

Understanding the Global Warming Debate - A Skeptic's View

"Fewer scientific problems are so often discussed, yet so rarely decided by proofs, as whether climatic relations have changed over time."

Joachim von Schouw, 1826.

“

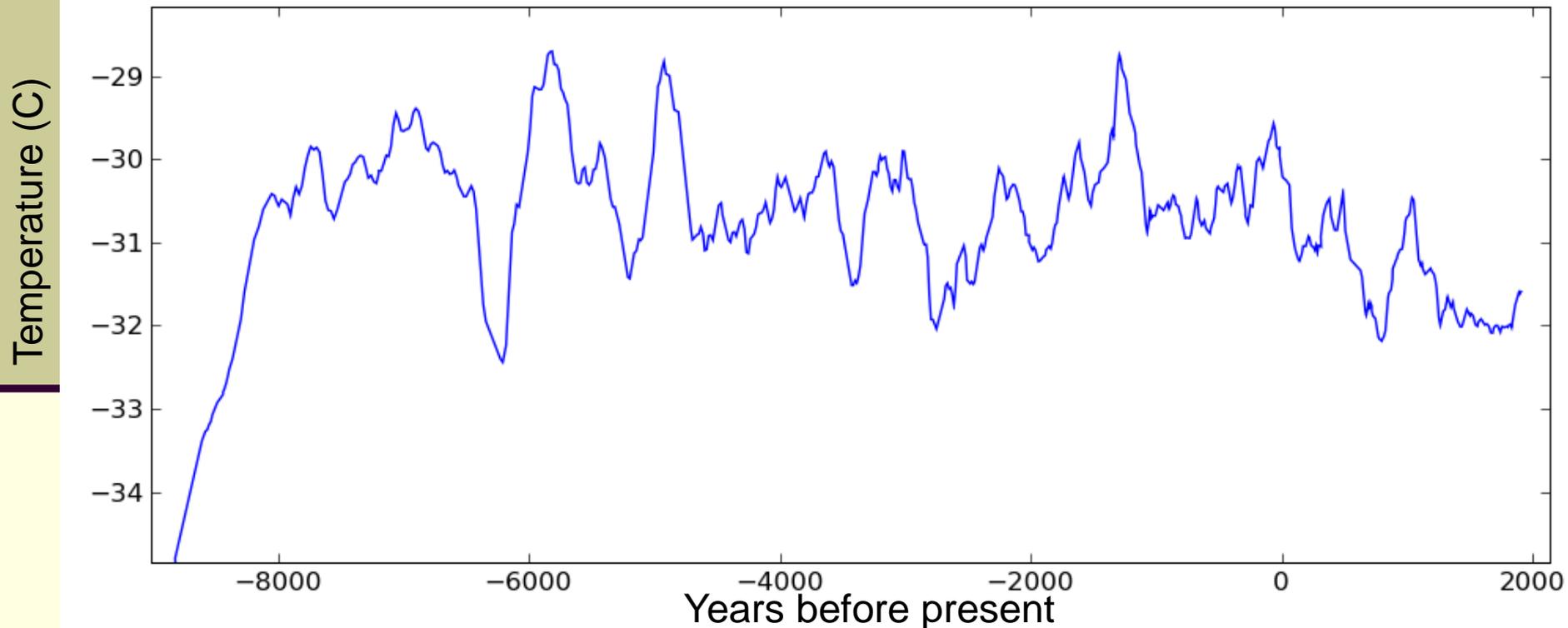
Skepticism

“Skeptical scrutiny is the means, in both science and religion, by which deep insights can be winnowed from deep nonsense.”

Carl Sagan

A Simple Assertion

Roughly 9200 of the last 10,000 years were warmer than today



The Greenland ice borehole record is a measure of temperature.

Stipulations

- Scientists have unanimous agreement about a few things:
 - Temperatures may be rising
 - the planet's climate is a complex and dynamic system with countless variables
 - ie. climate changes.
 - CO₂ levels are increasing.
 - The greenhouse effect is real.

Skeptic's Position

- CO₂ concentrations are increasing due to the burning of fossil fuels
- Temperatures may be rising (probably are)
 - But we really don't know for certain or how much
 - We really don't know why
 - Increased CO₂ should cause an increase in temp.
- Our knowledge of Climate is poor
 - Predictability is poor
 - Huge differences between models and reality
- Claims of disaster are unwarranted
- Proposed solutions are ill-advised

Catastrophic Man-Made Global Warming Theory

Theory

Doubling CO₂ directly increases temperatures about 1C

Feedbacks multiply this 3x-5x or more

Warming will / is causing many negative effects

- Hurricanes
- Tornadoes
- Glaciers melting
- Seas rising
- More snow / less snow
- More rain / more drought
- Tropical diseases
- Species extinction
- Etc. etc. etc.

Observation

The world has warmed about 0.7C in last century

All of this (and more) due to man-made CO₂

Climate Sensitivity

Theory

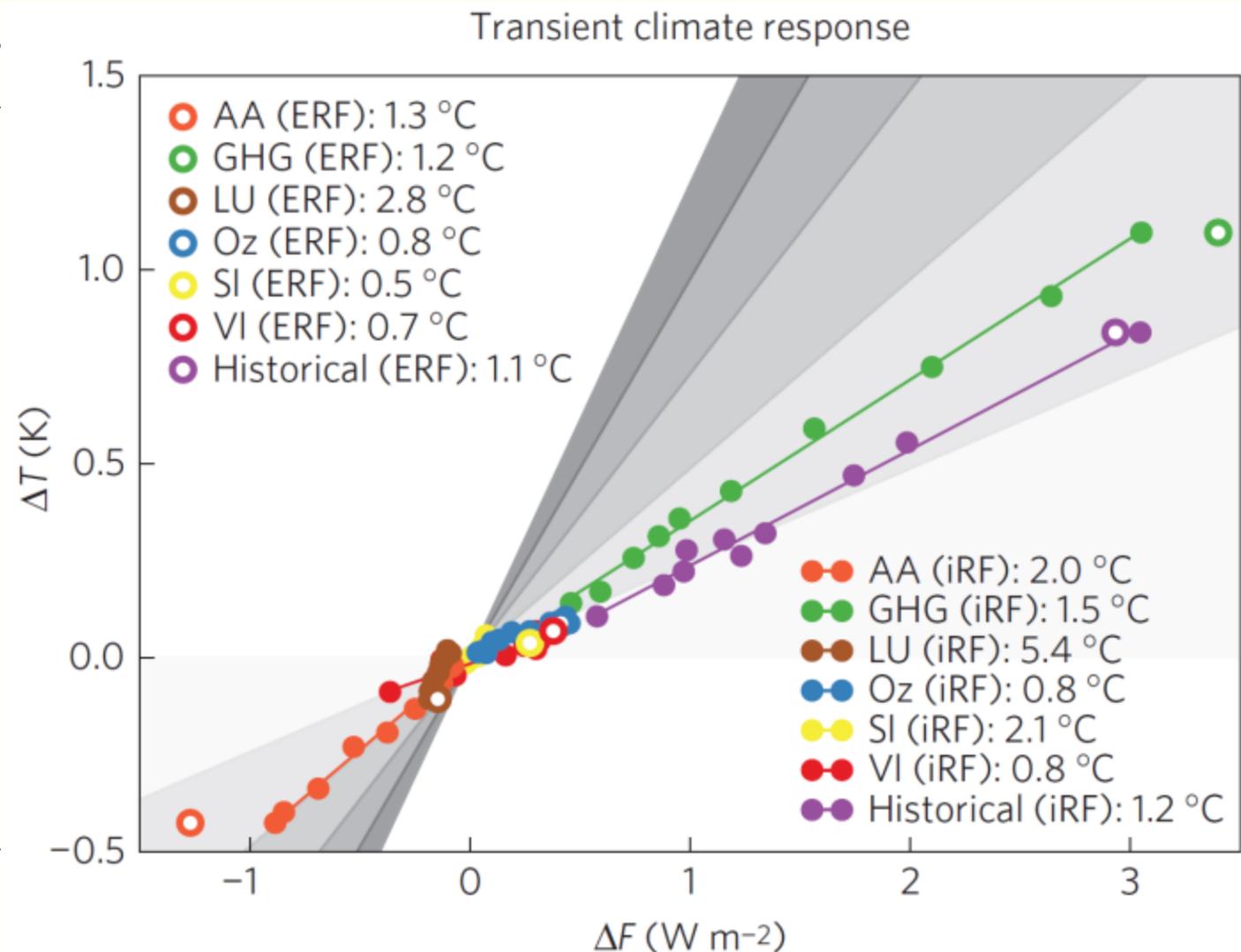
Doubling CO₂
directly increases
temperatures
about 1C

Feedbacks
multiply this
3x-5x or more

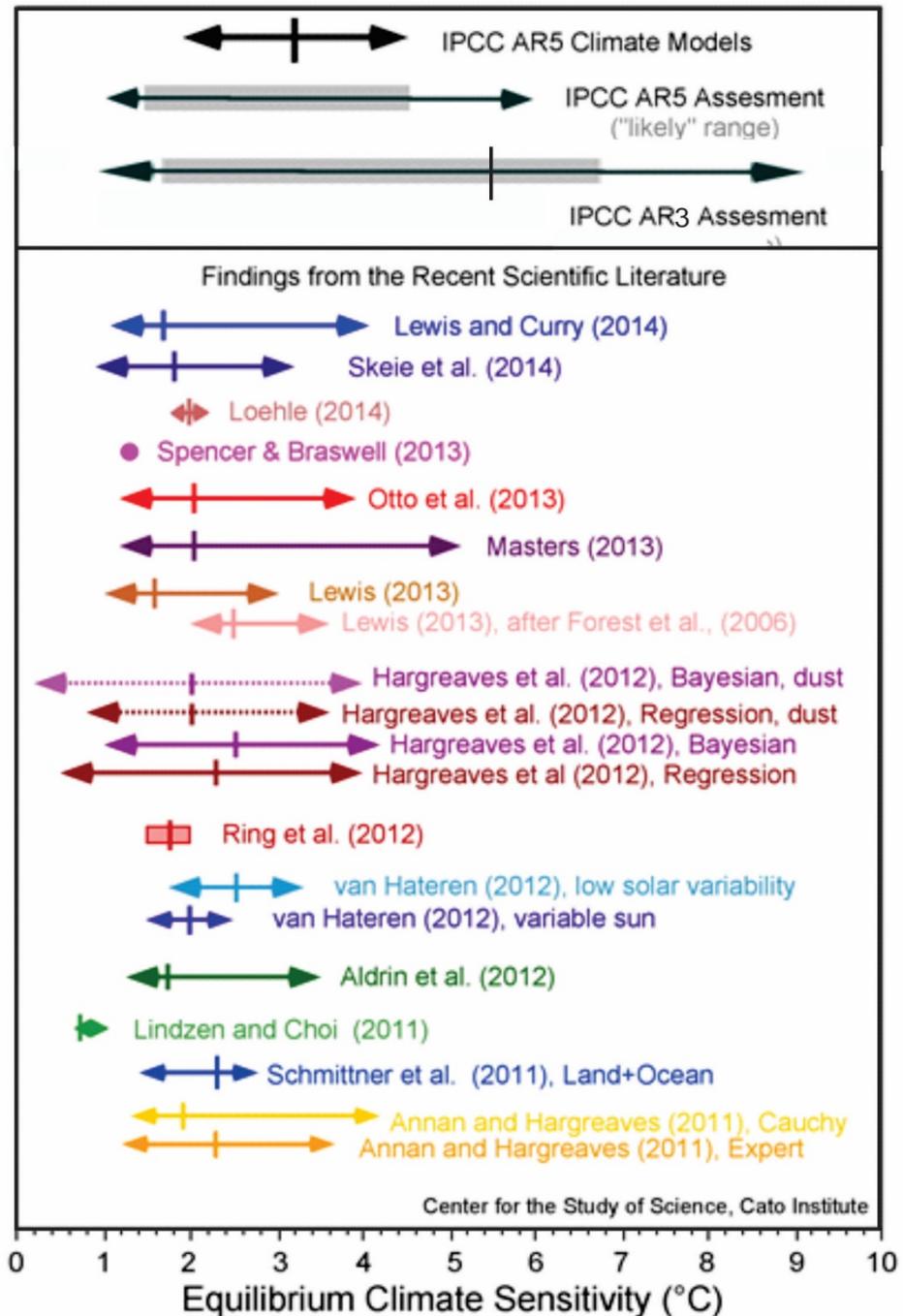
Climate Sensitivity

Equilibrium climate sensi.	Radiative forcing	Pre-feedback sensi. param.	Temperature feedbacks
Roe (2009, eq. 5) (K)	AR3, p. 358 W m^{-2}	AR4, p. 631 fn. $\text{K W}^{-1} \text{m}^2$	AR5, fig. 9.43a $\text{W m}^{-2} \text{K}^{-1}$
ΔT_{eq}	$= \Delta F$	λ_0	$\left(1 - \lambda_0 \sum_i c_i \right)^{-1}$
$\Delta F = k \ln\left(\frac{C}{C_0}\right) = 5.35 \ln(2) = 3.708$	W m^{-2}		$\underbrace{\hspace{10em}}_{\text{Feedback fraction } f}$
$\lambda_0 = \frac{7 \Delta T_E}{6 \Delta F_E} = \frac{7 T_E}{64 F_E} = \frac{7 \cdot 254.6}{64(238)} = 0.312$	$\text{K W}^{-1} \text{m}^2$		Roe (2009) (on [-1, +1], unitless)
Pre-feedback climate sensitivity $\Delta T_0 = 1.16 \text{ K}$			Post-feedback gain factor G
AR3, p. 354, eq. (6.1)			AR4, p. 631 fn.; Roe (2009) (unitless)

Climate Sensitivity



Climate Sensitivity



Climate Feedbacks

Theory

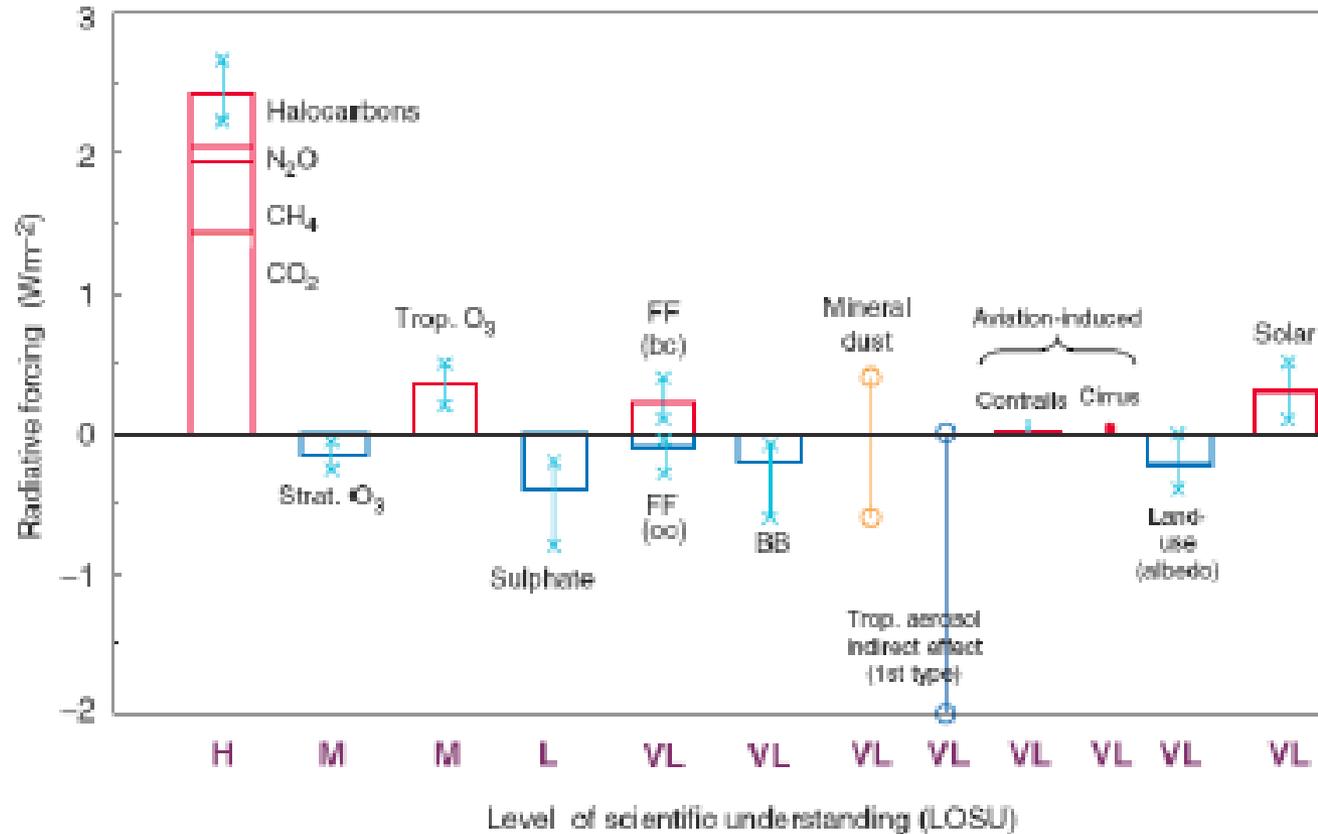
Doubling CO₂
directly increases
temperatures
about 1C

