so why is it happening, why are we right on the edge? There is no principle that we know of that would put us right on the edge. So one of two things is happening here.*
>
> *Either we are living right on the edge between a stable and an unstable universe, in which case we would like to explain that, or the calculation is wrong and everything I just told you is just the wrong calculation, but in that case there is something else that has to go into the picture that has to be to do with the Higgs boson and must be very fundamental because it has to change this fundamental property of how the Higgs boson works. And I have two candidates for you for that. One is dark matter which I already mentioned, and the other is supersymmetry, which I'll mention in a moment."*

He means that it is incredibly unlikely for it to happen at any time.

YOU'D NEED AN IMMENSE LIFETIME FOR IT TO BE REMOTELY POSSIBLE WITHIN YOUR LIFETIME

According to their calculations then it's only likely to happen within your lifetime if you have an

> 10, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000, 000 years,

or in trillions,

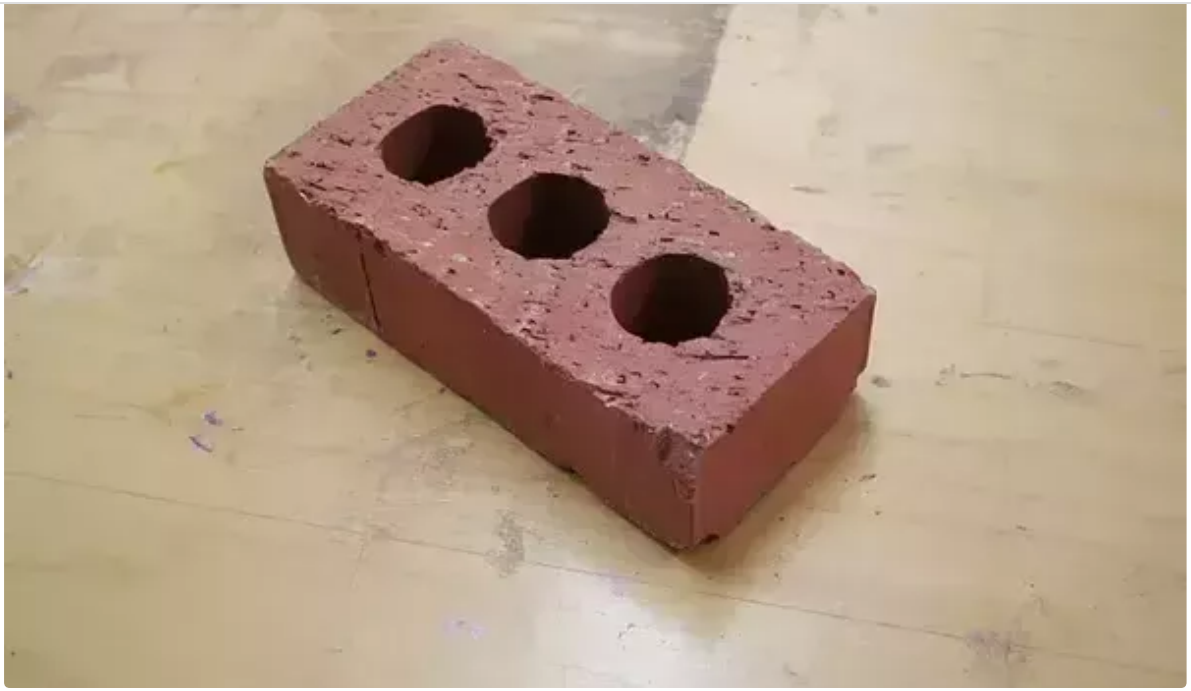
> 10, 000, trillion, trillion, trillion, trillion, trillion, trillion, trillion, trillion years

then there is an evens chance that it might happen at some point within your vast lifetime. If you have a lifetime of only a century or a few thousand years or even a few billion years, it's so incredibly unlikely to happen in your lifetime that you might as well say it is impossible.

CONSIDER A BRICK

Some people find it hard to understand how something can be so improbable that for all practical purposes it is impossible. Why do people writing about this, and even Joseph Lykken say that it could happen at any moment, when really, it couldn't?

So to understand this, consider a brick.



> Brick

Like almost any object that's not close to absolute zero, its molecules jiggle about because of heat all the time. Suppose that at some moment all the molecules that made it up happened to be jiggling in the same direction, out of the ground. Just by chance, nobody is doing anything to it. Normally when one atom jiggles up, another one somewhere in the brick jiggles down and it stays in the same place. But this time, just by chance, every atom jiggles up in the same moment of time. An accidental brick wide synchronized jiggle. If that happened, it would leap up in the air.

However that's just a theoretical impossibility because the chance of that is so tiny. You don't need to keep an eye out for flying bricks leaping out of the ground as a result of the random

So, it's like that. Theoretically it could happen right now, right here, anywhere, if the theory was correct. But in practice, no it couldn't. You might as well call it impossible, for the same reason that you'd say it is impossible for a brick to leap into the air from its thermal agitation.

To put it another way. In any given century, well the chance of it happening at all, anywhere in the universe, is roughly equal to the chance of throwing a fair dice 128 times.

If you did this once only in that year, your chance that you get 128 sixes in a row is the same (approximately) as the chance of it happening in that year.

> That's about the same as the 1 in 10^100 chance of the false vacuum turning into a true vacuum in any particular year, anywhere in our universe - if the theory is correct (which it probably isn't as our physics is incomplete)
>
> Dice photo by Diacritica, wikipedia .

So, not something to worry about. That's so improbable that it can't really happen.

NEW PHYSICS

However it's also very likely that we just don't understand the situation fully, as we know our understanding of physics is incomplete. In that case, then we would expect to find an explanation which would probably show that the universe is stable and it doesn't have even that tiny chance of happening.

In particular

- If there is dark matter that has mass like ordinary matter through the Higgs field it can't happen.
- If supersymmetry is correct it can't happen.
- If we have more than one Higgs boson it can't happn.

And there are probably lots of other things we don't know about that would mean it can't happen.

It's only a few years since we found the Higgs boson. Up until then many thought it wouldn't exist and hardly anyone thought it would have this mass in just the right region for a false vacuum state.

of predicting scientific doomsday things without putting a great deal of thought into them. See my Debunked - Stephen Hawking puts an expiry date on humanity. He is not as bad as Michio Kaku in this respect, but he does seem to relish his doomsday forecasts.

Anyway - Stephen Hawking is very likely to be wrong again. As they do the next runs on the LHC they might find more Higgs bosons or prove supersymmetry or find dark matter and any of that could make the theory false.

At any time we have numerous theories in astrophysics. At most one of those theories can be true as they contradict each other. But most likely they are all false and the truth is something nobody has thought of so far.

That it's possible at all is puzzling to physicists, it should either happen or not, and it takes a lot of explaining to understand why it would be so right on the edge as that and it could be that it is due to dark matter or supersymmetry stabilizing the universe.

So, in short, they may well end up proving that the universe is stable after all and that this scenario is not possible at all. It is all very speculative at this stage, and if the universe is unstable then it's only on mind bogglingly huge time scales. You'd need to have a lifetime of about

> 10, 000, trillion, trillion, trillion, trillion, trillion, trillion, trillion, trillion years

for it to be something to lose any sleep about.

See also Will the Higgs Boson Destroy the Universe???

And this BBC news story explains it quite well for ordinary folk Cosmos may be 'inherently unstable' - BBC News

Fermilab Today

Debunked: Nibiru will hit Earth on [Insert Date here]

Robert Walker

Nibiru is just an internet myth / hoax. There is no genuine astronomy behind it. They quote lots of astronomical news stories but they misunderstand them.

The idea of a planet in a 3600 year orbit or a 360 year orbit that crosses the paths of all the gas giants is an astronomical nonsense, BS.

[**NOTE TO DEBUNKERS** - you are welcome to copy / paste as much of this text as you like to use for your debunking comments on videos on youtube etc]

Here are some of the absurdities

- **The orbit is not stable**. A planet that crosses the path of all four gas giants, Jupiter,

A planet in such an orbit would be ejected from the solar system, or hit the sun or another planet, or be torn to pieces by the sun or Jupiter, or evaporate in the heat of the sun within a million years. Or if it was a big planet like a brown dwarf, it would do the same to our planets, destroy many of them, put the others into elliptical orbits and generally make the planet uninhabitable. This would have happened already over four billion years ago, not today. It would essentially be a binary system and binary systems with the smaller brown dwarf in an orbit like that don't have stable planets in orbits like ours.

Astronomers do search for planets way beyond Neptune. Those can be in stable orbits in our solar system because most of the ideas for planets are in orbits that never get s close to us as the very distant Neptune. Pluto does cross Neptune's orbit - that's possible because it is in a resonance with Neptune. It's not possible though to be in a resonance with both Neptune and Uranus, never mind all four of the gas giants.

- **Brown dwarfs are not invisible** - many of the Nibiru enthusiasts say that it is a brown dwarf and as such can't be seen. A brown dwarf is no more invisible than you or me. Indeed a brown dwarf is easier to spot than a large planet like Jupiter. A brown dwarf is a planet that is so large that it begins to start fusion reactions, but not quite large enough to turn into a star. As a result it is hotter than most planets, and so can be seen in infrared. It does not emit any visible light, unlike ka star. A brown dwarf in the depths of interstellar space is invisible in the same way that you are invisible in a dark room with no lights on. If it comes anywhere near to a star then it is viable by the light of the star just as you are. A brown dwarf at the distance of Jupiter would be at least as bright as Betelgeuse even if it was the coldest darkest brown dwarf known.

measurements are so precise that if there was an asteroid as large as a seventh of the size of Ceres, which in turn is 1/78 of the size of our Moon, we'd discover it by its gravitational effects on our spacecraft if it is anywhere between Saturn and the sun. We'd notice the effects of anything else like that, gas cloud or whatever if it had that much mass.

- **We have huge sensitive telescopes scanning the night sky for asteroids every single night.** They can spot an object as small as 300 meters in diameter at the distance of the outer edge of the asteroid belt. We find objects as small as 10 km across way out beyond Jupiter, and 100 km across way out beyond the very distant Neptune. These telescopes have already found every single asteroid of 10 kilometers upwards that does flybys of Earth in short period orbits of a few years. That leaves comets. PAN STARRS can find a 1 km comet a year before it gets ot Earth and a 6 km diameter comet 3 years before it gets here.

  There is no way these telescopes can miss an extra planet in our solar system.

  The idea is as absurd as someone discovering a cow living in your kitchen that's been there for years and you never noticed it.

MORE ABOUT WHY NIBIRU'S ORBIT IS UNSTABLE

The Nibiru orbit is unstable and would not last as long as a million years in our solar system because it crosses the paths of four gas giants Jupiter, Saturn, Uranus and Neptune all with different orbital periods. It's like rope skipping

Missing a planet on every orbit is like jumping a rope. You can do it if there is only one planet to miss each time. Pluto does that with Neptune, it goes inside Neptune's orbit every time it is closest to the sun, but that's no problem because it is in a resonance with Neptune and just like someone rope skipping - whenever they land on the ground the rope is not there so they don't get tangled up in it. Similarly every time Pluto gets closest to the sun, Neptune is not there and is elsewhere in its orbit so no problem.

But now imagine you have to skip four ropes simultaneously, you have to jump in a regular fashion (because orbits repeat exactly) and those four ropes are being turned at four different speeds with no resonances between them. That would be impossible. Similarly it is impossible for Nibiru to keep missing all four gas giants on every orbit for long. It can't keep that up for as long as a million years. Our solar system is over 4 billion years old. So such an orbit is impossible.

PLANETS BEYOND NEPTUNE

Astronomers do often hypothesize planets that orbit beyond Neptune. They call all these planets “planet X” where the X there doesn’t stand for 10, it stands for unknown, X as in

The Nibiru people seem to think that all these hypothetical planets are real planets.

Then they also ignore all the parameters in the hypothesis. Scientists publish a paper saying there might be a brown dwarf that orbits 1.5 light years away from Earth. (That's the idea of Nemesis, which is now pretty much disproved after the Wise infrared survey didn't find it, and would have found a brown dwarf unless it was unusually cold).

The Nibiru people then skim read this paper and conclude that it proves that there is a planet called Nibiru in a 3600 year orbit that comes into the inner solar system and is already in the inner solar system and about to fly past Earth or hit it a few months into the future or a few weeks into the future.

They don't seem to see the discrepancies between what the scientists say and what they are saying.

- **The astronomers are looking for planets that always orbit beyond Neptune**. These are possible. A planet that comes inside of Neptune's orbit but doesn't cross Uranus's orbit is also possible.
- **The Nibiru people claim that a planet can be in an orbit that crosses the orbits of all four gas giants**. We would see such a planet easily for decades on its way in and the orbit is unstable. This is impossible.
- **Therefore the planets the astronomers are searching for are not Nibiru**. if by Nibiru you mean this idea of a planet that can fly past Earth or hit Earth.

They behave like script writers for a movie.

If you make a movie, your ideas don't have to make scientific sense, they just have to seem

REAL LIFE IS NOT A MOVIE SCRIPT

But it doesn't work in real life. In real life and astronomy the ideas have to make sense and the Nibiru ones don't.

