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Climate change may be escalating so fast it could be 'game over', scientists warn

New research suggests the Earth's climate could be more sensitive to greenhouse gases than thought, raising the spectre of an 'apocalyptic side of bad' temperature rise of more than 7C within a lifetime

Ian Johnston Environment Correspondent | Friday 11 November 2016 |  1144 comments



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If the Earth's temperature rises seven degrees Celsius, it could trigger the kind of runaway global warming that may have turned Venus from a habitable planet into a 460C version of hell

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It is a vision of a future so apocalyptic that it is hard to even imagine.

But, if leading scientists writing in one of the most respected academic journals are right, planet Earth could be on course for **global warming** of more than seven degrees Celsius within a lifetime.

And that, according to one of the world's most renowned climatologists, could be “game over” – particularly given the imminent presence of climate change denier **Donald Trump** in the White House.

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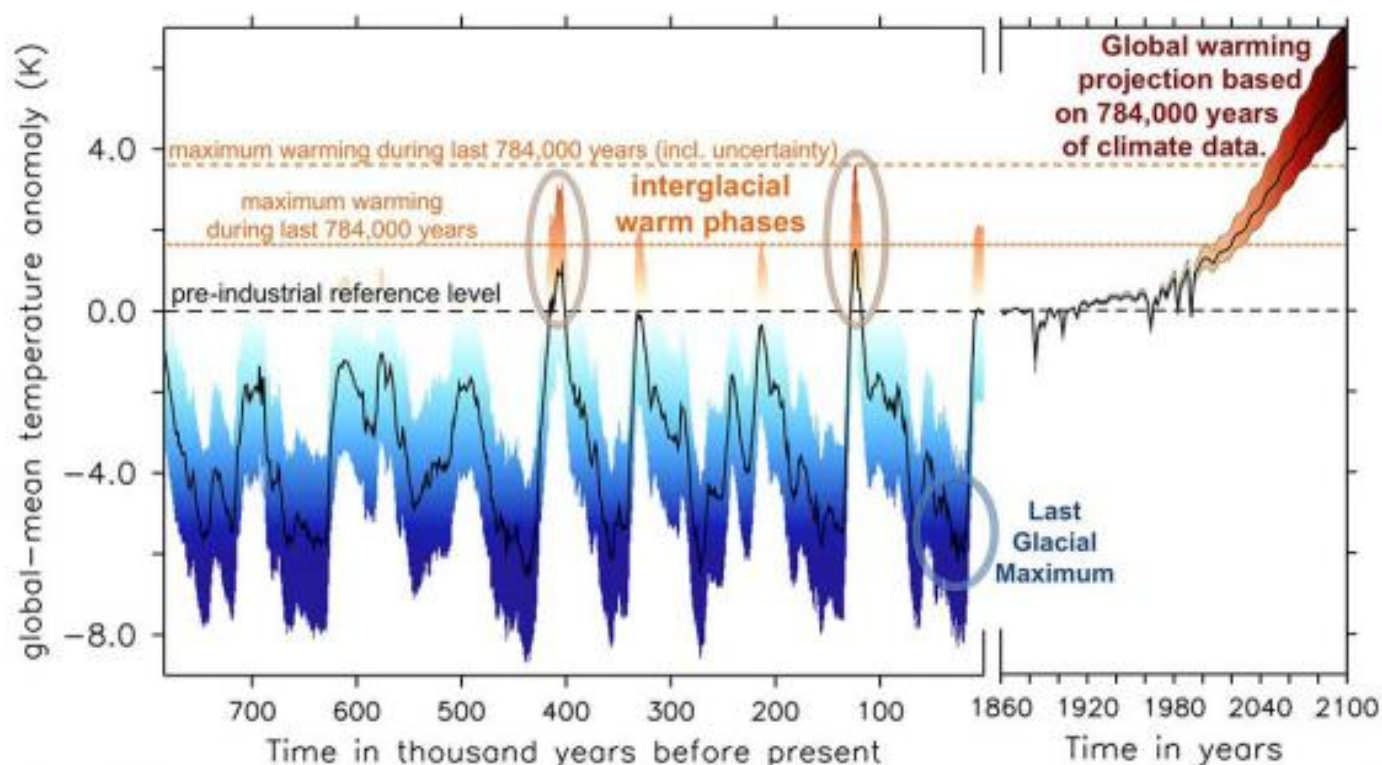
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Scientists have long tried to work out how the climate will react over the coming decades to the greenhouse gases humans are pumping into the atmosphere.

