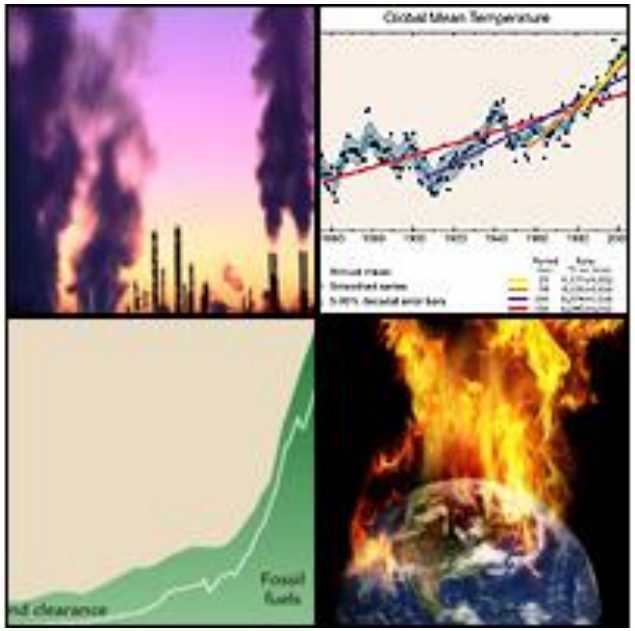


GLOBAL WARMING:

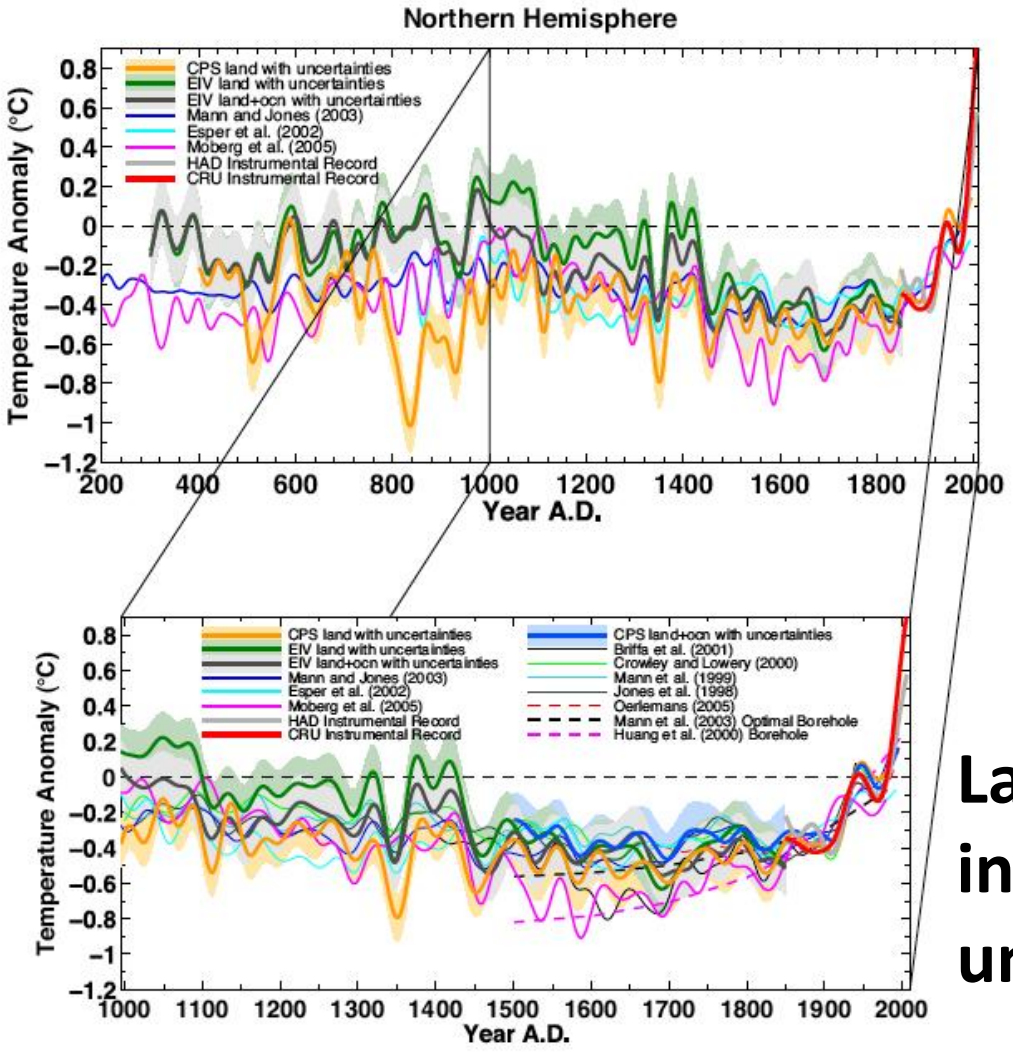
Separating **Fact** from Fiction

Scott A. Mandia, Professor of Physical Sciences

What Scientists Know:

- The climate record of the last 2000 years is fairly well-established. The last few decades have been the warmest in this time period and the rate of warming is unprecedented.
- We are observing tremendous warming with instruments today.
- Natural forcing mechanisms alone cannot explain this warming but increased greenhouse gases (GHG) can.

Historic Climate Record:

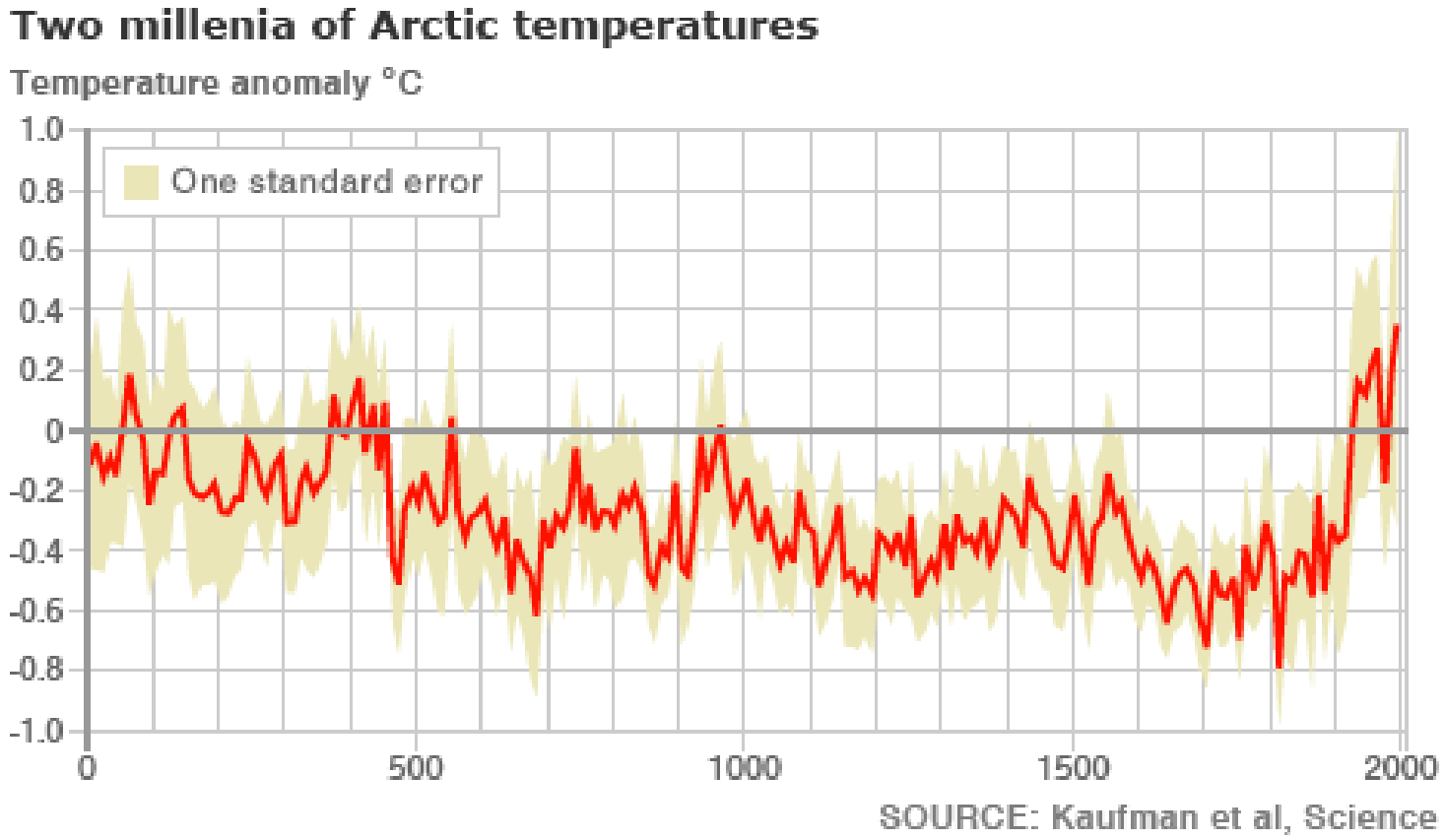


Mann, et al. (2008)

- multiple proxy database (1,209)
- annually – 1158
- decadally – 51
- tree-ring
- marine sediment
- mineral deposits
- lake deposits
- ice cores
- corals
- historical documentary series

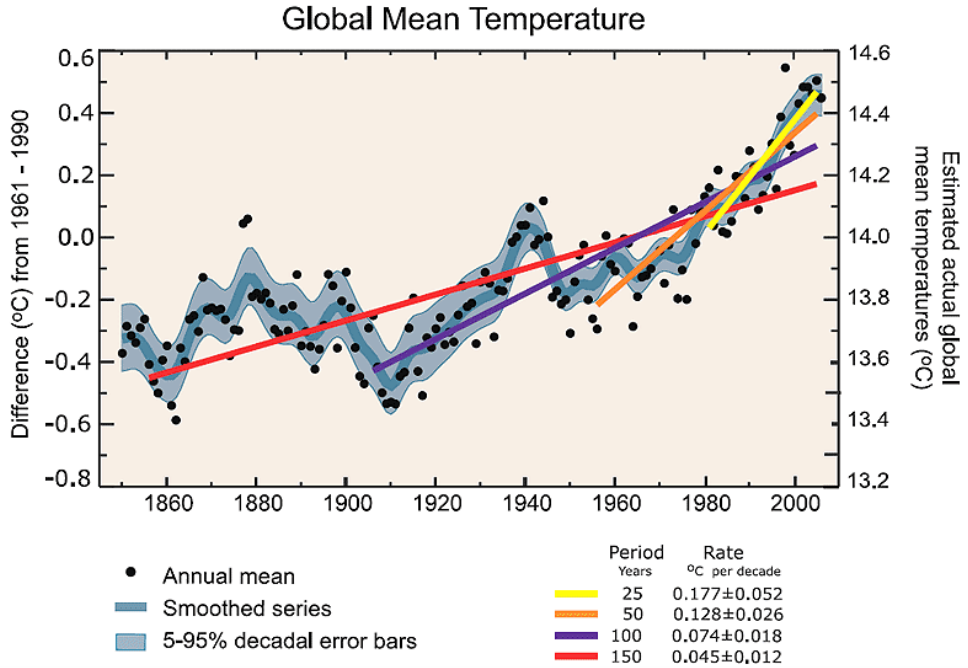
Last few decades WARMEST in 2,000 years and RATE is unprecedented.

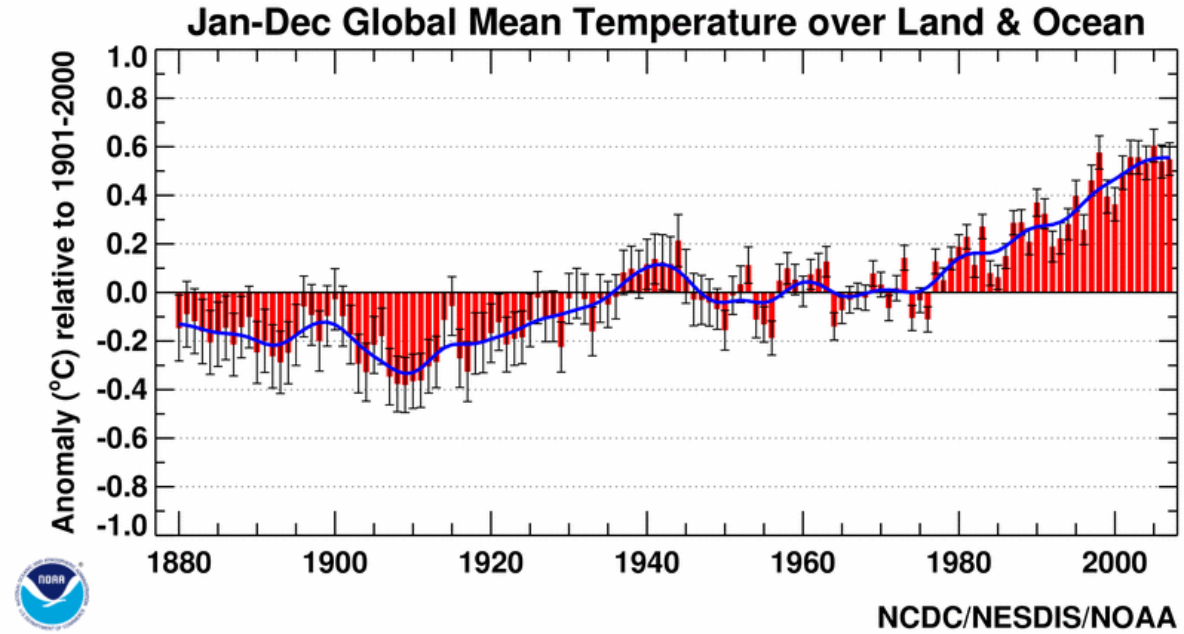
Historic Climate Record:



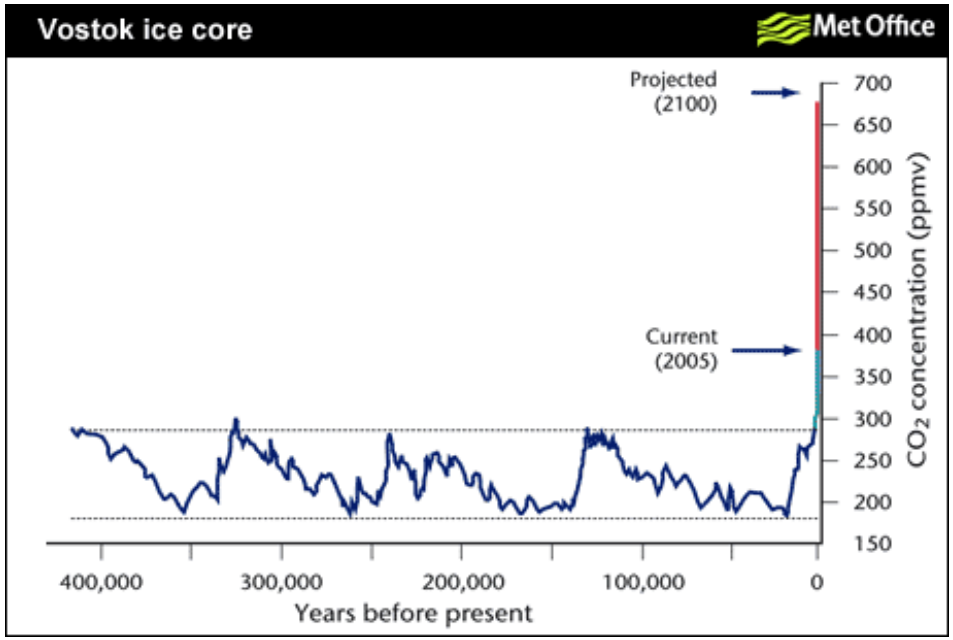
A 2,000 year cooling trend was reversed during the 20th century, with four of the five warmest decades of the 2000-year-long reconstruction occurring between 1950 and 2000.