BIZARRE INCONSISTENT IDEAS

They say really bizarre things. They think that a planet in a 3600 year orbit can stay behind the sun all the way through its orbit. The sun goes through twelve constellations every year. Jupiter goes through one of the zodiacal constellations each year. A planet in a 3600 year orbit would go through them even more slowly. From that it's easy to see that it's impossible for a planet in a long period orbit to "hide behind the sun". But they don't seem to be able to understand this.

They believe, many of them, that the Earth's poles have shifited. You just need to go out any starry night, locate the pole star, go out an hour or two later and check that it is the only star that hasn't shifted and you debunk that idea with your own eyes. Due North still points towards the pole star. They can't see this.

They also believe we have two suns and that this second sun appears in photographs take in a cell phone camera. It is so easy to debunk this. that just about anyone will just LOL if you say we have two suns, except the Nibiru people.

On any sunny day block out the sun with your finger. Do you see a second sun? (Don't stare at the sun itself as your eyes can be damaged and you feel no pain as you have no pain receptors in your retina and effects can happen much later like hours later you start to lose your sight)

I find it incredible that anyone even gives this a moment of thought, whether or not we have one sun or two.

stories seem impressive to you. Much as people come to beleive in propoganda. Also a bit like the way advertising works.

For this to happen you have to have no understanding of physics or astronomy, but there are many people who flunked physics at school, and indeed why should everyone understand physics :). I'm not good at languages and have no idea about how baseball or american soccer works.

RESPONSIBILITY OF JOURNALISTS

So I think that youtube videos and newspaper reporters are part of what leads people to get so scared about things that if they could relate to their own common sense, they would see are nonsense.

I've done a couple of petitions on Change.org

Youtube: Petition to Youtube to Halt Ads on Doomsday Videos

Petition: Let's End Dramatized Reporting Of "Doomsday" Stories - The Vulnerable Get Suicidal

Do sign and share, it may help.

OBJECTS THAT CAN HIT EARTH

As for other objects that could hit Earth, well we have a survey of all the NEOs of 10 kilometers upwards and know their orbits well, and none of them can hit Earth before 2100. We could be hit by a comet but that's now a 1 in 100 million probability, can be 99.999999% sure it won't happen this century, and we'd be able to track it for at least a year and probably much longer on its way in if it was a large comet like that

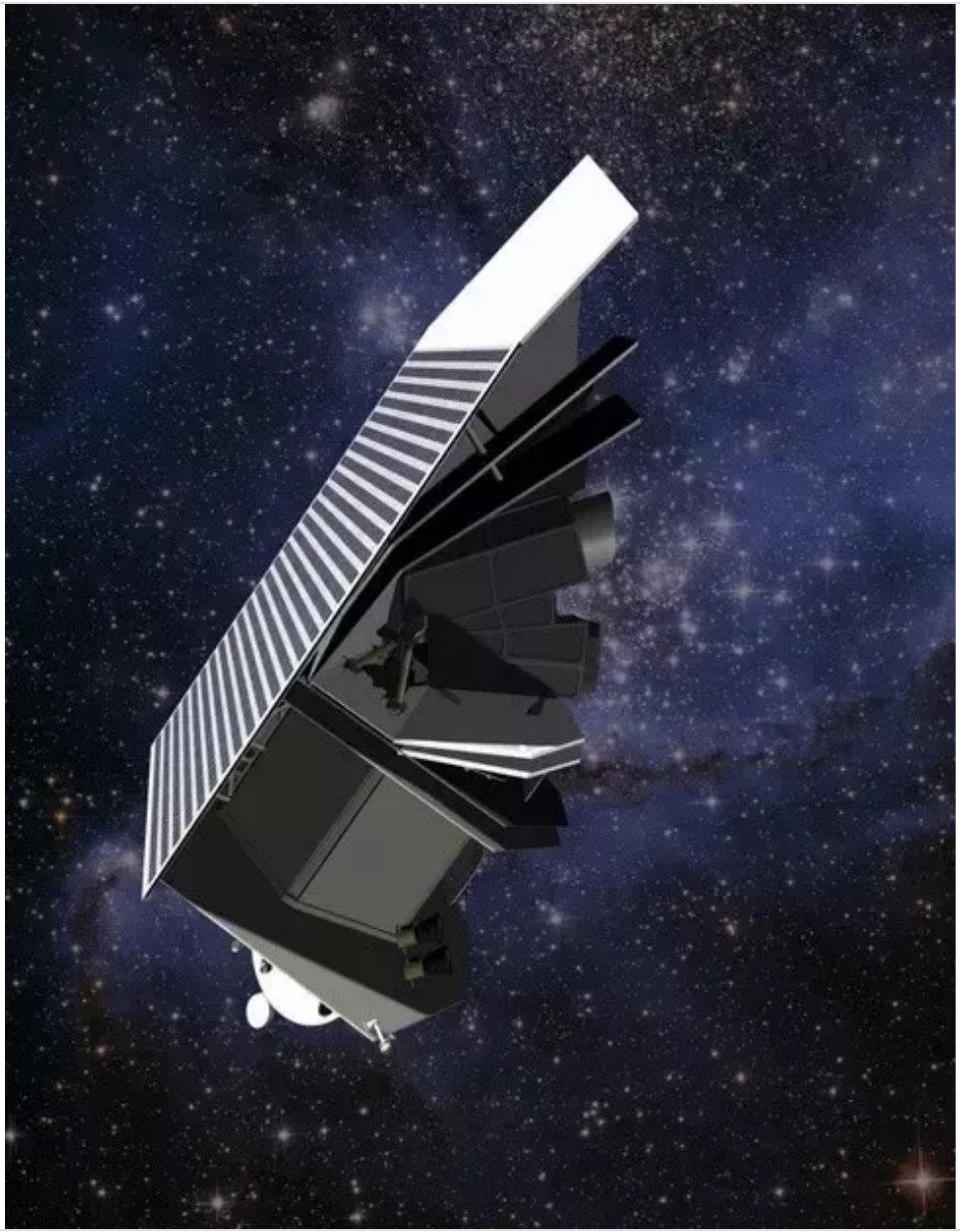
and are finding one of them every month at present.

An object that large is large enough to cause a tsunami, or to have serious effects on land, and put enough dust into the atmosphere to have some global effects. If we found such an object headed our way we'd need to evacuate the impact zone and couldn't do much to deflect it at such late notice.

But this is very very unlikely. After all it has never happened in recorded human history and is no more likely to happen in this century than any other. Indeed is less likely because we have found 90% and they are not headed our way so the known probability of it happening is a tenth of what it was before we found those 90% of them. So we can be more confident that it won't happen than anyone in any previous century already. By the 2020s we will be a hundred times more confident than we could be e.g. last century. Unless we find one headed our way of course, in which case it's most likely to do several flybys first so we can deflect it, easy to do if it has a flyby of Earth.

Can't say it is impossible but it's very unlikely, and ordinary things like traffic accidents or health issues are far more significant. Even being killed by lightning or a tornado is more likely than being killed by an asteroid.

But we can do something about it. For half a billion dollars we can build a space telescope to do an infrared survey from inside of Earth's orbit close to Venus to find most of the objects down to 20 meters within a decade.



> going to partner with NASA but they pulled out due to lack of funding. Any major technological country world-wide could fund this and hardly notice the effect on their defence budget.
>
> It would sit inside of Earth close to Venus's orbit giving it a good field of view of NEOs close to the sun. It looks away from the sun to avoid being blinded by it - and it can then see faint NEOs that are in between the Earth and the Sun which is the hardest place to spot them from our current Earth based surveys. It would help fix that blind spot for asteroids that come from the direction of the sun. It looks in infra red because the asteroids are far more obvious in the infrared.
>
> Eventually it would spot just about everything out there that's in the vicinity of the Earth orbit.
>
> Idea is that it would find nearly all potential impactors down to 20 meters diameter .

If we find anything headed our way then with a decade or two of warning it would be easy to deflect.

It doesn't make much sense to build an asteroid defense system based on expensive rockets that might not be needed for a hundred million years into the future (for the 10 km asteroids) or thousands of years inot the future for the smaller ones.

So unless we had huge amounts of funding ,the first priority is to do surveys and detect them. If we find something headed our way we can then build the defences against them, and if we do a complete survey we would expect decades of warning and can deflect them easily. So the priority right now is funding to detect them. We are doing quite well there. But for a tiny fraction, of say, the amount the UK government just voted to spend on renewing the Triden nuclear weapons, an amount so small the defence budget of any major country would hardly

for a space telescope to find the NEOs that threaten us from space.

For more on that, see Giant Asteroid Headed Your Way? - How We Can Detect And Deflect Them

My Nibiru debunking articles are here

- Simple Ways To See Nibiru Is Totally Nuts - And Limits On Planets Hiding In Our Solar System
- Why An Extra Planet Can't Be Hidden Behind The Sun Or Above The South Pole
- "Imaginary Bullshit Planet" Nibiru - Lens Flares, Sun Mirages, Hoaxes & Just Plain Silly
- Why This New "Planet X" Is No Threat To Earth :).
- No, There Isn't A Planet Called Nibiru, Soon To Hit Earth, And Often Visible In Your Photos Of The Sun :)
- Kudos To "The Independent" Newspaper For Debunking Nibiru "Blood Moon" Hoax
- No, We Were Not Hit By A 500 Kilometer Asteroid On March 8th. Nor Will We Be Hit By Nibiru Any Time - It's BS!
- Petition: Let's End Dramatized Reporting Of "Doomsday" Stories - The Vulnerable Get Suicidal
- World Did NOT End On 29th July! AWFUL "Silly Season" Story - Journalists Please Be More Responsible
- Petition To Youtube To Halt Ads On Doomsday Videos - They Make The Vulnerable

which I think most of them would admit is rather daft if they could just calm down enough to be able to connect to their basic common sense and good judgement. Especially young people and people who don't have a strong background in science or astronomy.

See also my answer to Why do some people still believe in Nibiru?

This is a copy of my answer to When will Nibiru hit Earth?

Debunked: We are endangered by "Star Quakes"

Robert Walker

Star quakes only happen in neutron stars. (Star Quakes (wikipedia)) These are the remnants of super nova explosions and nothing to do with our sun.

> Stellar Quakes

However we do get vibrations in our sun. They are like sound waves, though much lower frequency than sound on Earth. Here is some of the sound of the sun speeded up to reach audible frequencies, we don't actually hear this but they can do videos of the sun and then work out the sound from the movements of its surface:

There is no danger to us from this.

159 views · Posted Oct 24, 2016

Upvotes 0 Comment

Debunked: NASA is getting ready to Capture Planet X / Nibiru on Camera

Robert Walker

Debunked: NASA is getting ready to Capture Planet X Nibiru on Camera

This is the telescope they will use to search for it. This is just a video about the telescope, not about Planet 9:

The Planet 9 is not Nibiru. If it exists, it's in an orbit that never takes it any closer to Earth than several times the distance to Neptune, and it has to be at the furthest part of its orbit for us to have missed it so far. That's what Mike Brown is talking about.

It is particularly ironic to cite Mike Brown as an astronomer searching for Nibiru. He has written a long article saying that he will answer emails on any topic except Nibiru because it is such nonsense. This is Mike Brown's article about Nibiru: I do not ♥ pseudo-science

Debunked: Doomsday Stories like Nibiru must be true because lots of people believe they are true