Feedbacks
multiply this
3x-5x or more

Climate Sensitivity

Equilibrium climate sensi.	Radiative forcing	Pre-feedback sensi. param.	Temperature feedbacks
Roe (2009, eq. 5) (K)	AR3, p. 358 W m^{-2}	AR4, p. 631 fn. $\text{K W}^{-1} \text{m}^2$	AR5, fig. 9.43a $\text{W m}^{-2} \text{K}^{-1}$
ΔT_{eq}	$= \Delta F$	λ_0	$\left(1 - \lambda_0 \sum_i c_i \right)^{-1}$
	$\Delta F = k \ln\left(\frac{C}{C_0}\right) = 5.35 \ln(2) = 3.708$		$\underbrace{\sum_i c_i}_{\text{Feedback fraction } f}$
	W m^{-2}		Roe (2009) (on [-1, +1], unitless)
	$\lambda_0 = \frac{7 \Delta T_E}{6 \Delta F_E} = \frac{7 T_E}{64 F_E} = \frac{7 \cdot 254.6}{64(238)} = 0.312$		
	$\text{K W}^{-1} \text{m}^2$		
Pre-feedback climate sensitivity $\Delta T_0 = 1.16 \text{ K}$		Post-feedback gain factor G	
AR3, p. 354, eq. (6.1)		AR4, p. 631 fn.; Roe (2009) (unitless)	

Global and annual mean radiative forcing (1750 to present)



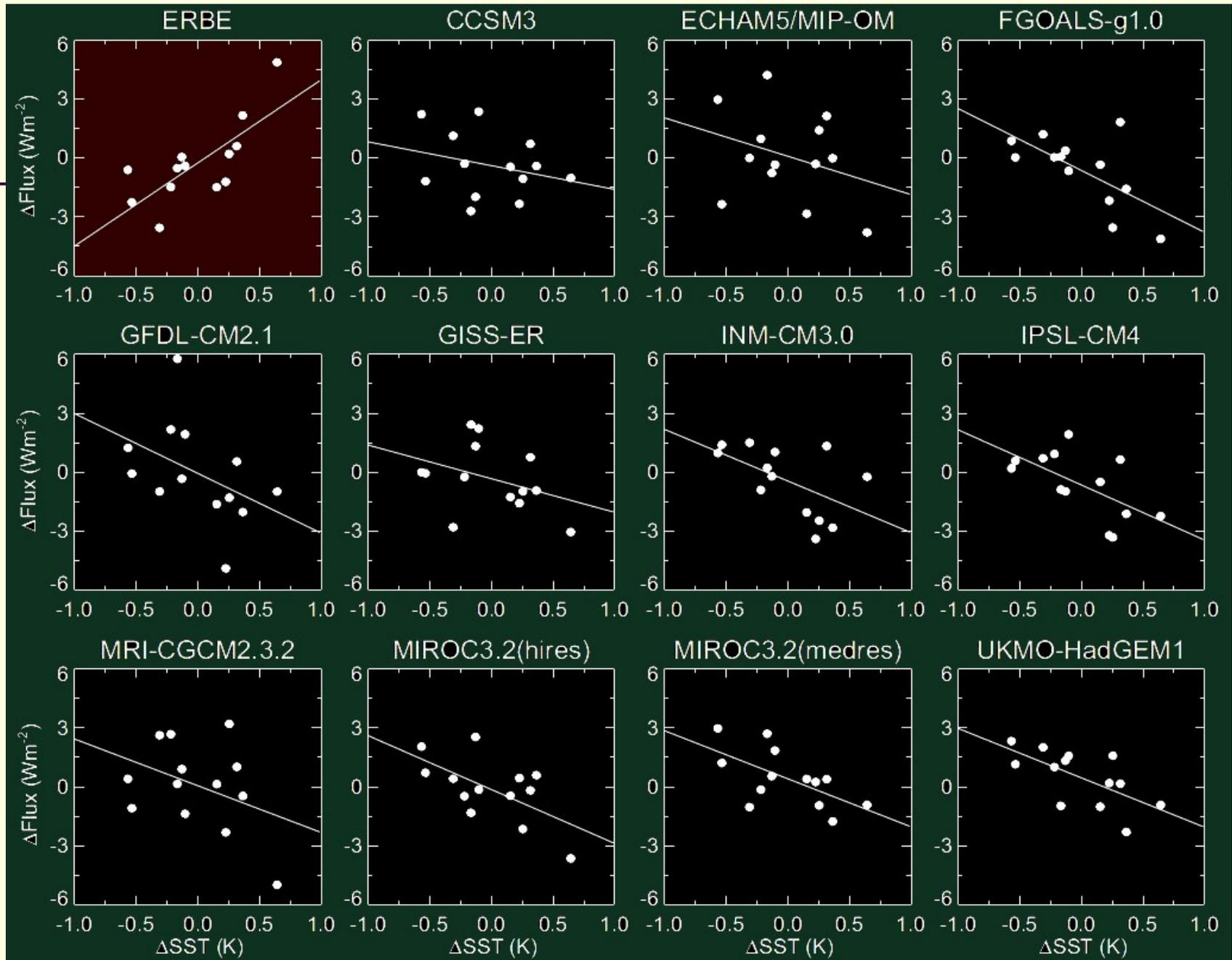
- Where is water vapor?

Climate Change Prediction

- Increased CO₂ leads to warming
- Increased warming leads to increased evaporation
- Increased atmospheric water leads to more warming
- Increased warming leads to increased evaporation
- Runaway

Climate Change Prediction

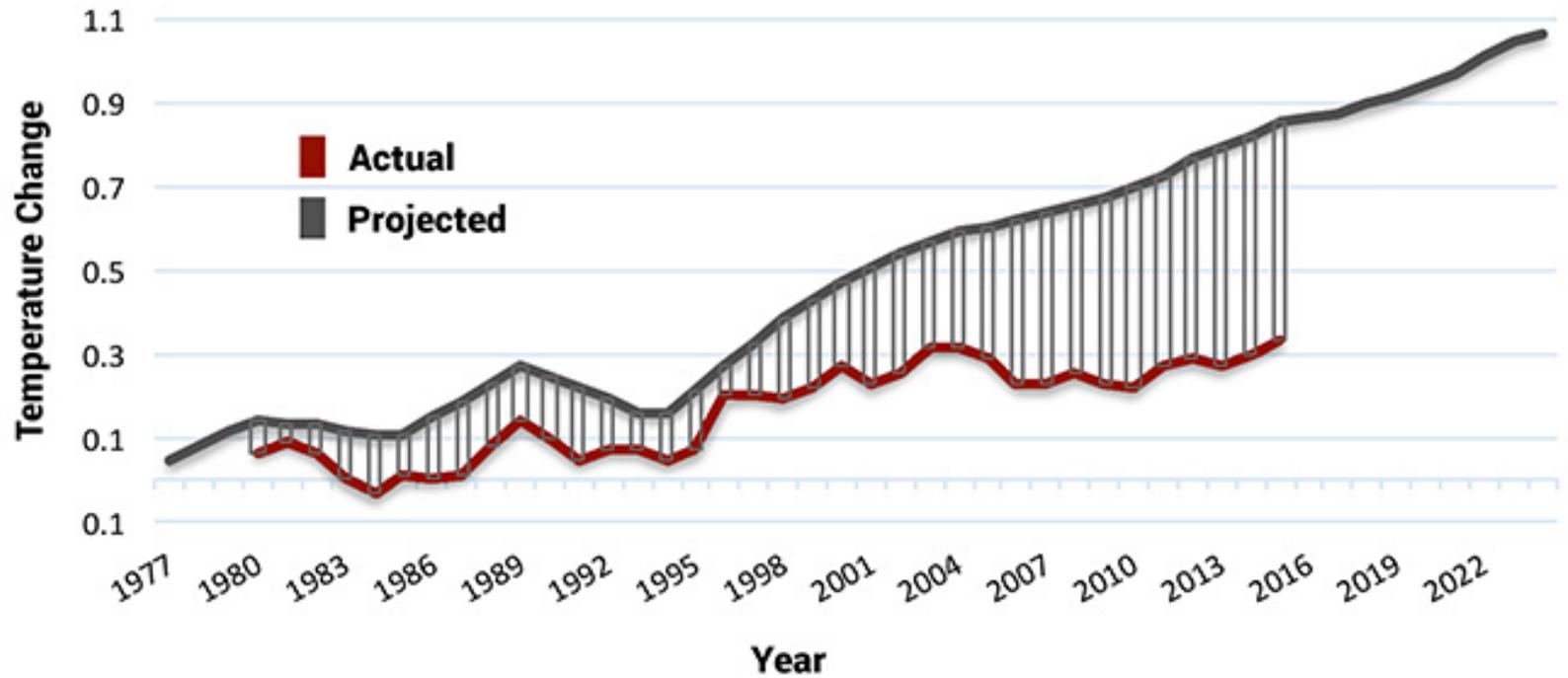
- Runaway greenhouse effect has not happened
- Why?
- Feedbacks are complex; for example
 - More water leads to more greenhouse warming
 - More water leads to more clouds – reflects sunlight
 - More water leads to more snow - reflects sunlight
 - Clouds can also warm (cloudy days in winter are warm)
- We don't even know the SIGN of the net effect of an increase in water vapor
- Climate models have mostly positive feedbacks



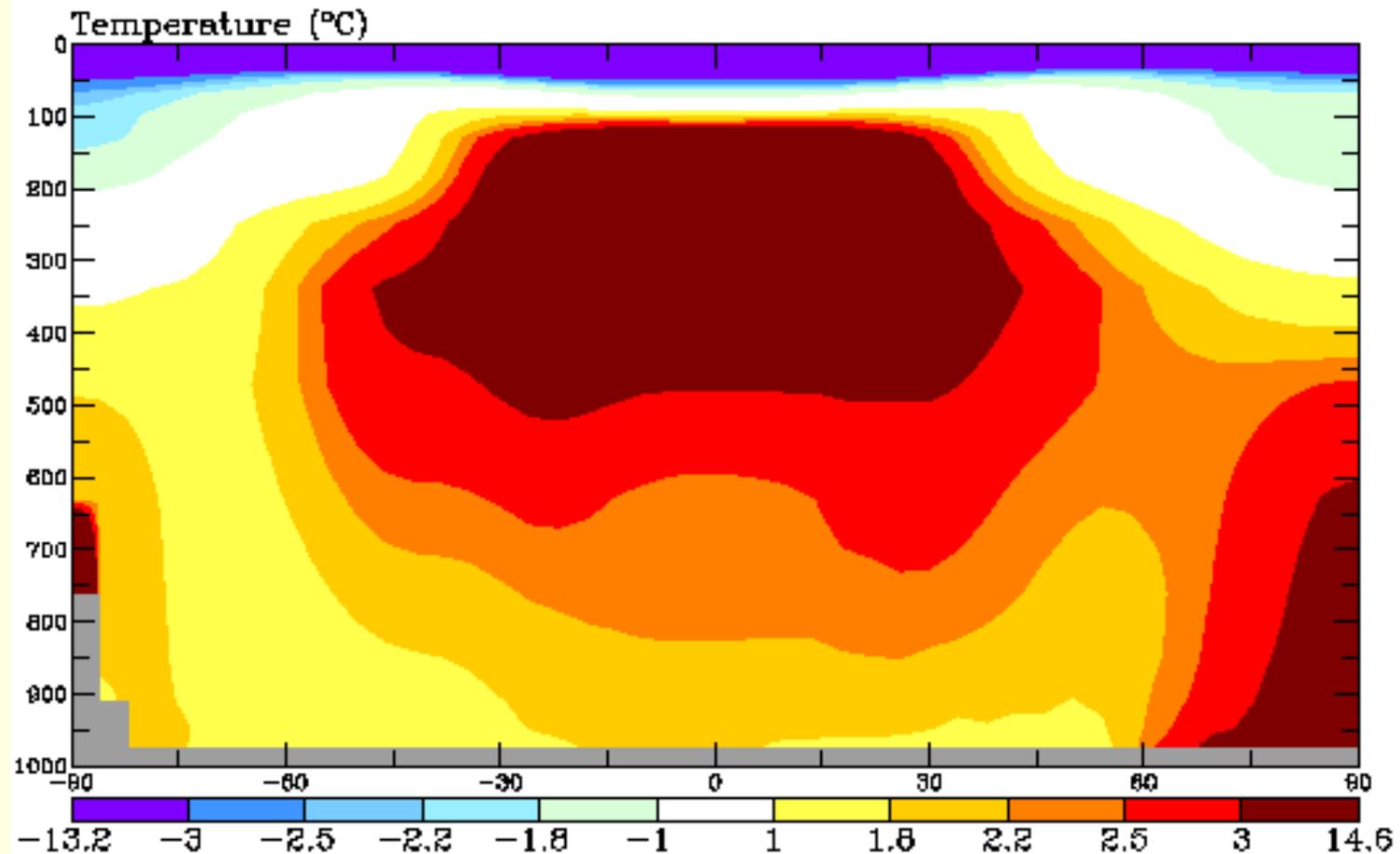
Climate Change Controversy

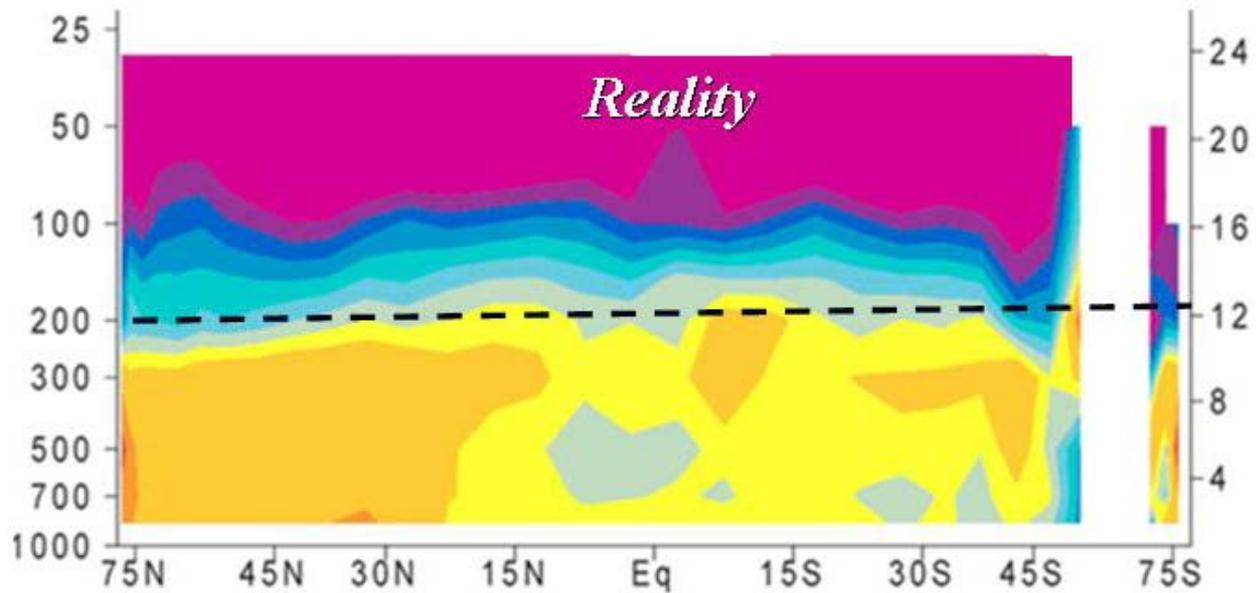
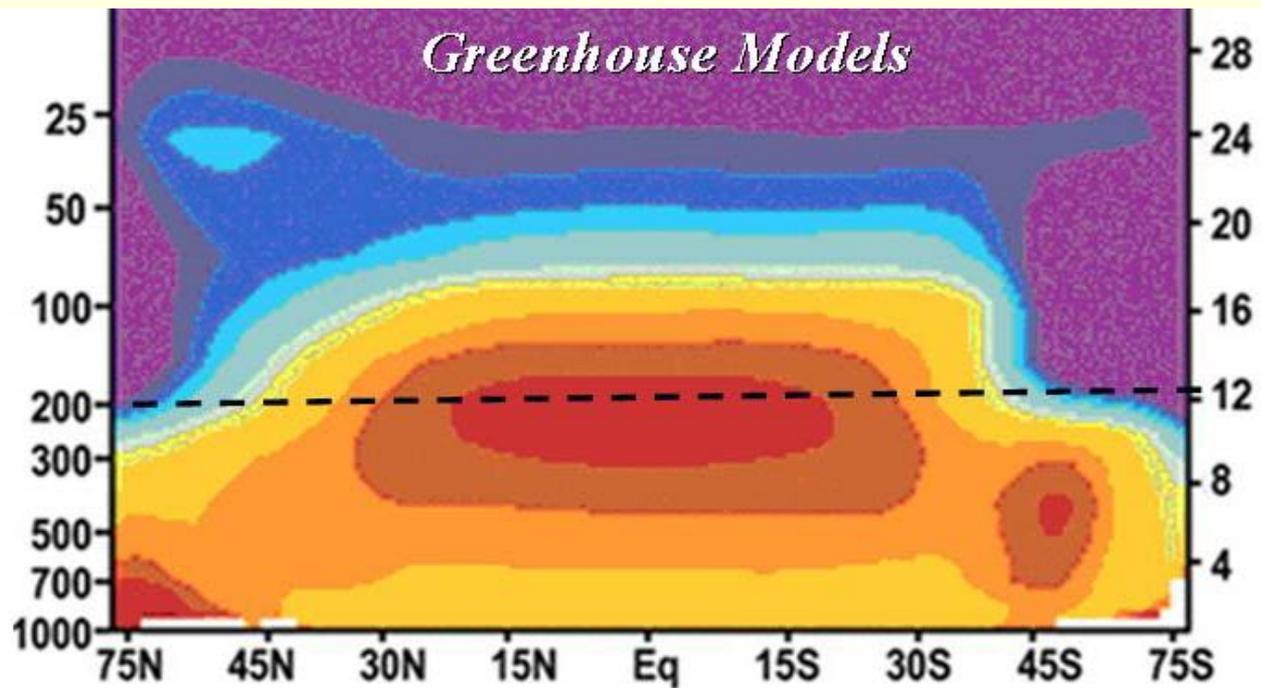
- Increased CO₂ will lead to higher temperatures
 - Undisputed fact
- What is disputed is: By how much?
- Truth is: We haven't a clue