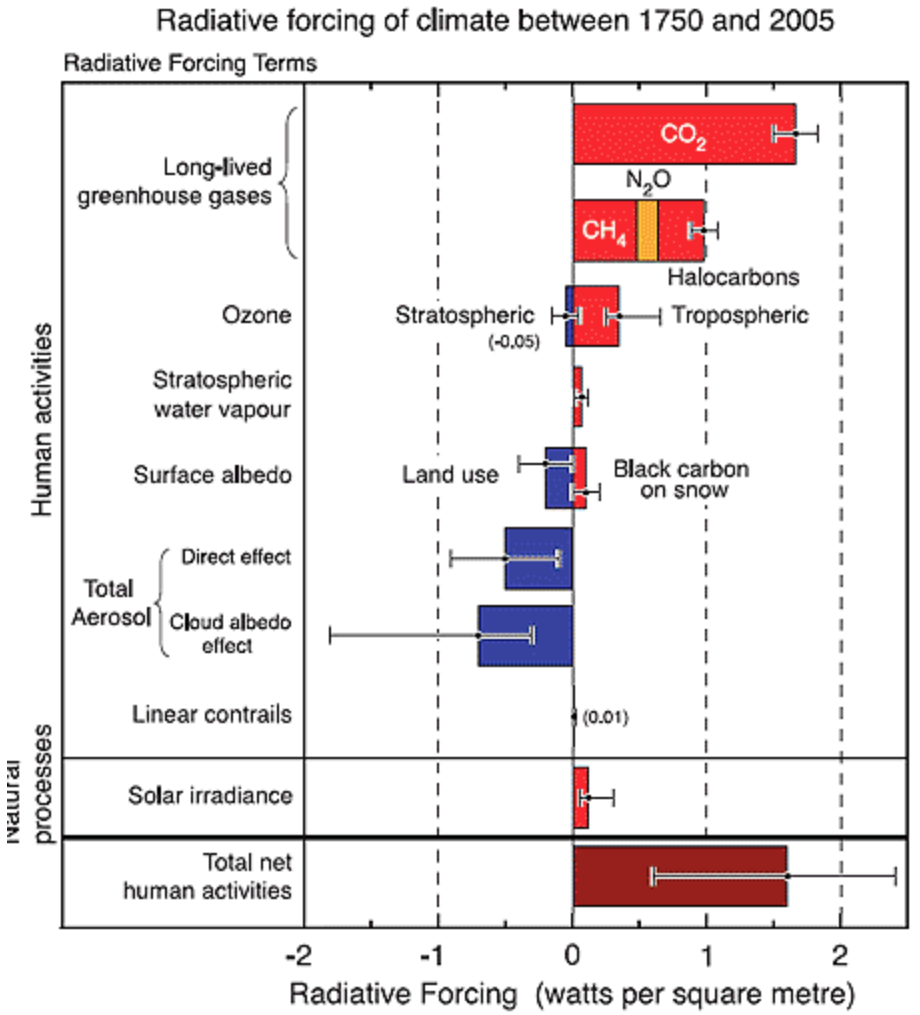
Observed Modern Climate:





GHG Forcing:





FAQ 2.1, Figure 2. *Summary of the principal components of the radiative forcing of climate change. All these radiative forcings result from one or more factors that affect climate and are associated with human activities or natural processes as discussed in the text. The values represent the forcings in 2005 relative to the start of the industrial era (about 1750). Human activities cause significant changes in long-lived gases, ozone, water vapour, surface albedo, aerosols and contrails. The only increase in natural forcing of any significance between 1750 and 2005 occurred in solar irradiance. Positive forcings lead to warming of climate and negative forcings lead to a cooling. The thin black line attached to each coloured bar represents the range of uncertainty for the respective value. (Figure adapted from Figure 2.20 of this report.)*

Fiction: There is No Consensus

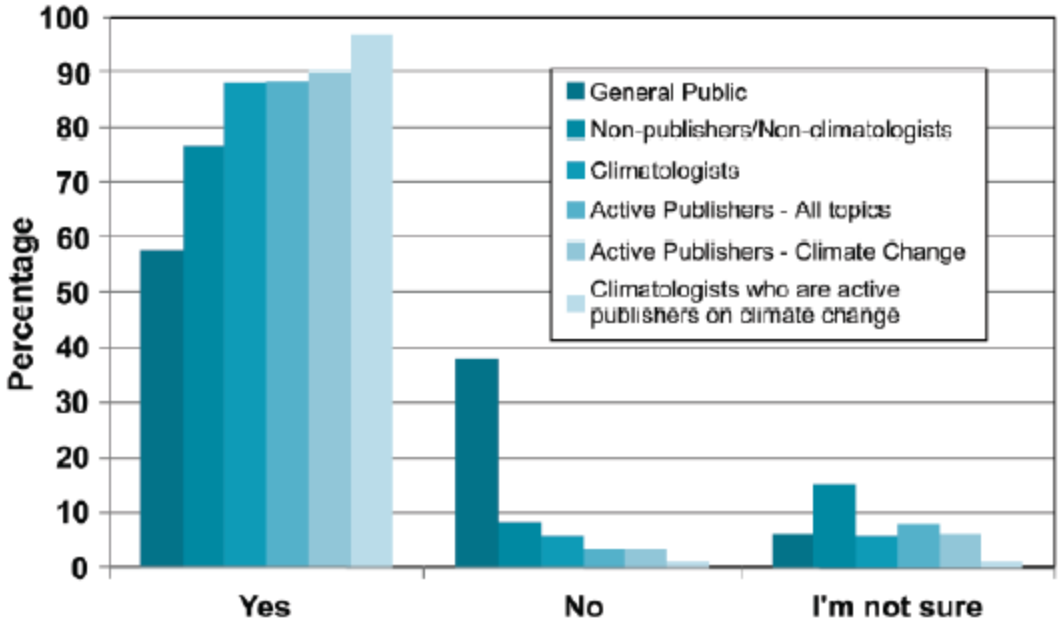


Fig. 1. Response distribution to our survey question 2. The general public data come from a 2008 Gallup poll (see http://www.gallup.com/poll/1615/Environment.aspx).

- **48% of Americans** think most **climate scientists do not agree** that the Earth has been warming in recent years
- **53% of Americans** think **climate scientists do not agree** that human activities are a major cause of that warming
- 2008 poll of 3,146 Earth scientists showed **96.2% of climatologists** who are active in climate research **believe in modern global warming**, and **97.4% believe that human activity is a significant factor** in this warming.

Doran and Zimmerman (2009)

Fiction: There is No Consensus

"Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." *(IPCC, 2007)*

"Observations throughout the world make it clear that climate change is occurring, and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver." (Union of Concerned Scientists, 2009)

"Observations show that warming of the climate is unequivocal. The global warming observed over the past 50 years is due primarily to human-induced emissions of heat-trapping gases. These emissions come mainly from the burning of fossil fuels (coal, oil, and gas), with important contributions from the clearing of forests, agricultural practices, and other activities." *(U.S. Global Change Research Program, 2009)*

"Human activity is most likely responsible for climate warming. Most of the climatic warming over the last 50 years is likely to have been caused by increased concentrations of greenhouse gases in the atmosphere." (European Academy of Sciences and Arts, 2007)

"Scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society....The pace of change and the evidence of harm have increased markedly over the last five years. The time to control greenhouse gas emissions is now." (American Association for the Advancement of Science, 2006)

"The Earth's climate is now clearly out of balance and is warming. Many components of the climate system—including the temperatures of the atmosphere, land and ocean, the extent of sea ice and mountain glaciers, the sea level, the distribution of precipitation, and the length of seasons—are now changing at rates and in patterns that are not natural and are best explained by the increased atmospheric abundances of greenhouse gases and aerosols generated by human activity during the 20th century." (American Geophysical Union, 2007)

Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Fiction: Consensus Isn't Science

"Scientific knowledge is the intellectual and social consensus of affiliated experts based on the weight of available empirical evidence, and evaluated according to accepted methodologies. If we feel that a policy question deserves to be informed by scientific knowledge, then we have no choice but to ask, what is the consensus of experts on this matter." -- Naomi Oreskes, Historian of Science

#1: You have a serious condition that must treated immediately – delay means serious health concerns

#2: You have a serious condition that must treated immediately – delay means serious health concerns

#3: You have a serious condition that must treated immediately – delay means serious health concerns

#4: You have a serious condition that must treated immediately – delay means serious health concerns

#5: You have a serious condition that must treated immediately – delay means serious health concerns

#6: You have a serious condition that must treated immediately – delay means serious health concerns

#7: You have a serious condition that must treated immediately – delay means serious health concerns

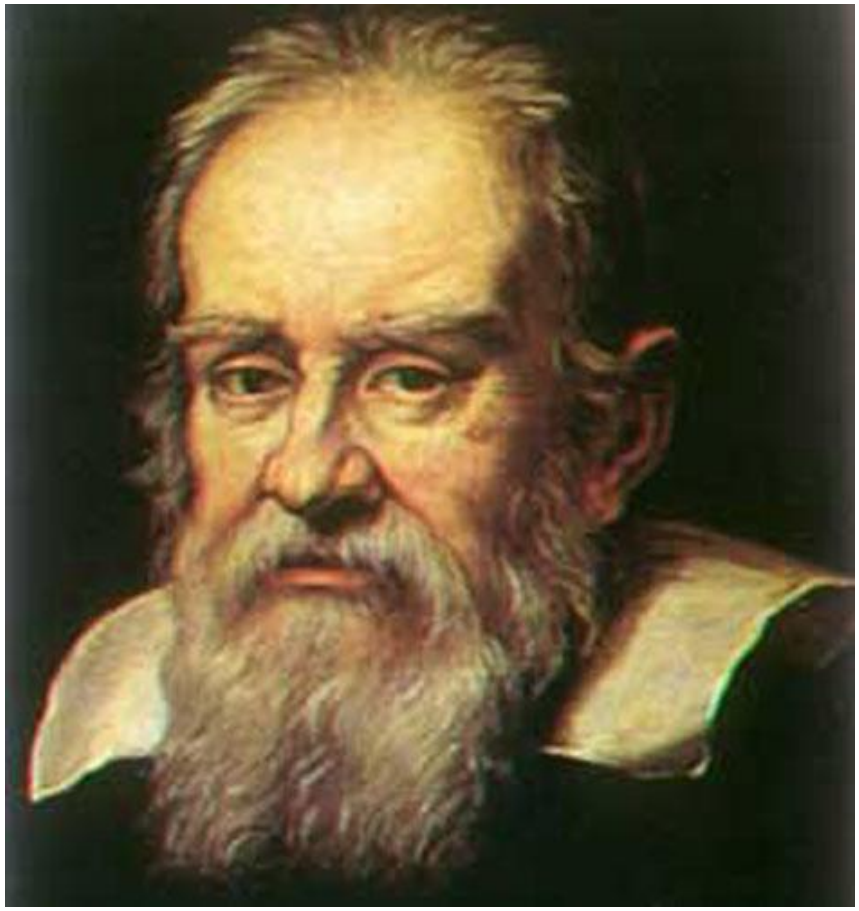
#8: You have a serious condition that must treated immediately – delay means serious health concerns

#9: You have a serious condition that must treated immediately – delay means serious health concerns

#10: You have a mild, natural condition that is not serious – no need to do anything at this time

Doctors #1 - #9 are active, well respected, and well published in medical journals.
Doctor #10 has not worked for years and has not published in medical journals.

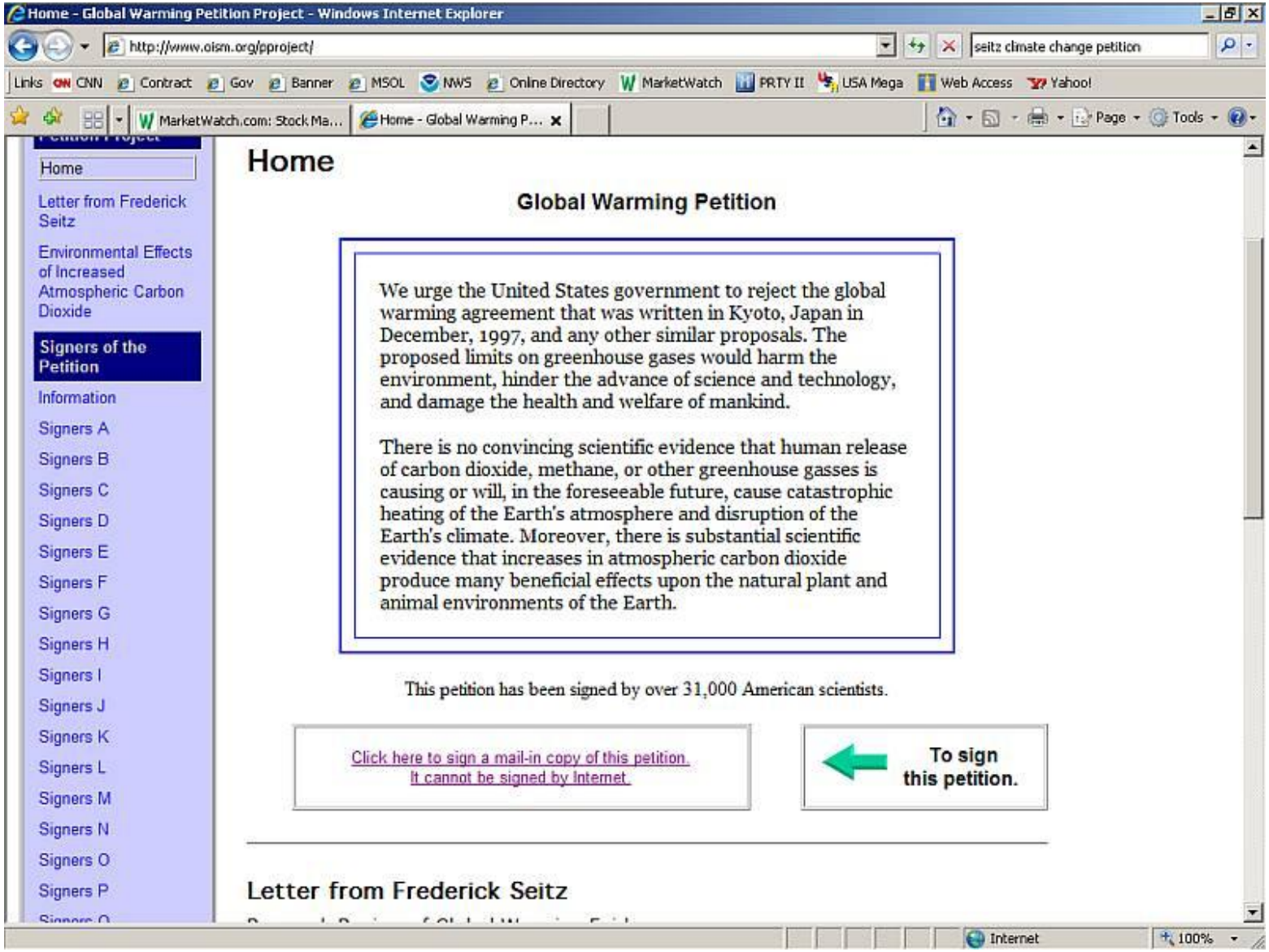
Fiction: What about Galileo?



"They laughed at Galileo … but they also laughed at Bozo the Clown!" -- Carl Sagan

Fiction: What About All of the Scientists Opposed to AGW?

Claim: 31,478 American scientists have signed this petition, including 9,029 with PhDs



Fiction: What About All of the Scientists Opposed to AGW?

Environmental Effects of Increased Atmospheric Carbon Dioxide

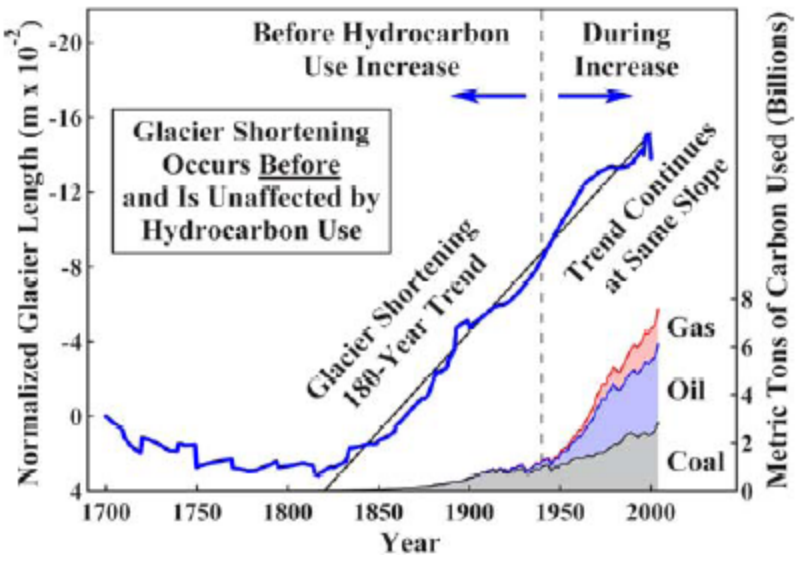
ARTHUR B. ROBINSON, NOAH E. ROBINSON, AND WILLIE SOON

Oregon Institute of Science and Medicine, 2251 Dick George Road, Cave Junction, Oregon 97523 [artr@oism.org]

ABSTRACT A review of the research literature concerning the environmental consequences of increased levels of atmospheric carbon dioxide leads to the conclusion that increases during the 20th and early 21st centuries have produced no deleterious effects upon Earth's weather and climate. Increased carbon dioxide has, however, markedly increased plant growth. Predictions of harmful climatic effects due to future increases in hydrocarbon use and minor greenhouse gases like CO_2 do not conform to current experimental knowledge. The environmental effects of rapid expansion of the nuclear and hydrocarbon energy industries are discussed.