Robert Walker

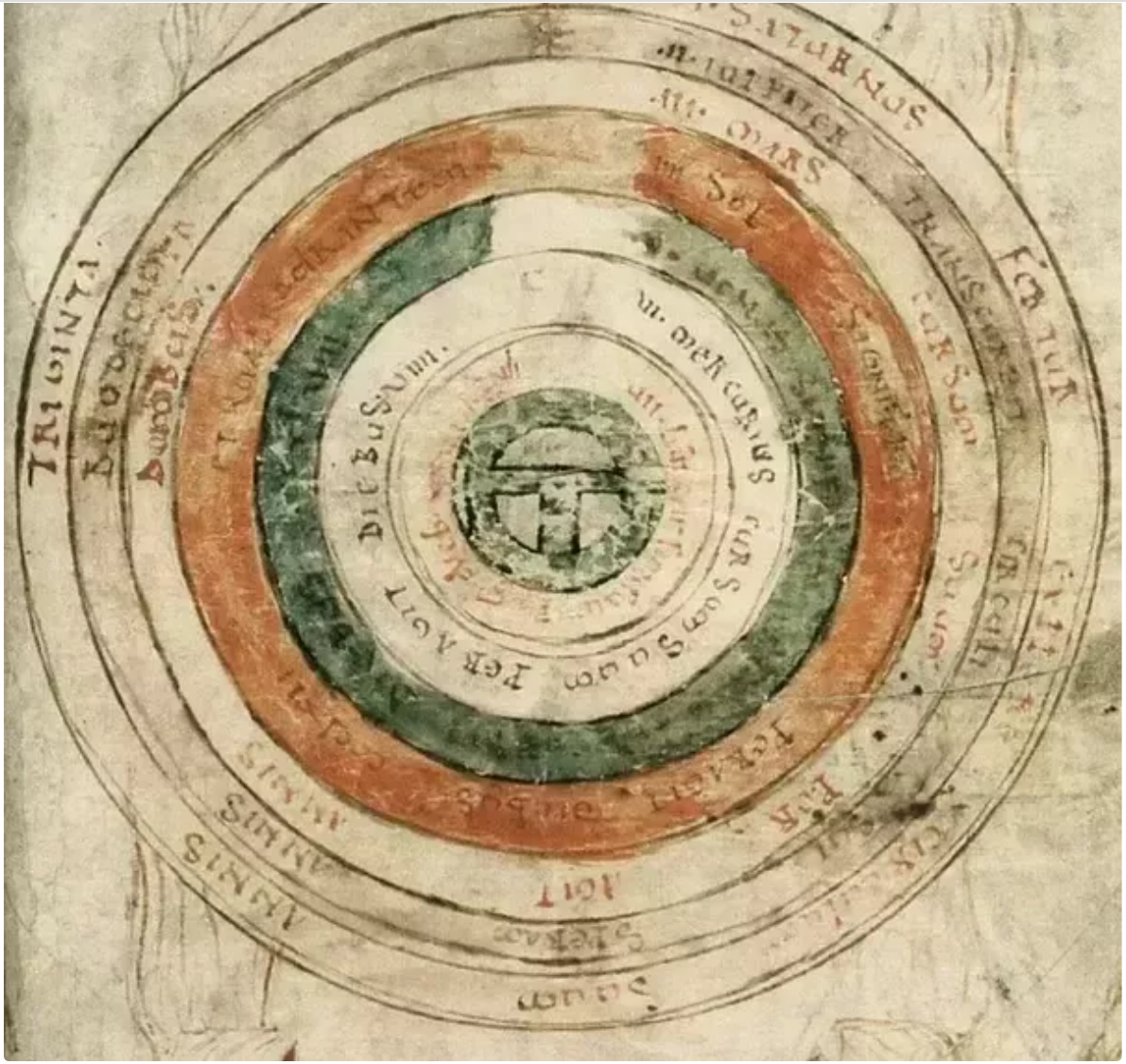
This is something I get told over and over in comment threads and pms about Nibiru especially. Certainly it is true of all doomsday stories, that if you search for them on google or youtube, you find lots of videos and newspaper articles in support of them and generally you have to do a lot of searching to find a debunking article, no matter how absurd the story is or how inaccurate.

But large numbers of people thinking something is true doesn't make it true. . This is the logical fallacy "If it is popular it is true" or "Argumentum ad populum "

Many people have believed prophets that said the world is about to end for many centuries, at least 2000 years and those were all false prophets as the world didn't end.

In 2012, a tenth of the world population, 750 million people, thought that the world was going to end and they were all wrong. So you can get millions of people believing something and they

the sun, nearly everyone ignored him (for good reason, he didn't have very strong data in support of his ideas - he needed new ideas which we didn't get until Kepler and Newton, and a telescope would have helped).



The Earth within seven celestial spheres as depicted by Bede in the eleventh century.

> The astronomers debated how far away these spheres were. In the middle ages most thought that the distance to the outermost sphere of fixed stars in the Ptolemaic theory was 19,000 Earth radii. Mathematical Astronomy in Copernicus' De Revolutionibus .
>
> (Modern measurements make the distance to the sun from Earth over 20,000 Earth radii. (distance to sun, 149,597,870.7 km using the value of the Astronomical Unit, and radius of Earth 6,371 km).)
>
> If you were born in the Middle ages, no matter how brilliant you were, how mathematically gifted, until Copernicus came along, you'd have thought that the sun, stars and planets were slowly spinning around the Earth. Probably you would have laughed at anyone who said otherwise, and called them a fool.

For most of our history, most people thought this was the true picture of the universe or something like this - Earth at the center and the planets and stars in celestial spheres - **they were all wrong**

So it is easily possible for the entire population of Earth to be wrong about something.

WHAT ABOUT NIBIRU?

Often there are no debunking articles in the search results later than 2012 (except for my blog posts and also quora answers by various authors here, which you may find if you search long enough).

For many doomsday stories I don't know of a debunking article other than my own or the quora answers by many people again.

So does this mean that they are true?

3 Planet Cracker”

It is so simple to check these things, yet none of these journalists who wrote those articles about 2009ES knew enough about astronomy to look it up in the close approach tables to find out that it had already done a flyby on the 5th September. They just kept writing articles saying it was due to hit Earth for the rest of September!

And it’s the same for videos. You have to search long and hard to find either a Nibiru debunking video or a Nibiru debunking article, and the ones you find generally date back to 2012.

That's the reason for my two recent petitions:

- Plea to Journalists: Please Debunk Rather than Dramatize "Doomsday" Stories - The Vulnerable Get Suicidal
- Youtube: Petition to Youtube to Halt Ads on Doomsday Videos

If youtube stopped running ads on Doomsday videos that would remove the economic incentive for unscrupulous people to upload hoax doomsday videos just to earn thousands of dollars in ad revenue. That would help a bit. You'd still get all the people who upload their videos that they think show two suns etc, but you'd get much less of the fake news channels with hoax videos about Nibiru. Then if the journalists were to write debunking articles instead of doomsday articles, then that would make a big difference too, because many people, like you, will search to try to find a debunking article. If lucky eventually they find mine. Apart from that, the only ones for most of the stories date back to 2012.

This does not make the stories true!

I started this Debunking Doomsday blog to try to help. Also I've decided, I'm going to try to get

Debunking: a president of the US could order a nuclear attack at a moments notice on a whim

Robert Walker

Summary: Legally the president makes the decision and everyone else then scurries around and follows his or her orders; in practice it's not going to be that simple in peace time especially. He or she doesn't just have a button to press and the weapons fire; it's a figurative expression. A president who gave that order in peacetime would surely be treated as temporarily deranged and ignored. They would need broad support, from their defense secretary especially.

However, in the event of an imminent attack on the US they decided that the president has to be able to launch a response within minutes. This is a result of the cold war and the idea of MAD (Mutually Assured Destruction). For that reason the president has been given authority to launch an attack on his or her own without consultation. That's the origin of their power to launch. But it's only meant for situations where they believe that another country has already launched nuclear weapons towards the US.

Although legally the president could invoke this ability in any situation, and just launch nuclear weapons on a whim because they are angry or having a bad day or whatever, they would surely

would probably lead swiftly to impeachment.

IN DETAIL

First to be scared of nuclear war certainly is a rational fear. It's not a hoax or an absurd idea like most of the ones I debunk. I had some fear of nuclear weapons during the cold war. Including nightmares that we'd been hit by nuclear weapons. I'm sure many did back then.

Not so much now, because I don't feel that an all out nuclear war is likely myself. We are much more connected world wide, than before, with internet, and fast communications, satellites etc, and though there are tensions between Russia and the US, also involving China, it's nothing like what it was during the cold war, seems to me. And everyone has so much to lose in an exchange of nuclear weapons.

Anyway many people are worrying about the US president or Putin starting a nuclear war, particularly the US president as a result of the short exchange on nuclear weapons between Hillary Clinton and Donald Trump in the third debate.

Many people in these online debates talk about a two person rule. But no, that doesn't apply to the president. I'm using as my sources here the NY Times article: Debate Over Trump's Fitness Raises Issue of Checks on Nuclear Power . and the Politico article by a Bruce Blair , a nuclear security expert: What Exactly Would It Mean to Have Trump's Finger on the Nuclear Button

It says that a president can order a nuclear attack all by himself or herself in theory, as the two person rule only applies to missile silos and submarines. The defense secretary doesn't have to approve it, as he or she is second in chain of command to the president who makes the order.

> "The NCA consists only of thePresident and the Secretary of Defense or their duly deputized

> World-Wide Military Command and Control System, DoD Directive S-5100.30

But in practice a president who ordered a nuclear attack in peacetime might well face some kind of a mutinous action, refusal to follow his orders, moves to be declared unfit to govern etc.

This actually happened to president Nixon, not that he ordered an attack, but that towards the end of his presidency they no longer trusted him with the nuclear button, because of drink problems etc. So, though it was not legal for them to do it and probably mutinous considered from a legal point of view, the secretary of defense James R. Schlesinger instructed the military to divert all emergency orders especially any involving nuclear weapons, to him. In the circumstances nobody was likely to challenge this.

There's a difference here between a decision to do a first strike, and a response to an attack. After being told about an attack, the president may have only minutes to decide whether to treat it as a false alarm or to respond, and what response to take.

That's what Hillary Clinton is talking about here in the third debate, six minutes into this extract.

It's confusing because she pivots. She starts by talking about Trump's idea of a unilateral nuclear attack in peacetime. But the end of her sentence when she talks about the 4 minutes and saying that former presidents say Trump is not a suitable person to respond in a situation like that she is talking about response if you hear that there has been a nuclear attack on the US. Is it a false alarm? Do you get on the phone to Putin or to China or N. Korea or whoever? Or do you just respond right away.

She is saying at that point that he is not a fit person to make such a decision.

But she isn't saying that a president in peace time can launch a nuclear attack with only 4 minutes of warning for no reason. If a president did that I'm sure they would be treated as temporarily insane, of diminished responsibility, and ignored. Whether it is Clinton or Trump or whoever it is.

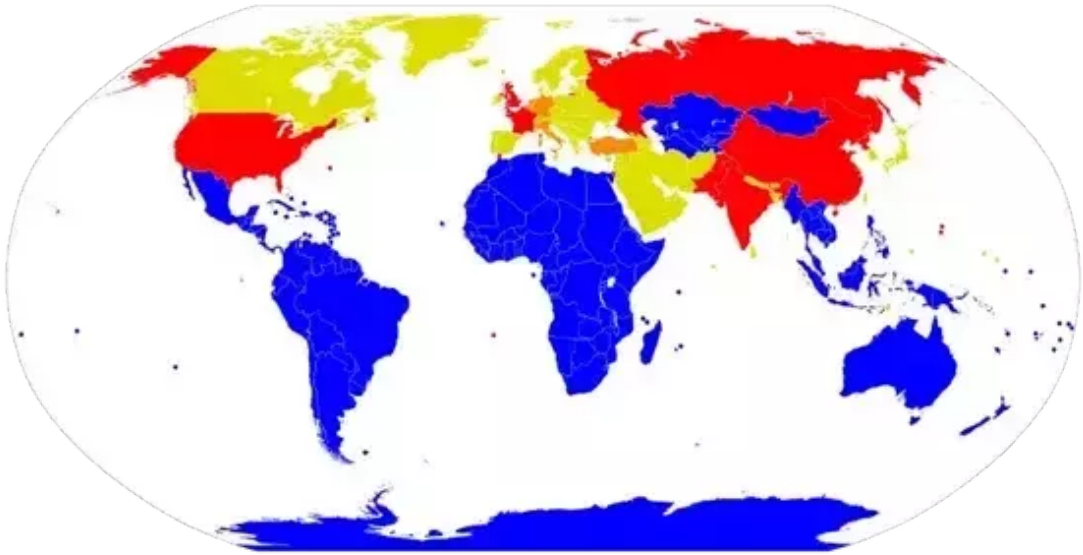
But because of the pivot it's not so clear, she is somewhat giving the impression that Trump would be able to launch a nuclear weapon in peacetime within 4 minutes.

If challenged I'm sure she'd deny that is what she meant. It's the sort of thing politicians often do in debate to score a point, pivoting like that.

Incidentally I think it is totally immoral to launch nuclear weapons at all and if someone has dropped a nuclear weapon on your state, heaven forbid as they say, then it does not make it acceptable to use them. Jeremy Corbyn, leader of the opposition in the UK, and long term opponent to nuclear weapons has said that if he is prime minister he will never give the order to launch nuclear weapons. Theresa May has said unequivocally that she would, if it came to it,

Also - longer term, I believe that it is definitely possible that we could end up with worldwide nuclear disarmament. Personally, I've been against nuclear weapons all my life, you may know that Scotland wants to disarm, and it's a policy of the SNP. and if it became an independent country it would give up its nuclear weapons. Also the leader of the opposition Jeremy Corbyn wants to disarm. Very few nations actually do have nuclear weapons.

Africa, Australia, New Zealand, South America - they all have formed nuclear weapon free zones. The entire Southern Hemisphere is a nuclear free zone.



All the blue areas on this map are nuclear free. And most nations of course don't have nuclear weapons of their own. Only the red zones here actually have their own nuclear weapons. The orange ones are nuclear weapons sharing.

It's about time we had a few more nuclear weapon free zones in the northern hemisphere.

So also some people worry we would all go extinct as a result of a nuclear war. But if you think about it only the people in the red or orange zones are likely to be hit by nuclear weapons - as nuclear weapon states mainly target each other.

The chances are that the entire southern hemisphere would have no nuclear weapon hits at all.

And anyway humans are much harder to make extinct than you might think. We are amongst the most reslient of all animals. As mammals able to survive almost anywhere, cold or hot, travel easily, eat almost anything because we are omnivores, able to farm, cultivate anything edible. And for sure could take precautions against radioactivity.