Climate Models Fail to Predict Warming Trends



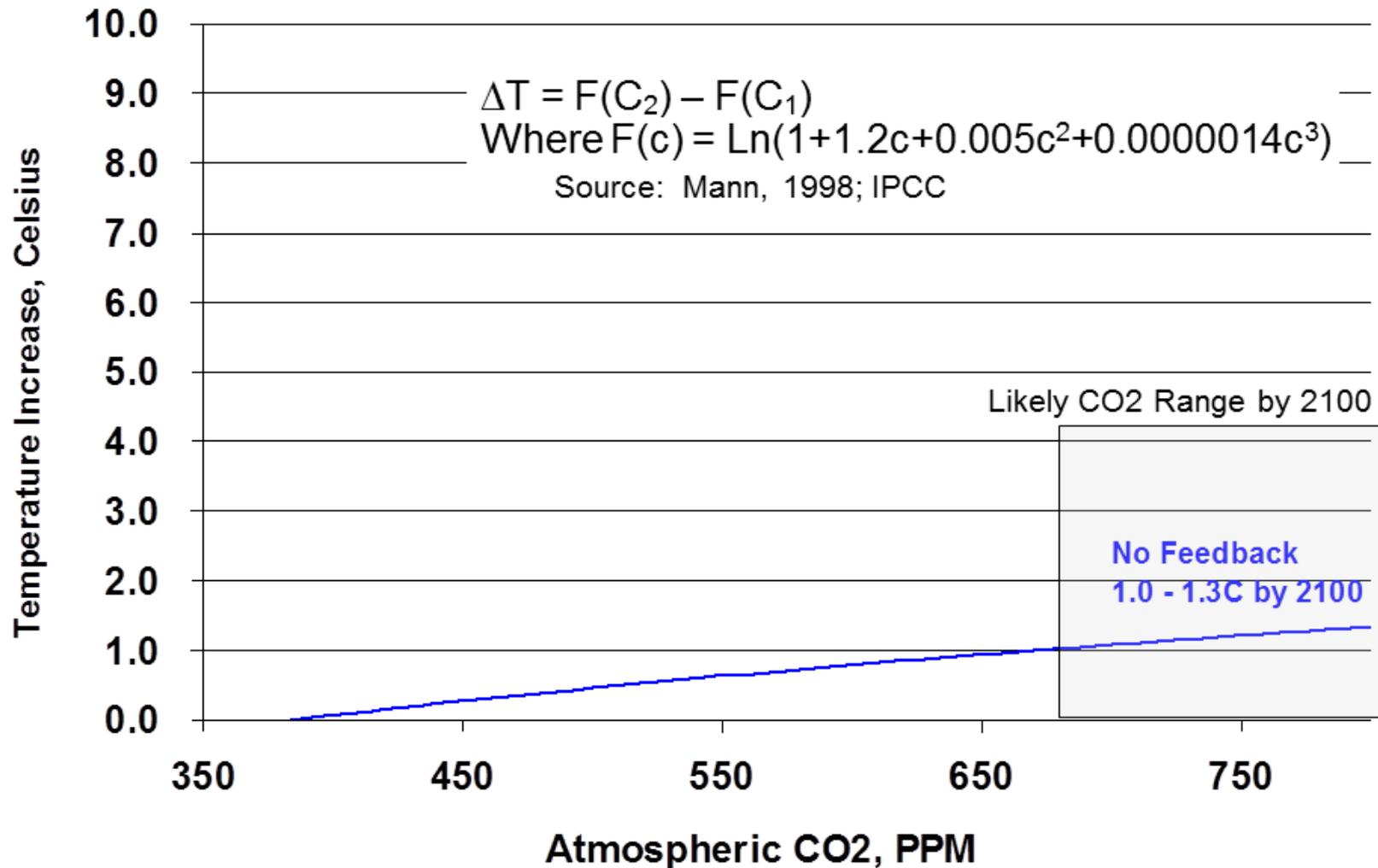
Tropospheric Warming in the Tropics





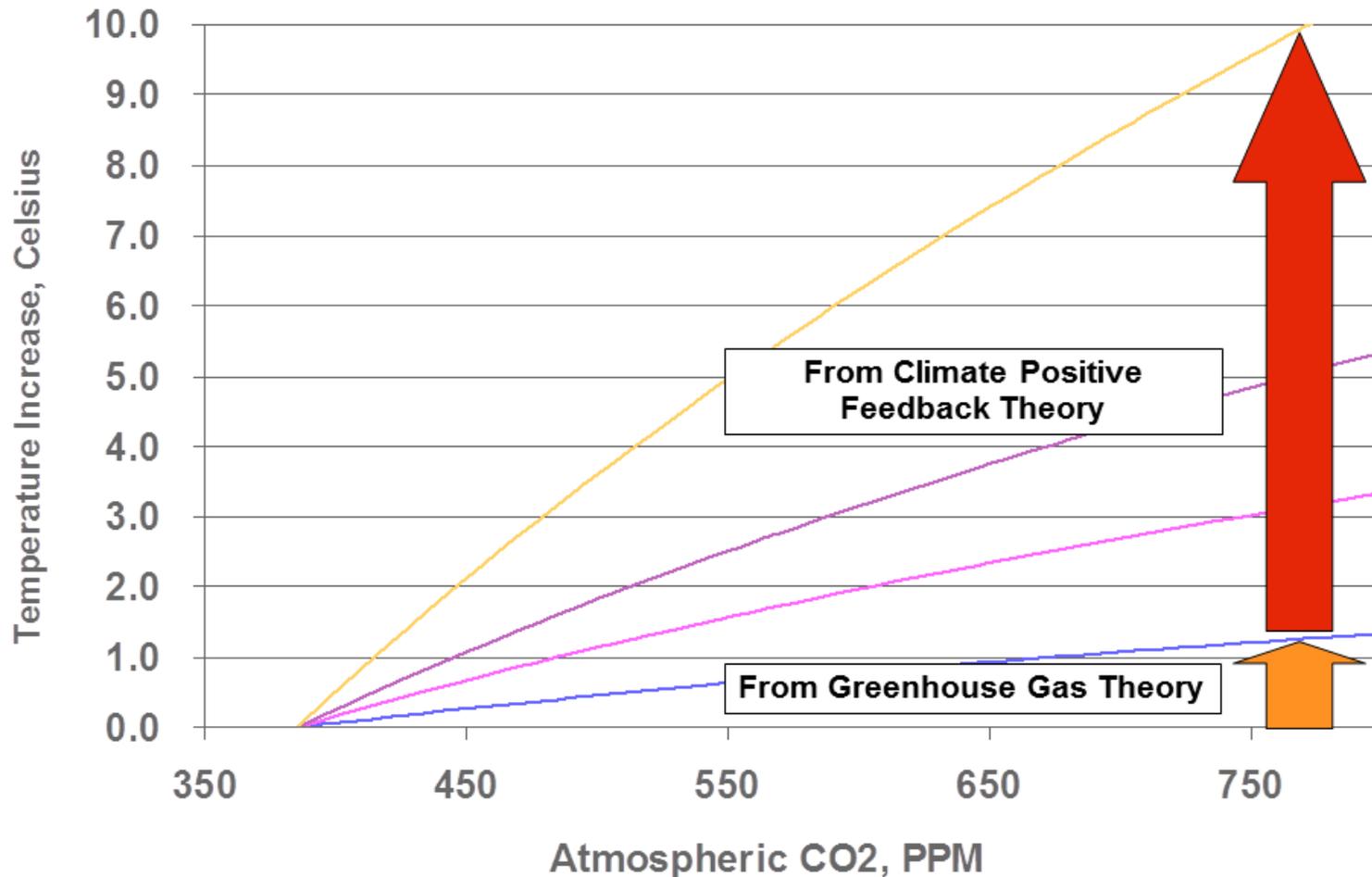
Climate Sensitivity

Temperature Projections from CO₂



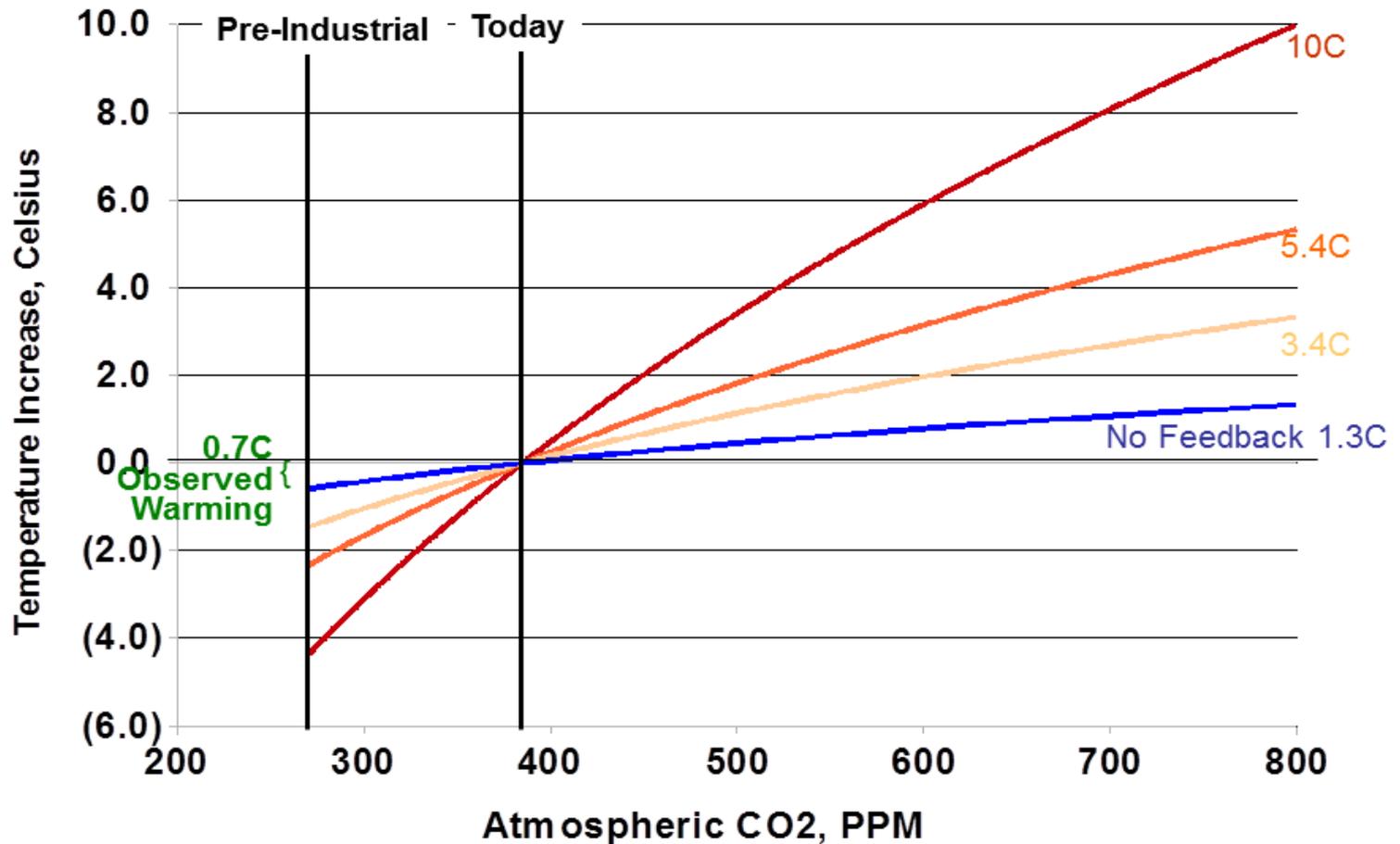
Climate Sensitivity

Temperature Projections with Feedback



Climate Sensitivity

Temperature Projection back in time



Historical Record

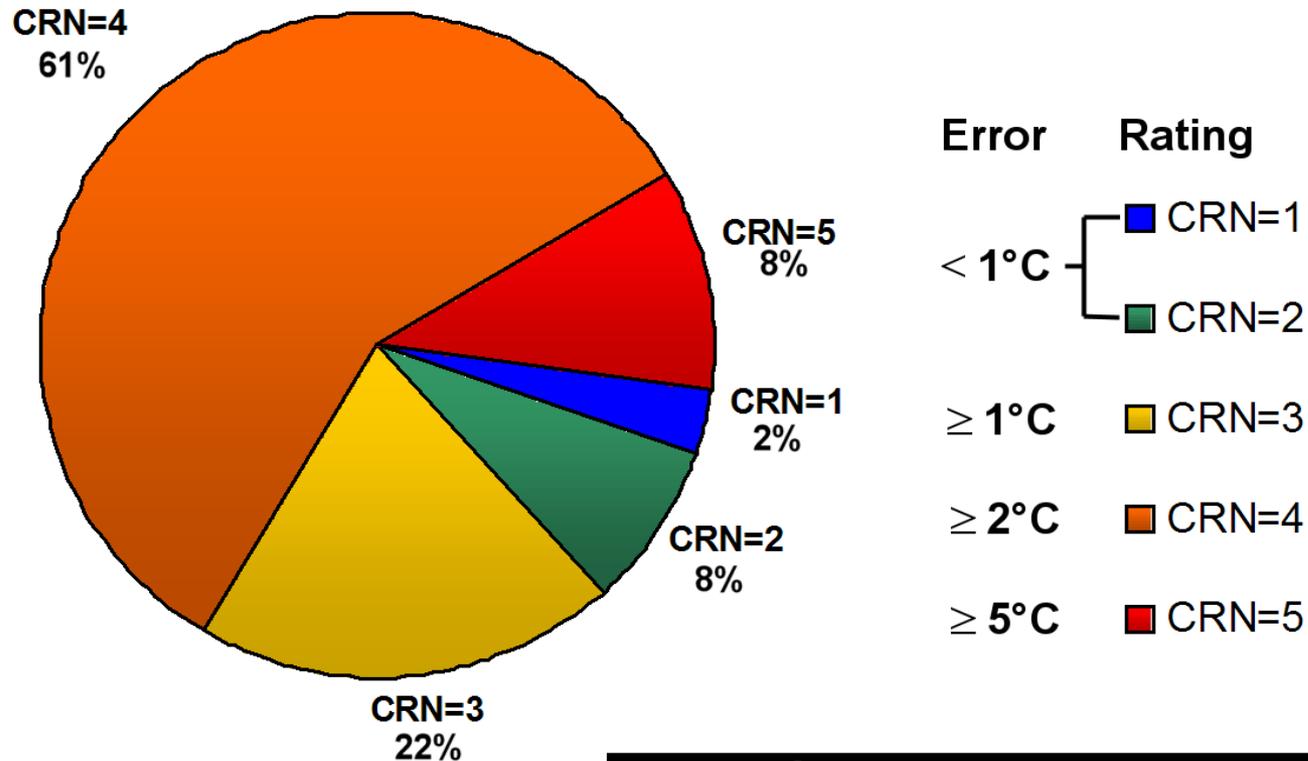
Observation

The world has warmed about 0.7C in last century

All of this (and more) due to man-made CO₂

Uncertainty in the Temperature Measurements

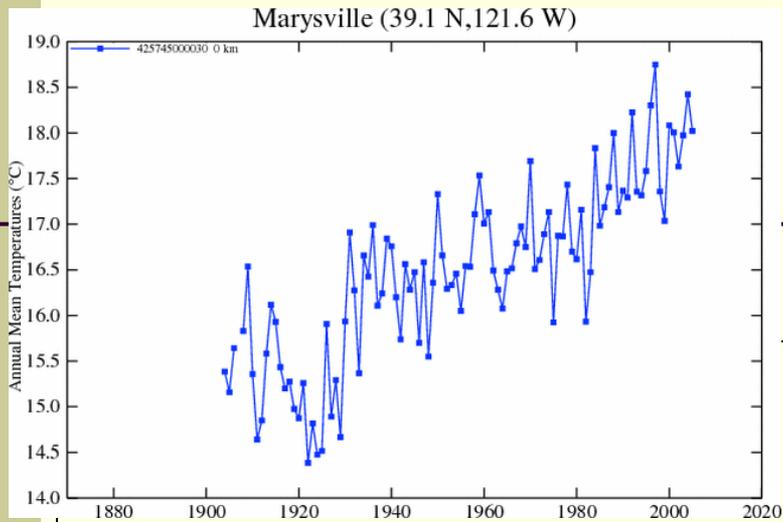
USHCN - Station Site Quality by Rating



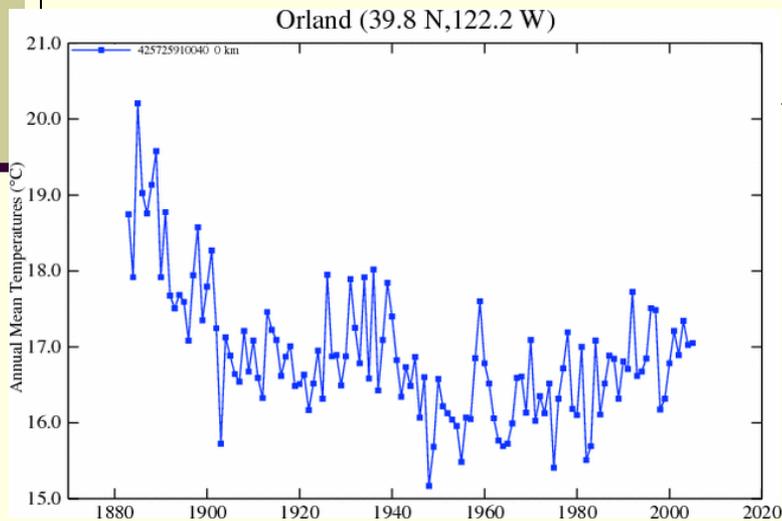
948 of 1221 stations rated as of 5/31/09
78% of the total

