



This is the print version of the [Skeptical Science](#) article '[Akasofu Proved Global Warming is Just a Recovery from the Little Ice Age](#)', which can be found at akasofu.

Akasofu's Magical Thinking was Wrong

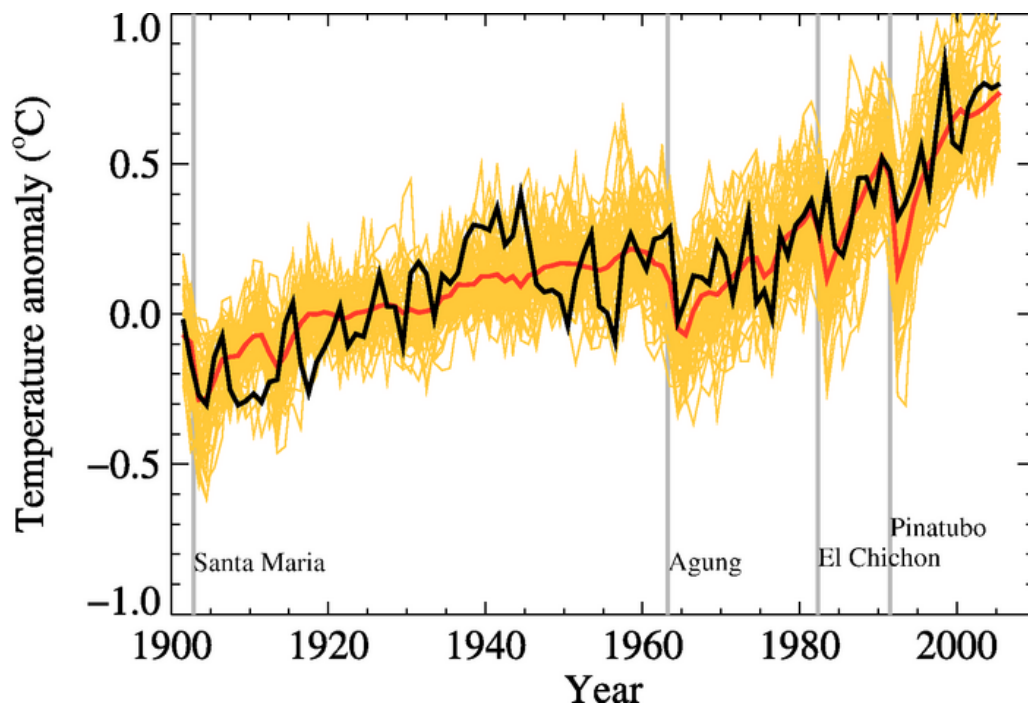
What The Science Says:

Akasofu's argument is based on magical thinking and curve fitting without any physical explanation. Climate changes must have a physical cause, for example the increased greenhouse effect.

Climate Myth: Akasofu Proved Global Warming is Just a Recovery from the Little Ice Age

"The rise in global average temperature over the last century has halted since roughly the year 2000, despite the fact that the release of CO₂ into the atmosphere is still increasing. It is suggested here that this interruption has been caused by the suspension of the near linear (+ 0.5 °C/100 years or 0.05 °C/10 years) temperature increase over the last two centuries, due to recovery from the Little Ice Age..." (Syun-Ichi Akasofu)

One of the most important concepts to understand when trying to grasp how the Earth's climate works, is that every climate change must have a physical cause. Over the past century, climate scientists have developed a solid understanding about how the climate works and the physical mechanisms that cause it to change. By building that knowledge into complex climate models, scientists have been able to accurately reproduce past observed global surface temperature changes.



Global mean near-surface temperatures from observations (black) and as obtained from 58 simulations produced by 14 different climate models driven by both natural and human-caused factors that influence climate in the 2007 IPCC

report (yellow). The mean of all these runs is also shown (thick red line). Vertical grey lines indicate the timing of major volcanic eruptions.

For example, we know the increased greenhouse effect is creating a global energy imbalance that will cause the Earth's surface temperature to rise. Any alternative explanation has to identify why the increased greenhouse effect isn't causing the warming we expect based on fundamental physics, and why the [climate change 'fingerprints'](#) are consistent with the increased greenhouse effect.



A brand new scientific journal called *Climate* published [a paper by Syun-Ichi Akasofu](#), a retired geophysicist and former director of the International Arctic Research Center at the University of Alaska-Fairbanks. Despite having a background in physical sciences, Akasofu made a very unphysical argument in that paper. He claimed that the current global warming is merely a result of the planet "recovering" from [the Little Ice Age](#) - a cool period (the cooling mostly isolated in Europe) that lasted between the years of about 1550 and 1850.