This next section is not really part of the debunking but hope you don't mind if I add a section about it as someone who has a long standing conviction that we need to work towards ending nuclear weapons altogether:

WHY IT MAKES MORE SENSE TO GP NUCLEAR FREE

This also is one reason why it actually makes more sense from a safety point of view to give up nuclear weapons. As someone who has been a long standing opponent of nuclear weapons for the UK, I don't see how it gives us any security at all. It's not as if the only thing stopping Russia from taking over Europe is our nuclear weapons. And anyway when they want to invade somewhere like the Ukraine or whatever, nuclear weapons don't stop them.

It just makes no sense to me it just makes us a target. The SNP is against nuclear weapons, the majority of the residents of Scotland. In the debate in the UK parliament one of the main reasons they gave for retaining nuclear weapons was because we would then keep our seat in the security council. They thought if we gave up our nuclear weapons we might no longer be a permanent member of the world security council. That's really backward thinking, seems to me. If nuclear weapons are seen as a prestige symbol, how can we ever get rid of them?

from unilateral disarmament by South Africa. If we are ever to have a European nuclear free zone, then unilateral disarmament by the UK seems a good way to start.

And as for the idea that would make us dependent on the US -that's only if you think nuclear weapons give us security. If you don't think that ,then it doesn't make us dependent on them at all. Rather it makes us more independent as we don't spend more than 200 billion dollars on nuclear weapons which takes away from the budget we could use for other things. Military generals in the UK say that nuclear weapons are an outdated and useless defense system, they don't see any need for it in their campaigns it just does nothing for them.

As a pacifist myself I am uncomfortable arguing for increased military expense on conventional weapons. But that is what would happen if we reduced nuclear weapons that they would be more capable in conventional arms. Perhaps also we'd have some extra budget for non military things, let's hope.

The US of course would find it much harder to go nuclear free and not suggesting they do so unilaterally, better to do it in collaboration with Russia, China and everyone else.

But in the UK we can go nuclear free and start to turn thinking around so that instead of thinking of nuclear weapons as prestigious and making you strong, more people start to see them as outmoded, expensive, useless. And hopefully start to get the idea that it is actually prestigious to give up nuclear weapons. That may then eventually lead to a nuclear free world.

DO NUCLEAR WEAPONS "PRESERVE PEACE"?

On whether it saved lives in Japan - well it's mainly a US rather than a Japanese perspective I think, that it might have saved lives eventually. Not the sort of thing that you'd use to justify a foreign country dropping nuclear weapons on your own cities.

twice what's more. Albert Einstein who was one of the people who advocated developing the bomb was horrified that they actually used it and many others at the time in the US said it was the wrong decision to make.

A friend has made an interesting point, that for the generals it seemed like a fire bombing of cities, for instance the fire bombing of Dresden, which had already happened before.

> Center of Dresden after fire bombing by the UK in WWII, image from the German Federal Archive . Firebombing of cities in WWII is a highly controversial action taken by the Allied forces with much debate since then.

and more of that sort of thing got used to that as something they did in war time.

Only the scientists like Albert Einstein really understood the horror of a nuclear bomb at the time. As for whether (if it is true that it reduced the number of deaths) that it justifies it in hindsight well the thing is it is easier to use such arguments to justify it on another country. Try turning that around and suppose the nuclear weapons were dropped on the US (or whatever country you are citizen of) which for some reason had a fanatical government at that time. It doesn't work so well that way around.

And at any rate that's past history. We now all know how horrific nuclear bombs are. And nowadays hardly anyone, military generals or anyone, would say that it is morally acceptable to fire bomb a city to oblivion as for Dresden in a modern conflict.

As for modern conflicts, then if, say, North Korea was to drop a bomb on Japan, or South Korea or even, somehow, the US, well they would get immediate condemnation of the entire world. China would no longer be able to support them in any way, and that would surely be the end of their regime, seems to me. We are in a world so interconnected that it is not possible for a small industrial nation to stand against the entire world like that.

While if the US then responded by dropping a nuclear weapon on N. Korea, that would then turn condemnation against the US and China would then feel justified to continue to support N. Korea. It makes no sense politically for the US to respond by retaliating in that situation. And in a nuclear free world, if N. Korea was the only remaining country with nuclear weapons, it would be even more stark, if they dropped nuclear weapons against another country with them the only country in the entire world to retain the nuclear weapon.

I think what we need is a change of attitudes according to which nuclear weapons are seen as useless, expensive, immoral, and instead of being a matter of prestige are a matter of

No, not at all. Those of us who say we should WORK towards nuclear disarmament, establishing more nuclear free zones, encourage unilateral disarmament of the smaller countries like the UK etc, aren't saying that US or anyone else should give up their conventional military.

But I don't think there is any evidence that nuclear weapons stop countries from invading. It did nothing to stop Russia invading Ukraine or to stop them from what they are doing in Syria which many object to. It did nothing to stop Saddam Hussein. It is doing nothing to stop North Korea. It surely does nothing either to stop superpowers or small nations. It just puts everyone on edge and makes it possible that there could be a horrible disaster / mistake. That's how I see it.

IS THIS NOT AN UNREALISTIC HOPE - THAT EVERYONE WILL BECOME SAINTS?

I don't think it is unrealistic at all. It doesn't need people to be especially evolved or to have a higher consciousness or anything like that. After all nearly all countries don't have nuclear weapons. And all of the southern hemisphere is nuclear free already. The people there aren't saints or special in any way, they just see it as sensible. Australians for instance aren't champing at the bit to have nuclear weapons. Rather the opposite, the very idea is unthinkable to them, that they would adopt nuclear weapons, for most australians and new zealanders etc. The won't even permit the presence of ships carrying nuclear weapons from other nations.

I think it just needs a change of attitude like that in the rest of the world. Sort of like apartheid in S. Africa. For many decades it was just the norm. But then there was a change until it became unthinkable. Not because people became perfect, just because of a change in ideas.

On a simpler level, when I was young then it was thought to be extremely eccentric and dotty to try to recycle. Now everyone does it, in the UK anyway. Even in the remotest areas - I live half a mile from a tiny village of 200 people on an island, by a single track road with passing places

clothes, shoes, garden waste - you name it, if it can be recycled, there's a bin for it.

I understand from friends that though it is common in the big cities in the States, in some rural areas it is still not done, and recycling is still ridiculed as it was here when I was a child. If so, I expect it is only a matter of time before it becomes normal there as well.

Recycling in some form is now supported pretty much world wide.

> Recycling bins in Japan,image by Jorge . In the 1960s and 1970s recycling was something that a few eccentrics would try to do, with no recycling centers, and no support for it at all.

That's not because we are much better people than we were in the 1960s and early 1970s. It is just because of a change of society and ideas.

So, I think we need a similar change according to which nuclear weapons are thought of as unsafe, expensive and useless and most important, just silly. Rather than making you powerful, they make you vulnerable and other countries would ridicule you for being so backward as to think that nuclear weapons help you in any way.

If they can come to be seen like that, as a matter of ridicule, and the sort of thing that leads other countries to treat you with very low esteem, if you still have them, then the change will happen perhaps almost by itself like the end of apartheid once the ball got rolling. And we do have the example at least of the nuclear free zones in the southern hemisphere to show that it is possible.

See also my op-ed here Is Corbyn Right About The Bomb?- Op Ed

I've now written this article up as Debunking: A President Of The US Could Order A Nuclear Attack At A Moments Notice On A Whim on my Science20 blog

887 views · 2 upvotes · Posted Oct 24, 2016

Upvotes 2 Comment

Debunked: NASA says that Earth will enter

This is an old chestnut of a hoax in a new dress. NASA Confirms Earth Will Experience 15 Days Of Complete Darkness in November 2015

It's on newswatch33 which is a fake news site. Newswatch33.com – fake news - website profile - ThatsFake.com

Not worth debunking in detail, the whole story is just absurd nonsense, and as it is a fake news site, it is not meant by its writers to be taken seriously.

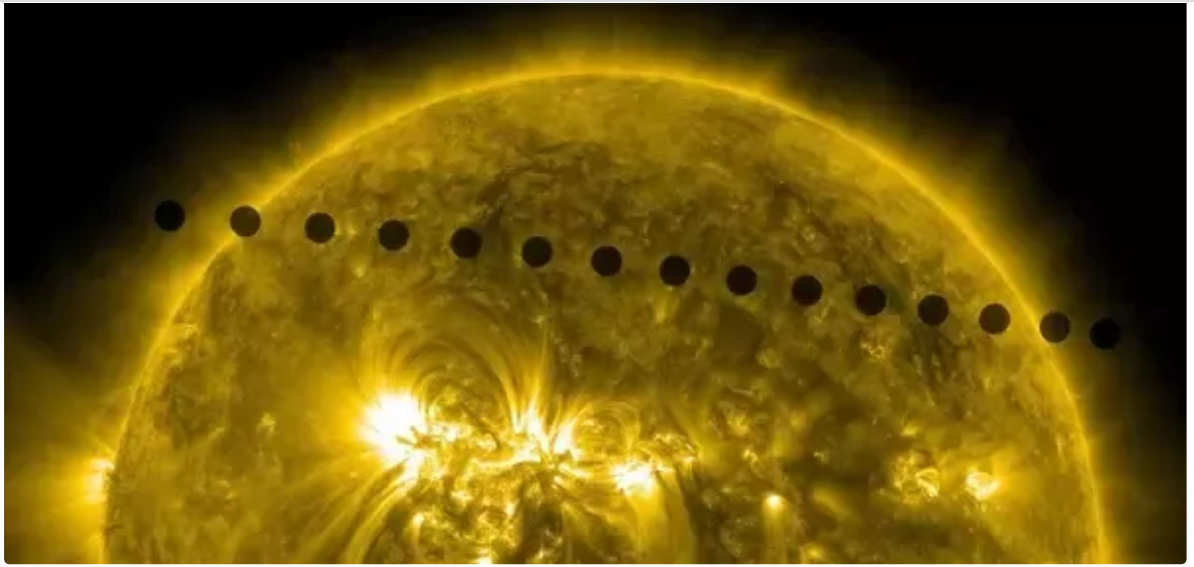
Here is the Snope page about it: FALSE: NASA Confirms 15 Days of Darkness in November

Here is the Universe Today's debunking of it

No, There Won't Be 15 Days of Darkness in November. It's Another Stupid Hoax. - Universe Today

Although this story doesn't say it, I have read a hoax which I can't find now suggesting that we could have a fortnight of darkness due to passing through the shadow of Venus.

This is what Venus looks like when it transits the sun inj 2012, the last time it will happen for 105 years:

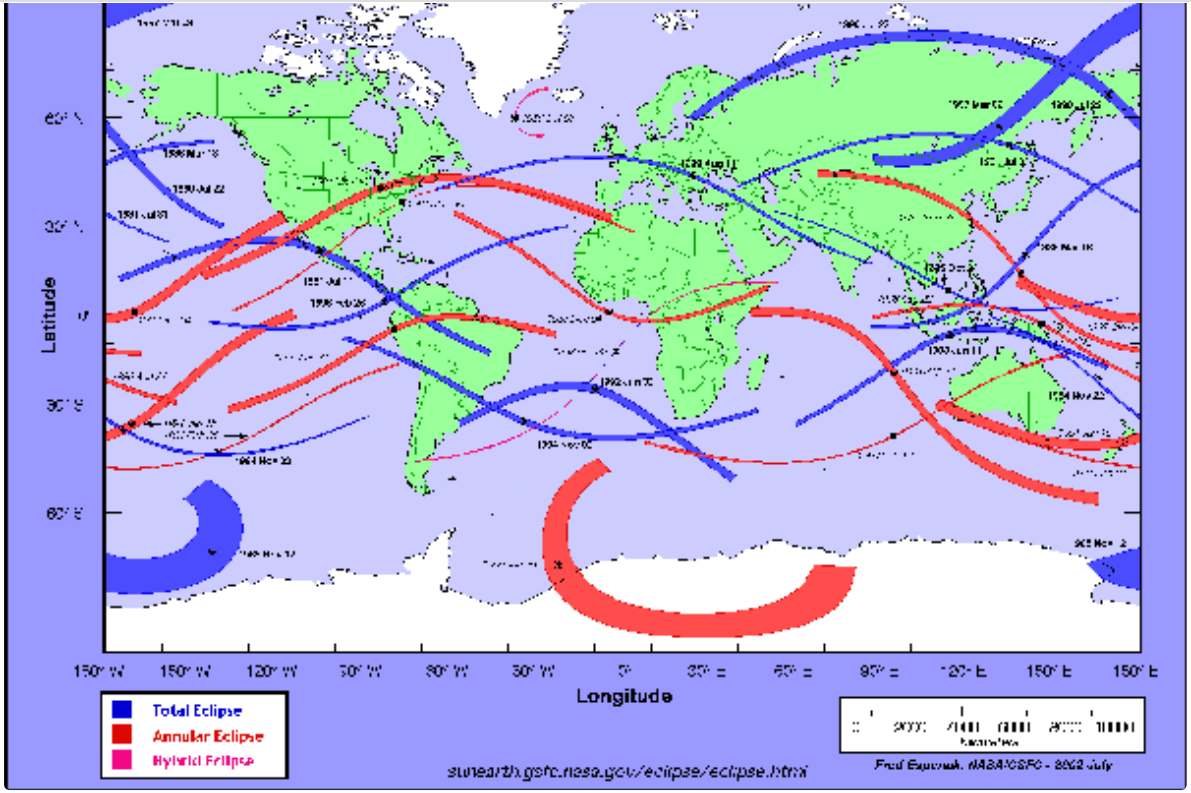


> Venus transit,June 5, 2012, photographed by NASA's Solar Dynamics Observatory spacecraft. False colour obviously. Credit: NASA/SDO, HMI

As you can see, Venus is far too far away to cast a shadow on Earth at all during the rare times it transits the sun.