According to the current best estimate, by the Intergovernmental Panel on Climate Change (IPCC), if humans carry on with a “business as usual” approach using large amounts of fossil fuels, the Earth’s average temperature will rise by between 2.6 and 4.8 degrees above pre-industrial levels by 2100.

However new research by an international team of experts who looked into how the Earth’s climate has reacted over nearly 800,000 years warns this could be a major under-estimate.

Because, they believe, the climate is more sensitive to greenhouse gases when it is warmer.



A reconstruction of the Earth's global mean temperature over the last 784,000 years, on the left of the graph, followed by a projection to 2100 based on new calculations of the climate's sensitivity to greenhouse gases (Friedrich, et al. (2016))

In a paper in the journal *Science Advances*, they said the actual range could be between 4.78C to 7.36C by 2100, based on one set of calculations.

Some have dismissed the idea that the world would continue to burn fossil fuels despite obvious global warming, but emissions are still increasing despite a 1C rise in average thermometer readings since the 1880s.

Global Mean Sea Level Change (1880 - 2013)



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And US President-elect Donald Trump has said he will rip up America's commitments to the fight against climate change.

Professor Michael Mann, of Penn State University in the US, who led research that produced the famous "hockey stick" graph showing how humans were dramatically increasing the Earth's temperature, told *The Independent* the new paper appeared "sound and the conclusions quite defensible".

"And it does indeed provide support for the notion that a Donald Trump presidency could be game over for the climate," he wrote in an email.



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“By ‘game over for the climate’, I mean game over for stabilizing warming below dangerous (ie greater than 2C) levels.

“If Trump makes good on his promises, and the US pulls out of the Paris [climate] treaty, it is difficult to see a path forward to keeping warming below those levels.”