surfacestations.org

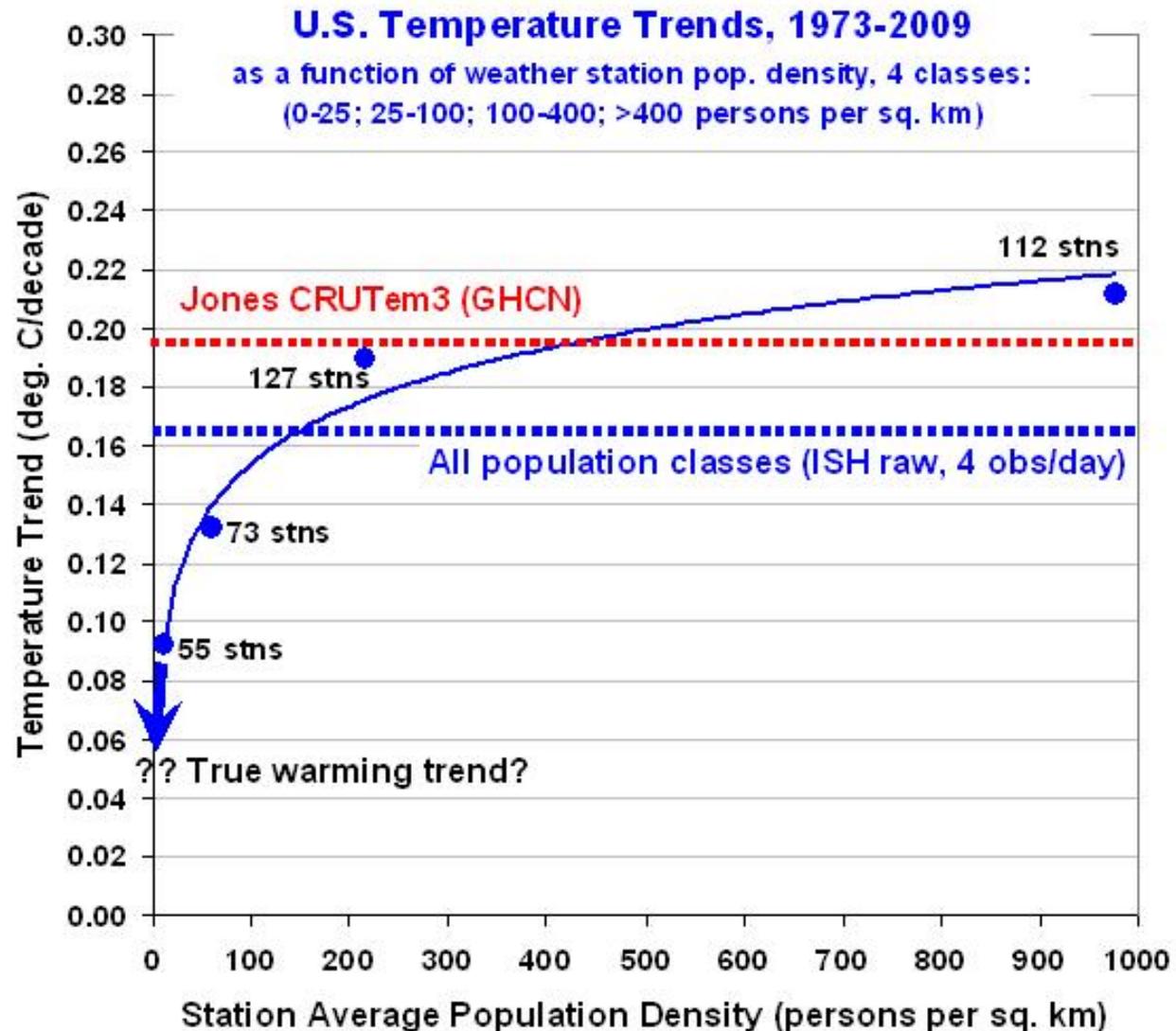
A resource for climate station records and surveys



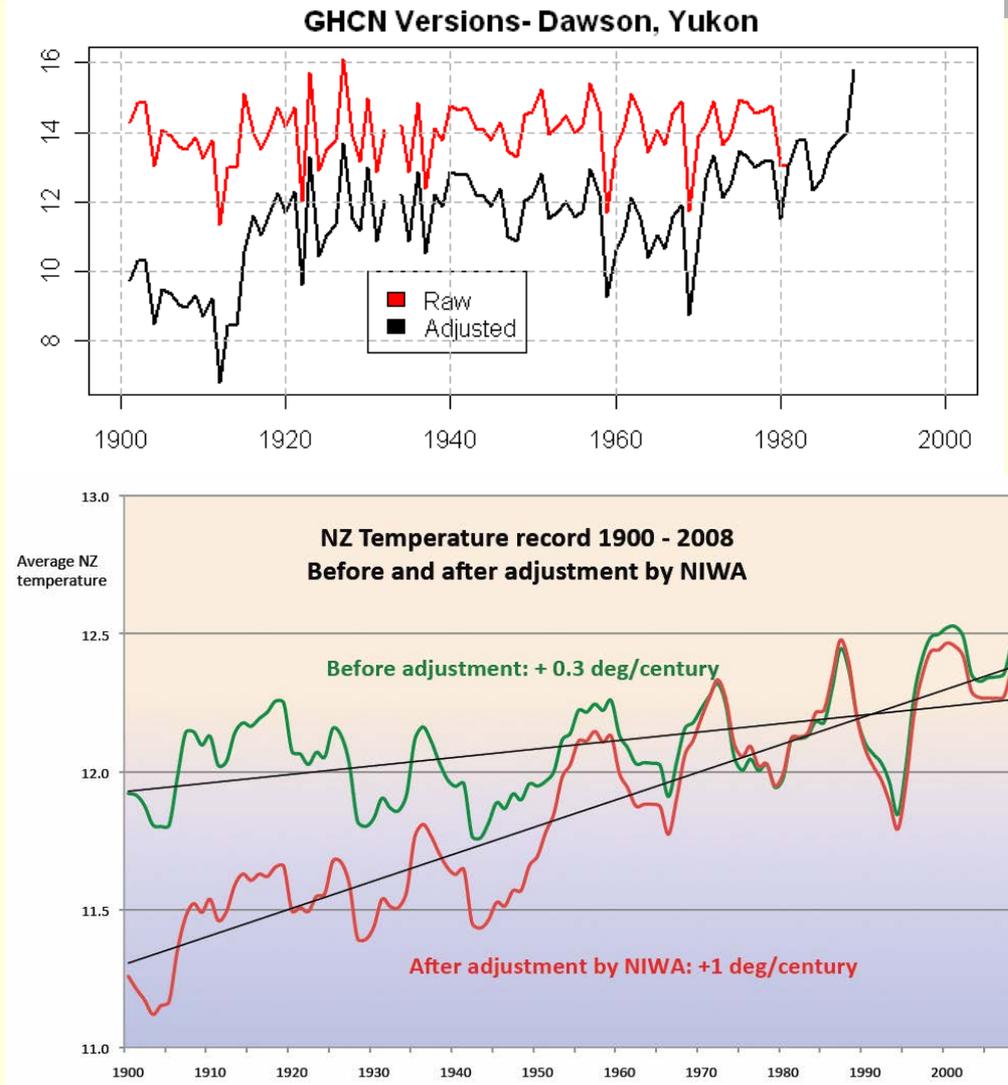
Urban Heat Island Effect
 These two stations are 67 miles apart.



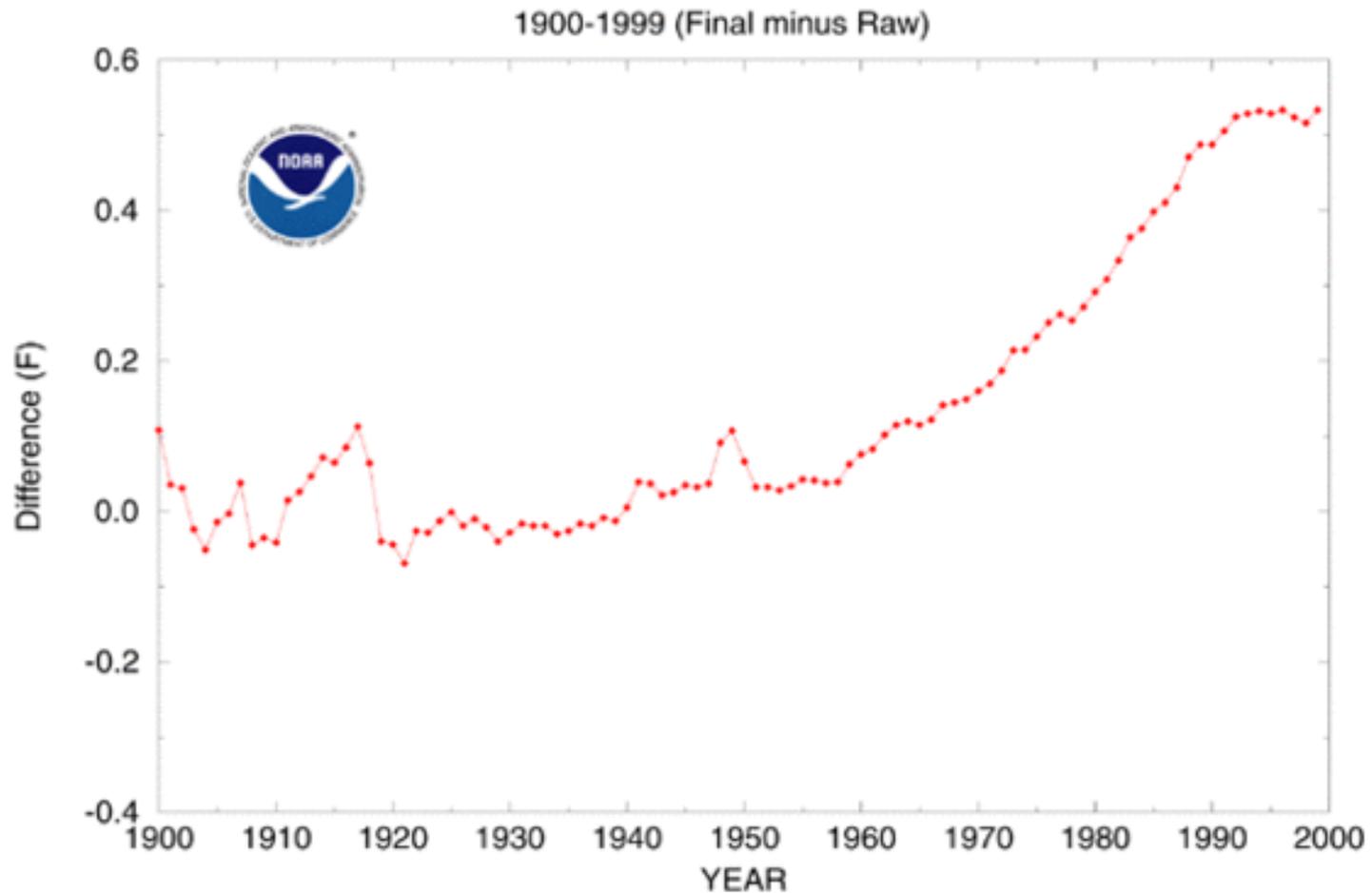
The Effect of Where We Measure



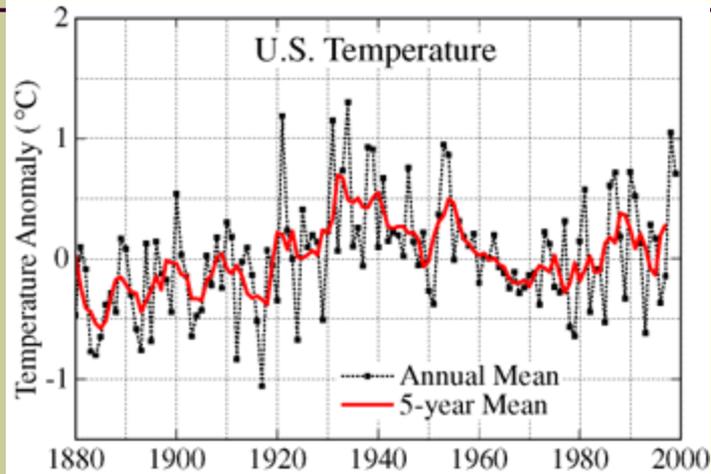
Which is the Correct Record?