There’s no astronomical phenomenon known that could happen in our solar system and block out the sun for 14 days. Or even for one minute apart from lunar eclipses as the Moon is the only object close enough and large enough to block out the sun in our solar system.

> Timelapse of a solar eclipse. The Moon is the only object in our solar system that can block out the sun as seen from Earth. It blocks it out completely for a maximum of a few minutes. A total eclipse is visible from a narrow “eclipse track” that traces across the Earth.



For the 2017 eclipse in the US, see this track plotted on google maps: Total Solar Eclipse of 2017 Aug 21

187 views · 1 upvote · Posted Oct 23, 2016

Upvotes 1 Comment

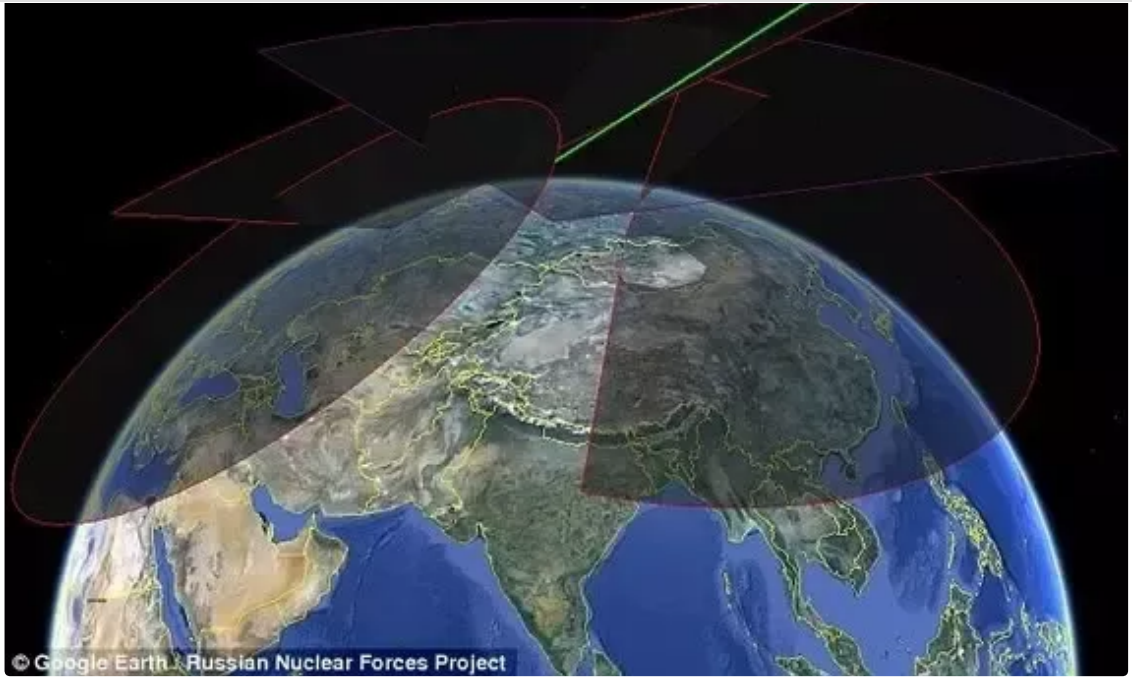
Okay this isn't actually debunking anything but it's a natural question. Why didn't the astronomers spot it and for that matter, why didn't the Russians spot it on their radar? And the answer in short is that the only reason they missed it is because it is so small and approached from an awkward angle.

If it had been a bit larger we'd have spotted it months earlier. and if it had approached in any direction except from the sun we'd have spotted it days or maybe a week or so before.

Also, if we'd had our present day telescopes operating back in the 1980s we'd have discovered it then when it did a very close flyby of Earth.

Then, there's a space telescope we could launch for $450 million that would find most small asteroids even right down to 20 meters in diameter within a decade, and also since Chelyabinsk there are new asteroid detection systems in place that will help to find most assteroids, even small ones , sooner, though an asteroid as small as Chelyabinsk from that particular direction remains a challenge to spot from Earth and needs either a long timeline of observations going back decades, or to have a space telescope closer to the sun to look at parts of the sky we can't see easily from Earth.

So first, why didn't Russia's early warning radar system spot it? Well this image helps make it clear



The fans there show the Russian radar sweeps. They are ideal for detecting ICBMs which would approach from somewhere else on Earth. They are not designed for detecting asteroids. It would waste power and it would make them less efficient if they looked in all directions in space, where ICBMs could neer come from.

So, the simple reason is that the Russian radar is designed for detecting ICBMs not asteroids. They can tilt their radar up to angles of 34.5 degrees if necessary e.g. to track satellites but they need to be asked to do that - since nobody knew that Chelyabinsk meteorite was on its way they had no reason to tilt their radar scan to look for it.

More details: How did Russia's early warning system miss the meteorite? Nuclear missile-detecting radars never saw it coming

slower than that. In one minute it would travel 1020 km, more than twice the distance from the ISS to the Earth's surface.

So what about the astronomers? Well Chelyabinsk was a tiny asteroid only 20 meters across and it approached from close to the direction of the sun.

This is it's orbit

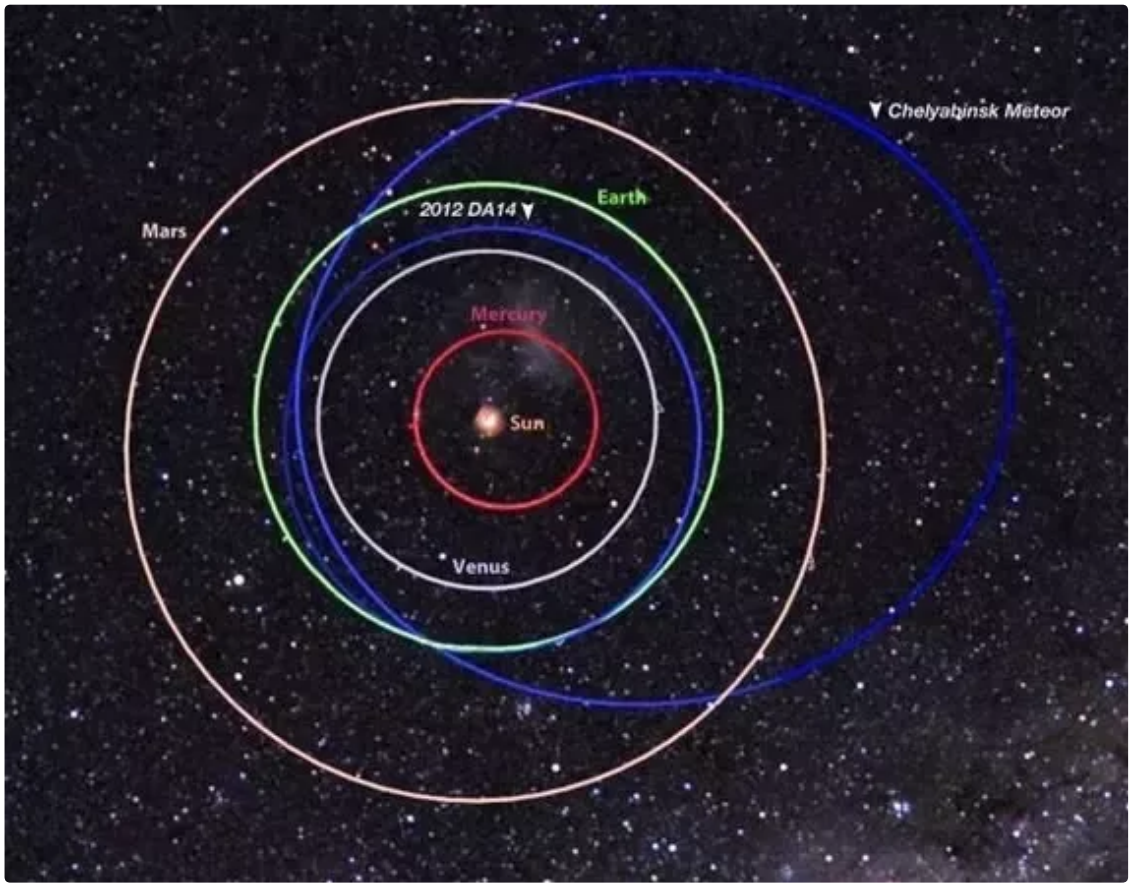


Diagram from here: Chelyabinsk meteor mystery 2 years later | EarthSky.org

it could have been detected months earlier.

It actually did a close flyby of Earth back in February 15, 1982 at a distance of bout 140,000 miles (224,000 km) - that's closer than the Moon - which changed its orbit to one that hit Earth more than three decades later.

Eventually as we keep observing the sky we will find the faint astseroids like this also but it could take decades to find most of them.

HOW MUCH DAMAGE COULD IT DO?

An impact at that angle even over a city would mainly cause broken glass and such like - could hurt people near to windows as for Chelyabinsk.

However as you can see from the image above, it is just chance that it came in at a shallow angle. If the path was shifted a bit more to the right in that diagram it could hit the Earth more directly at a steep angle. That would have been much more dangerous for humans. It was about a one megaton explosion, slightly less, harmless as an air burst. But if it happened near the ground it could be devastating.

> "For a 1-megaton explosion the optimum burst height is about 1700 meters (a mile) and widespread structural damage occurs for any blast below about 5000 m (3 mi)

John S Lewis

I'm a little surprised that something only 20 meters across could be so dangerous, it did have a high relative velocity though, 15 km /sec. Well above average for Earth meteorites though not as high as short period comets

There's a webinar about it here:

I was interested also to hear that it's really hard to model whether or not you get tsunami for ocean impacts. Usually you'd say that 20 meters in diameter is far too small for a tsunami and that it would need to be more like one kilometer - but it could cause a tsunami depending where it hit and the result is hard to model.

WHAT IS THE RISK FROM SUCH AN ASTEROID?

The risk of hitting a populated area is very low because first of all, most of the Earth's surface is water, and then of the land area, most is uninhabited or sparsely inhabited. Then many of the impacts would be at shallow angles because you have to hit Earth pretty much dead center to get a steep impact.

So - the next asteroid to hit Earth of this size will probably not kill anyone, but it could be hazardous, similar to Chelyabinsk and it could be much worse.

This is also by far the most likely size of asteroid to hit us as the smaller ones are much more numerous. We are probably hit by asteroids this size roughly every 80 years I've heard as a

populated area. And a possibility of a tsunami for impacts on water but hard to model, probably most won't be.

Which does not mean that we are safe for the next 400 / 1000s of years. We could be hit tomorrow or not be hit by another one for centuries. We were hit by another one in Siberia after all in Tunguska. And though it's very unlikely, the next one could also hit on a populated area.

It's much more likely that you are hit by lightning, or a tornado, or an earthquake or tsunami or volcanic eruption than one of these. All of those have happened many times to many people. There are actually a few historical records of individual people killed by small meteorites, none since the beginning of the twentieth century. But no instances of many people in one go except a rather dubious Chinese one that seems more likely to be a hail storm with large hailstones.

[will add in the information about historical records of death by meteorite in the C19 and earlier, can't remember where I have that data just now]

WHAT CAN WE DO TO RETIRE THIS RISK?

If we can find them well in advance, there are many ways we can deflect them. If we can warn of them a day or two in advance that is still time to evacuate the impact zone. ~Detection is the key and this is definitely an addressable problem, it mainly needs funding. Astronomers know what to do to find them.

They are making great strides with the asteroids we can spot from Earth. See Tally of known near-Earth asteroids and comets hits 15,000 . They discover about 30 new asteroids per week, or more than three a day nowadays. But some of the smaller ones can only be seen easily from space (or else if we wait for some decades for a close flyby to image them).

The risk though shouldn't be over played. It's more likely that you are killed by a tornado or by

It's up to politicians really and the general public, what our priorities are. The cost of the Sentinel space telescope is $450 million which could find most objects down to 20 meters in diameter with in 10 years and it would be in orbit between Earth and the Sun so able to find the hard to see asteroids that approach us from the direction of the Sun more easily, especially since it uses infrared and they are easier to spot in infrared.