SUMMARY

Political leaders gathered in Kyoto, Japan, in December 1997 to consider a world treaty restricting human production of "greenhouse gases," chiefly carbon dioxide (CO_2). They feared that CO_2 would



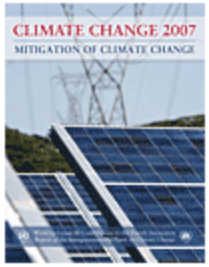
"The petition project was a deliberate attempt to mislead scientists and to rally them in an attempt to undermine support for the Kyoto Protocol. The petition was not based on a review of the science of global climate change, nor were its signers experts in the field of climate science." (National Academy of Sciences)

Fiction: The IPCC is Just Politics – Not Science

- IPCC 4th Assessment Report (2007) is the result of 2500+ scientific expert reviewers, 800+ contributing authors, and 450+ lead authors from 130+ countries.
- WGI, WGII, WGIII are **scientific summaries written by scientists**

Working Group I Report
"The Physical Science Basis"

Working Group II Report
"Impacts, Adaptation and Vulnerability"



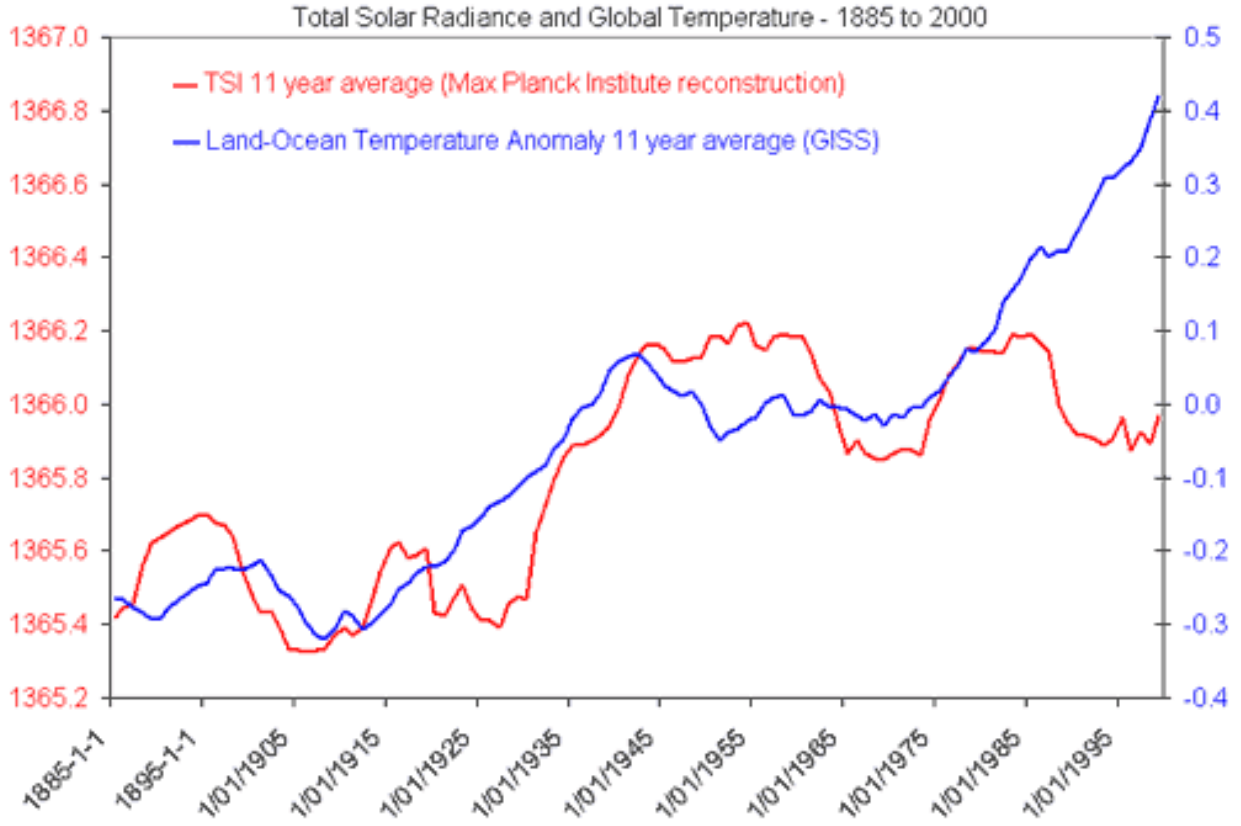
Working Group III Report
"Mitigation of Climate Change"

The AR4 Synthesis Report

- The following countries endorsed the IPCC 2007 reports **<u>despite strong political reasons for them not to endorse</u>**:

  - **United States of America – Fossil fuel-based economy, strong lobby efforts**
  - **Saudi Arabia – World's largest producer/exporter of oil**
  - **China – Rapidly industrializing using coal-fired power plants**
  - **India – Rapidly industrializing using coal-fired power plants**

Fiction: It's the Sun!

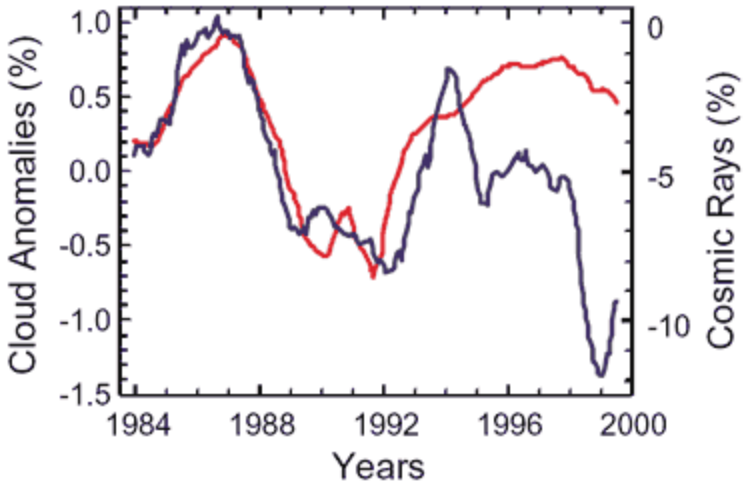


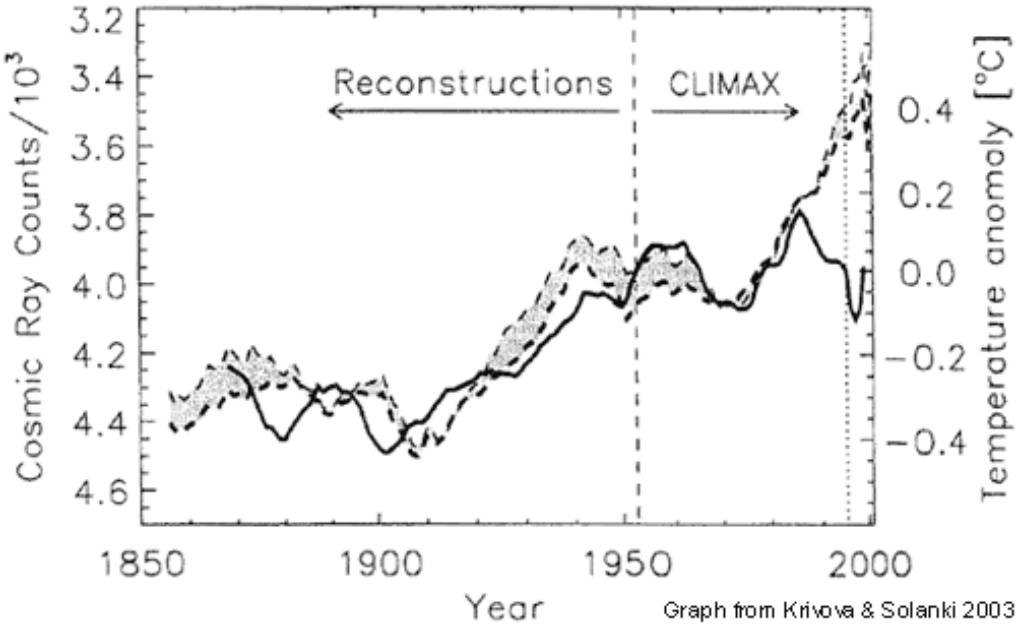
Source: Cook (2007)

- Only 0.1 ^{o}C of the 0.8 ^{o}C of warming since the late 1800s is due to solar irradiance.
- Since direct satellite measurements (1980 – present) solar contribution to the observed rapid warming is **negligible**. In fact, the **sun has been WEAKER while the climate WARMS**.
- There is no evidence that variations in the strength of the sun are the cause of the modern day climate change.

Fiction: It's Cosmic Rays!

Claim: Cosmic rays increase low level clouds. When the sun is strong, cosmic rays decrease which decreases clouds – causing a warmer climate.

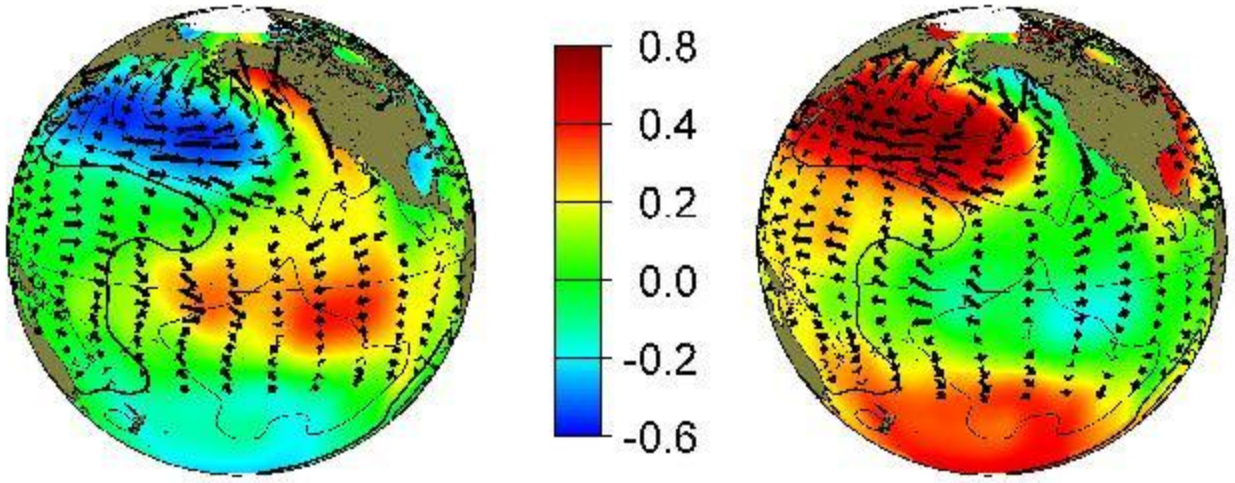


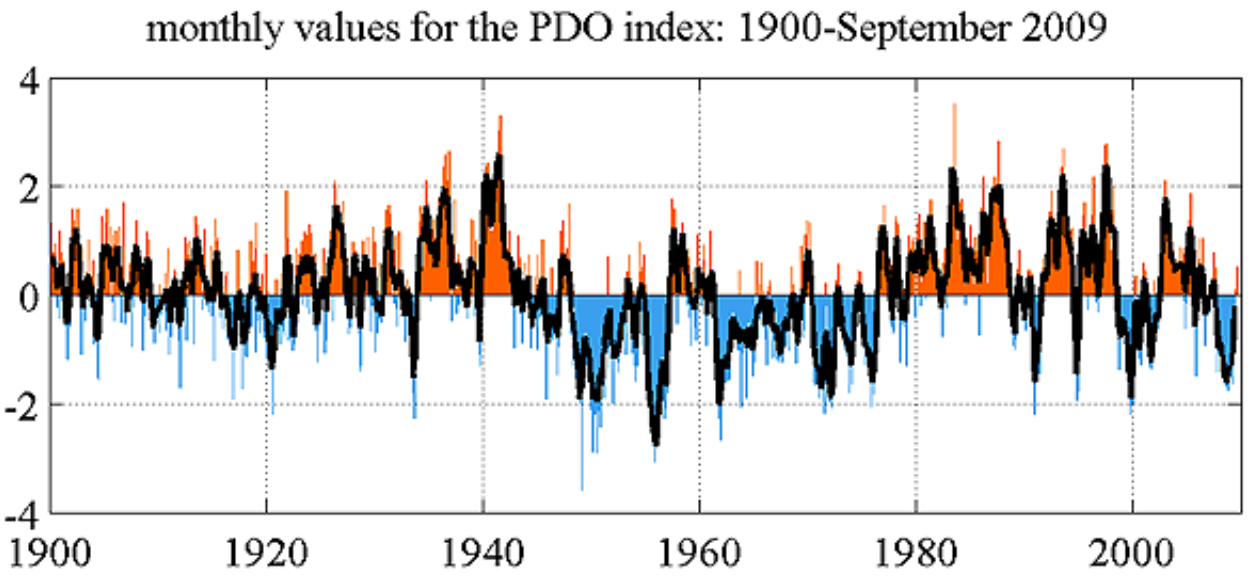


- There is **NO DEFINITIVE LINK** between cosmic rays (red) and low clouds (blue).
- Quite the opposite is true: since 1991 there has been **NO COORELATION**.
- Cosmic ray intensity shows **NO COORELATION TO CLIMATE** since 1985.
- New study (Kulmala, et al., 2009) states: *"Our main conclusion is that galactic cosmic rays appear to play a minor role for atmospheric aerosol formation, and so for the connected aerosol-climate effects as well."*

Fiction: It's Pacific Decadal Oscillation (PDO)!

Claim: PDOs influence the sea surface temperature and wind patterns in the North Pacific and cause climate changes on 20 to 30 year cycles.





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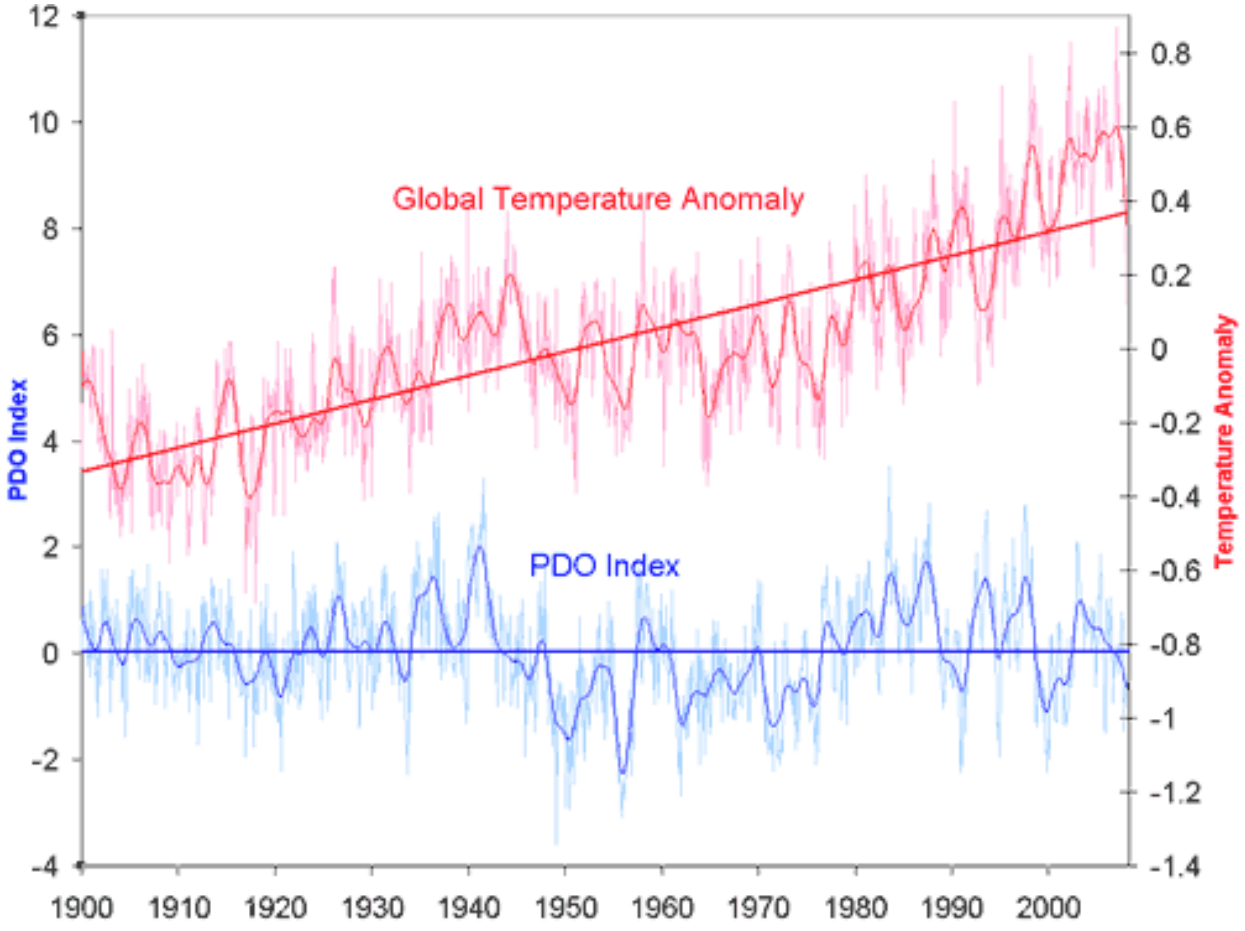
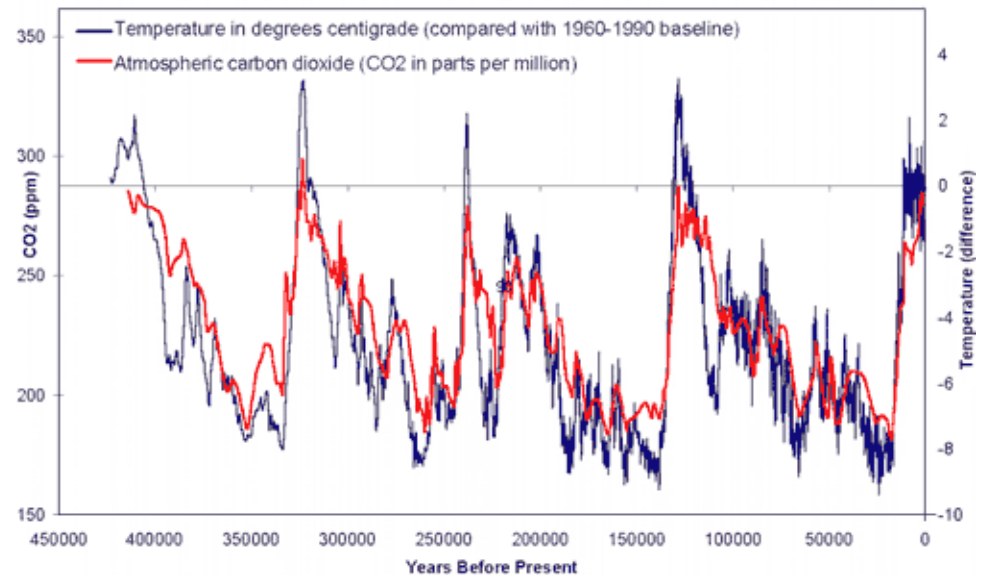
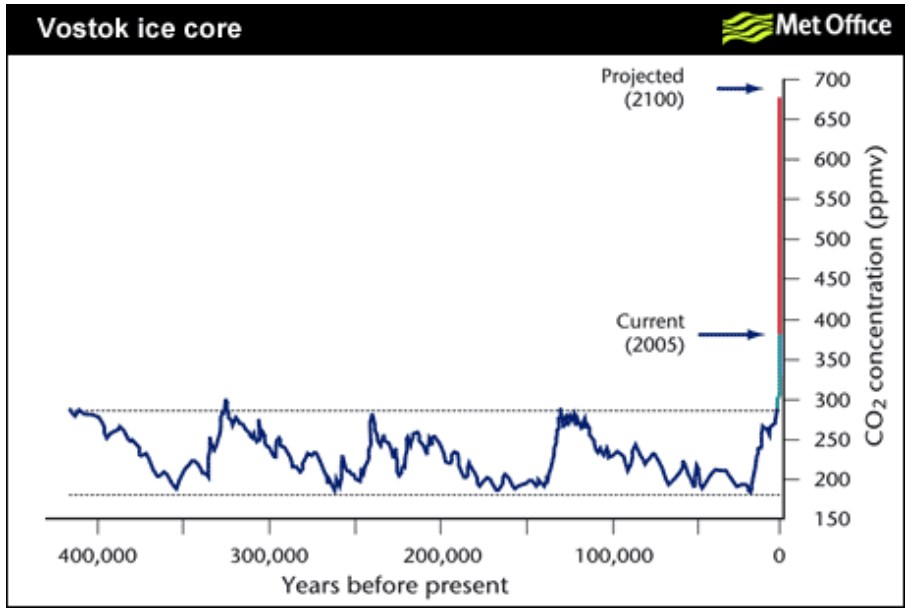


PDO Index shows NO COORELATION to global warming since 1900.