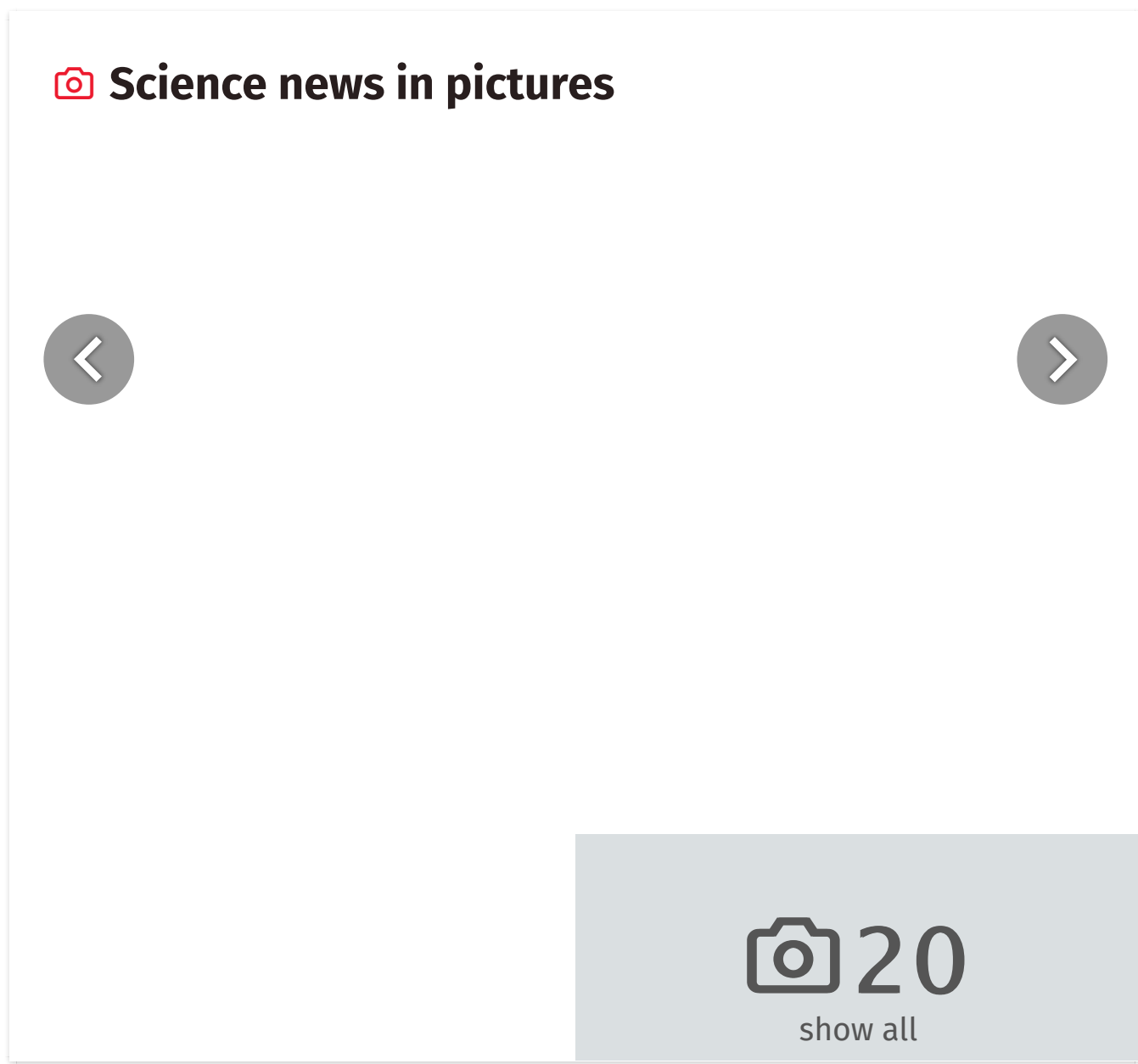
Greenpeace UK said the new research was further evidence that urgent action was needed.

Dr Doug Parr, the environmental campaign group’s chief scientist, said: “The worrying thing is the suggestion climate sensitivity is higher [than thought] is not incompatible with higher temperatures we have been seeing this year.

“If there is science backing that up, that there’s a higher sensitivity of the climate to greenhouse gases, that puts at risk the prospect of keeping the globe at the Paris target of well below 2C.

“Anybody who understands the situation we find ourselves in

would have already have realised we are in an emergency situation.”



Dr Tobias Friedrich, one of the authors of the paper, said: “Our results imply that the Earth’s sensitivity to variations in atmospheric carbon dioxide increases as the climate warms.

“Currently, our planet is in a warm phase – an interglacial period – and the associated increased climate sensitivity needs to be taken into account for future projections of warming induced by human activities.

“The only way out is to reduce greenhouse gas emissions as soon as possible.”

Dr Andrey Ganopolski, who was involved in the research and on the IPCC’s latest report, admitted their work was controversial with some scientists disagreeing and others agreeing with their findings.

“In our field of science, you cannot be definite by 100 per cent. There are always uncertainties and we discuss this in the paper,” he said.

“If we have more and more results of this sort, then we have more reasons to be concerned.”

Dr Ganopolski, of the Potsdam Institute for Climate Impact Research in Germany, suggested their findings meant it would be harder to prevent the world entering dangerous global warming of 2C or above.

“Our results mean it is not impossible to stay within 2C but it probably – if we are right and climate sensitivity is higher than this – would require even strong cuts in carbon emissions,” he said.

“Whether it’s feasible politically ... I believe it is feasible technically.

“It would be really good to stay below 1.5C or close to that, whether it’s feasible I’m probably a bit sceptical about that.”

Commenting on the paper, Professor Eric Wolff, of Cambridge University, said using data from the past was a “powerful way of understanding the climate”.



But he noted the authors had used different ways of estimating average global temperature, some of which had produced “a lower range of values”.