It costs only a fraction of a percent of the cost of Trident renewal which the UK just voted for, and it's actually a price that a philanthropic billionaire could find too. Anyone reading this got a few hundred million dollars in spare change and want to sponsor a mission to find most of the 20 meter diameter and larger asteroids within 10 years?

Or perhaps pressure on politicians would work. I know there are many natural disasters to protect against. However this one does deserve some attention because it's the easiest to actually prevent. There is no way to stop an earthquake or a volcano or a tsunami, just have to focus on predicting it. But we can not only predict asteroid impacts years and decades in advance, exactly to the minute, we can also deflect them given enough time. Spot an asteroid a decade or two decades before it hits, and we can deflect it even rather easily, especially if it does a flyby of Earth before the impact as is the usual situation.

There are many ways we could do it but the priority is to find them first. If we find an asteroid headed our way, it shouldn't be hard to raise the funds for an asteroid deflection mission.

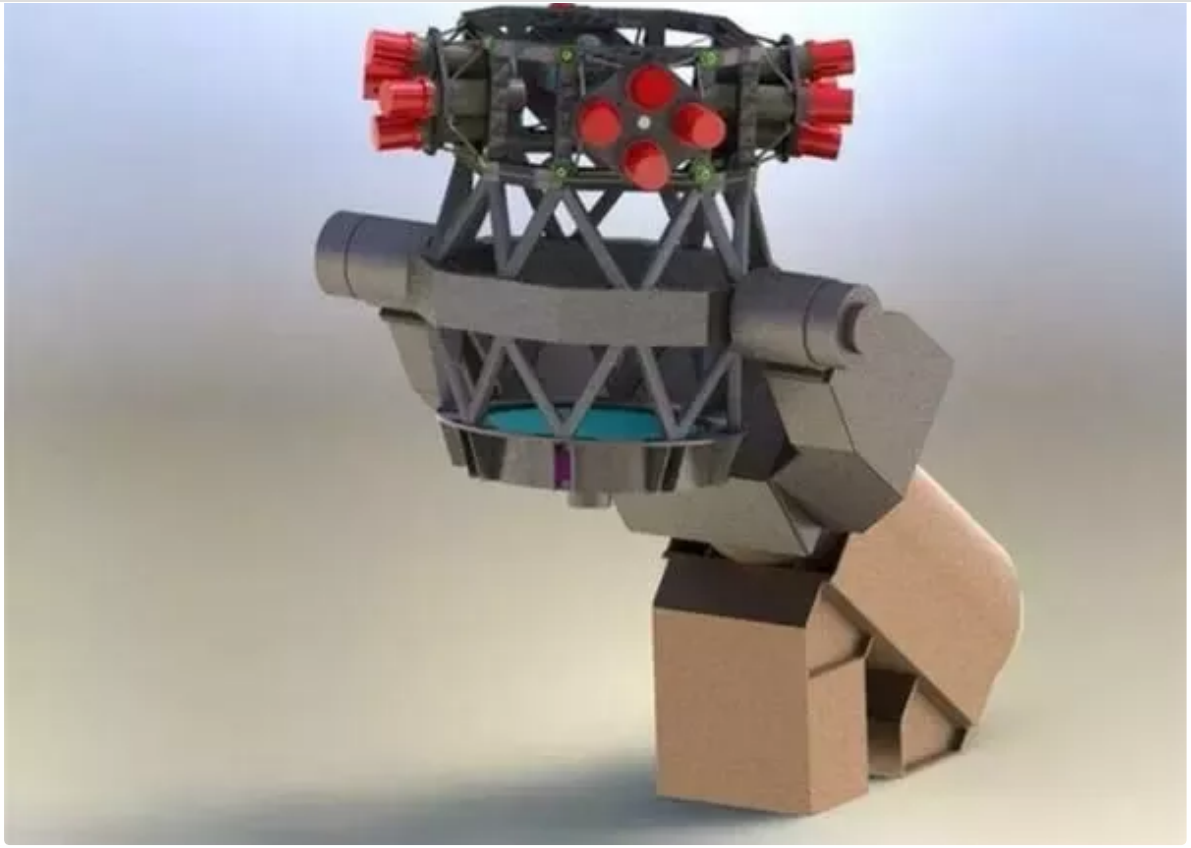
SMALL ASTEROID EARLY WARNING SYSTEM

There's also work on early warning systems. This one wouldn't work for Chelyabinsk as nobody spotted it before the impact, but it's a new computer program Scout, which automatically checks all the observations submitted to the IAU minor planet center for ones that may be on potentially hazardous tracks. It then prioritizes those and sends messages to astronomers to

asteroids. Incoming! New Warning System Tracks Potentially Dangerous Asteroids

Another approach is to add more telescopes to look for them automatically from many places on Earth so we can see them quickly. That's especially useful for small faint asteroids that we might only detect a few weeks before they get here.

That's the idea behind this scheme from the ESA due to come on line in the near future ESA's bug-eyed "fly-eye" telescope to watch for Earth-threatening asteroids They are motion detectors, don't actually image the asteroids very well, but alert astronomers to the possibility that something nearby is moving across the sky quickly, so that they will look at it more closely.



FINDING MORE ASTEROIDS QUICKLY

Then, the Large Synoptic Survey Telescope being built in Chile, first light 2019 begin science operations in 2021, and full operations in 2022 is a very unusual large mirror telescope. It's mirror is 8.4-meters in diameter, and unlike most large telescopes which are designed to focus on a tiny spot, it will have a very wide field of view, 3.5 degrees diameter, or just short of ten square degrees, with sharp vision right across its field of view

It will use a 3.2-gigapixel CCD camera to do paired images of those ten square degrees of the

That should speed up the detection of the fainter asteroids, sub kilometer scale as far as the main asteroid belt. It should increase the number of known asteroids and comets of all sorts 10 to 100 times. It will image the whole sky every three or four nights in two colours, a total of nearly a thousand full sky surveys in ten years, and take so many photos of the sky that it will be able to do its own orbit determinations for the asteroids (normally follow up measurements are needed for all the asteroids detected). Near-Earth Objects (NEOs) . This will let it find the orbits of the asteroids very accurately as well. For details see: [1511.03199] Asteroid Discovery and Characterization with the Large Synoptic Survey Telescope (LSST)

Wikipedia

So it is faster, higher resolution and more sensitive than Pan STARRS. Also, it's in the southern hemisphere, so complements Pan-STARRS, which is in the northern hemisphere. Pan-STARRS already finds most of the asteroids to date. Once the LSST comes on line it should increase the rate of discovery even more.

GOAL TO FIND 90% OF ALL ASTEROIDS OF 140 METERS AND ABOVE BY 2020

The **NASA Authorization Act of 2005** set the goal to find 90% of all asteroids of 140 meters or larger by 2020.

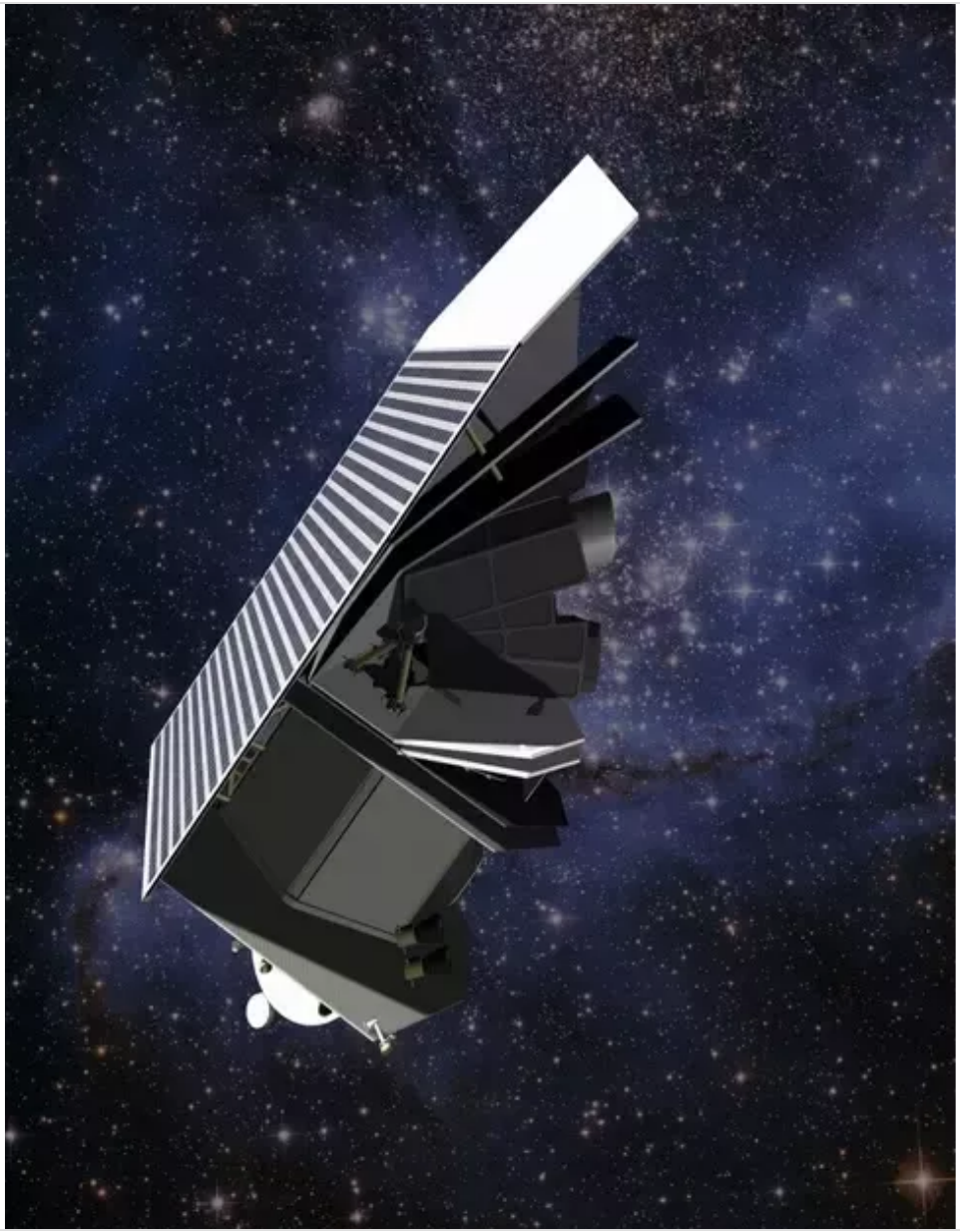
> "detect, track, catalogue, and characterize the physical characteristics of near-Earth objects equal to or greater than 140 meters in diameter in order to assess the threat of such near-Earth objects to the Earth. It shall be the goal of the Survey program to achieve 90 percent completion of its near Earth object catalogue (based on statistically predicted populations of near-Earth objects) within 15 years after the date of enactment of this Act."

We have already reached the goal already for asteroids of 1 km and larger and should have no trouble reaching it by then. Found 90% of the roughly 1000 asteroids that large, and are finding one a month at present.

However the smaller ones are more of a challenge. There are about 30,000 NEOs of 140 meters or larger.

LSST could achieve this goal within 12 years, and potentially faster if it is optimized for searching for NEOs. However, it will come into operation until 2020 (first light) and 2022 (first observations). Also it is currently funded for only 10 years and was funded for many science goals, not just NEOs. So although it will find many NEOs by 2032, it will not reach that 90%

For half a billion dollars we can build a space telescope to do an infrared survey from inside of Earth's orbit close to Venus to find most of the objects down to 20 meters within a decade.



> going to partner with NASA but they pulled out due to lack of funding. Any major technological country world-wide could fund this and hardly notice the effect on their defence budget.
>
> It would sit inside of Earth close to Venus's orbit giving it a good field of view of NEOs close to the sun. It looks away from the sun to avoid being blinded by it - and it can then see faint NEOs that are in between the Earth and the Sun which is the hardest place to spot them from our current Earth based surveys. It would help fix that blind spot for asteroids that come from the direction of the sun. It looks in infra red because the asteroids are far more obvious in the infrared.
>
> Eventually it would spot just about everything out there that's in the vicinity of the Earth orbit.
>
> Idea is that it would find nearly all potential impactors down to 20 meters diameter .

If we find anything headed our way then with a decade or two of warning it would be easy to deflect.

The Sentinel spacecraft didn't get enough funding and work on it is paused.

NASA however is still following up an alternative approach NEOCam with a slightly different strategy, situated at the L2 position. If it is funded, this should help close the gap for 140 meters and larger.

However that still leaves the three million asteroids of 30 meters and larger, which are still large enough to be quite hazardous. NEOCam is not as sensitive as Sentinel for these.