Fiction: CO_2 Lags Temperature

Claim: Historically, temperature warms first and then CO_2 follows (600 years later)





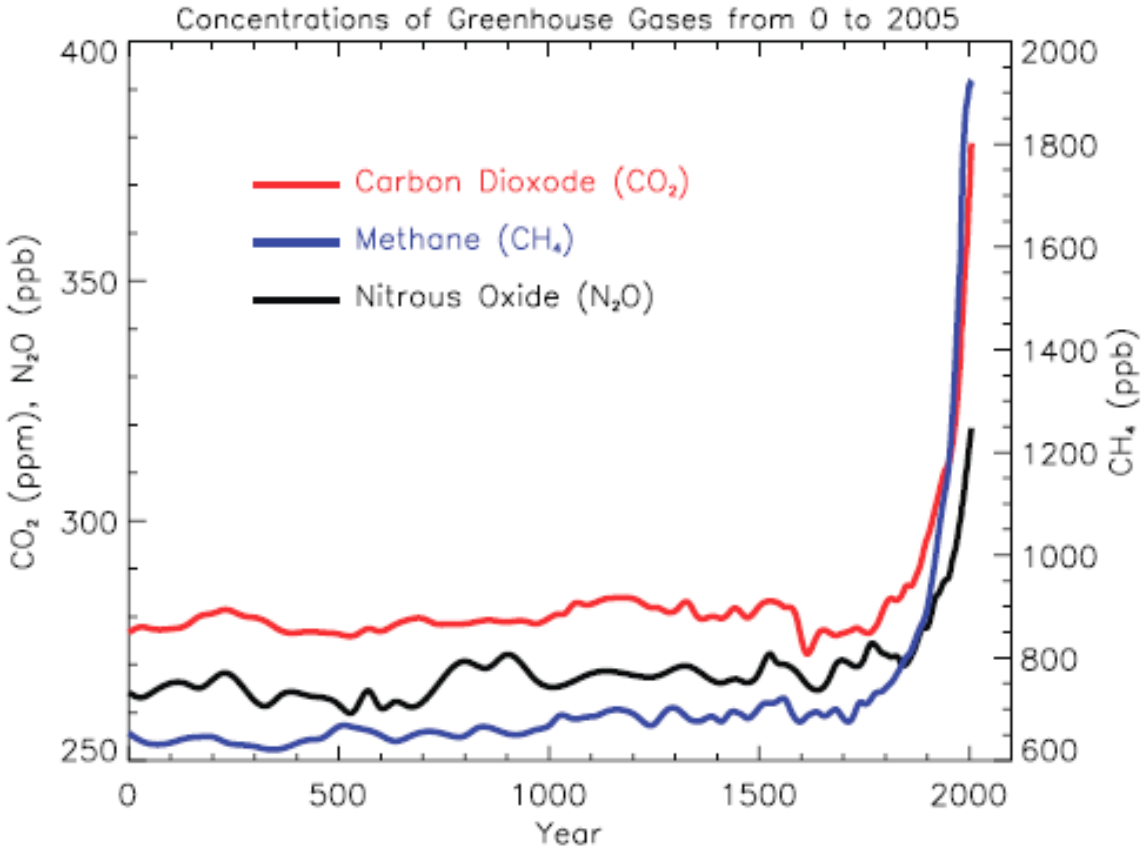
- Before humans, CO_2 controlled by natural forcing mechanisms over thousands of years.
- When the climate warmed, more CO_2 entered the atmosphere and accelerated the warming.
- CO_2 may not have caused the initial warming but it definitely drove the climate later on.
- Today human activities are driving the CO_2 change on very short time scales.
- CO_2 concentrations are known accurately for the past 650,000 years. During that time, they varied between 180 ppm and 300 ppm. As of 09/2009, CO_2 is 385 ppm which took about 100 years to increase. For comparison, **it took over 5,000 years for an 80 ppm rise after the last ice age.**
- Higher values than today have only occurred over many **millions of years**.

Fiction: CO_2 is Too Small to Change Climate

Claim: Because CO_2 and other GHGs make up less than 1% of the atmosphere (CO_2 = .04%) any changes in GHGs cannot be responsible for global warming.

- Air is mostly nitrogen (78%) and oxygen (21%) but these are **TRANSPARENT to OUTGOING LW RADIATION** – they cannot prevent heat from escaping to space.

- Due to **pre-Industrial** GHGs, the atmosphere is **33 °C warmer** than with an atmosphere with no greenhouse gases.



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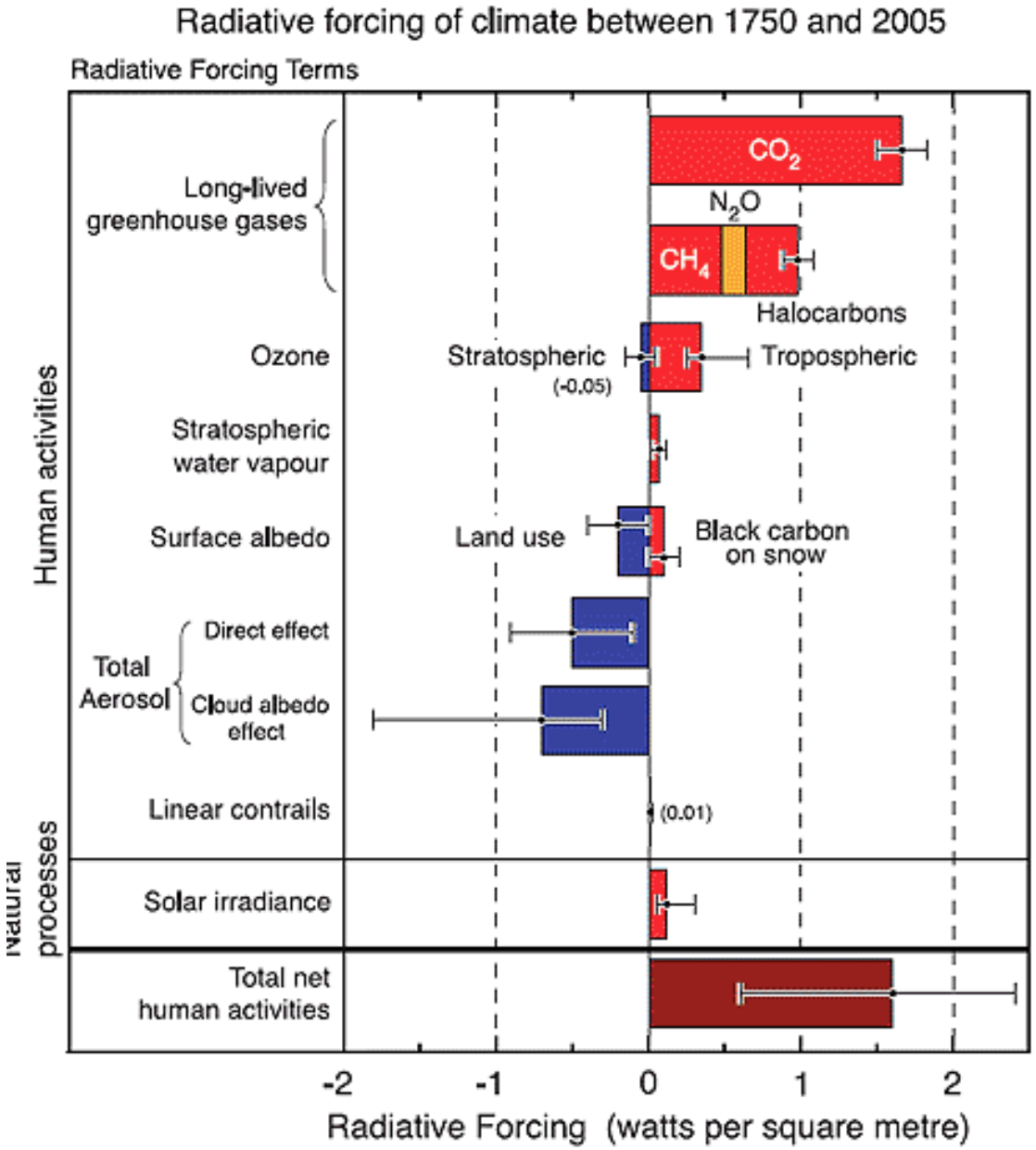


Misleading: Water Vapor is More Important!

Claim: Because water vapor is a stronger GHG and there is more water vapor in the air, it is far more important than CO_2.

- Water vapor molecules typically spend about 10 days in the atmosphere {while elevated CO_2 concentrations can remain for hundreds to thousands of years} so water vapor cannot be a climate change forcing mechanism like CO_2.

- Water vapor is an important **FEEDBACK** to global warming. A warmer climate causes more water vapor in the air and that enhances the warming.

- The water vapor feedback essentially **DOUBLES** the warming caused by GHG forcing.

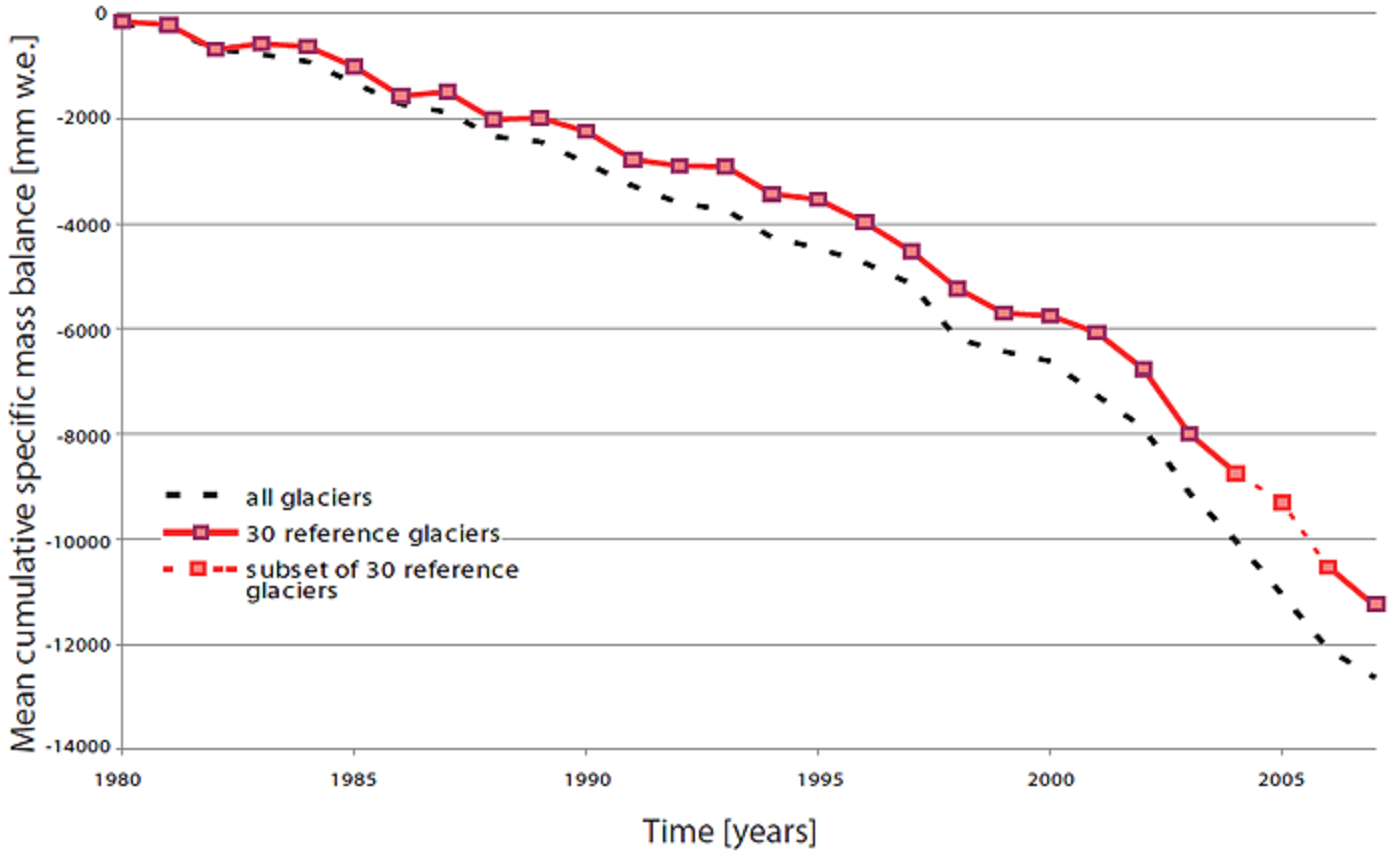
- If CO_2 doubles from 280 ppm (pre-Industrial Revolution) to 560 ppm, climate will warm between 2 to 4.5 ^oC due to feedbacks.

"Recent observations show that societies and ecosystems are highly vulnerable to even modest levels of climate change, with poor nations and communities, ecosystem services and biodiversity particularly at risk. Temperature rises above 2^{o}C will be difficult for contemporary societies to cope with, and are likely to cause major societal and environmental disruptions through the rest of the century and beyond."

-- *Synthesis Report* from the Climate Change Congress - University of Copenhagen (2009)

Fiction: Glaciers are Growing

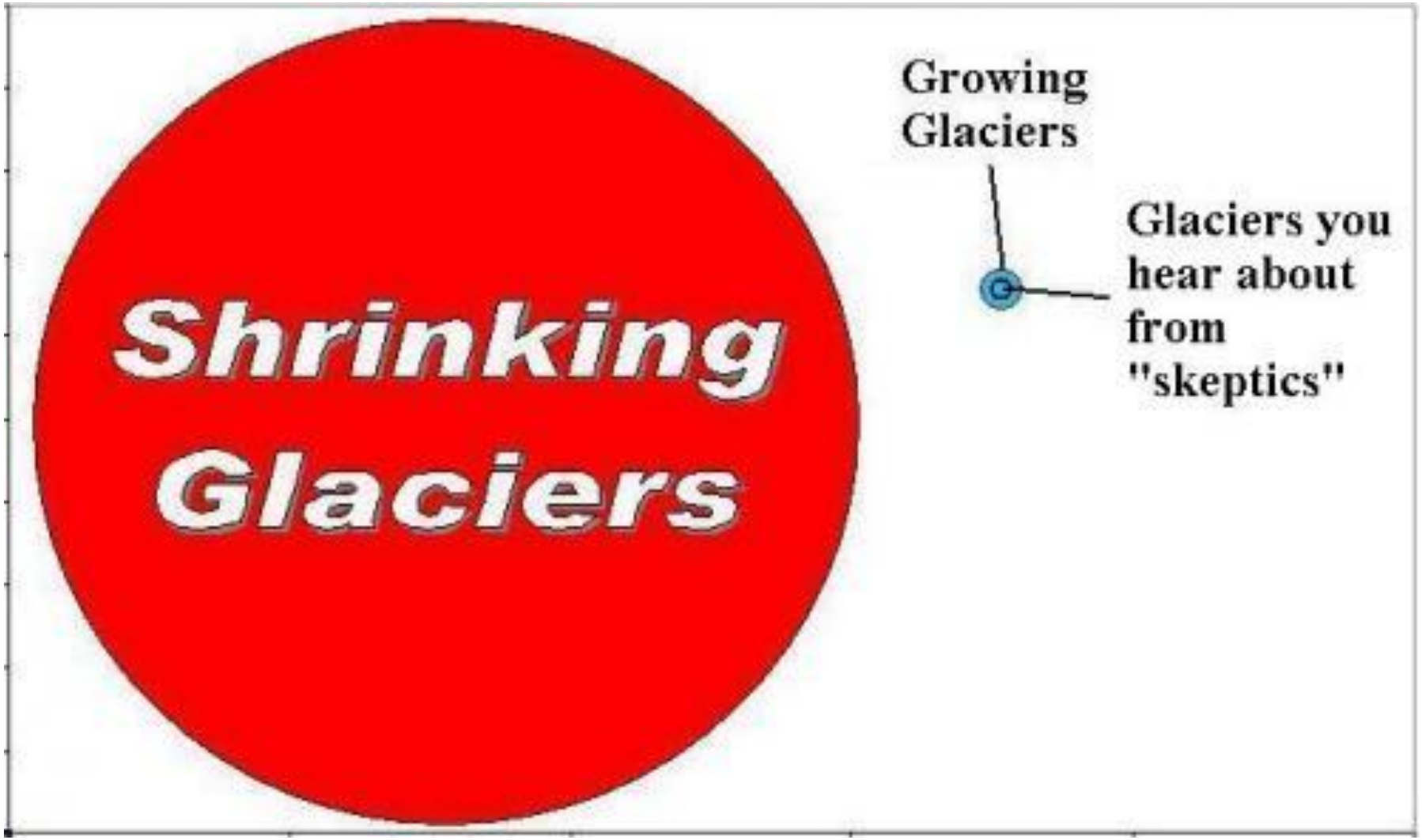
Claim: How can glaciers be growing if there is global warming?