“The estimates of temperature in this paper are subject to large uncertainties, and therefore the range of estimates for 2100 is also very wide,” Professor Wolff said.

“Still, it's encouraging that it overlaps with model estimates and confirms that the emission reductions promised in Paris are essential to avoid unacceptable climate changes.”

Mark Lynas laid out what would happen as the temperature rises in his award-winning book, *Six Degrees: Our Future on a Hotter Planet*.

He was shocked by the researchers' results.

“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.”

Nasa recently said Venus **may once have been habitable** before runaway global warming turned the planet into its current version of hell with temperatures of more than 460C, almost no water and an atmosphere of mainly carbon dioxide with clouds of sulphuric acid. ●

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eh 7 hours ago

spoiler! please see the important caveat to GenericTweetMan's post, provided below his comment

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-1 ||



thegreattailz 12 hours ago

Why would anyone engage their time discrediting world renown scientists, that all appear to be in agreement? Do they really make that much more money by claiming to be doomsday activists? This preposterous

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0 ||



GenericTweetMan 22 hours ago

<http://link.springer.com/article/10.1007/s11191-013-9647-9#page-1>

The Myth of 97%

<http://www.wsj.com/articles/SB1000142405-2702303480304579578462813553136>

List of Scientists who's works were misrepresented:

<http://www.forbes.com/sites/alexepstein/2015/01/06/97-of-climate-scientists-agree-is-100-wrong/#5965969c7187>

97% of Scientists agree is 100% wrong. Great heading.

Some Snippets:

How do we know the 97% agree?

To elaborate, how was that proven?

Almost no one who refers to the 97% has any idea, but the basic way it works is that a researcher reviews a lot of scholarly papers and classifies them by how many agree with a certain position.

Unfortunately, in the case of 97% of climate scientists agreeing that human beings are the main cause of warming, the researchers have engaged in egregious misconduct.

One of the main papers behind the 97 percent claim is authored by John Cook, who runs the popular website SkepticalScience.com, a virtual encyclopedia of arguments trying to defend predictions of catastrophic climate change from all challenges.

Here is Cook's summary of his paper: "Cook et al. (2013) found that over 97 percent [of papers he surveyed] endorsed the view that the Earth is warming up and human emissions of greenhouse gases are the main cause."

This is a fairly clear statement—97 percent of the papers surveyed endorsed the view that man-made greenhouse gases were the main cause—main in common usage meaning more than 50 percent.

But even a quick scan of the paper reveals that this is not the case. Cook is able to demonstrate only that a relative handful endorse "the view that the Earth is warming up and human emissions of greenhouse gases are the main cause." Cook calls this "explicit endorsement with quantification" (quantification meaning 50 percent or more). The problem is, only a small percentage of the papers fall into this category; Cook does not say what percentage, but when the study was publicly challenged by economist David Friedman, one observer calculated that only 1.6 percent explicitly stated that man-made greenhouse gases caused at least 50 percent of global warming.

"Cook survey included 10 of my 122 eligible papers. 5/10 were rated incorrectly. 4/5 were rated as endorse rather than neutral."

—Dr. Richard Tol

"That is not an accurate representation of my paper . . ."

—Dr. Craig Idso

“Nope . . . it is not an accurate representation.”

—Dr. Nir Shaviv

“Cook et al. (2013) is based on a strawman argument . . .”

—Dr. Nicola Scafetta

<http://www.populartechnology.net/2013/05/97-study-falsely-classifies-scientists.html?m=1>

"97% Study Falsely Classifies Scientists' Papers, according to the scientists that published them

The paper, Cook et al. (2013) 'Quantifying the consensus on anthropogenic global warming in the scientific literature' searched the Web of Science for the phrases "global warming" and "global climate change" then categorizing these results to their alleged level of endorsement of AGW. These results were then used to allege a 97% consensus on human-caused global warming.

To get to the truth, I emailed a sample of scientists whose papers were used in the study and asked them if the categorization by Cook et al. (2013) is an accurate representation of their paper. Their responses are eye opening and evidence that the Cook et al. (2013) team falsely classified scientists' papers as "endorsing AGW", apparently believing to know more about the papers than their authors.