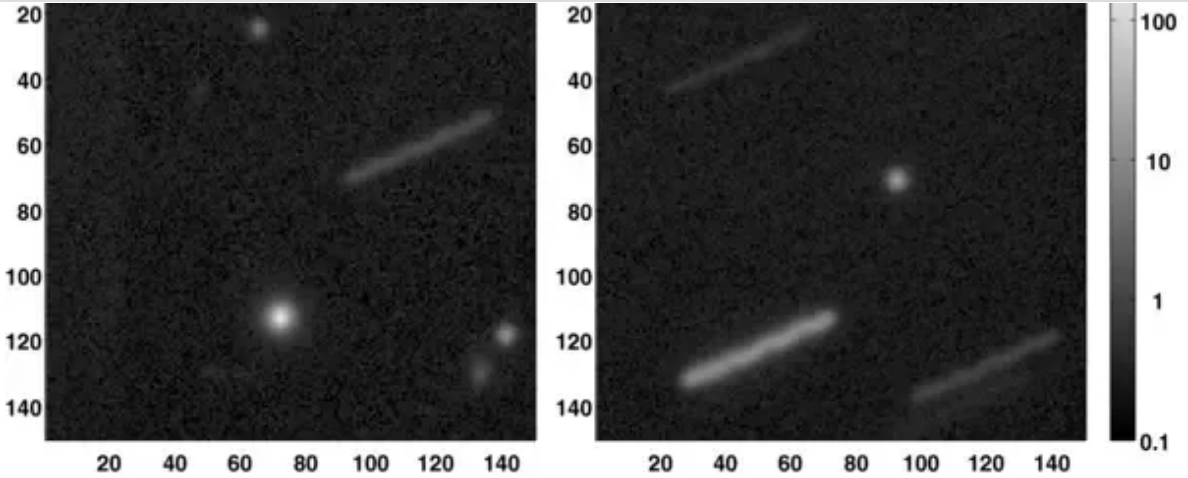
NEW DEVELOPMENT SYNTHETIC TRACKING OF ASTEROIDS

Near-Earth Asteroids using Synthetic Tracking . For an easier to read summary of it, see "Synthetic Tracking" Set to Revolutionise Near-Earth Asteroid Discovery

The idea is that instead of doing a 30 second exposure, you do many shorter 2 second exposures. With conventional CCDs that adds to the read noise so you get more errors but there are new CCDs developed for medical imaging that permit fast accurate reading, called Scientific CMOS detectors. The Andor Zyla is an example here.

> Andor Zyla 5.5 | sCMOS Camera medical imaging camera capable of fast read out with low read error

You can then use this to simulate tracking the asteroid with the camera, which makes the asteroid far brighter in the images.



> This image shows a the result of stacking many photographs of asteroid 2009BL with camera set to follow the stars on the left - notice how the asteroid is shown as a streak, and rather faint. On the right, the same photos are stacked to follow the asteroid which then shows as a much brighter spot, and the stars are streaked and fainter.
>
> Image from: DETECTION OF A FAINT FAST-MOVING NEAR-EARTH ASTEROID USING THE SYNTHETIC TRACKING TECHNIQUE
>
> When the asteroid is small and traveling faster across the field of view, the trail can be so faint it can't be distinguished from background noise when the camera follows the stars. If you know its velocity you can make it much brighter by following the asteroid. But what can you do if you haven't detected it yet and don't know which way it is moving? The idea of synthetic tracking is that you take lots of short exposure photos and just try stacking them in many different ways until you find the right velocity and an asteroid pops into vie win the photo. This is time consuming but modern graphics cards permit fast parallel processing which makes synthetic tracking feasible.

volume of space covered. So this technique can lead to a huge increase in the detection of asteroids.

They found that fewer than eight of these cubesats, fitted with 15 centimeter synthetic tracking telescopes could find more than 70% of NEOs larger than 45 meters in diameter in less than six years. The total cost would be $50 million so a tenth of the cost of Sentinel.

With larger 30 cm telescopes they could find 95% of them in the same mtime period. For details see their 2016 Annual Progress Report

See also my Giant Asteroid Headed Your Way? - How We Can Detect And Deflect Them

Debunking: All going to die as a result of impact of Asteroid 2009ES or 2000 ET70 or [insert name of asteroid here] or a “Level 3 Planet Cracker”

Robert Walker

Current Impact Risks

It's sorted with the asteroid of most risk at the top and it is colour coded, so easy to check. Anything white or blue is no threat at all. If you ever see a yellow entry at the top, that means it is a potential risk, but the chances are high that it is a false alarm. Only if you get an orange or red is there a real risk. That has never happened to date.

I assure you if it goes orange or red, you won't need to hunt around to find out information, it will be on international news and all astronomical web sites. And if there is an actual impact predicted, you'd get warnings to evacuate the impact zone. This is very unlikely to happen though. In all of recorded history we have had many volcanoes, earthquakes, tsunamis, but never had a major asteroid impact on a populated area. Indeed not even in a desert apart from meteor crater in Arizona 50,000 years ago.

So chances are that this is not going to happen for thousands of years into the future and by then if we still have space technology we have probably been expecting it for a few thousand years, centuries at least, and surely would either deflect it, or just mine it away to oblivion with space mining.

It's not impossible that we get a largish meteorite impact, even one large enough to destroy a city, or a small country. It's enough of a risk that we need to detect these things, and even more so the smaller ones like Chelyabinsk. .

As for a "level 3 planet cracker", I've no idea what it means. It sounds like something out of Star Wars.

However whatever it is, it's not possible. Such things did happen in the early solar system, when the planets were forming, one of them created our Moon. But they haven't happened for billions of years since the solar system settled down, the largest ones that can hit us are about

So planet crackers are just impossible at present, in what is a quiet time of our solar system.

MORE DETAILS ON 2009ES

One of these asteroids, 2009ES was photographed by a Chinese observatory in early September, one of the many asteroids photographed every day. For some reason this became a major news story. This asteroid was discovered in 2009, as you can tell from the name. It flew past Earth at a distance of 7.2 million kilometers on the 5th September. The original story did not give a date for a flyby and as a result, the story continued to be repeated in online news sites, predicting the end of the life on Earth, for much of September. Here is an example story: End of The World? Massive Killer Asteroid Heading Towards Earth, Experts Warn on Nature World News and Warning of doomsday asteroid 'with the power of three billion nuclear bombs' . on Metro magazine .

2009ES has its close approaches mapped out through to march 2200 when it will pass Earth at a distance of between 1.4 million kilometers and 1.42 million kilometers. It has a diameter of between 210 and 470 meters - large enough to have widespread local effects though not enough to have global effects. It is listed as a potentially hazardous asteroid so we do have to keep an eye on it - but it is no risk at all for the next couple of centuries. For details see 2009ES in the JPL Small-Body Database Browser and more details and links here: Asteroid 2009 ES Fact Sheet

More details on 2000 ET70

As another example, right now, many of these online news sources are running a story about 2000 ET70 which isn't anywhere near us this year. The closest it gets to us before 2100 is a flyby at a distance of 5.52 million kilometers on the 19th February, 2059 at 9:20 am. They don't give a source for the story so it's impossible to work out how the misunderstanding arose. If you

2000 ET70 would not kill us all if it hit, none of the NEOs are that big.

But it is a large asteroid, diameter about 1.5 km, it's large enough to cause a large tsunami also to have some global effects on climate for a few years and obviously, it would devastate an entire country if it impacted on a populated area.

It is one of the better known NEOs with radar imaging. See Radar imaging and physical characterization of near-Earth Asteroid (162421) 2000 ET70 - they have computed its orbit so precisely that they know it accurately from 480 - 2813 CE. The minimum distance from the Earth over this time period is 4.7 million kilometers. So though it is a potentially hazardous object long term, it's no threat to Earth for at least 800 years.

HOW TO CHECK AN ASTEROID FLYBY STORY IN DETAIL

If the top entry is blue or white, there is no current risk known from any asteroid, and the story is a hoax or misunderstanding. If you want to investigate in more detail, see the indented paragraph:

> For a more thorough check, look up the object's page in the JPL NEO browser and click on "Close approach data". Here is the page for 2000 ET70 . The first column shows the date. The fourth column shows the minimum distance in au, where 1 au is the distance from the Earth to the Sun. To convert that to kilometers type0.0369406968466726 au in kilometers into google (or whatever the number is). That particular example gives the distance for the closest approach for 2000 ET70 in kilometers.
>
> For a list of all the flybys for upcoming dates, go to the ESA close approaches table . Or the JPL close approaches page . The JPL page is more comprehensive including even very small minor asteroids, while the ESA one has a longer timeline and includes past asteroids for some time back.

IDEA THAT NASA WOULD DEBUNK STORIES LIKE THIS IF FALSE

NASA rarely comment on doomsday stories. That's not their mission and it has to be something fairly major for them to say anything. So, no, they won't issue a debunking statement every time the media mistakenly say that some asteroid is going to hit Earth.

It's important also I think to realize that NASA is a space agency, not an astronomical organization. They do make public statements about results of their space missions, e.g. discoveries from rovers on Mars etc. But they aren't really a mouthpiece for astronomy generally. Their announcements are generally tied in some way to an observation or mission, e.g. Curiosity, or Hubble or whatever.

Debunking: Halley’s comet is going to hit Earth this week.

Robert Walker

Debunking: Daily Mail online ran a news story with the title"'Doomsday' comet set to shower Earth tonight" saying that conspiracy theorists claim that scientists have miscalculated the orbit for Halley's comet and that it will hit Earth this week.

> Orbit of Halley's comet. As you see it can never hit Earth or any other major planet for as long as it remains in this orbit, which is stable over timescales of thousands of years
>
> (longer term it will probably evaporate away as many comets do eventually, over a period of a few thousand years. It's orbit is hard to predict long term exactly because it's orbit is sensitive to small scale perturbations. If it doesn't evaporate, the most likely outcome is that it is ejected from our solar system within 10 million years).

It's true that the Oronids meteor shower is associated with Halley's comet, but it comes from the debris from its tail, blown away from the main comet by the sun. See my answer to Can Halley's comet strike a planet in the solar system?

129 views · 1 upvote · Posted Oct 23, 2016

Upvotes 1 Comment

Debunking: You can’t trust anyone except the Nibiru people - everyone else is a paid shill of the government or in some other way motivated to propogate falsehoods

I am often asked this - why should you trust me rather than anyone else? Well the the way forward is to learn to discriminate reliable from unreliable sources and to learn to check your sources.

For instance, on the Obama solar storms story, try to find a link to his actual announcement. It's an executive order, easy to find with a google search, here it is.

Executive Order -- Coordinating Efforts to Prepare the Nation for Space Weather Events

Although a bit technical, it says
"Space weather events, in the form of solar flares, solar energetic particles, and geomagnetic disturbances, occur regularly, some with measurable effects on critical infrastructure systems and technologies, **such as the Global Positioning System (GPS), satellite operations and communication, aviation, and the electrical power grid**. ..."

Now go to the DailyStar which says'Prepare for space weather DOOMSDAY' Barack Obama's stark warning to the world and the subtitle says "US president Barack Obama has warned of an apocalyptic solar storm that could WIPE OUT life as we know it."

That's obviously not at all what it is about. He was warning about effects on power supply and satellites and effects on health as a result of power disruptions - e.g. hospitals losing power supply, that sort of thing. He was not warning about a disaster that would wipe out life as we know it.

So you know now that the Daily Star is not a reliable source of information on this topic (it's a red top tabloid notoriously unreliable and sensationalist in the UK).

Now also, if anyone else repeats this story to you, you know that they do not check their sources

You will find other people who are reliable, who check their sources. The best of all are the ones that actually share their sources, so you don't have to rely on just trusting that thye remembered what they say correctly, you can click through and check for ourself.

That's what I call "rational trust" and "rational distrust".

MORE ABOUT RATIONAL TRUST AND RATIONAL DISTRUST

In the case of Nibiru, many of the things I talk about in my articles are things you can confirm from your own experience. You can go out any starry night and check that what I said about the pole star is true. You can also block out the sun with a finger and check for yourself that there is no other sun next to it. You can follow Jupiter through the night sky with your own eyes and you can also check for yourself that every constellation in the zodiac is visible all night at some point during the year.

Or you can go and check on any reliable astronomical site and confirm that they say those things.

You could try learning a little astronomy and then you'll see for yourself that Jupiter and any other planet can't hide behind the sun.

Then there's also "rational trust" - even with no astronomical knowledge, you can look at how various authors use the sources they cite to see if they are credible - people who it is rational to trust.

You don't have to verify everything someone says once you have shown to your satisfaction that they are reliable - once you have done that for a while you get to realize that they do read their sources. I have rational trust in what Phil Plait says about astronomy - he checks his figures and details and I've confirmed many times that he is an accurate author, and every fact he states

very important to me, e.g. I'm writing an article and need to know for sure it's accurate, I just follow up the sources and find out for sure for myself. If anyone is not sure about any of the sources also they just need to ask and I'll give more details. I do make mistakes also sometimes, and when people point them out I fix them.

On the other hand with these Nibiru stories, when you follow up the sources, their sources usually directly contradict what they say. E.g. someone wrote a huge long page about an object in Google Sky which he claimed was Nibiru .

It is easy to check for yourself that this object is in facts the peanut nebula, you can check the co-ordinates for the peanut nebula for yourself, and verify that it is indeed the object on google sky which they picked out which then you can recognize visually to be the same object.. It is a distant object about 400 light years away. Once you find that someone has written a great long article about an object 400 light years away claiming that it is a planet in our solar system and building a big elaborate story around that, you can be pretty sure this is someone who doesn't check their sources well. Maybe they don't even know how to do that - and so it is rational to distrust them. So that's "rational distrust".