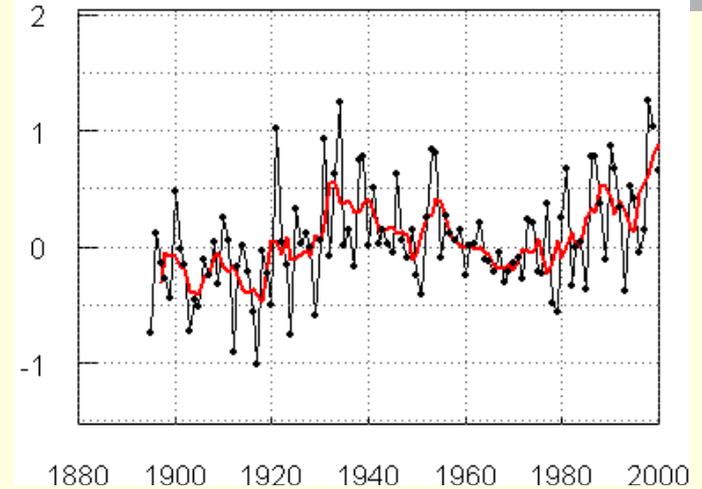
Difference Between Raw and Final USHCN Data Sets



Adjusting the Data

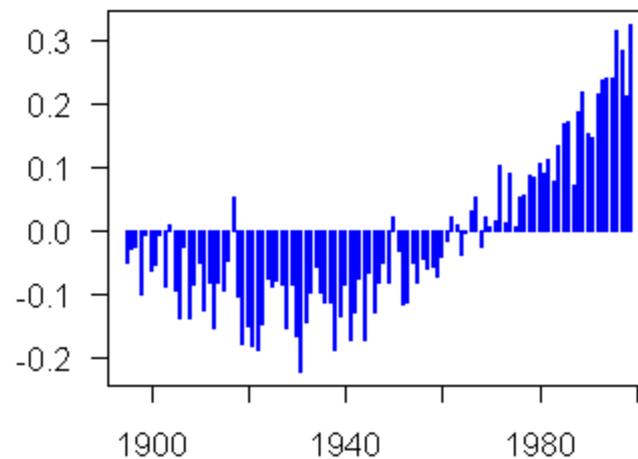


USHCN Version 2000

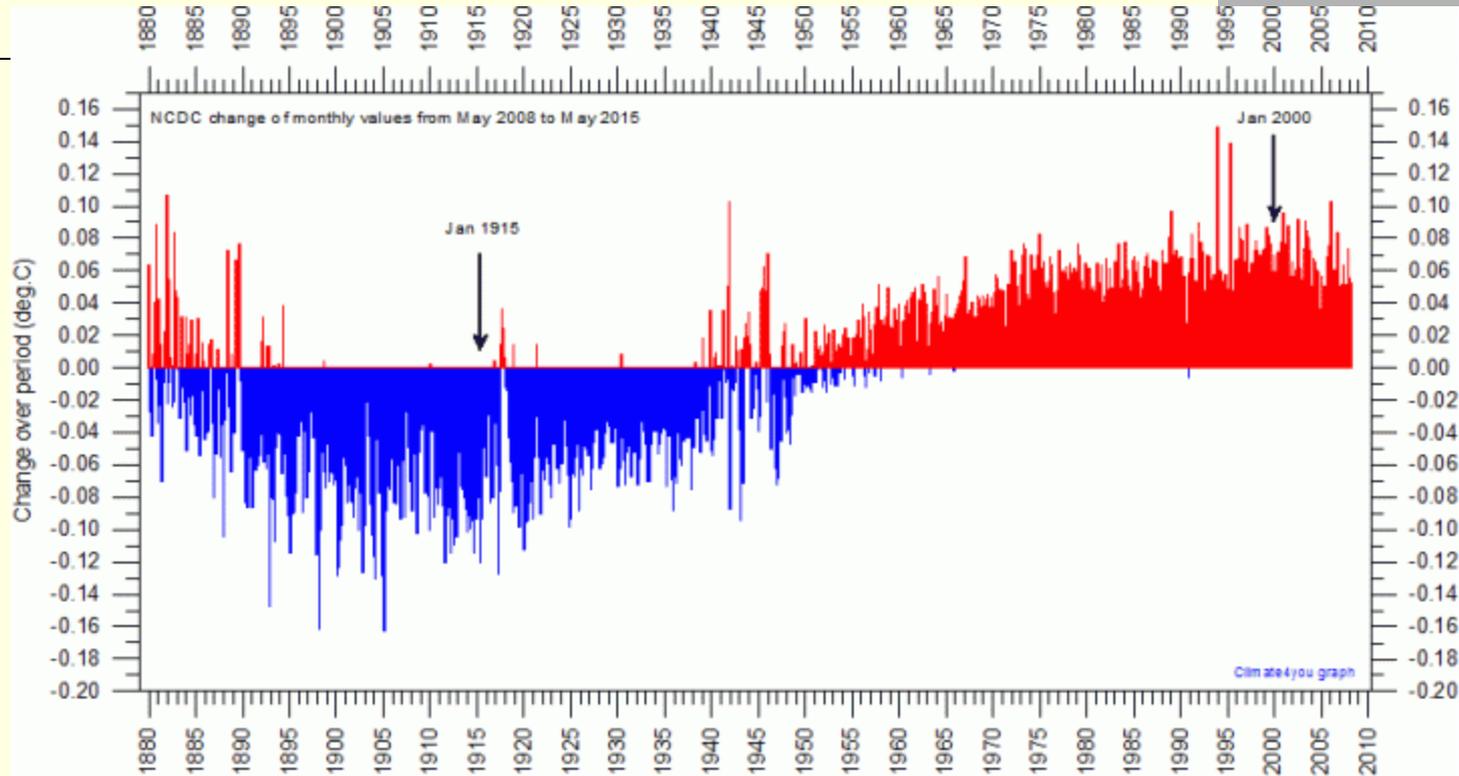


USHCN Version 2007

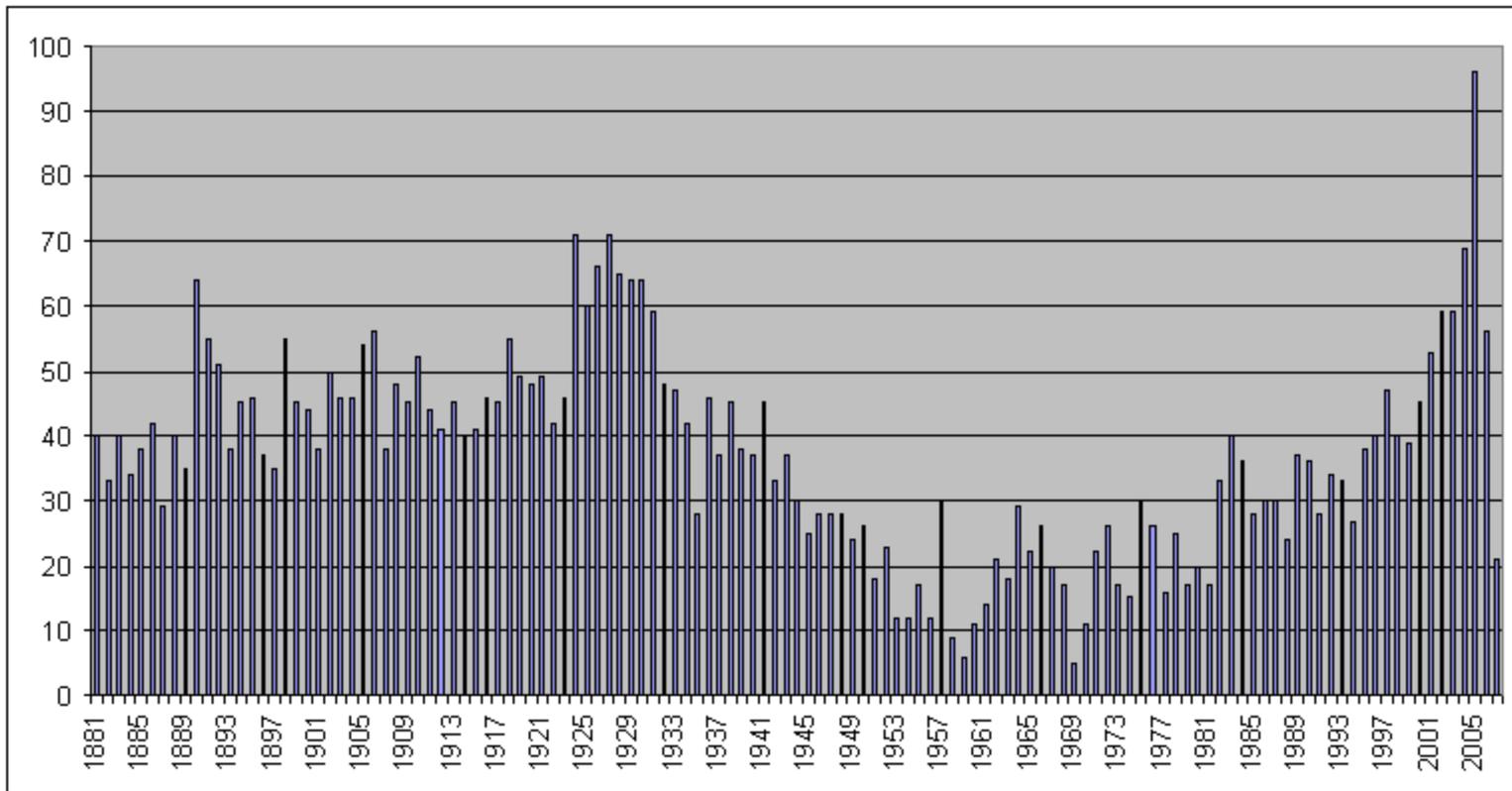
Difference



Changes May 2008 to May 2015

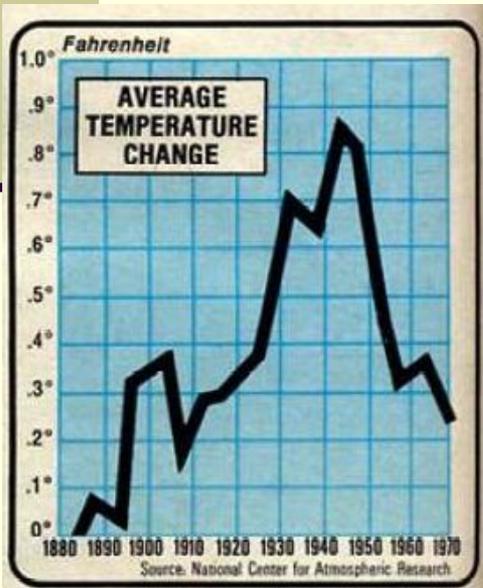
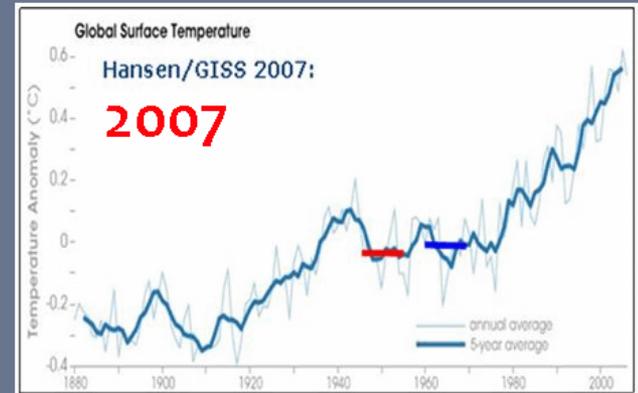
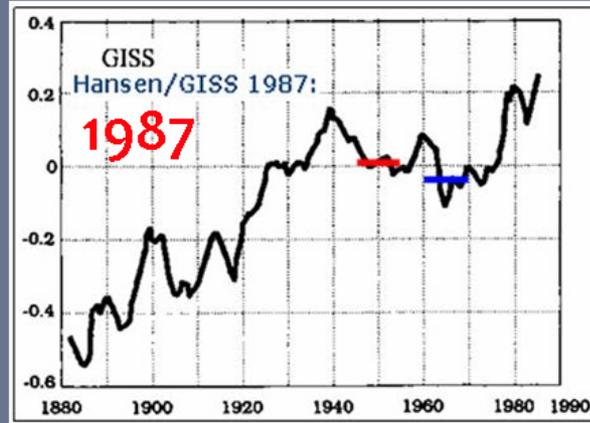
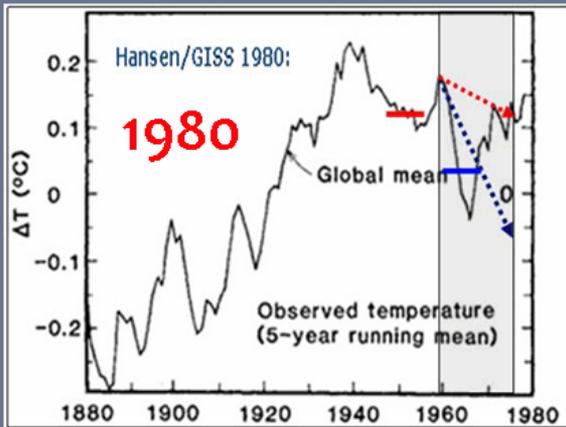


Number of times each Temperature Record has been changed in the last 5 years



“Adjusting” the Data

Watch how the red and blue periods progressively “realign” as GISS reinterprets the temperature from decades long gone



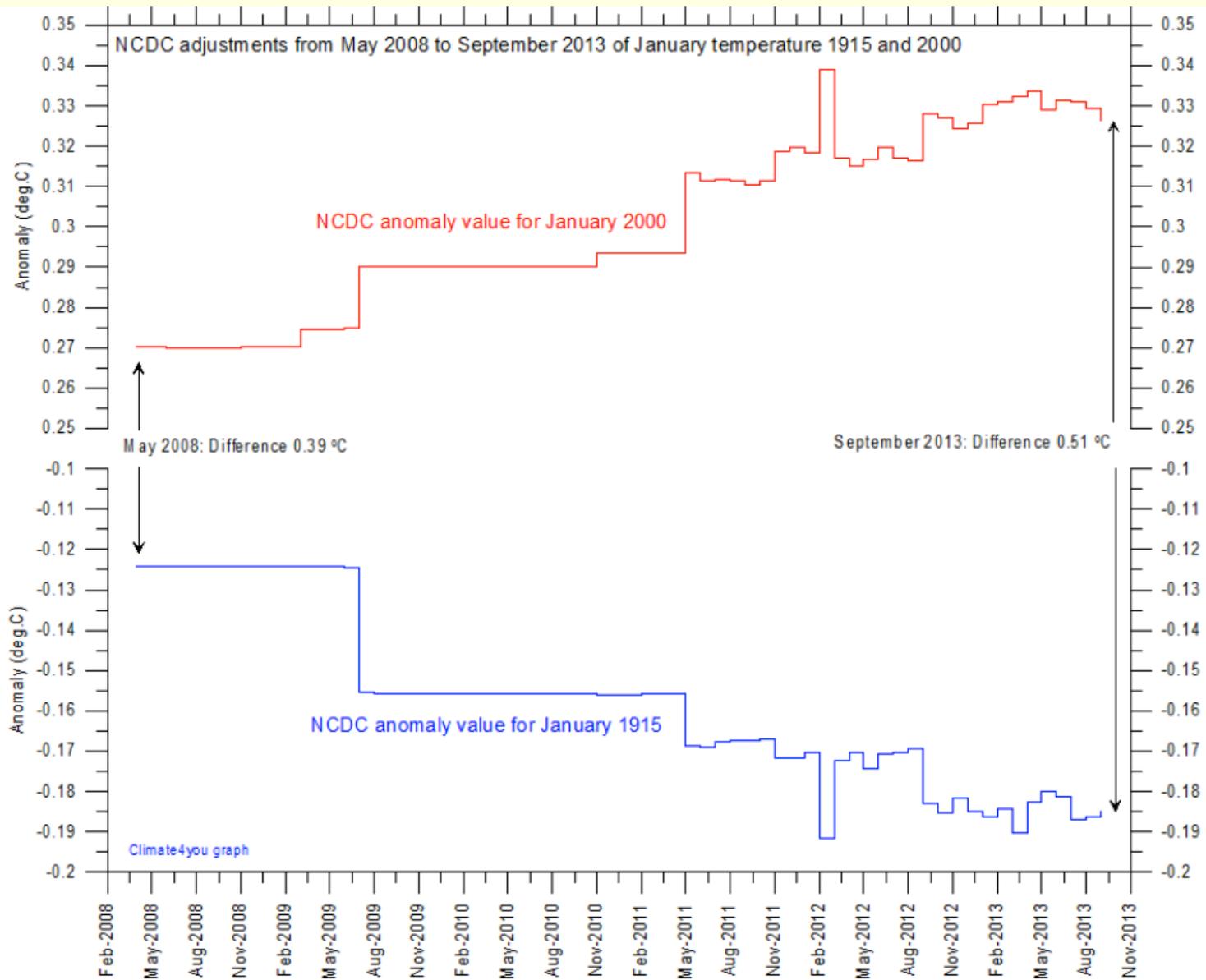


Diagram showing the adjustment made since May 2008 by the [National Climatic Data Center \(NCDC\)](#) in the anomaly values for the two months January 1915 and January 2000.