Read that link for the Scientists and their work, and how it was purposefully misconstrued in the 97% of all scientists agree paper.

Reply

[2 replies](#)

+1 ||



thegreatailz 12 hours ago

This is retarded. Nothing is 100% and all your doing is digging for dirty laundry. If you go looking through someones dirty laundry, you're going to find some. I dont care who you are. Let me give you a piece of wisdom, it isnt the thing your aware of that kills you. 98% of the time its the thing you're not aware of... Science isnt about digging around a bomb that can explode at any minute. Its about the best given facts at the time and forming a hypothesis if you dont have an exact answer. Why would scientists lie? They already have their doctorate. If the ignorant human race cant look at itself and identify problems you are guaranteed to extinguish yourself from the universe. Quit making scientists out to be conspiracy theorists doomsday activists

Reply

0 ||



eh 7 hours ago

WSJ and Forbes... neither are exactly renowned for their objective reporting of climate science, and the guest articles they host are typically even more suspect. The WSJ guest article that you provide a link to was co-authored by Joseph Bast, president of the Heartland Institute. This should immediately ring alarm bells. The Heartland Institute began life as a "think tank" that questioned the health risks associated with smoking. Essentially it was a tobacco industry lobbying group. It went on to try and discredit climate science, funded by the fossil fuel industry. For example, ExxonMobil gave the institute \$800,000 between 1998 and 2005. You appear to be another of the handful of dubious posters within this thread distributing thoroughly discredited information.

Reply

-1 ||



thegreatailz 2 days ago

MANY of you are missing the point... If something is going

on, it will take years maybe even decades to correct it. If we're wrong on this issue, and god help us if we are, your betting the human races extinction vs a few tax dollars. The energy corporations dont care because they make more money if they dont care and ignore the problem. There is no guarantee a world mass extinction cant happen again caused by human hands. Did we not just avert a nuclear one with the cold war? Im not a conspiracy theorist, Im talking pure science. Mass extinctions happen, and they have happened because something tipped the scales. And when things happen, they happen very quickly. If you tip the scales out of petulance and ignorance then you get whats coming to you. If the polar ice caps melt, there is no putting them back. Scientists are doing their jobs as they were educated to do. Politicians and corporations dont care. Why push the limits of human survivability? Because of corporate greed and irresponsibility? Trumps stance on global warming is simply intolerable. He is supposed to be a world example for leadership and innovation. The human race is already being pushed to its limits. This is why either A. Aliens if they exist could not surpass the nuclear or the environmental impact age of their own people or B. we are to stupid for any of them to talk to us or even acknowledge they exist

Reply

0 ||



Nod Glodnig 2 days ago

It seems a jobsworth under pressure to produce papers tweaks his spreadsheets and the next thing is we are all going to die, Apocalypse Now (or safely after his death it appears) so he can't be proved wrong. Meanwhile we all soil our panties as if we haven't seen predictions like this in the last thirty years but some of them are getting embarrassing like arctic sea ice-free in 2016, snowfalls will be a thing of the past, and by 2010 temps will have risen by two degrees and sea levels a metre - Maldives under water. All utter bollards. No proof, no science, just crunch a spreadsheet and publish a paper. Absolute complete and utter stuff and nonsense. Meanwhile people genuflect at these "pearls of wisdom" given from up high. The mere act of dissent brings howling derision

from the "elite" who say we are not able to judge these because they have created their own pseudo-science to "prove" everything

Reply

[2 replies](#)

0 ||



thegreattailz 12 hours ago

You are accusing professional educated scientists of being doomsday advocates and money mongerers. The only money monger here is trump. Scientists dont make that much more money by turning conspiracy theorist or being a nay sayer, really, they don't.

Reply

[1 reply](#)

0 ||



Nod Glodnig 5 hours ago

I actually suggested "jobsworth under pressure to produce papers" maybe had a target to produce X number per year to hold his job? I said nothing about money. Please stop mis-interpreting peoples comments with your own agenda.

Reply

0 ||



Oziman 2 days ago

Nuke Yellowstone from orbit, its the only way to be sure.