So - it's not saying at all that they are untrustworthy as a person. Perhaps they are upstanding citizens that have never stolen, never told a lie, and sincerely believe everything they say. But that what they say on the topic of planets can't be trusted to be accurate as they don't know how to discriminate between an object 400 light years away - so far away that it takes light 400 years to get to our eyes from it, and an object in our own solar system. Perhaps it is because of things they don't understand and that nobody has explained to them. Or it might be that someone tried to explain and they didn't understand what they were saying or they were not listening. Perhaps they have never had any scholarly training and never learnt about the need to check sources.

made a mistake, admit it and learn the subject properly. Until then, it is rational to distrust them in matters of astronomy.

I posted these videos to the comment thread in my Imaginary Bullshit Nibiru article , and some found them helpful.

Here is the Ringu Tulku video I mentioned at the end of that last video.

Debunking: NASA is hiding astronomical information about extra planets and extra suns in our solar system and even an entire extra solar system

Robert Walker

I get this all the time. The conspiracy theorists seem to think that NASA has almost unlimited power, able to shape the news stories and astronomical observations and research world wide

might have some credibility, but I don't know of any instance of NASA doing anything intentionally deceptive.

NASA don't release classified details of the technology for making rockets, for obvious reasons, because it is the same technology used for making ICBMs. Sometimes the US military use NASA facilities to launch secret missions, mainly military spy satellites and suchlike. But apart from those obvious exceptions, they don't even keep things secret either.

Amongst space agencies they are actually the most open in terms of rapid release of images - Curiosity and their orbiting images are released immediately - while ESA missions often delay release to let their scientists publish papers about them first.

But anyway NASA is not an astronomical body either. It's a space agency. There are tens of thousands of professional astronomers in many countries world wide and millions of knowledgeable amateurs. And asterod detection is done as a collaboration between professionals and amateurs.

So there is no way that any government or even a collaboration of several governments could keep anything of any significance secret in astronomy. It's just not possible.

There are tens of thousands of professional astronomers - including 12,000 individual members of the IAU - and most professional astronomers don't belong to it nowadays though it used to be that they all did, it's less important now. There are 74 national members .

> The IAU voting in 2006 International Astronomical Union | IAU in Prague. They meet every three years. International body with 74 national members and over 12,000 individual members. This is a press release photo from International Astronomical Union | IAU
>
> The US member is not NASA which is a space administration The US member of the IAU is the National Academies which has 2000 participating universities in it.

The US has an estimated 200,000 to 500,000 amateur astronomers. Astronomy is one of the largest of the sciences and it has amongst the largest level of amateur involvement too with many amateurs making new discoveries. Asteroids are tracked by amateurs who play equal roles with the professionals in this, since it is much easier to track them with a smaller telescope than to tie up a big telescope like Pan Starrs just to track asteroids. Once you know

news, it wouldn't work, because of this wide network of amateurs and professionals. It could only be suppressed in a totalitarian world government with complete control of news media and blogging and facebook posts etc all vetted by them. That is not our situation thank goodness.

And after all, if there was such suppression, why would the professional and amateur astronomers be suppressed, in their tens of thousands, and millions, respectively, yet anyone can upload a photo taken with a mobile phone or a video to youtube without it being suppressed. It just makes no sense no matter how deeply you are into conspiracy theories on this matter.

The problem with all these amateur "observations" of a second sun etc is that they are not used to astronomy, are not used to camera glitches, and don't do the basic elementary precautions that an amateur or professional astronomer would do before they would count something as an observation.

A real object such as a daytime comet, say, gets observed day after day, you can say "look five degrees East of the sun and you can see it" or "look to the West after sunset with a clear horizon and you will see it just below such and such a star" etc. And everyone then can point their telescopes in that direction and take photos of it.

But the Nibiru enthusiasts just say "snap lots of photos and take lots of videos. If you photograph or video an unexpected bright spot anywhere in the sky, that confirms Nibiru". That is not how science is done.

218 views · 1 upvote · Posted Oct 23, 2016

Upvotes 1 Comment

Robert Walker

This story is actually true - but it is not as scary as it might seem from titles such as Planet Nine could be making the solar system WOBBLE: Sun's strange tilt may be caused by mysterious world's orbit By a wobble there they actually refer to a very very slow gradual tilt over billions of years. But as journalists do, they chose a more graphic vivid word than “gradual tilt” to help attract your attention to the article. Then people sharing this story online and talking about it make it seem like it is something new and scary that is going on. It is not scary at all.

Artist’s impression of Planet 9 together with our sun, so far away it looks like a bright star

The eight major planets in our solar system are in orbits inclined at an average of six degrees to the equator of the sun. This is a long standing mystery in astronomy.

There are several possible explanations including

- Something to do with the effect of the Sun's magnetic field on electrically charged particles in the collapsing dust / gas cloud in the early solar system.
- Imbalance in the mass of the sun's core in the early solar system
- Now we have a new possible explanation, that this Planet 9, if it exists, slowly shifted the solar system out of alignment with the sun over billions of years.

Astronomers are interested in this because if they find planet 9 they can check to see if it is heavy enough and in the right orbit to tilt the solar system by the amount observed. The other explanations are very hard to test and verify.

If it's planet 9, it happened over billions of years. Nothing noticeable is happening right now, and it is to explain a long standing puzzle in astronomy that we've known about for ages, it's not a new observation.

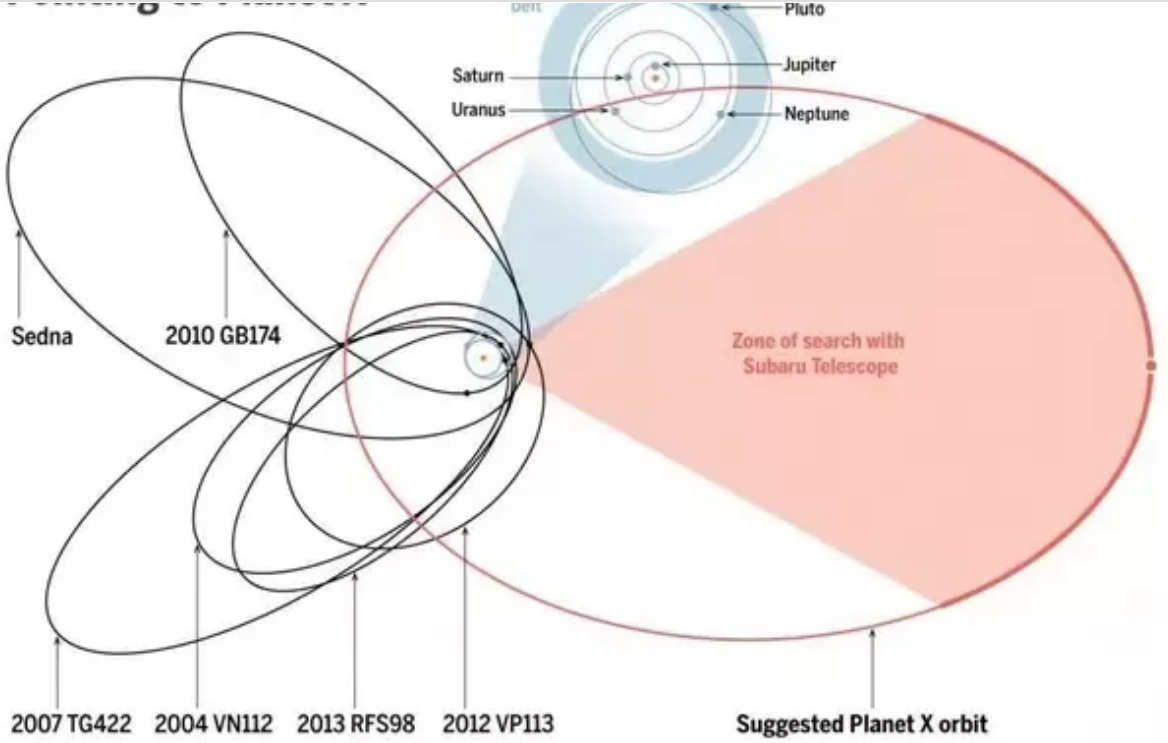
Details here Did the Mysterious 'Planet Nine' Tilt the Solar System?

Robert Walker

Many Nibiru enthusiasts claim that Planet 9 - a hypothesized planet way beyond Neptune - is the same as Nibiru - a planet that they claim comes into the inner solar system every 3600 years and is currently behind the sun and has been hiding behind it for many years and is about to jump out from behind it and hit Earth.

You can check this for yourself whether these ideas are at all similar.

This is the suggested orbit for Planet 9 if it exists



It's that big red oval. Now do you see the blue circle in the middle? That's the orbit for Pluto and Neptune. Our entire solar system is inside that circle. So the proposed orbit does not go anywhere near Earth, it doesn't even go anywhere near Neptune, the most distant of the gas giants from Earth. Its closest point is around 200 au so over six times the distance to Neptune (of 30 au) and its furthest point is 1200 au or 40 times the distance to Neptune from the Sun.

The zone of search shows the part of its orbit where it could be and still remain hidden to us - if it was closer to Earth we'd have seen it already.

To get an idea of how far away Neptune is see Bill Nye's video here:

After watching that video, can you see that something that is many times the distance to Neptune is no threat to Earth?

So, the people saying that this is Nibiru are wrong.

The scientists who hypothesized Planet 9 don't have any proof that it exists. They are currently searching to try to find it. For more about this, see

Why This New "Planet X" Is No Threat To Earth :).

For more debunking see also Debunking Doomsday - Nibiru, Pole Shift, California falling into the sea, Supervolcanoes, black holes, ... - idea for new online / kindle book.

Earth

Robert Walker

To debunk: Story in the Daily Star - red top tabloid so these are notoriously sensationalist and unreliable: 'Prepare for space weather DOOMSDAY' Barack Obama's stark warning to the world with subtitle “US president Barack Obama has warned of an apocalyptic solar storm that could WIPE OUT life as we know it.

This is the executive order they refer to: Executive Order -- Coordinating Efforts to Prepare the Nation for Space Weather Events

Although a bit technical, it says

> “Space weather events, in the form of solar flares, solar energetic particles, and geomagnetic disturbances, occur regularly, some with measurable effects on critical infrastructure systems and technologies, **such as the Global Positioning System (GPS), satellite operations and communication, aviation, and the electrical power grid**. Extreme space weather events -- those that could significantly degrade critical infrastructure -- could disable large portions of the electrical power grid, resulting in cascading failures that would affect key services such as water supply, healthcare, and transportation.”

So yes, it is true, This is something experts have warned about for some time. The thing is that the sun sends flares into space quite often but most of them miss Earth, and our magnetic field also protects us. Here is a summary of solar flares

There is no danger from the particles themselves because our atmosphere is equivalent in mass to ten meters thickness of water above us. It's like swimming ten meters deep, except, that because our bodies are also at the same pressure inside, our lungs, blood, etc, all equalized with it, we don't notice. A bit like the way fish can manage just fine at great depths because they have the same pressure inside and out.

But the particles are charged and cause fluctuations in magnetic fields. Not enough to damage electronics your laptop, tv etc is just fine. But very long distance cables like electricity cables that span tens and hundreds of kilometers can build up large charges along them which then spark through equipment attached to them and can damage very expensive transformers that cost millions of dollars to replace and are hard to make too.

So, it's to harden those, as otherwise in the worst case we could get power cuts that last for weeks as they work to replace all the damaged equipment after a storm like that. It's a sensible measure. These storms are very rare but one did happen in the nineteenth century, and so it can happen and could happen again, so it is sensible to be prepared.

to look into that properly and make sure the power supplies are robust in event of somethign like that. It could also knock GPS satellites out - though probably only temporarily, not physically damage them, but cause glitches that force them to reboot. So - there would be some warning, hours at least, with some days of warning that it could happen, but we'd need to be prepared to deal with that issue, I suppose worst case is that they just ground planes / halt operations of anything that relies on GPS for a few hours during the storm but they'd want to find a better solution than that if possible.

In short not at all apocalyptic. I just added a comment to an article on the Daily Star to summarize it:

> "This is not an apocalypse scenario at all. The main danger us from power blackouts as happened to Quebec some years back. It's a risk to long range transmission cables. A power surge due to a solar storm could burn out the transformers attached to the cables, They are very expensive, millions of dollars, and hard to replace. In worst case it could be a blackout for weeks until they fix it. So it is only sensible to prepare for this, which means, hardening the power supplies. The last time this happened was the Carrington Event the middle of the nineteenth century, 1859 when of course they didn't even have long range power cables, and it was just a pretty show of lights, the only people who noticed any other effects back then were telegraph operators who noticed sparks jumping from their apparatus."

For more debunking see also Debunking Doomsday - Nibiru, Pole Shift, California falling into the sea, Supervolcanoes, black holes, ... - idea for new online / kindle book.

See also: Debunked: **A Solar Storm Put A Crack In Earth's Magnetic Field**

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