- In 2005 , 442 glaciers examined, 26 advancing, 18 stationary and 398 retreating.
- **90% of worldwide glaciers are retreating.**
- In 2005, for the first time ever, no observed Swiss glaciers advanced.
- Of the 26 advancing glaciers, 15 were in New Zealand.
- Overall there has been a substantial volume loss of 11% of New Zealand glaciers from 1975-2005 even with this advancement.

Fiction: Glaciers are Growing

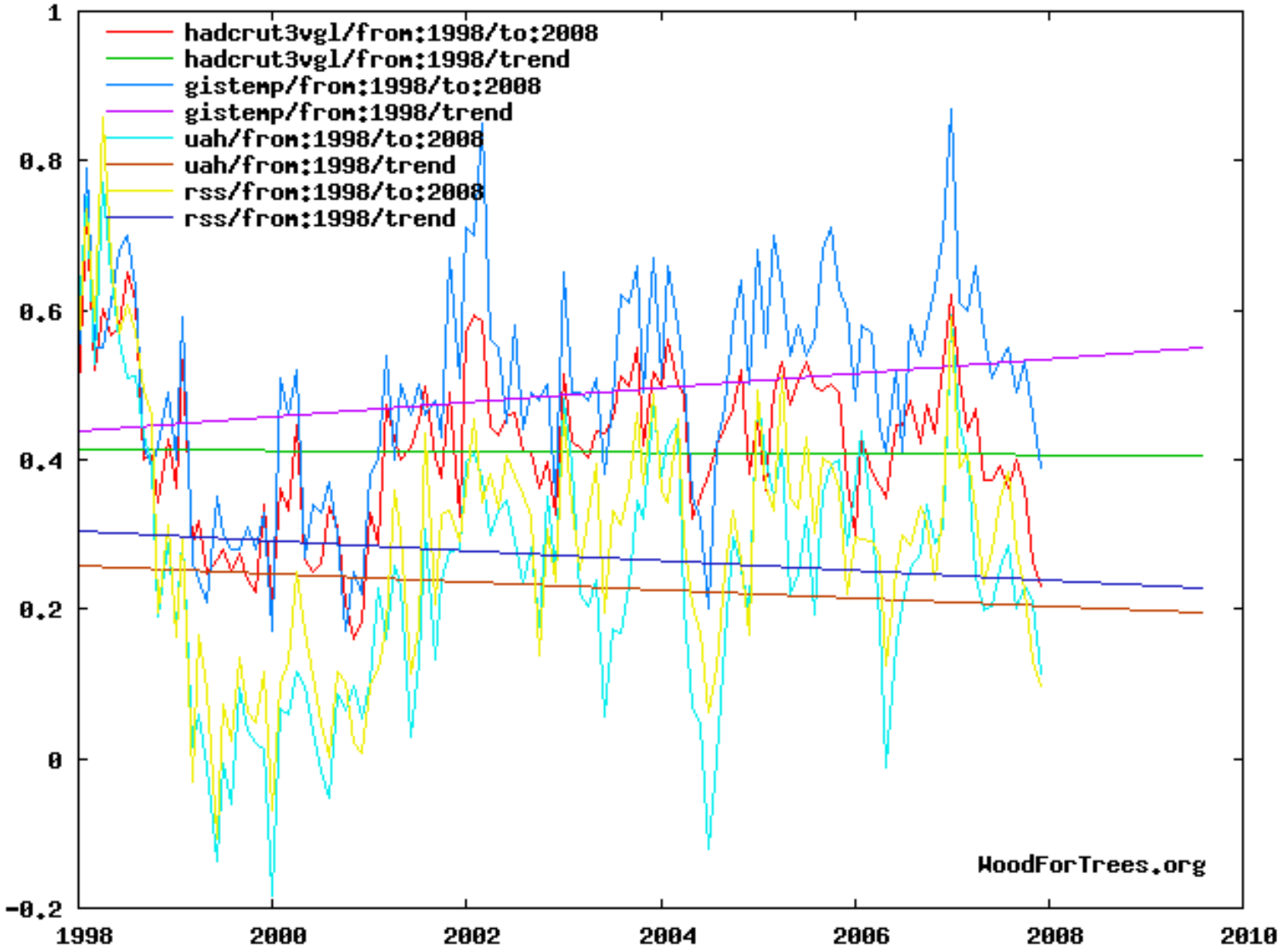
Some Perspective:



Tamino (2009)

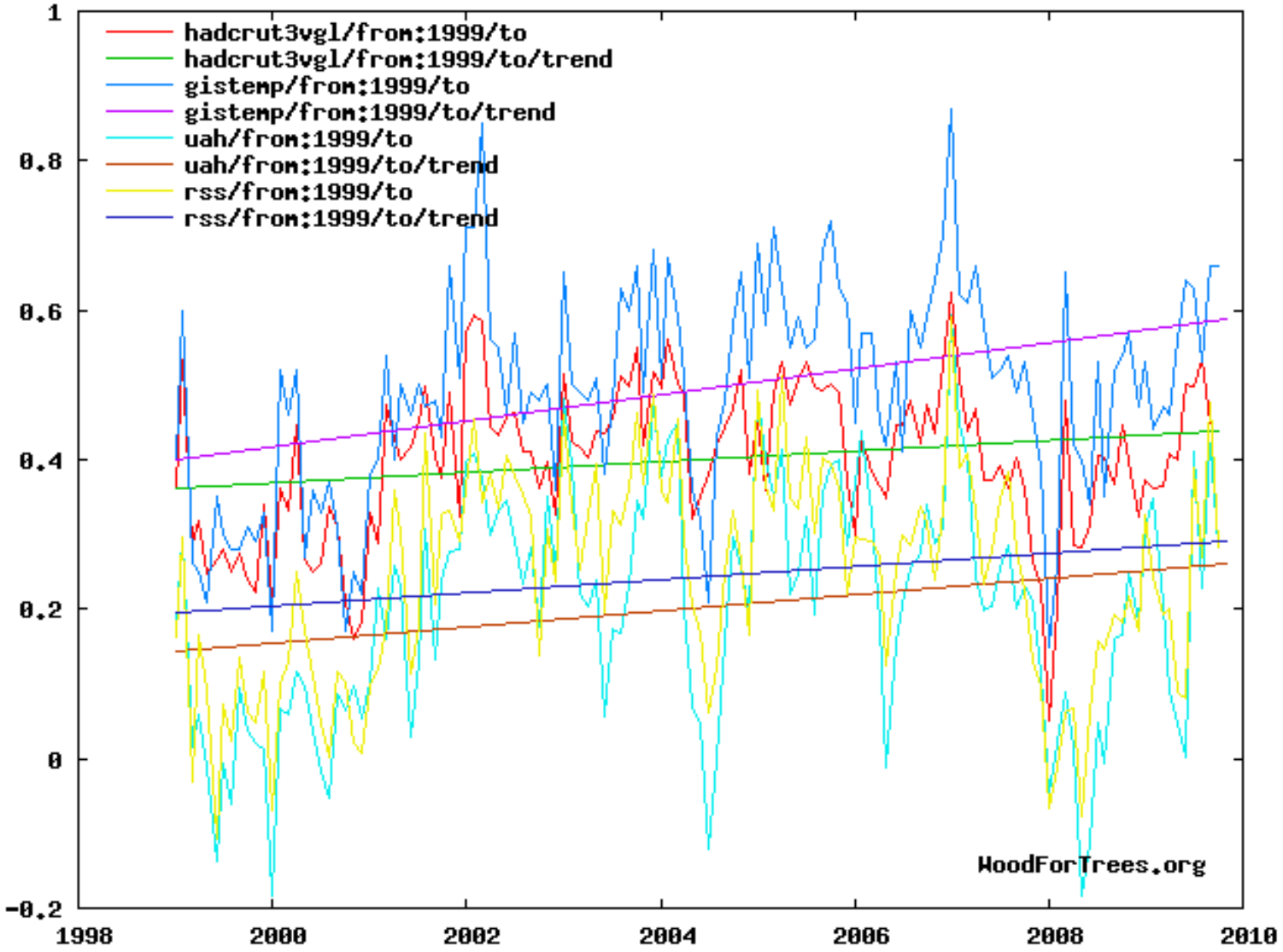
Fiction: Global Warming Has Stopped Recently

Starting at 1998 and ending at 2008:



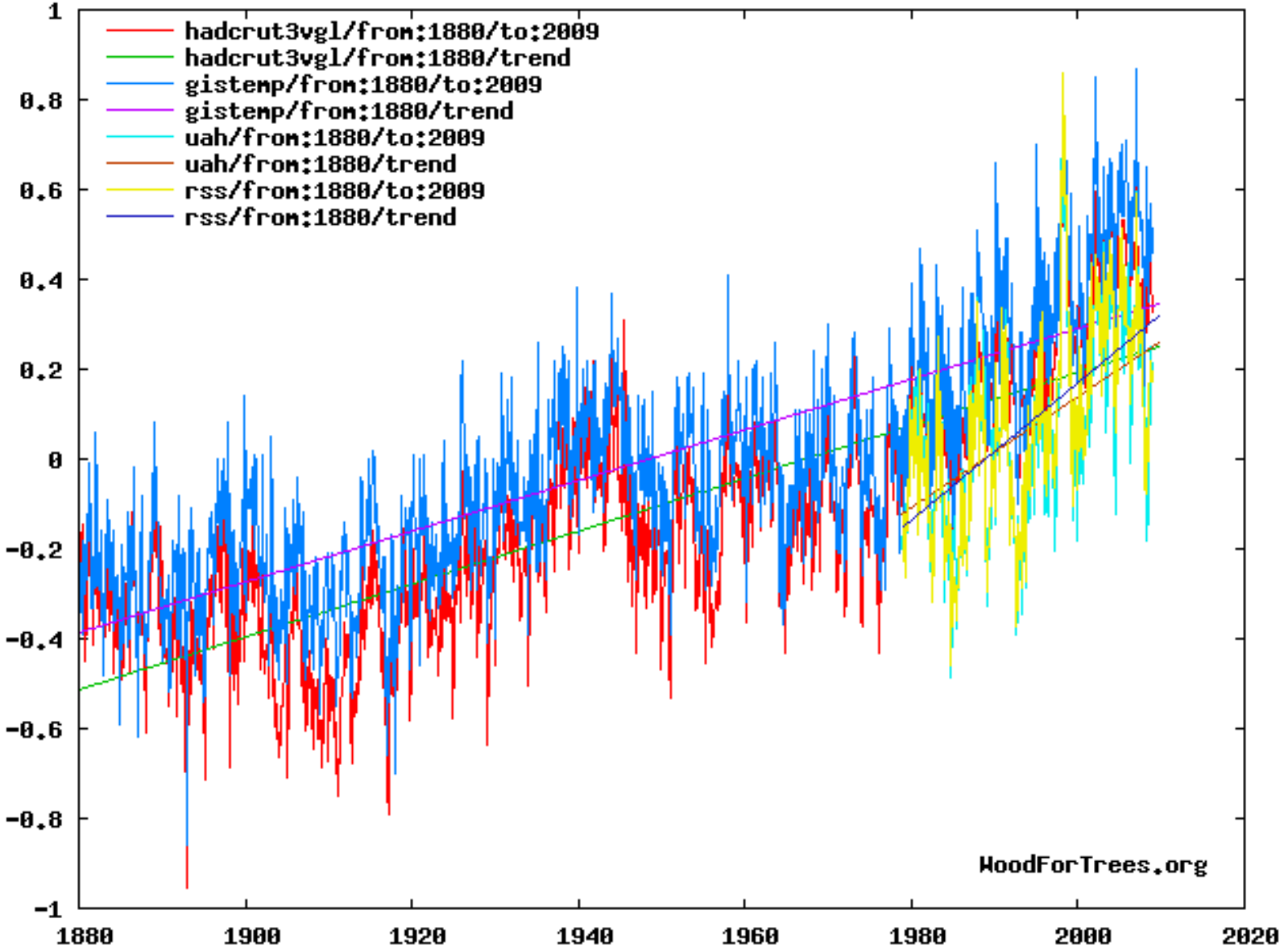
Fiction: Global Warming Has Stopped Recently

Starting at 1999 ending with 2009:



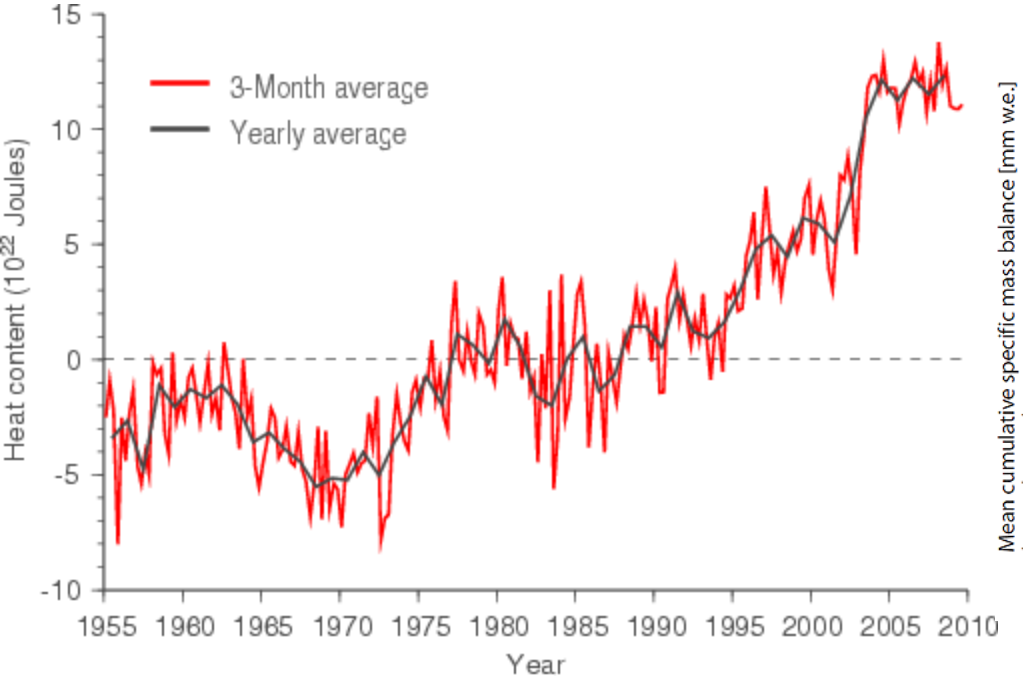
Fiction: Global Warming Has Stopped Recently

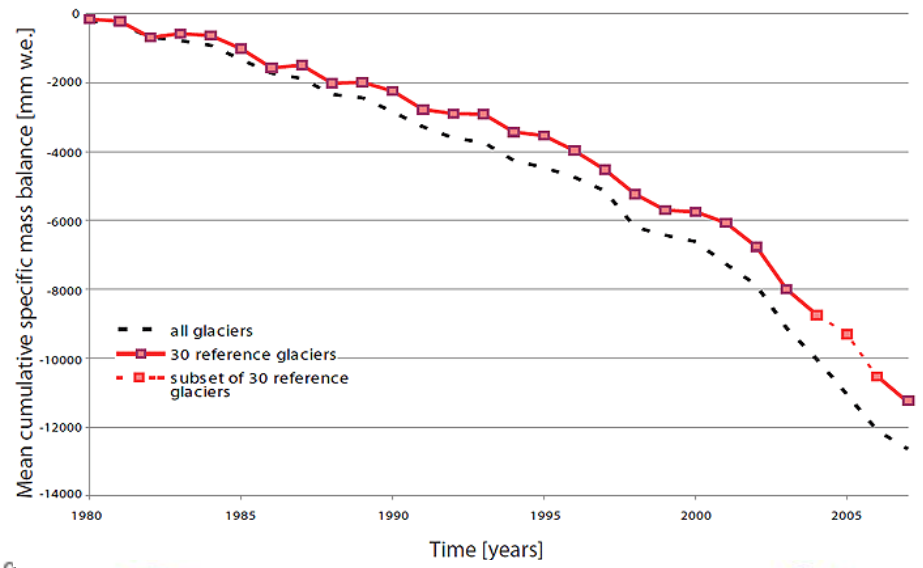
Using ALL the data between 1880 and 2009:

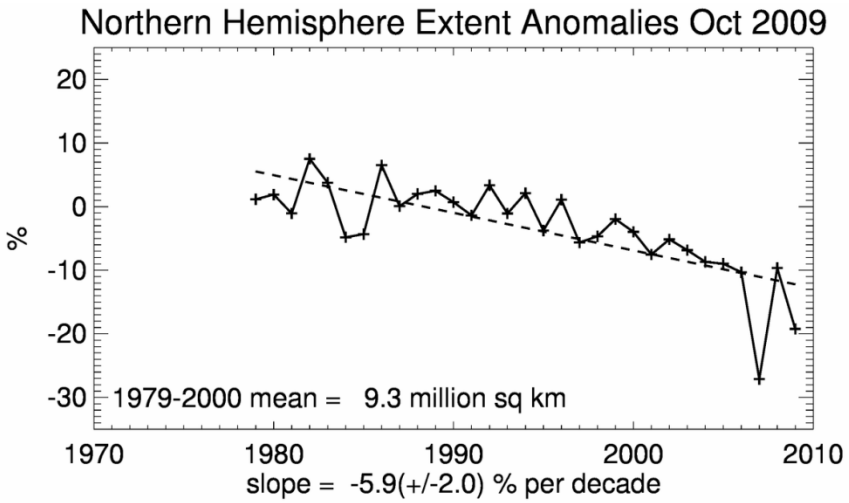


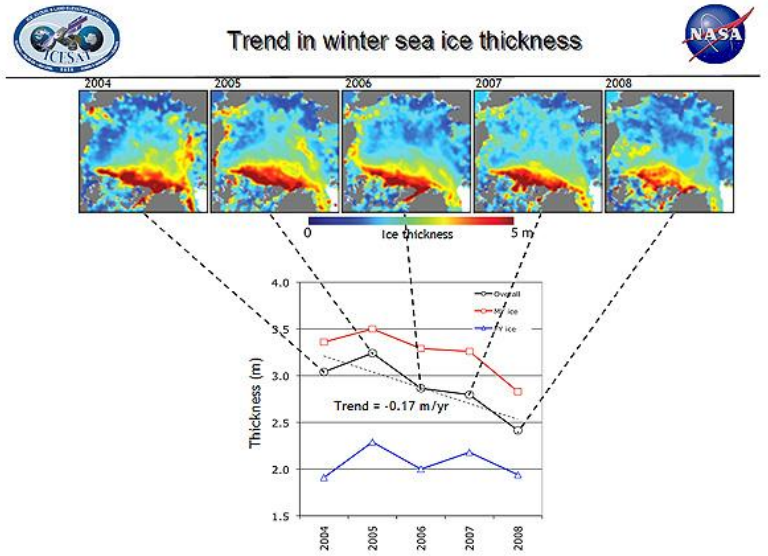
Fiction: Global Warming Has Stopped Recently

Where is the global cooling below?