Exposed: How world leaders were duped into investing billions over manipulated global warming data

- The Mail on Sunday can reveal a landmark paper exaggerated global warming
- It was rushed through and timed to influence the Paris agreement on climate change
- America's National Oceanic and Atmospheric Administration broke its own rules
- The report claimed the pause in global warming never existed, but it was based on misleading, 'unverified' data

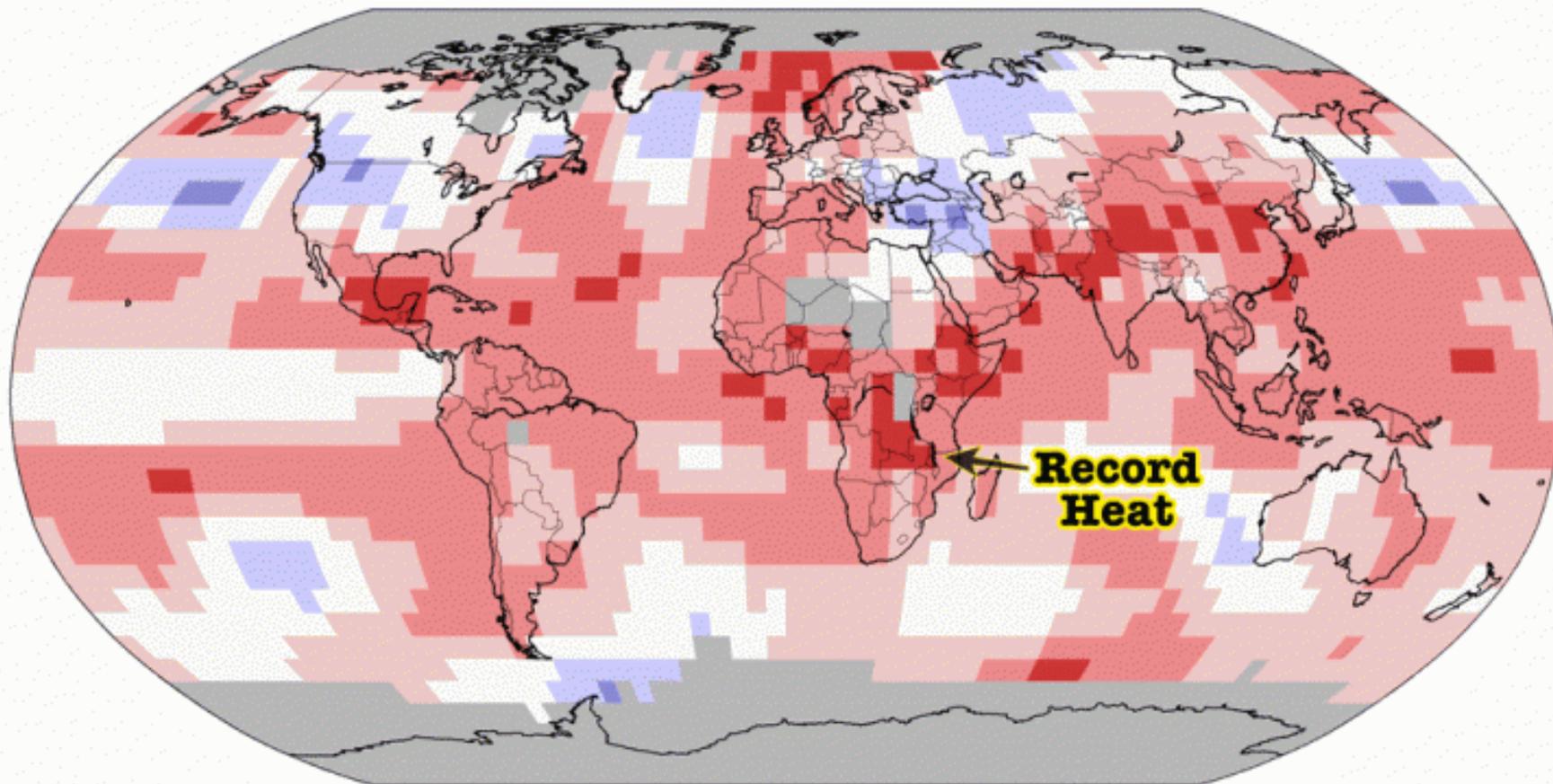
By [DAVID ROSE FOR THE MAIL ON SUNDAY](#)

PUBLISHED: 17:57 EST, 4 February 2017 | **UPDATED:** 10:12 EST, 5 February 2017

Land & Ocean Temperature Percentiles Dec 2016

NOAA's National Centers for Environmental Information

Data Source: GHCN-M version 3.3.0 & ERSST version 4.0.0



Record Coldest



Much Cooler than Average



Cooler than Average



Near Average



Warmer than Average



Much Warmer than Average

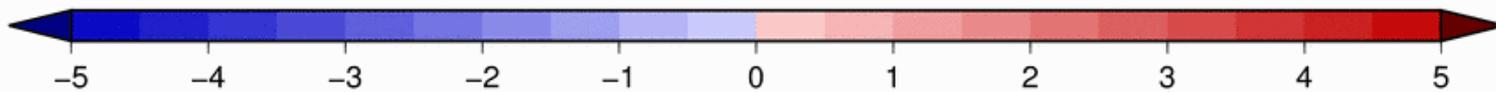
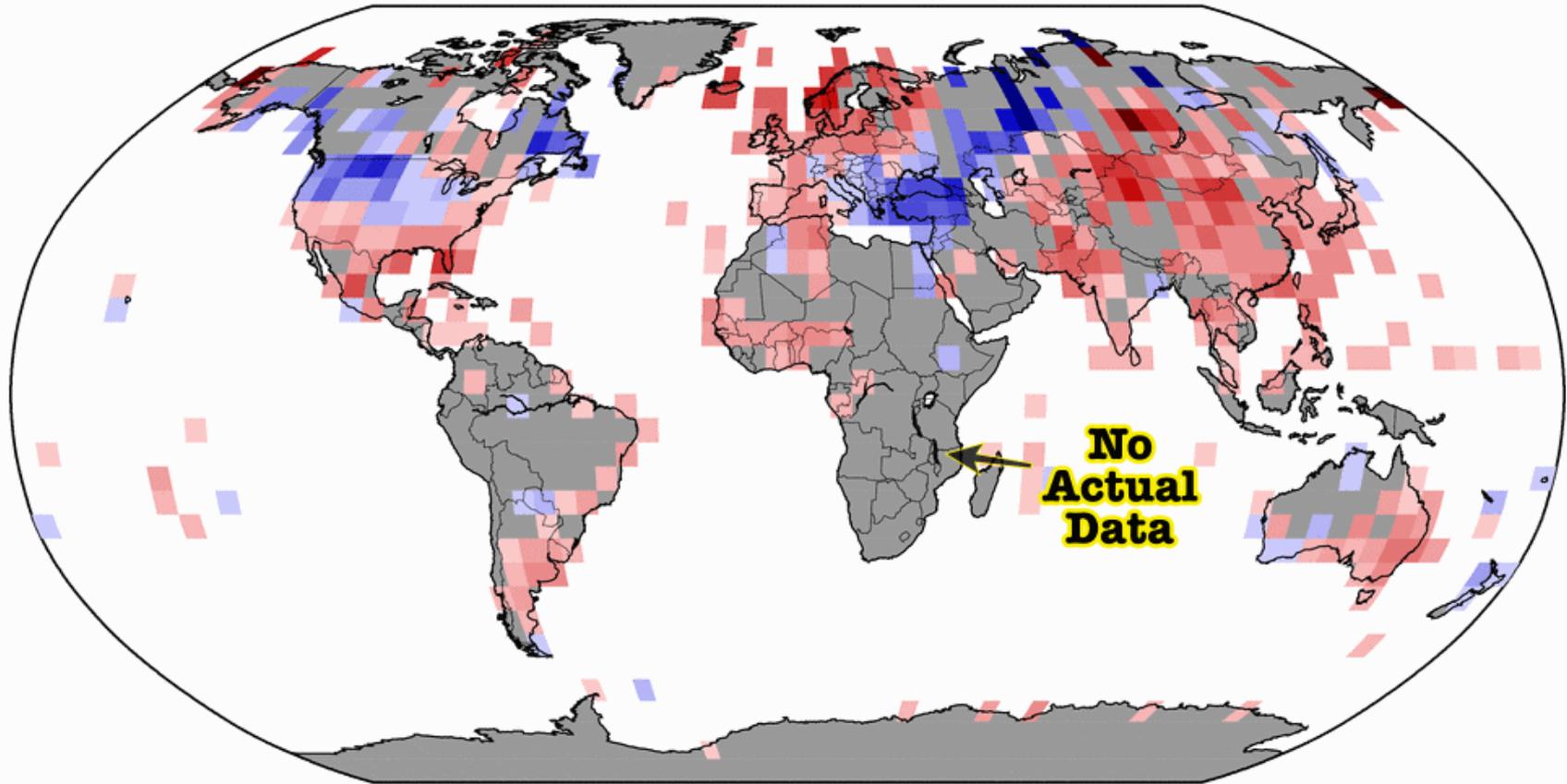


Record Warmest



Land-Only Temperature Departure from Average Dec 2016 (with respect to a 1981–2010 base period)

Data Source: GHCNM v3.3.0

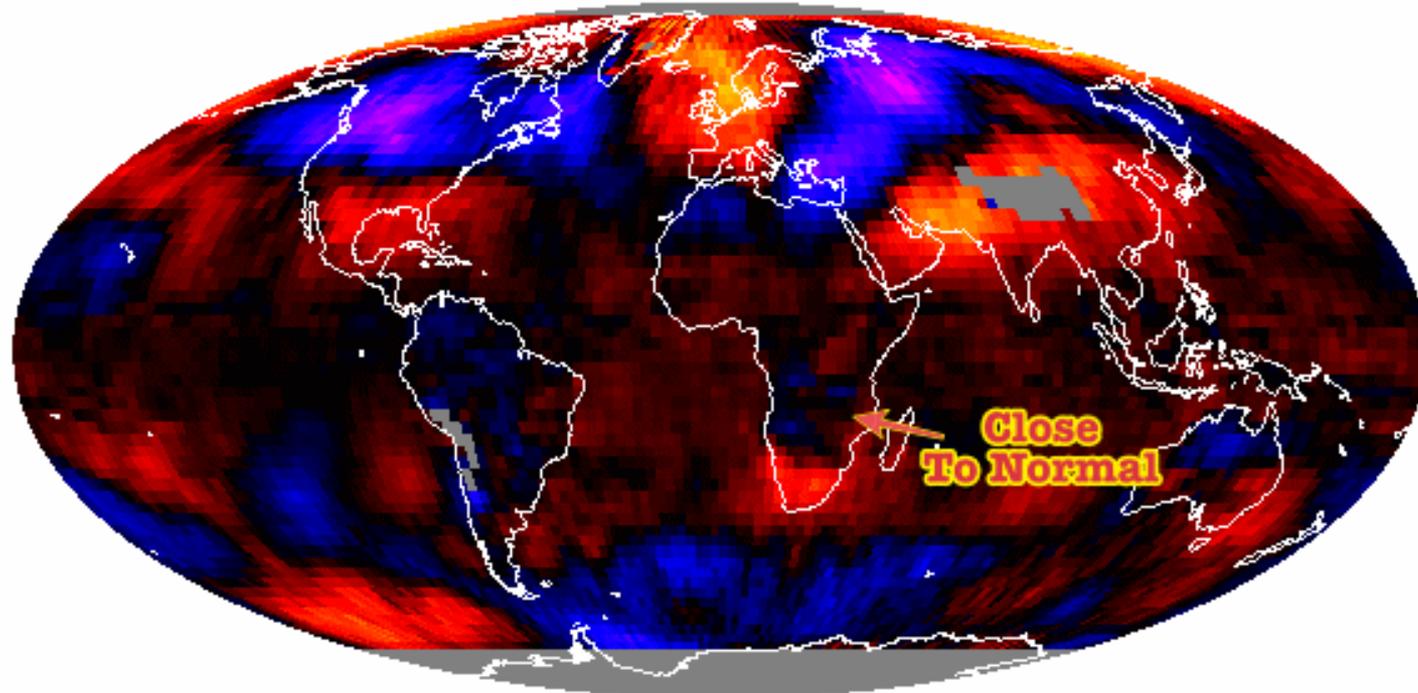


National Centers for Environmental Information
Wed Jan 11 06:15:27 EST 2017

Degrees Celsius

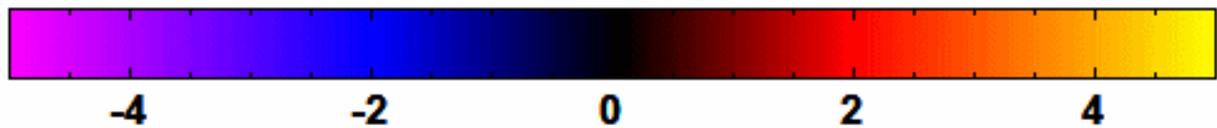
Please Note: Gray areas represent missing data
Map Projection: Robinson

MSU/AMSU Channel TLT Brightness Temperature Anomaly, December, 2016



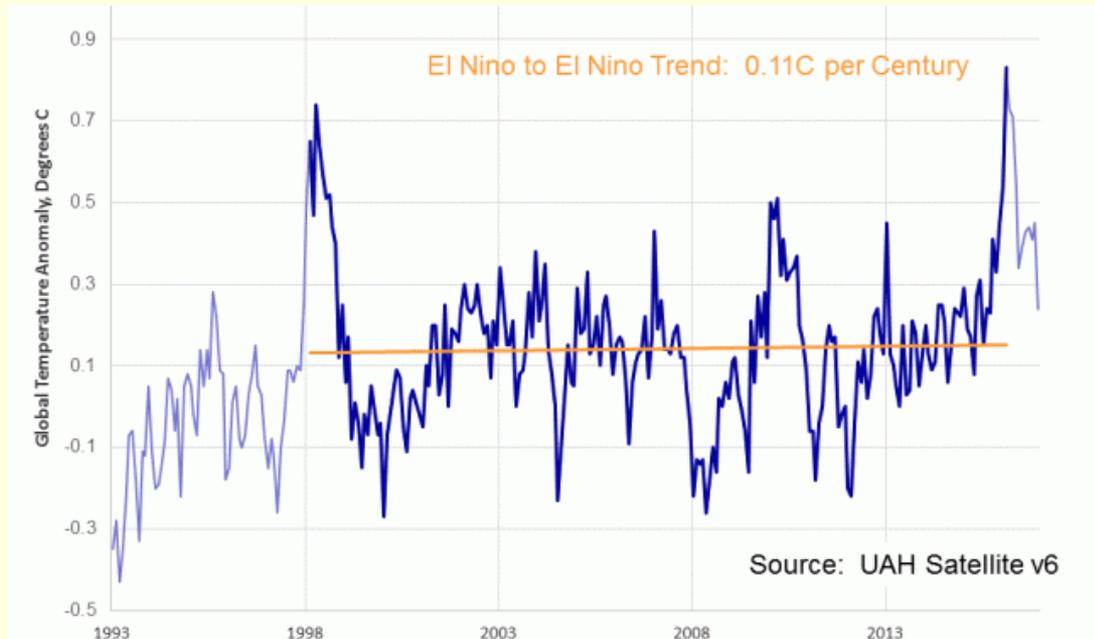
Remote Sensing Systems
www.remss.com

Brightness Temperature Anomaly (K)



How Do You Find Reliable Data?

There is only one climate data set for which
the data used to create the set is completely known,
the raw data is freely available
it is known what corrections have been applied & why
the computer code used to adjust the data is public



What does this mean?

The published temperature records are compromised

This does not mean that the earth is not warming.
probably is: 0.1-0.3 C/century

The lack of reliable long term temperature records means we cannot tell if CO₂ is affecting the climate.

Temperature Rise is Due Only to CO₂

Observation

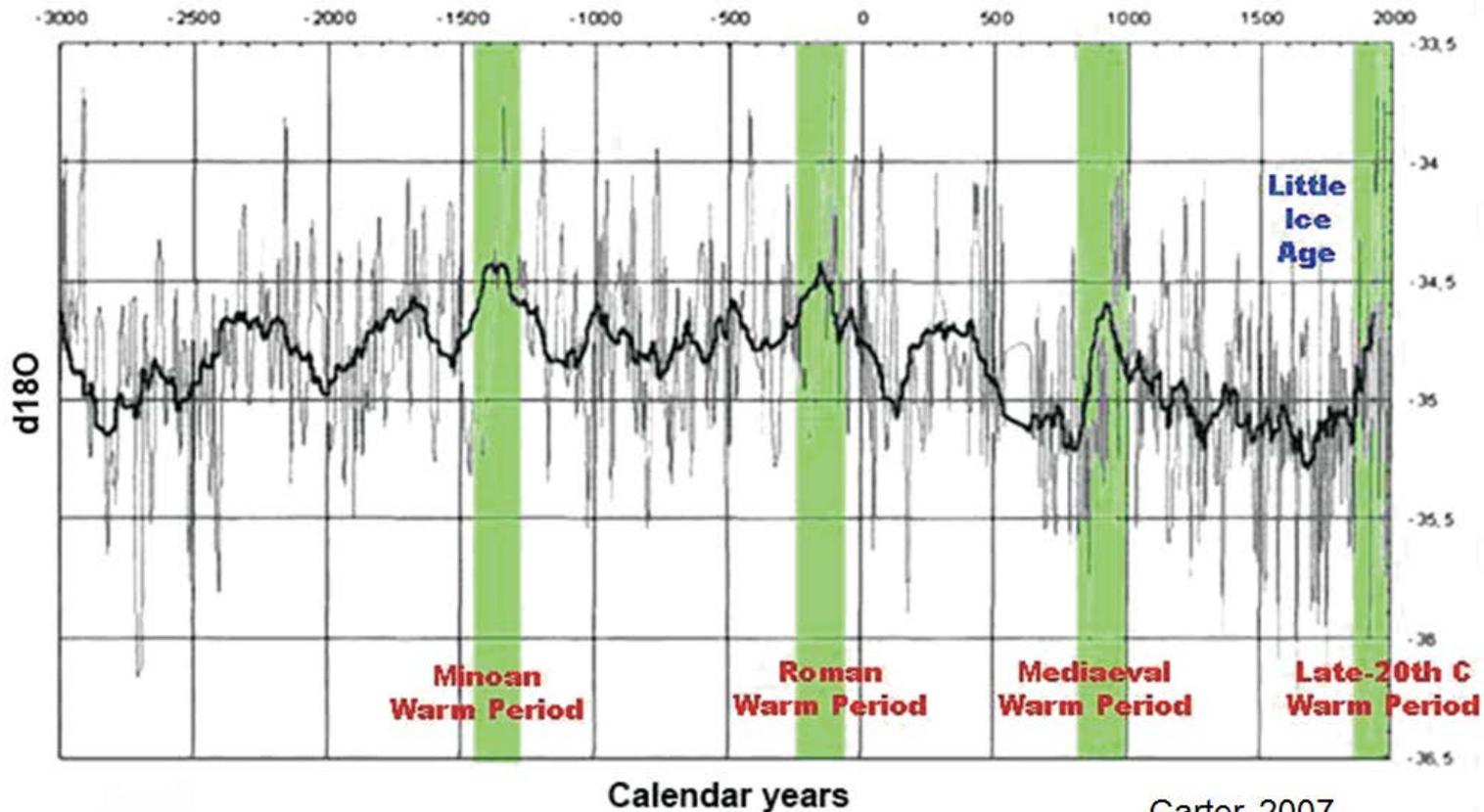
The world has warmed about 0.7C in last century