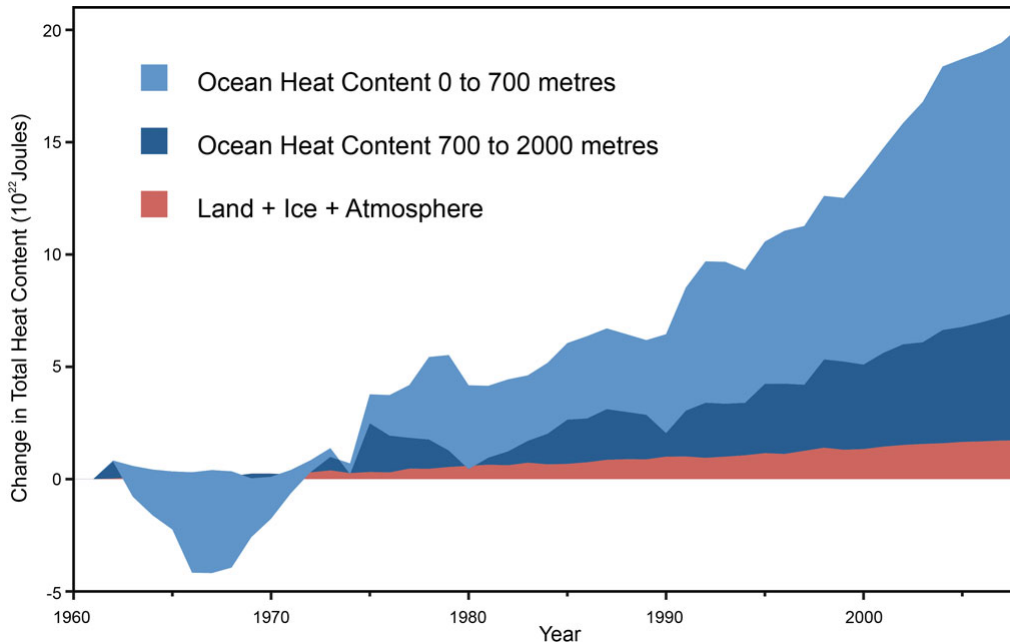
Problem - Akasofu didn't identify any physical cause for this supposed 'recovery.' Instead he engaged in what's known as "curve fitting," in which you take data that is correlated to your desired graph and scale it to match, then argue you've proven that your data is the cause of the changes shown in that graph. In other words, it confuses correlation with causation. If I can take data regarding the number of pirates in the Caribbean and consumption of spaghetti in Ireland and make it fit the global temperature data, that doesn't mean that pirates and Irish spaghetti are causing global warming. A physical cause must be identified.

Akasofu didn't do that. He just roughly fit some ocean cycle data to the global temperature measurements and decided that a linear global warming trend was left over. He then declared that linear trend was the "recovery" from the Little Ice Age, and that it would continue indefinitely into the future, despite not knowing its cause.

Unfortunately the peer-review process isn't perfect. It's necessary but insufficient in separating the good from the flawed research. Sometimes a bad paper will slip through the cracks, whether due to a poor choice of reviewers,

or the judgment of the journal editor. Akasofu's paper was published in the very first edition of *Climate*, which caused great concern amongst its editorial staff (many of whom recognized the poor quality of the paper), and even [caused one editor to resign from the journal](#).

Climate also published [Nuccitelli et al. \(2013\)](#), which debunked Akasofu's paper mainly by pointing out that it had no physical basis. Akasofu's paper also focused on the claim that global warming has "halted," but Nuccitelli et al. (2013) also pointed out that studies that have accounted for the warming of the entire climate (oceans, air, ice, and land) have shown that if anything, global warming is accelerating.



Global heat accumulation data (ocean heating in blue; land, atmosphere, and ice heating in red) from [Nuccitelli et al. \(2012\)](#).

The problem with many anything but carbon (ABC) climate contrarian hypotheses like Akasofu's is that they throw out what we know about how the Earth's climate works. It's fine to try and account the influences of ocean cycles - [that's what mainstream climate scientists are doing](#) - but we've known how the Earth warms in response to the increased greenhouse effect [for over a century](#). We also know that any long-term global warming must be caused by a global energy imbalance.

Any valid climate research has to work within that known framework. When you throw out everything we know about the Earth's climate, you're stuck making unphysical arguments based on nothing more than correlations and curve fitting, as Akasofu did. The problem for climate contrarians is that our existing climate framework is very solid. We understand the fundamentals about how the climate operates well enough to accurately reproduce the observed changes, based on solid, well-understood physical mechanisms like the increased greenhouse effect. That's not about to get overturned by magical thinking and curve fitting.

Basic rebuttal written by dana1981

Update July 2015:

Here is a related lecture-video from [Denial101x - Making Sense of Climate Science Denial](#)



Skeptical Science explains the science of global warming and examines climate misinformation through the lens of peer-reviewed research. The website won the Australian Museum 2011 Eureka Prize for the Advancement of Climate Change Knowledge. Members of the Skeptical Science team have authored peer-reviewed papers, a [college textbook on climate change](#) and the book [Climate Change Denial: Heads in the Sand](#). Skeptical Science content has been used in university courses, textbooks, government reports on climate change, television documentaries and numerous books.



The [Skeptical Science](#) website by Skeptical Science is licensed under a Creative Commons [Attribution 3.0 Unported License](#).