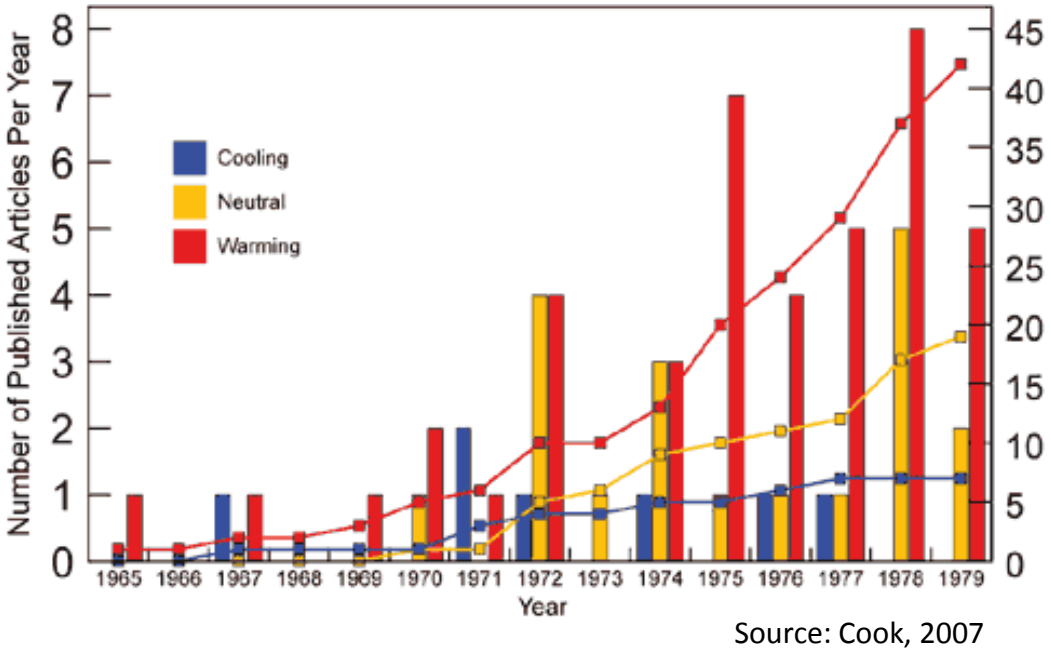




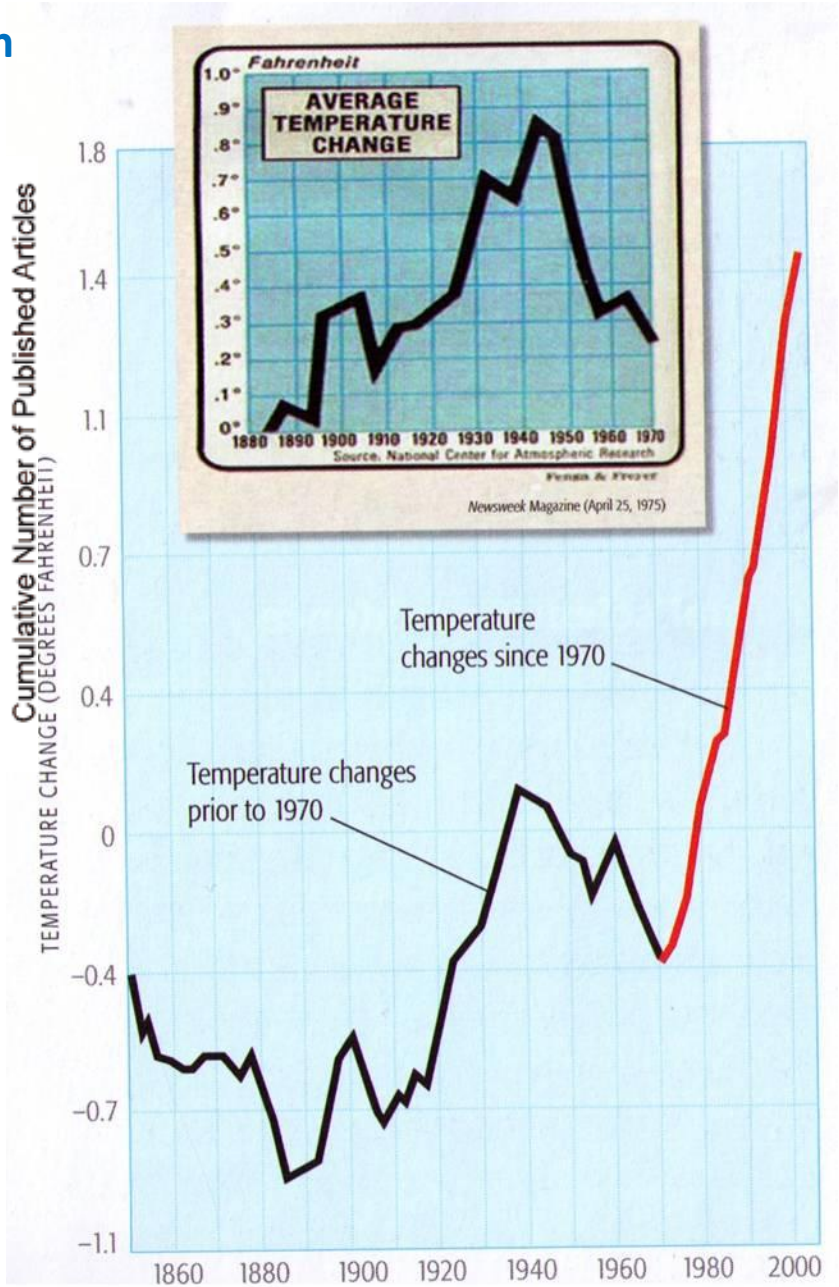


Fiction: Ice Age Predicted in the 1970s

Claim: Scientists were predicting a coming ice age in the 1970s so how can we trust them now?



Source: Cook, 2007

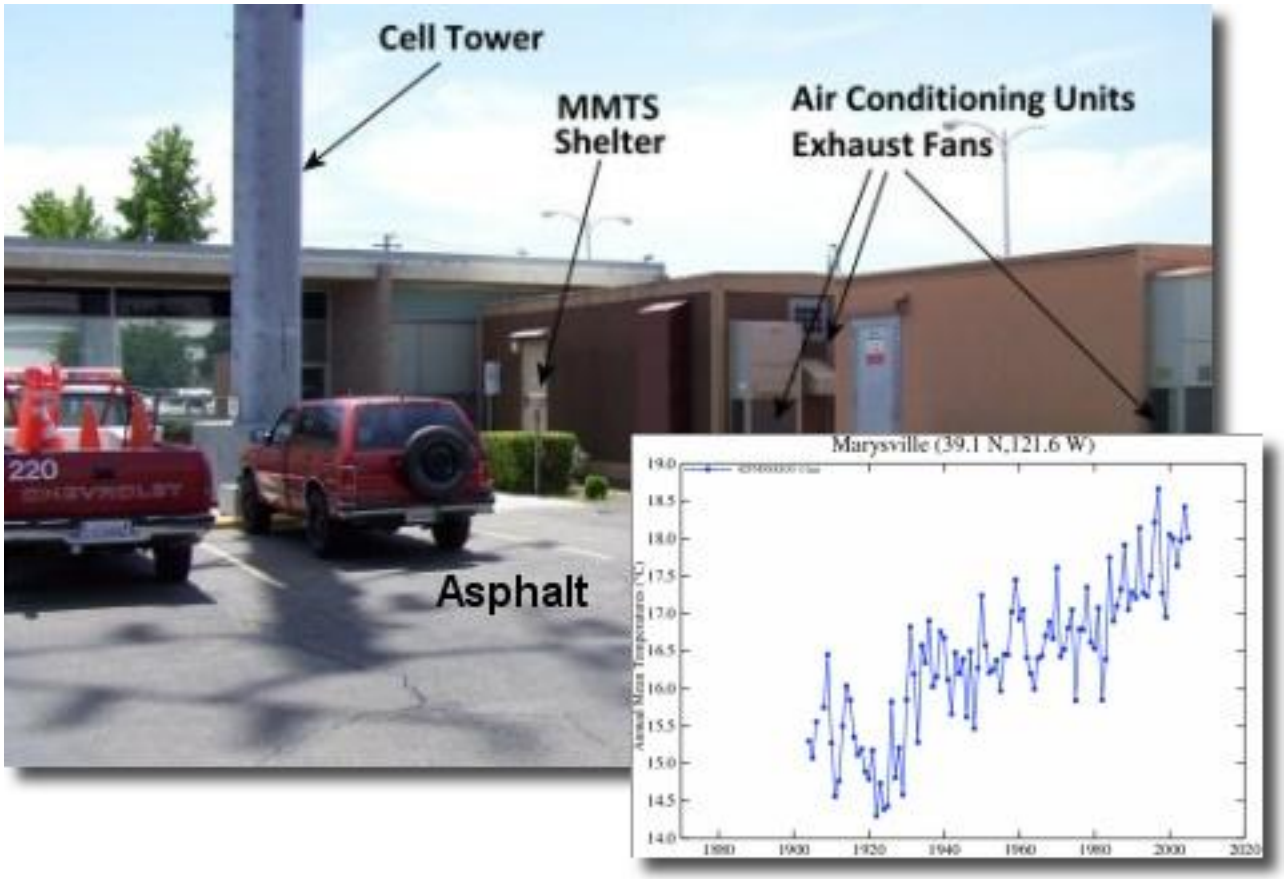


- **The "coming ice age" was mostly a story portrayed by the media – NOT scientists!**

- **Cooling between 1940-1970 due to global dimming by air pollution – and still occurring today!**

Fiction: Surface Temperatures are Unreliable (UHI)

Claim: Due to the Urban Heat Island Effect, temperatures are being warmed by thermometer placement and not by climate change.

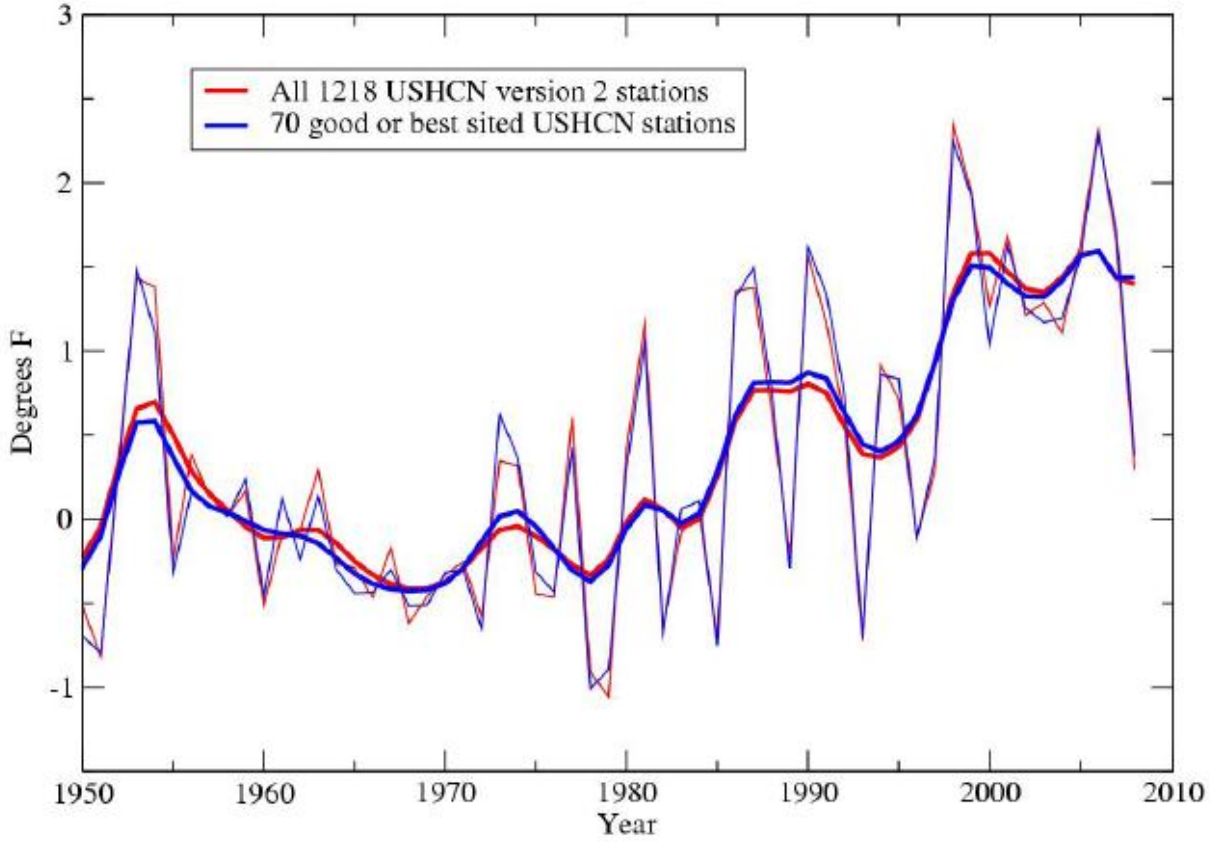


Source: www.surfacestations.org

Fiction: Surface Temperatures are Unreliable (UHI)

- Surfacestations.org has examined about 70% of the 1221 stations in NOAA's Historical Climatology Network (USHCN) (Watts, 2009). They classified **70 stations** as good or best.