Reply

0 ||



Nod Glodnig 2 days ago

Unbelievable. Some jobsworth who probably hasn't published papers in a while and is under pressure tweaks his spreadsheet and announces we 're all gonna die, it will be Venus by the end of the century (by which time he is safely dead). So we all kack our pants and believe him, just like we believed all the other "forecasters" who made the mistake of setting their apocalypse within our time,

and who since been proven wrong. Remember that the Arctic would be ice-free this year? No it wasn't!

[1 reply](#)

-4 ||



thegreatailz 2 days ago

Thats not the issue. If something is going on, it will take years maybe even decades to correct it. If we're wrong on this issue, and god help us if we are, your betting the human races extinction. There is no guarantee a world mass extinction cant happen again caused by human hands

0 ||



flatfred 2 days ago

The deniers will be the first to start crying when their home gets flooded.

[1 reply](#)

+6 ||



Nod Glodnig 2 days ago

Not me I live 400 metres above sea level! Should be good for several thousand years at the current 4mm per year rise.

-1 ||



Fred 2 days ago

The crisis of science:

http://www.theinternationalforecaster.com/International_Forecaster_Weekly/The_Crisis_of_Science

-1 ||



thegreatailz 2 days ago

The serious issue here, isn't weather humans are causing the global warming or not... (Which, of course, they are, the world has never seen this many people or the multiplication of greenhouse gasses before) This is a fact not to be debated. The serious issue is that the needs of living people will keep pushing it back like a frog in a boiling pot. It will sit in the pot trying to adjust with the heat on until life can't take it anymore. Human survivability will decrease, the rich will prosper, and quality of living/life will plummet. I'm warning everyone here, if the scales are tipped there is no way to put it back to the way it was. There is un-calculable amounts of methane in the lakes, permafrost, and ground and if its released by warming that IS caused by human disturbance, it will catapult further global warming and melt the ice caps for good. Once they're gone there is no putting them back. You have ONE CHANCE to fix the problem non-believers. And ignoring it so the energy executives can buy another gold plated yacht is the wrong answer. We can't depend on the rich to fix the problem because they won't. They'll ignore it until the poor are dead and fly away in their air conditioned jet. This is an issue where if we're wrong, it will put the planet in serious peril. The Venus analogy isn't far off, it doesn't take much to disrupt the requirements to sustain life. If you've ever been scuba diving or in a situation without air, this becomes very clear.

Reply

[4 replies](#)

+4 ||



burnsie 2 days ago

well said, but if you read the nature of the comments and responses below, they'd even disagree that they possess a nervous system-that notion is simply voodoo.

Reply

-1 ||



Nigel 2 days ago

Cut n pasted

Even most warmaholics don't agree with your

doomsday scenarios

Reply

[1 reply](#)

-2 ||



flatfred 2 days ago

how much are they paying you nigel to spew your lies ?

Reply

+2 ||



plutonium 2 days ago

Nukes can fix problem by 2100. Cost ~200 trillion USD. Or we can try it with wind and solar for between 3000 and 6000 trillion USD. Just the economic activity will destroy the planet up front. Or do the World North Korea government thing.

Reply

0 ||

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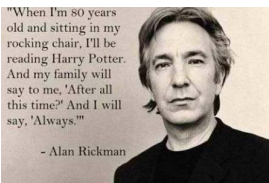
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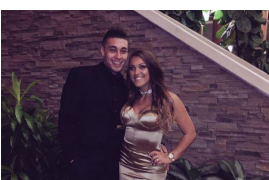
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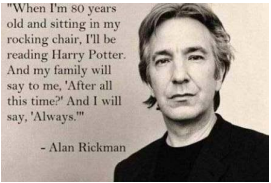
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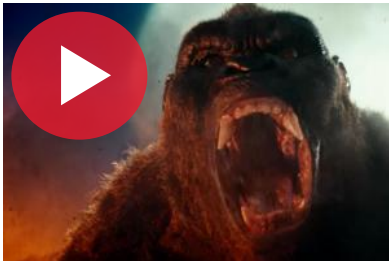
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