All of this (and more) due to man-made CO₂

Temperature Rise is Due Only to CO₂

51

Omitted: Recovery from the Little Ice Age

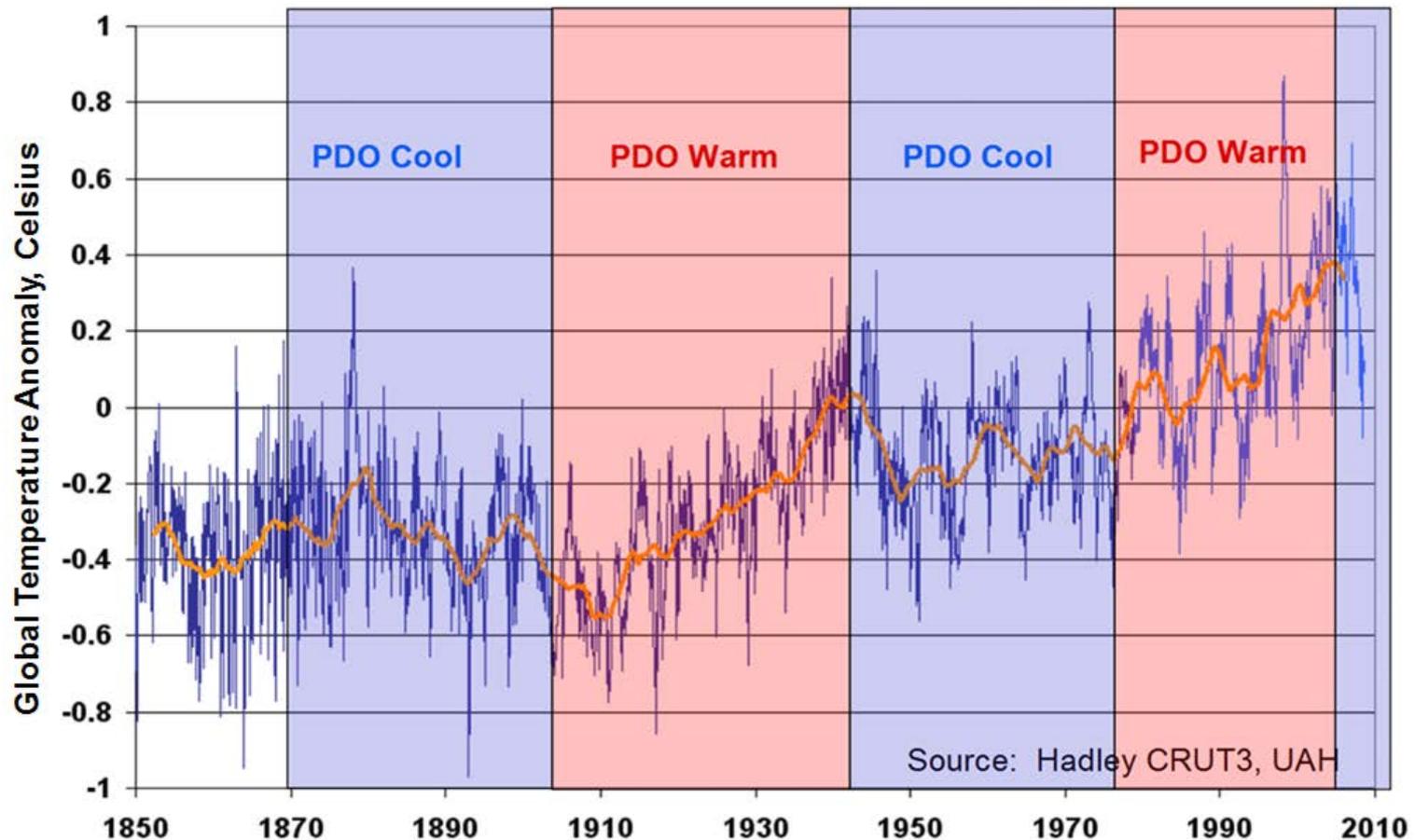


Carter, 2007

Temperature Rise is Due Only to CO₂

53

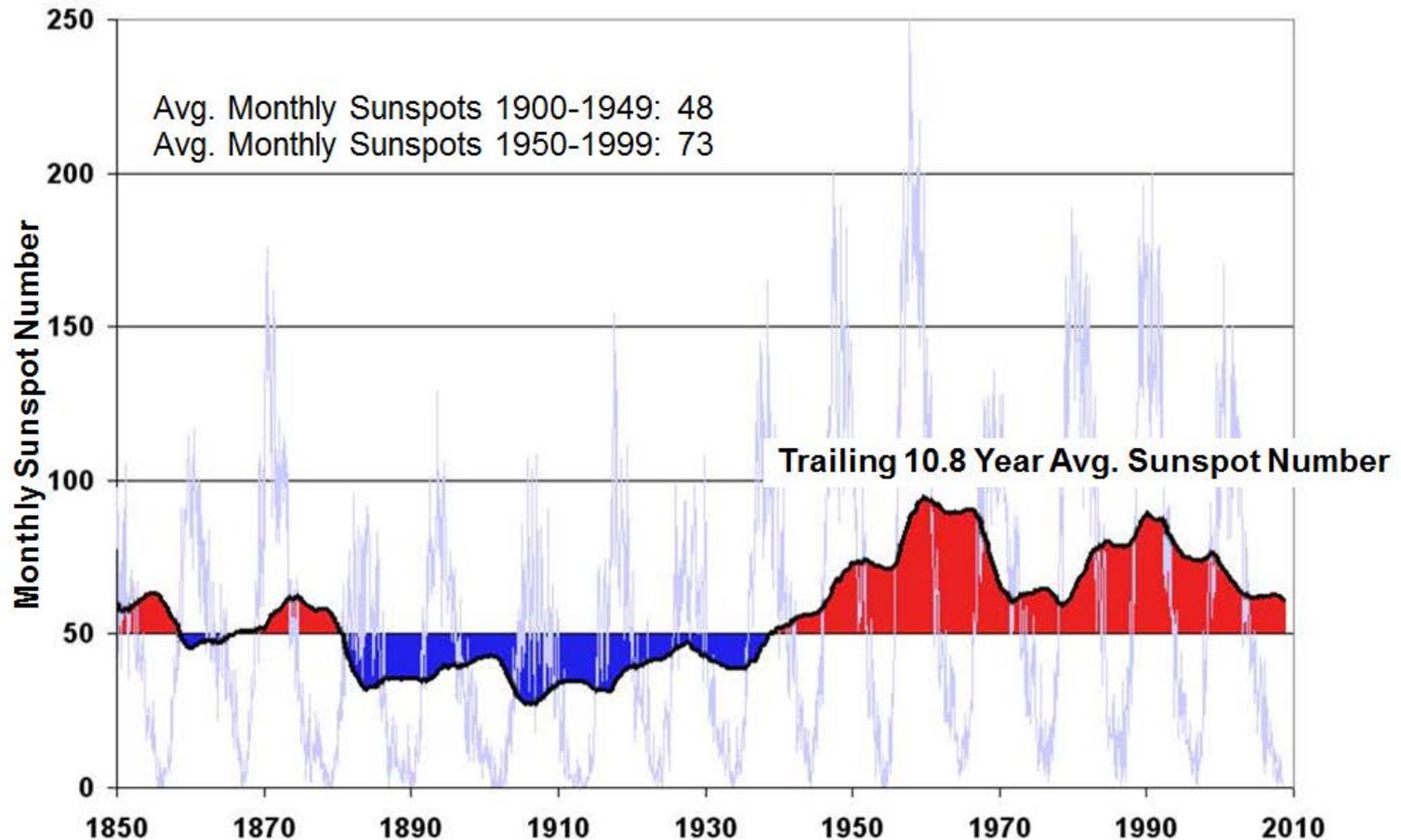
Omitted: The Pacific Decadal Oscillation Has An Enormous Effect on Temperatures



Temperature Rise is Due Only to CO₂

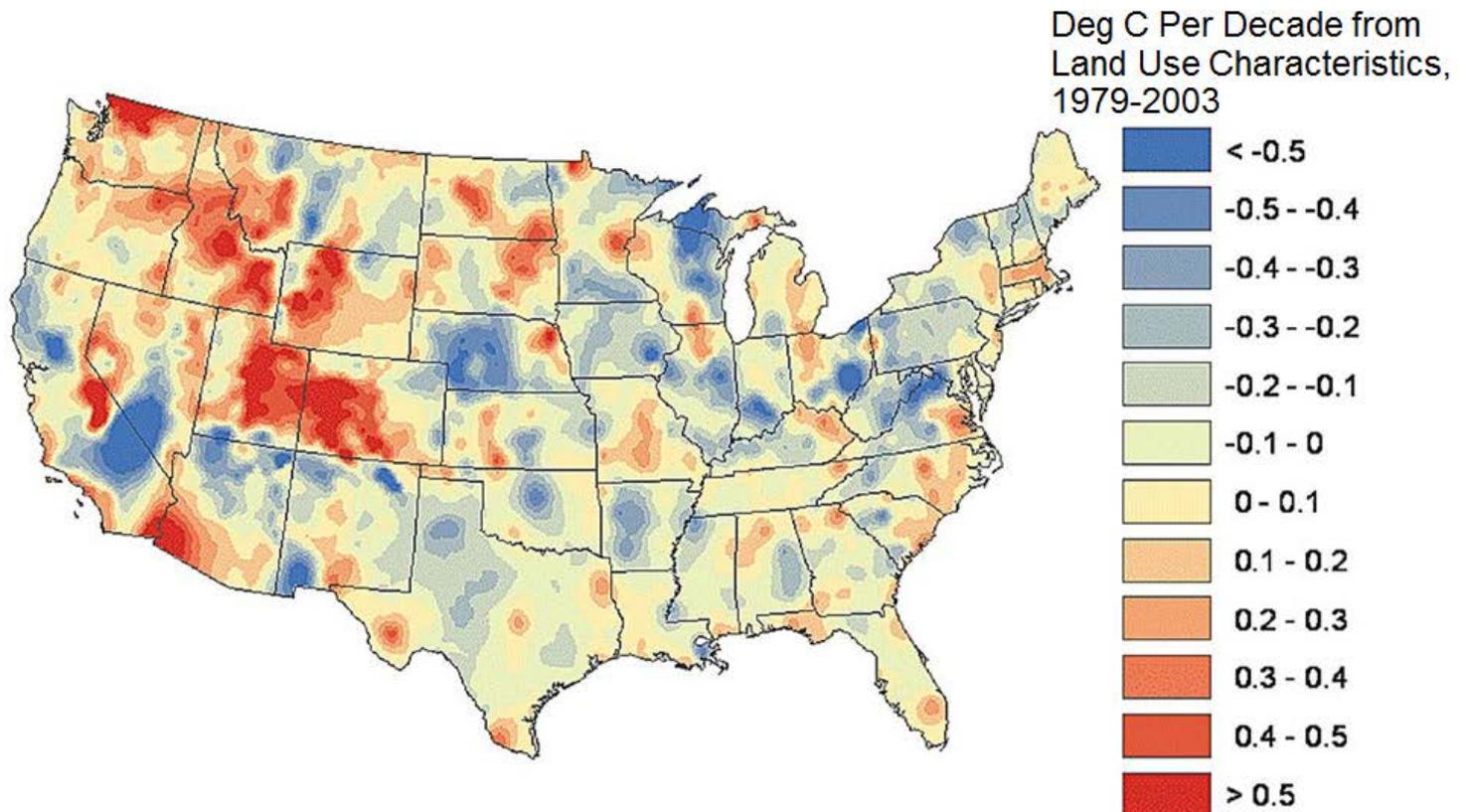
52

Omitted: Sun Has Been Unusually Active in Last 50 Years

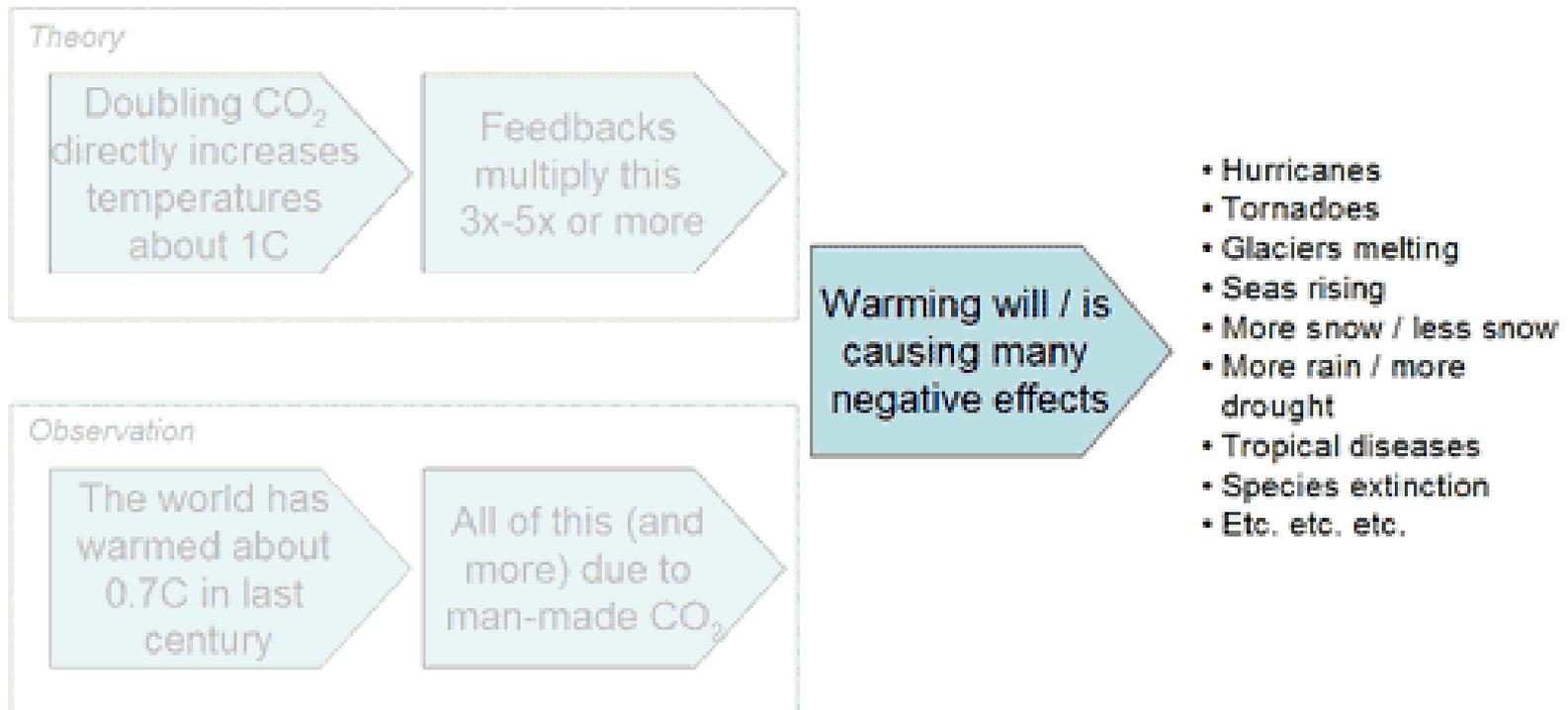


Temperature Rise is Due Only to CO₂

Omitted: Land Use Changes Affect⁵⁰ Temperatures

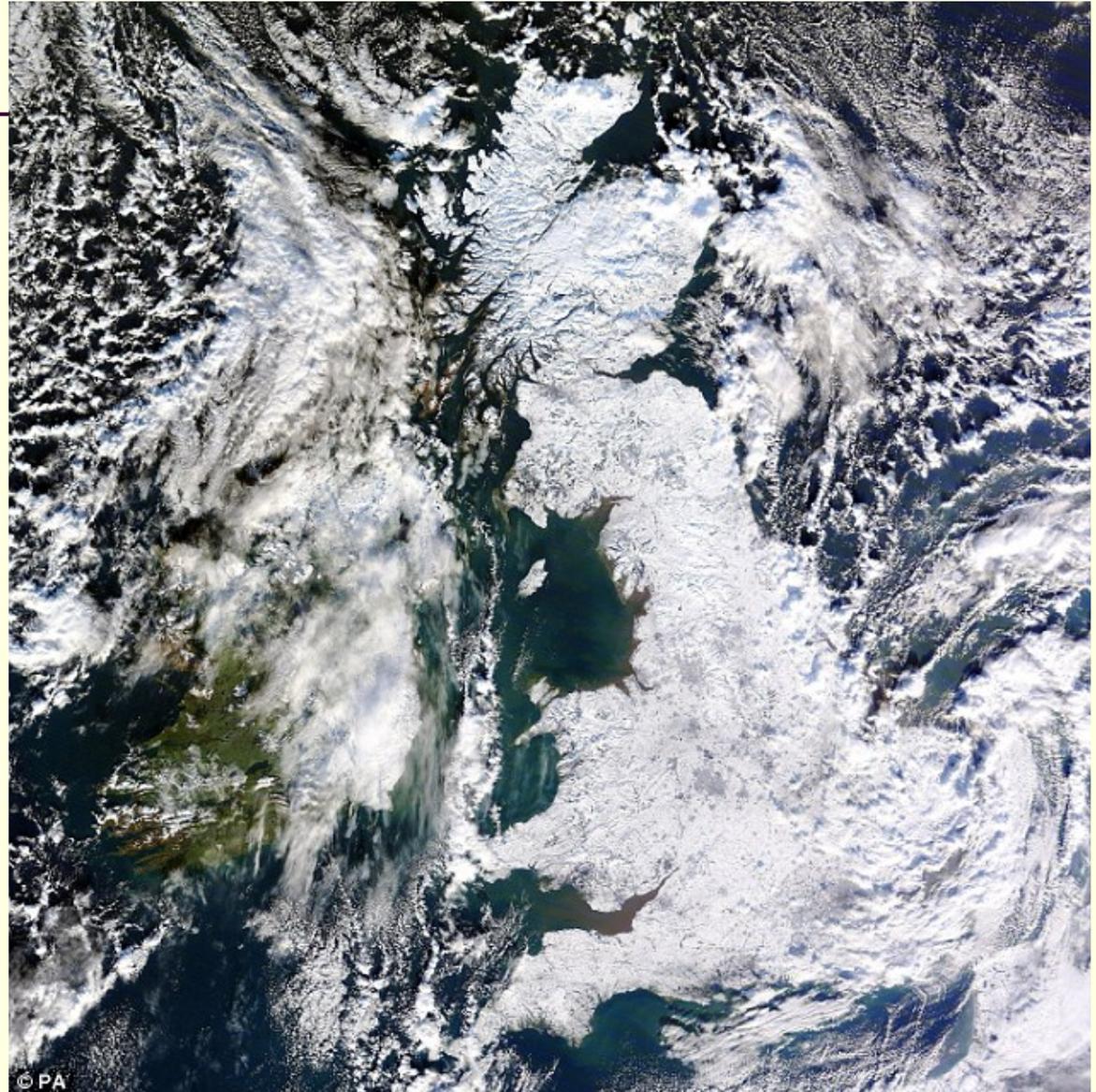


Climate Disasters



In 2001,
Climate Change
Modelers predicted
England would
never again have
snow in winter.