- NOAA analysis comparing the 70 "good or best" stations with ALL 1221 stations:

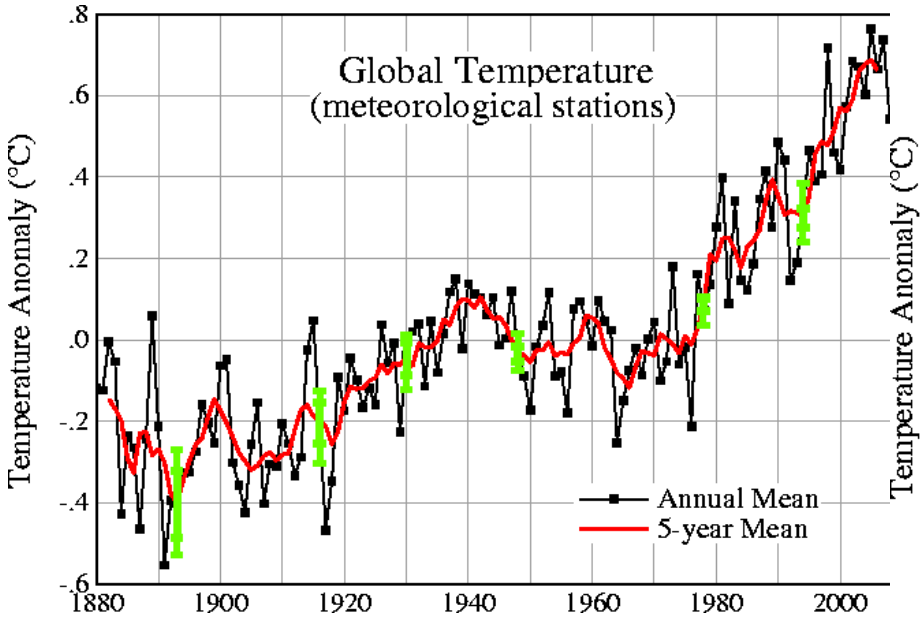


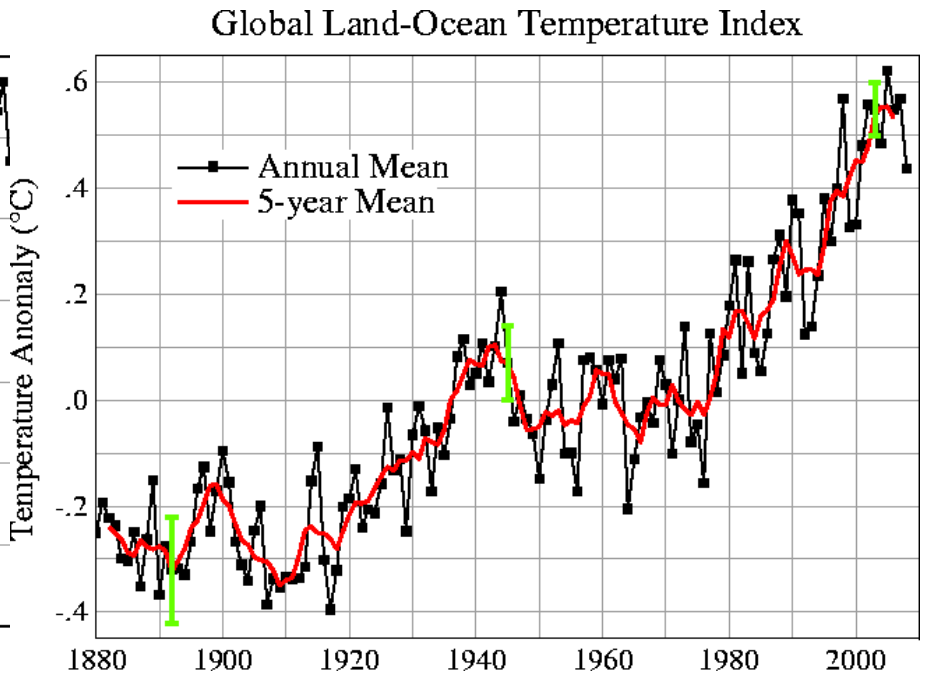
Fiction: Surface Temperatures are Unreliable (UHI)

- Other studies have shown the same results – there is little to no UHI bias in the **TREND** of temperature. The IPCC reports: "that effects of urbanization and land use change on the land-based temperature record are negligible (**0.006 °C per decade**)."

- **A RISING TIDE LIFTS ALL BOATS.**

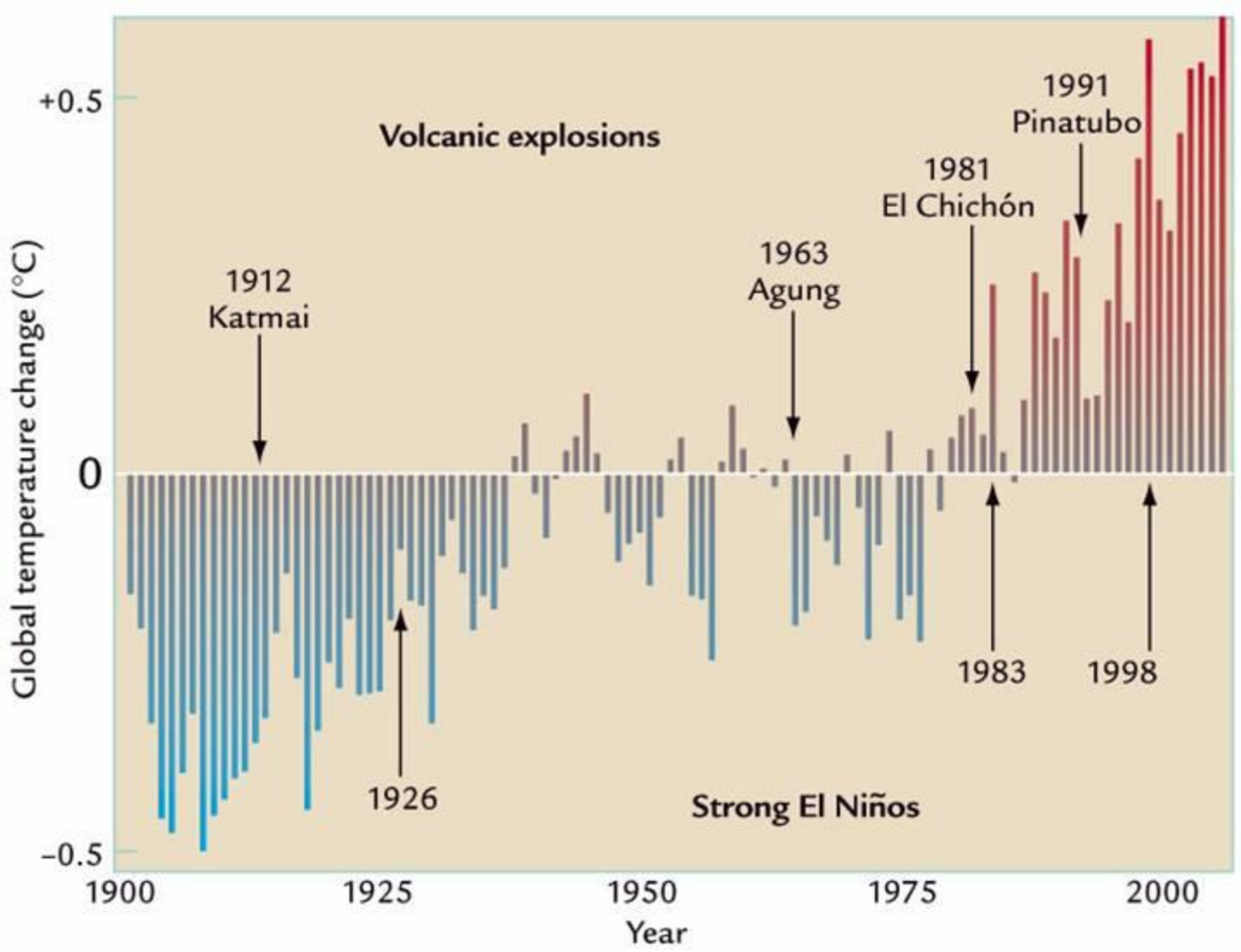
- Certainly there is no UHI over the oceans and satellite trends show the same warming trends:





Fiction: It's El Niño!

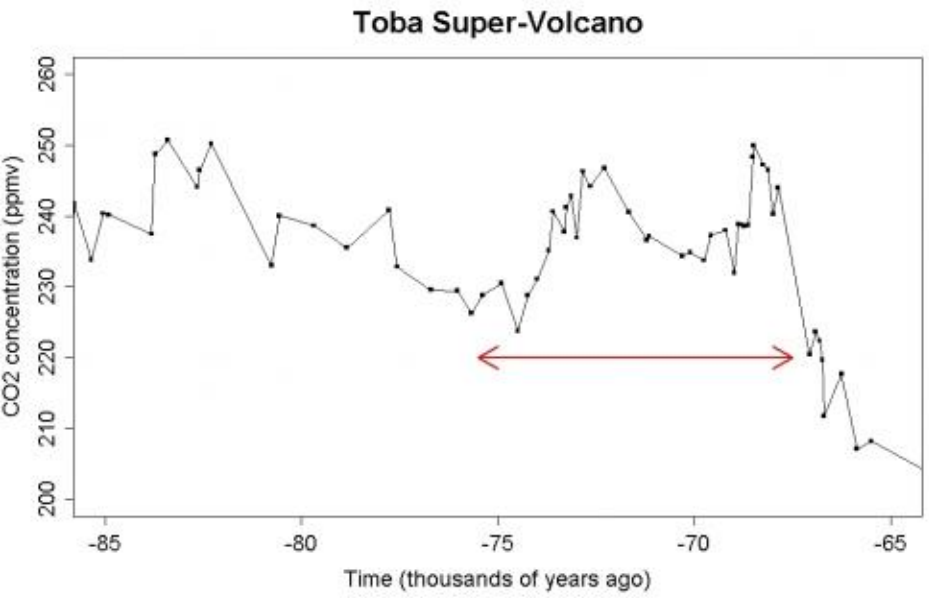
Claim: El Niño causes warmer ocean waters which warms the climate.

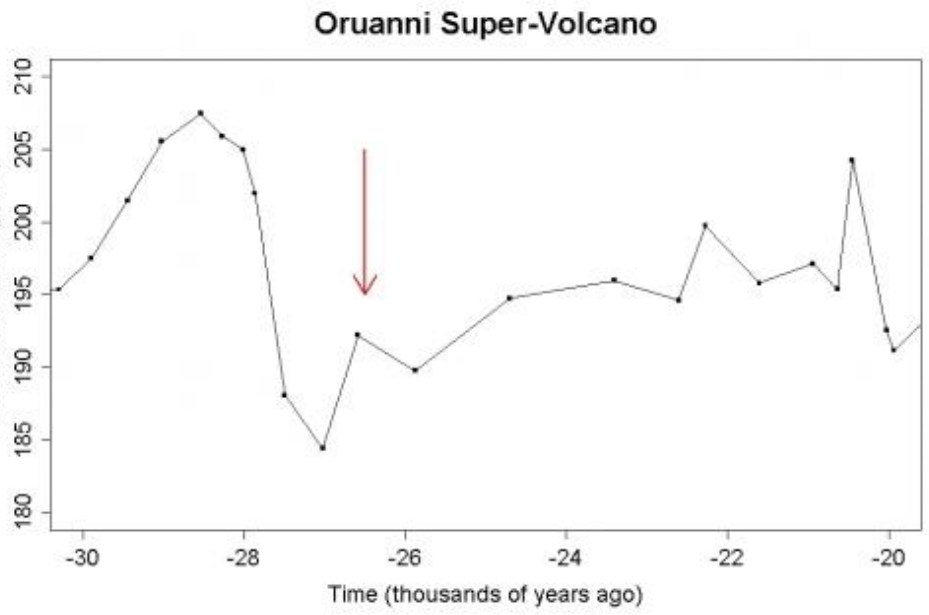


El Niño events cause global warming on a short time scale **(6 months to 2 years)** so they cannot explain the rise in the modern record.

Fiction: Volcanoes Emit More CO_2 Than Humans

Claim: Volcanoes emit more CO_2 in a day than all of the human emissions since Ind. Rev.



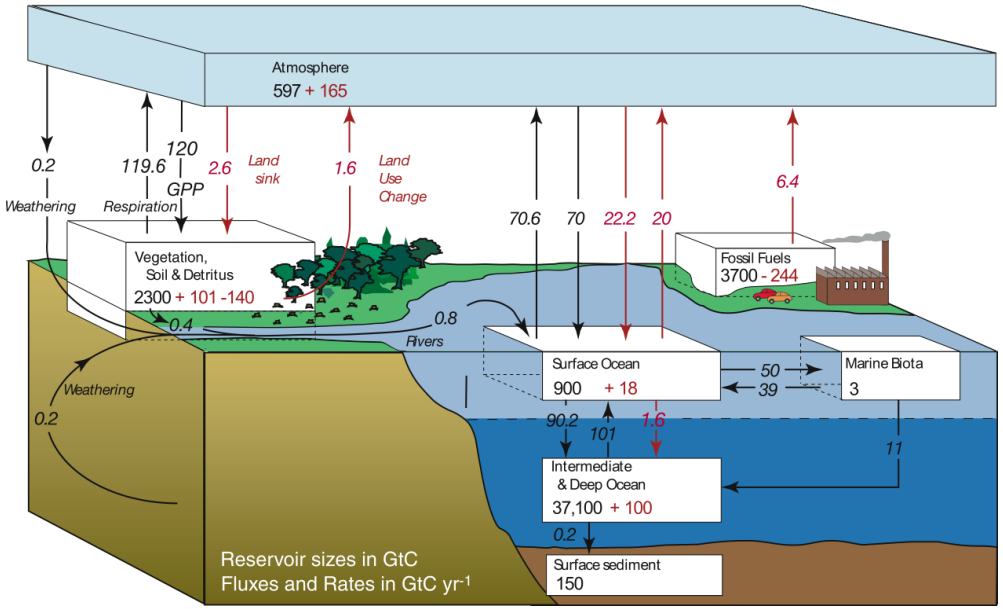


Tamino (2009)

- **Humans are responsible for about 100 ppm CO_2 since the Industrial Revolution**
- Each 1 ppm = 7.8 Gt (billion tons) of CO_2
- 1991 Mt. Pinatubo emitted 10 Gt of material – some of which was CO_2
- **Even if all of it was CO_2 it would result in a 1.3 ppm increase!**
- In fact, due to the cooler climate, there was a **decrease in CO_2 in the following 2 years.**

Misleading: Nature Emits Much More CO_2 Than Humans

Claim: Human emissions are dwarfed by natural emissions.



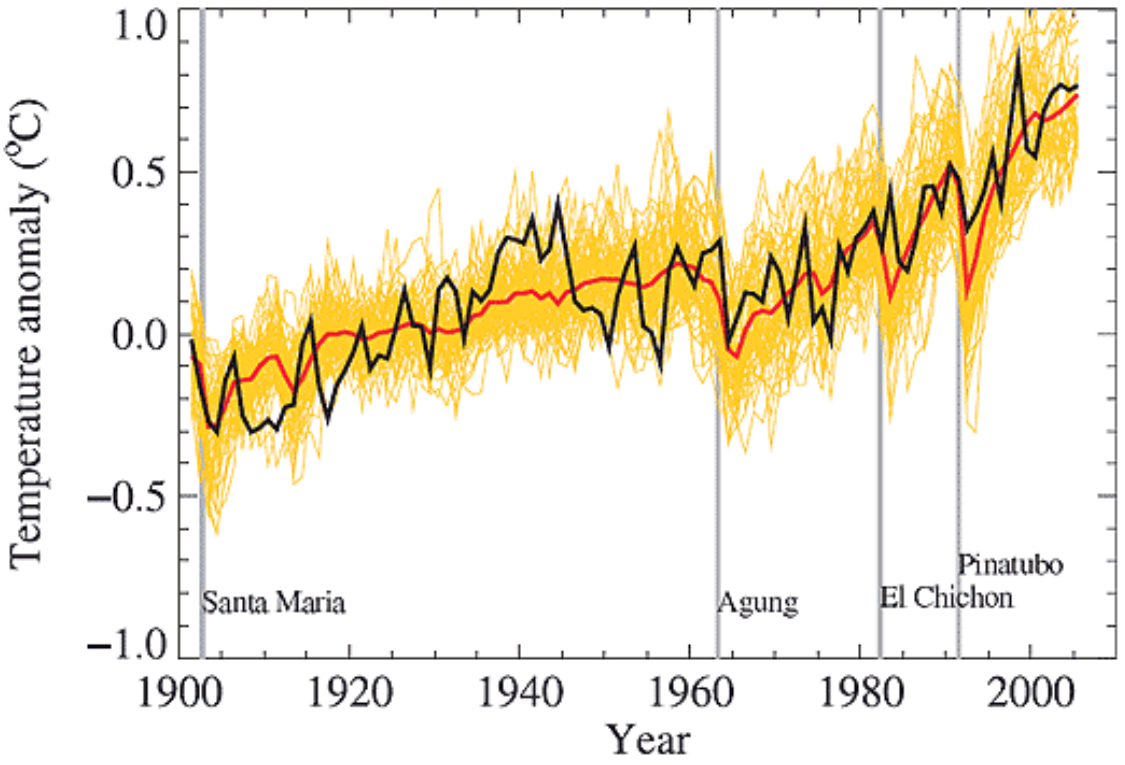
IPCC (2007)

- As the diagram shows, the natural emissions (*sources*) to the atmosphere (black up arrows) are 190.2 GtC/yr while the natural removal (*sinks*) from the atmosphere is also 190.2 GtC/yr. Big numbers, for sure, **but they are in balance and effectively cancel each other out.**
- In the year 2008 human emissions of carbon were 10.2 Gt. Natural sinks removed 5.3 Gt of this carbon. Humans caused a net increase of approximately 5 GtC in 2008. 1 GtC is equal to 3.67 $GtCO_2$, therefore, **humans caused a net increase of 18.4 $GtCO_2$!**
- So, yes, natural emissions dwarf human emissions, but because natural emissions are balanced by natural sinks, **only the human contribution is responsible for the increasing CO_2 in the atmosphere.**
- The annual mean growth rate of atmospheric CO_2 is about 2.0 ppm for the period 2000-2008. 2 ppm CO_2 = 15.6 $GtCO_2$ per year.
- Natural sinks have removed 54% of all CO_2 emitted from human activities during the period 2000-2008.
- The efficiency of these sinks in removing CO_2 has decreased by 5% over the last 50 years, and will continue to do so in the future, thus exacerbating the problem.

Fiction: Climate Models are Unreliable

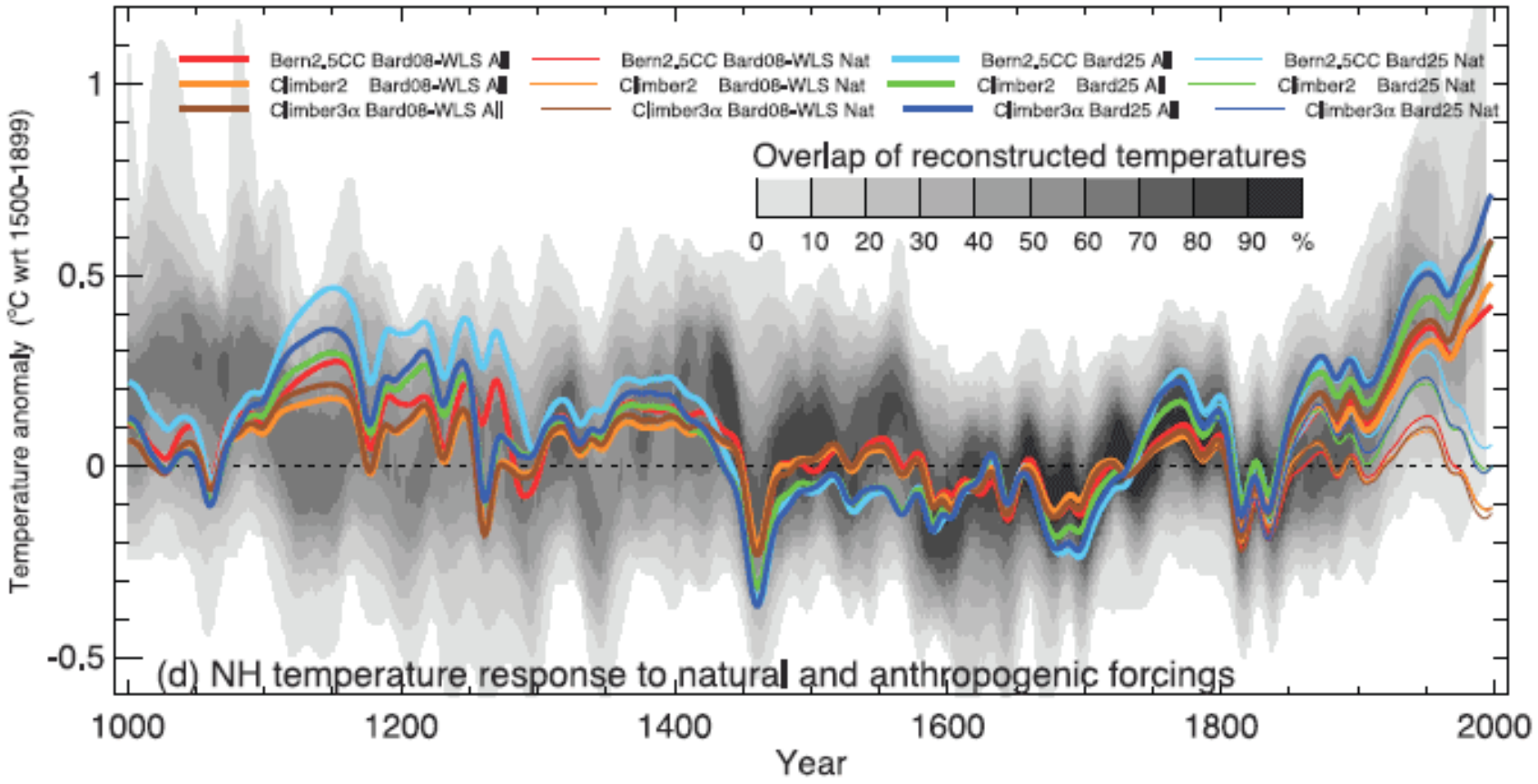
Claim: Climate models are not matching today's climate so cannot be trusted.

FAQ 8.1, Figure 1. *Global mean near-surface temperatures over the 20th century 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 (yellow). The mean of all these runs is also shown (thick red line). Temperature anomalies are shown relative to the 1901 to 1950 mean. Vertical grey lines indicate the timing of major volcanic eruptions. (Figure adapted from Chapter 9, Figure 9.5. Refer to corresponding caption for further details.)*



- **Climate models are based upon well-established laws of physics and use a wealth of actual observations.**
- **These models are able to simulate the current climate.**
- **These models are able to simulate past climate.**

Fiction: Climate Models are Unreliable



Thick lines include natural forcing and human GHG emissions.
Thin lines include just natural forcing.

Climate after Industrial Revolution can only be explained when including human emissions of GHGs and the climate is predicted well by models.

Fiction: Climate Models are Unreliable

According to the IPCC 2007 WGI, Chapter 8 report by Randall, et al. (2007):

1. There is considerable confidence that Atmosphere-Ocean General Circulation Models (AOGCMs) provide credible quantitative estimates of future climate change, particularly at continental and larger scales.
2. Models now being used in applications by major climate modeling groups better simulate seasonally varying patterns of precipitation, mean sea level pressure and surface air temperature than the models relied on by these same groups at the time of the IPCC Third Assessment Report (TAR).
3. Model global temperature projections made over the last two decades have also been in overall agreement with subsequent observations over that period.
4. Some AOGCMs can now simulate important aspects of the El Niño-Southern Oscillation (ENSO).
5. The ability of AOGCMs to simulate extreme events, especially hot and cold spells, has improved.
6. Atmosphere-Ocean General Circulation Models are able to simulate extreme warm temperatures, cold air outbreaks and frost days reasonably well.
7. Models also reproduce other observed changes, such as the faster increase in nighttime than in daytime temperatures and the larger degree of warming in the Arctic known as *polar amplification.*
8. Models account for a very large fraction of the global temperature pattern: the correlation coefficient between the simulated and observed spatial patterns of annual mean temperature is typically about 0.98 for individual models. This supports the view that major processes governing surface temperature climatology are represented with a reasonable degree of fidelity by the models.
9. The models, as a group, clearly capture the differences between marine and continental environments and the larger magnitude of the annual cycle found at higher latitudes, but there is a general tendency to underestimate the annual temperature range over eastern Siberia. In general, the largest fractional errors are found over the oceans (e.g., over much of tropical South America and off the east coasts of North America and Asia). These exceptions to the overall good agreement illustrate a general characteristic of current climate models: the largest-scale features of climate are simulated more accurately than regional- and smaller-scale features.
10. Models predict the small, short-term global cooling (and subsequent recovery) which has followed major volcanic eruptions, such as that of Mt. Pinatubo in 1991
11. Simulation of extratropical cyclones has improved. Some models used for projections of tropical cyclone changes can simulate successfully the observed frequency and distribution of tropical cyclones.
12. The models capture the dominant extratropical patterns of variability including the Northern and Southern Annular Modes, the Pacific Decadal Oscillation, the Pacific-North American and Cold Ocean-Warm Land Patterns.
13. With a few exceptions, the models can simulate the observed zonal mean of the annual mean outgoing LW within 10 W/m^2 (an error of around 5%) The models reproduce the relative minimum in this field near the equator where the relatively high humidity and extensive cloud cover in the tropics raises the effective height (and lowers the effective temperature) at which LW radiation emanates to space.
14. The seasonal cycle of the outgoing LW radiation pattern is also reasonably well simulated by models.
15. The models capture the large-scale zonal mean precipitation differences, suggesting that they can adequately represent these features of atmospheric circulation. Moreover, there is some evidence that models have improved over the last several years in simulating the annual cycle of the precipitation patterns.
16. Models also simulate some of the major regional characteristics of the precipitation field, including the major convergence zones and the maxima over tropical rain forests, although there is a tendency to underestimate rainfall over the Amazon.
17. Confidence has also increased in the ability of GCMs to represent upper-tropospheric humidity and its variations, both free and forced. Together, upper-tropospheric observational and modeling evidence provide strong support for a combined water vapor/lapse rate feedback of around the strength found in GCMs (approximately 1 $W/m^2\ {}^oC^{-1}$, corresponding to around a 50% amplification of global mean warming).

Fiction: We Cannot Predict Weather So how Can We Predict Climate?

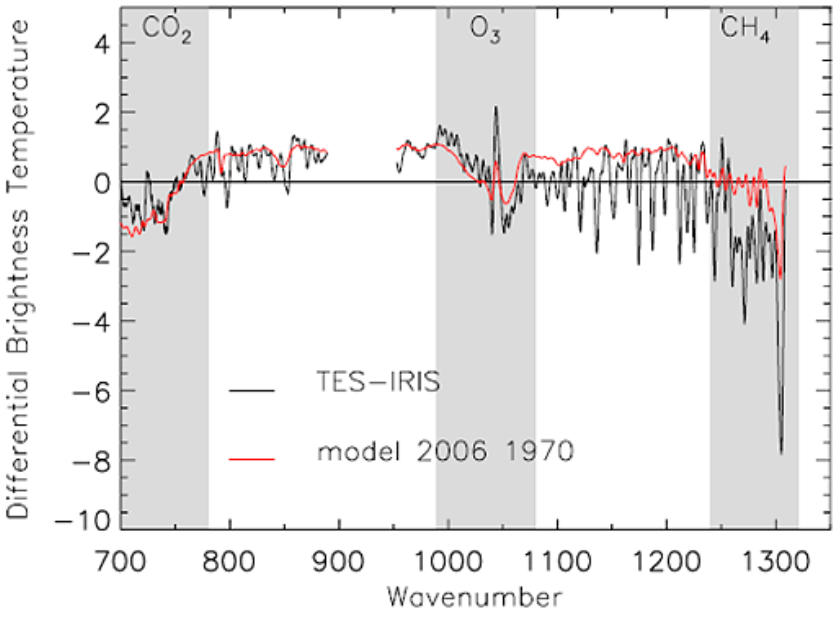
Claim: If we cannot predict weather beyond a week how can we predict the next 30 years?

"Climate is average weather, which is more predictable than day-to-day and hour-to-hour weather changes. Weather behavior is chaotic and often difficult to predict beyond a week or so into the future. By comparison, climate is largely determined by global and regional geophysical processes that change slowly. Hence, if these factors are properly understood and predictable, then the climate can be forecast far into the future with a significant degree of confidence." -- Atmospheric Science Assessment and Integration Section Science and Technology Branch Environment Canada (2008)

Coin flip example
Water example

A person who claims "how can we predict climate change over decades when we can't even predict tomorrow's weather?" has a fundamental misunderstanding of modeling.

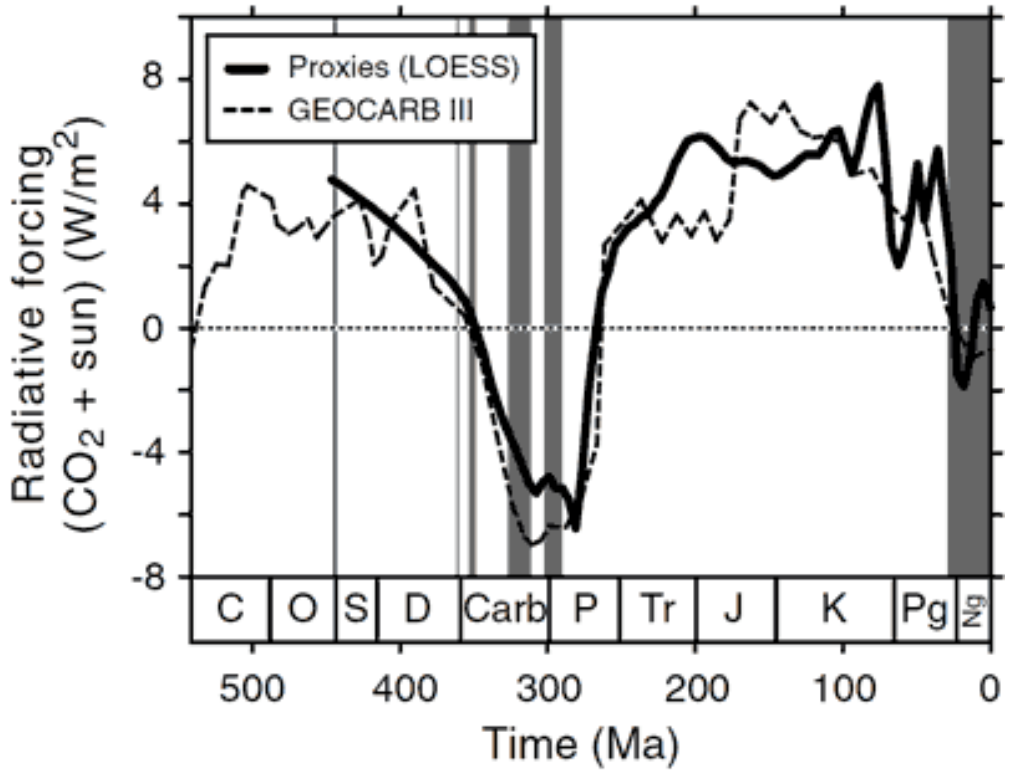
Fiction: Greenhouse Effect Has Not Been Measured – Only Modeled



- **Increased CO_2 is preventing LW radiation from escaping the atmosphere** and this **decreasing LW radiation is accurately being predicted by models.**
- Wang & Liang (2009) estimated downwelling LW radiation under both clear and cloudy conditions at about 3200 stations from 1973 to 2008 were presented.
- **Daily downwelling LW increased at an average rate of 2.2 W/m² per decade from 1973 to 2008.** The rising trend results from increases in air temperature, atmospheric water vapor, and CO_2 concentration.

- Evans & Puckrin (2006) measured the downward radiative flux for several important greenhouse gases. The greenhouse effect from trace gases in the atmosphere is real and adds significantly to global warming.
- Their data indicates that an energy flux imbalance of 3.5 W/m² has been created by anthropogenic emissions of greenhouse gases since 1850. This compares favorably with a modeled prediction of 2.55 W/m².
- They concluded: ***"This experimental data should effectively end the argument by skeptics that no experimental evidence exists for the connection between greenhouse gas increases in the atmosphere and global warming."***

Misleading: CO_2 Has Been Much Higher in the Past and It Was Colder



- 440 million years ago CO_2 is estimated to be about 1200 ppm with large glaciation
- Today values = 390 ppm
- However, **the sun was 4% weaker 440 million years ago!**
- To overcome the weaker sun, CO_2 values would need to be around **3000 ppm** to prevent ice!

Why So Much Misinformation?

1. Industry-backed Lobby Groups
2. Journalism Style & Mass Media
3. Political Ideology

Industry Backed Lobby Groups

Lobbyists Intent on Avoiding Real Science (L.I.A.R.S.)

- Heartland Institute
- George C. Marshall Institute
- Competitive Enterprise Institute
- Fraser Institute
- Global Climate Coalition
- S. Fred Singer
- Dr. Frederick Seitz
- Steven Milloy
- Dr. Timothy Ball
- Lord Christopher Monckton
- Ian Plimer
- Senator James M. Inhofe

Industry Backed Lobby Groups

The Climate Change Lobby Explosion

- A Center for Public Integrity analysis of Senate lobbying disclosure forms shows that more than 770 companies and interest groups hired an estimated 2,340 lobbyists to influence federal policy on climate change in 2009 as the issue gathered momentum and came to a vote on Capitol Hill.

- **Increase of more than 300 % in the number of lobbyists on climate change** in just five years.

- Washington has more than **four climate lobbyists for every member of Congress**.

- Based on the data, the Center estimates that lobbying expenditures on climate change last year **topped $90 million.**

Industry Backed Lobby Groups

The Organization of Denial: Conservative Think Tanks and Environmental Scepticism
(Dunlap & Freeman, 2008)

- *This study analyzes 141 English-language environmentally skeptical books published between 1972 and 2005.*

- *Found that over 92% of these books, most published in the US, are linked to conservative think tanks (CTTs).*

- *90% of CTTs espouse environmental skepticism.*

- *Conclusion:* ***skepticism is a tactic of an elite-driven counter-movement designed to combat environmentalism****, and that the successful use of this tactic has contributed to the weakening of US commitment to environmental protection.*

- They further state: *Thus, the notion that environmental skeptics are unbiased analysts exposing the myths and scare tactics employed by those they label as practitioners of 'junk science' lacks credibility. Similarly, the self-portrayal of skeptics as marginalized 'Davids' battling the powerful 'Goliath' of environmentalists and environmental scientists is a charade,* ***as skeptics are supported by politically powerful CTTs funded by wealthy foundations and corporations.***

Journalism & Mass Media

Journalists try to be "Fair and Balanced"

Boykoff, M.T. & Boykoff, J.M. (2004). Balance as bias: global warming and the US prestige press. *Global Environmental Change*, 14 (2004) 125–136.

- 3543 news articles appeared from 1988 to 2002. Of these articles, approximately 41% came from the New York Times, 29% from the Washington Post, 25% from the Los Angeles Times, and 5% from the Wall Street Journal.

- Found that in the majority (52.65%) of coverage in the US prestige press, these accounts gave ''roughly equal attention'' to the view that humans were contributing to global warming, and the other view that exclusively natural fluctuations could explain the earth's temperature increase.

- **This supports the hypothesis that journalistic balance can often lead to a form of informational bias.**

Political Ideology

- Conservatives and libertarians abhor industry and personal regulation.

- Regulation of industry and personal carbon limitation are essential to mitigate global warming.

Conclusion:

1. **An overwhelming majority of international climate experts agree about much of the tenets of AGW and are honest.**

2. **An overwhelming majority of international climate experts are ignorant about their own expertise in a sudden and collective manner.**

3. **Scientists have all agreed to conspire to delude the billions of folks on the planet and just a very tiny percentage of them (mostly unpublished and with ties to Big Oil) are trying to save us all from this mass hoax.**

Some of My Favorite Quotes:

“Observing a bird in the sky doesn’t disprove gravity.”

-- Dr. Bart Verheggen, Energy research Centre of the Netherlands (ECN)

"What's the use of having developed a science well enough to make predictions if, in the end, all we're willing to do is stand around and wait for them to come true?"

Nobel Laureate Sherwood Rowland (referring then to ozone depletion)

"The trouble with the world is not that people know too little, it's that they know so many things that just aren't so.“

Mark Twain

"It is difficult to get a man to understand something when his salary depends upon his not understanding."

Upton Sinclair

Sources:

The material presented in this presentation can be found and sourced at:

Global Warming: Man or Myth?
http://www2.sunysuffolk.edu/mandias/global_warming/

Skeptical Science: Examining Global Warming Skepticism
http://www.skepticalscience.com/

A special thanks goes to John Cook who maintains Skeptical Science. He was the inspiration behind this presentation.