MODIS photo,
December, 2009



Problem of Falsifiability

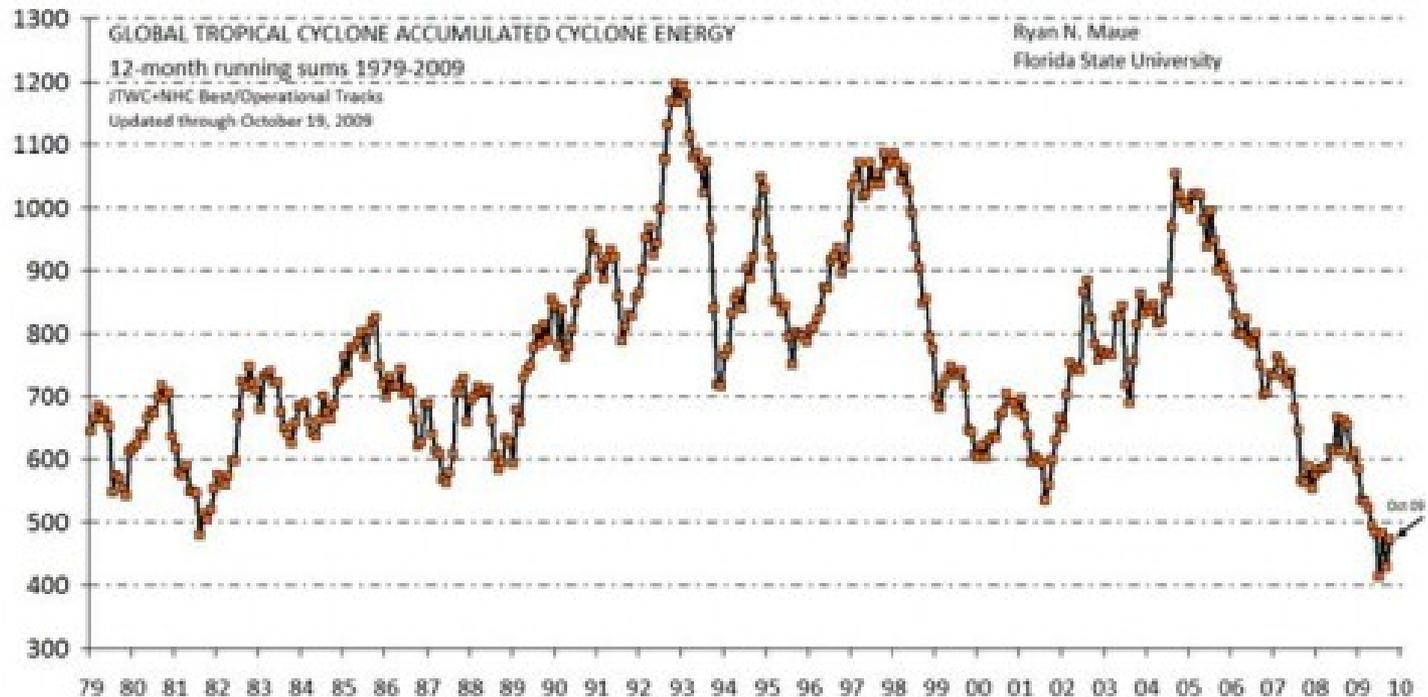
Normally, if a theory predicts “X” and “X” doesn’t happen, then the theory is considered not proven.

If it doesn’t snow, it is proof of climate change, if it does snow, it is proof of climate change.

When California has a drought, it will be permanent because of climate change. When rain and flooding comes, Climate change.

Hurricane Events

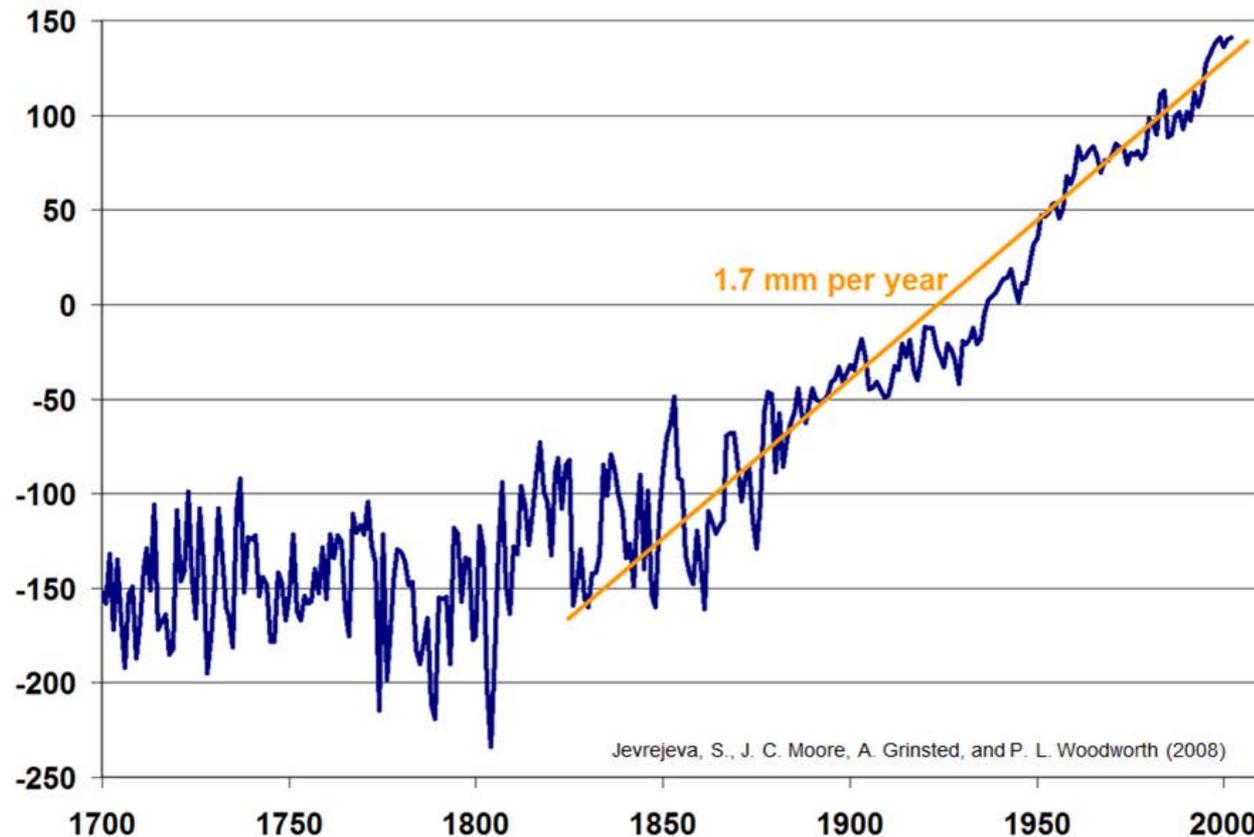
No Upward Trend in Hurricane or Cyclonic Activity



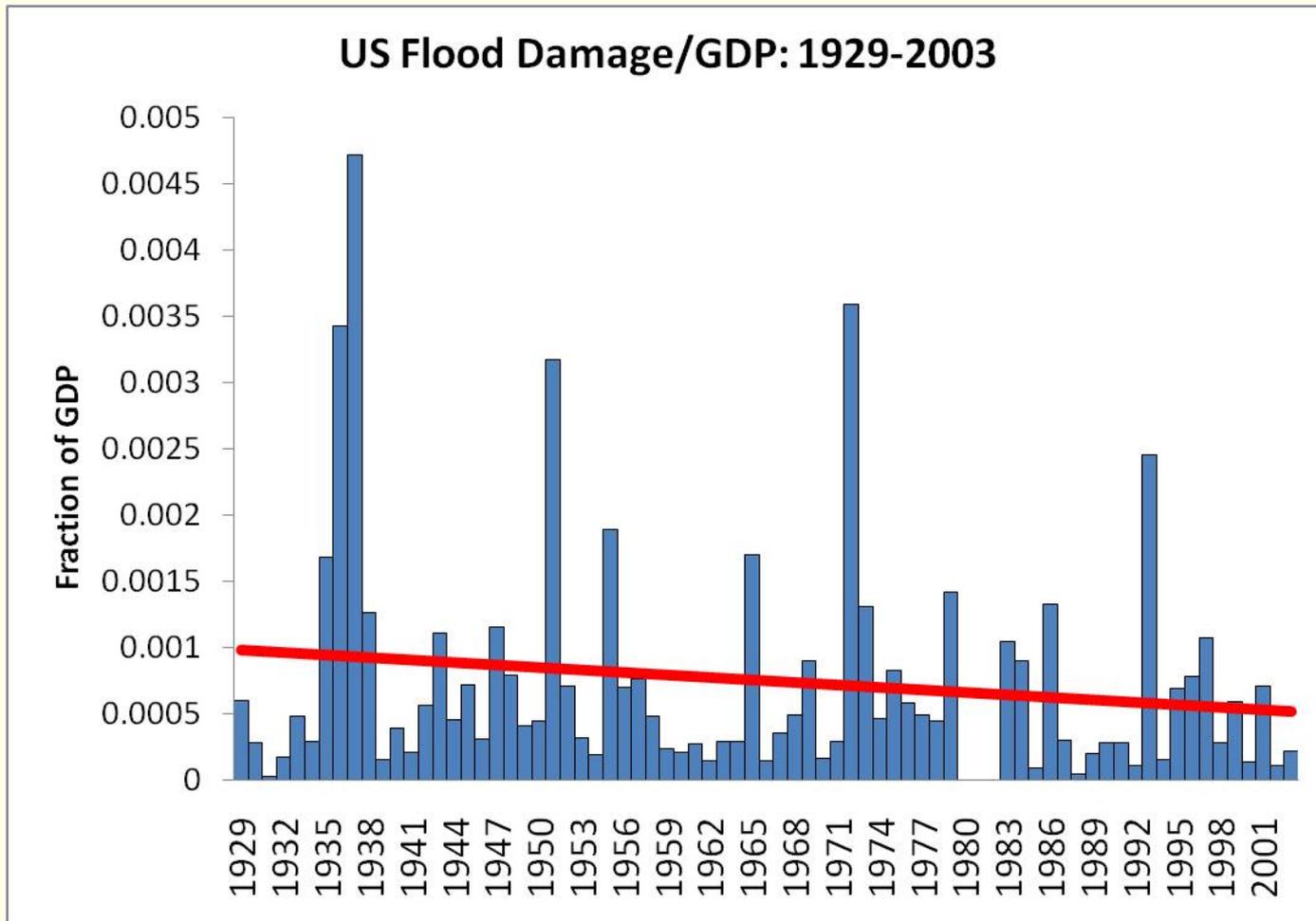
Sea Level Rise

81

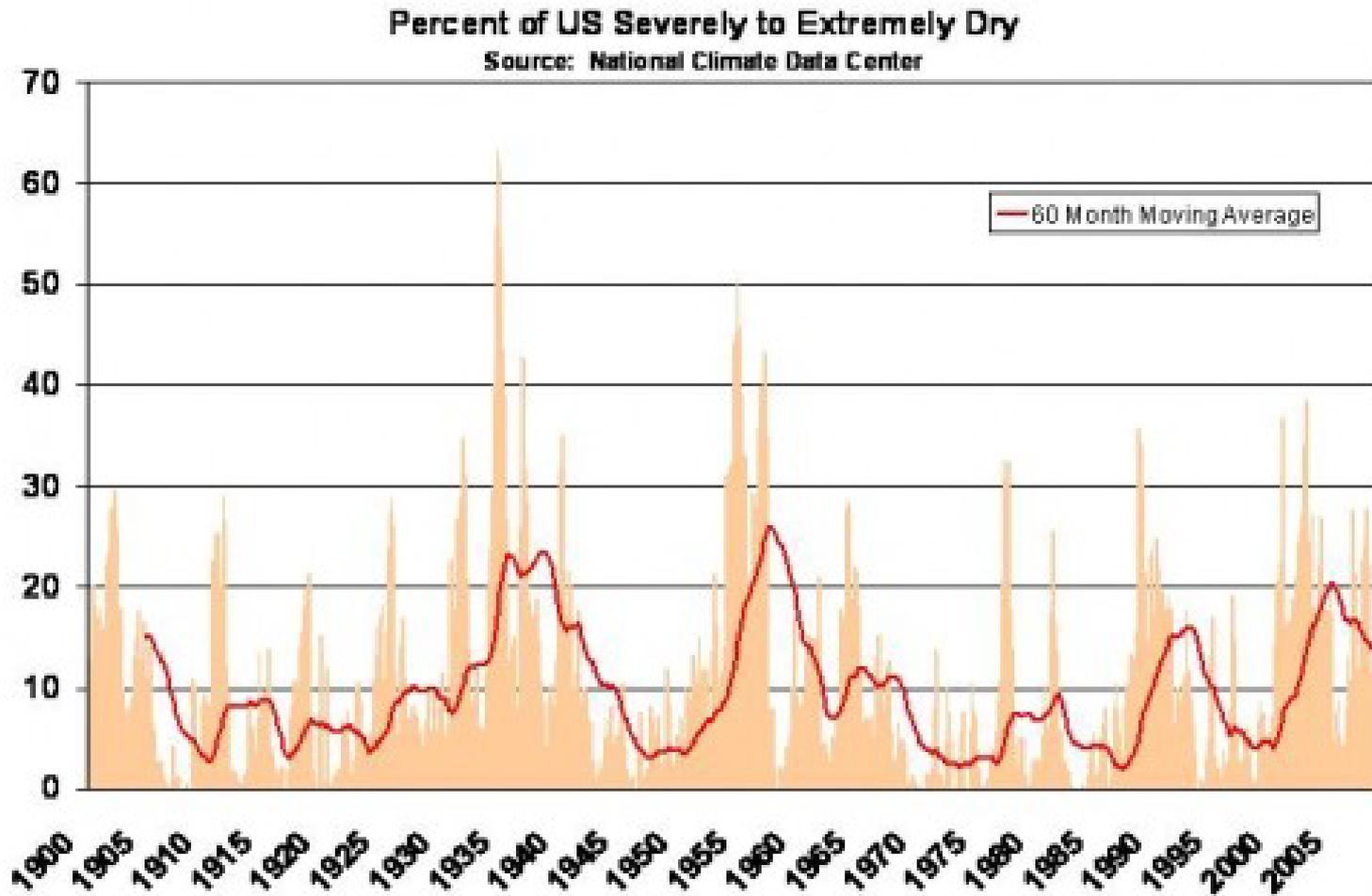
Sea Levels Have Risen At A Fairly Constant Rate Since the Little Ice Age



Damage Due to Extreme Events



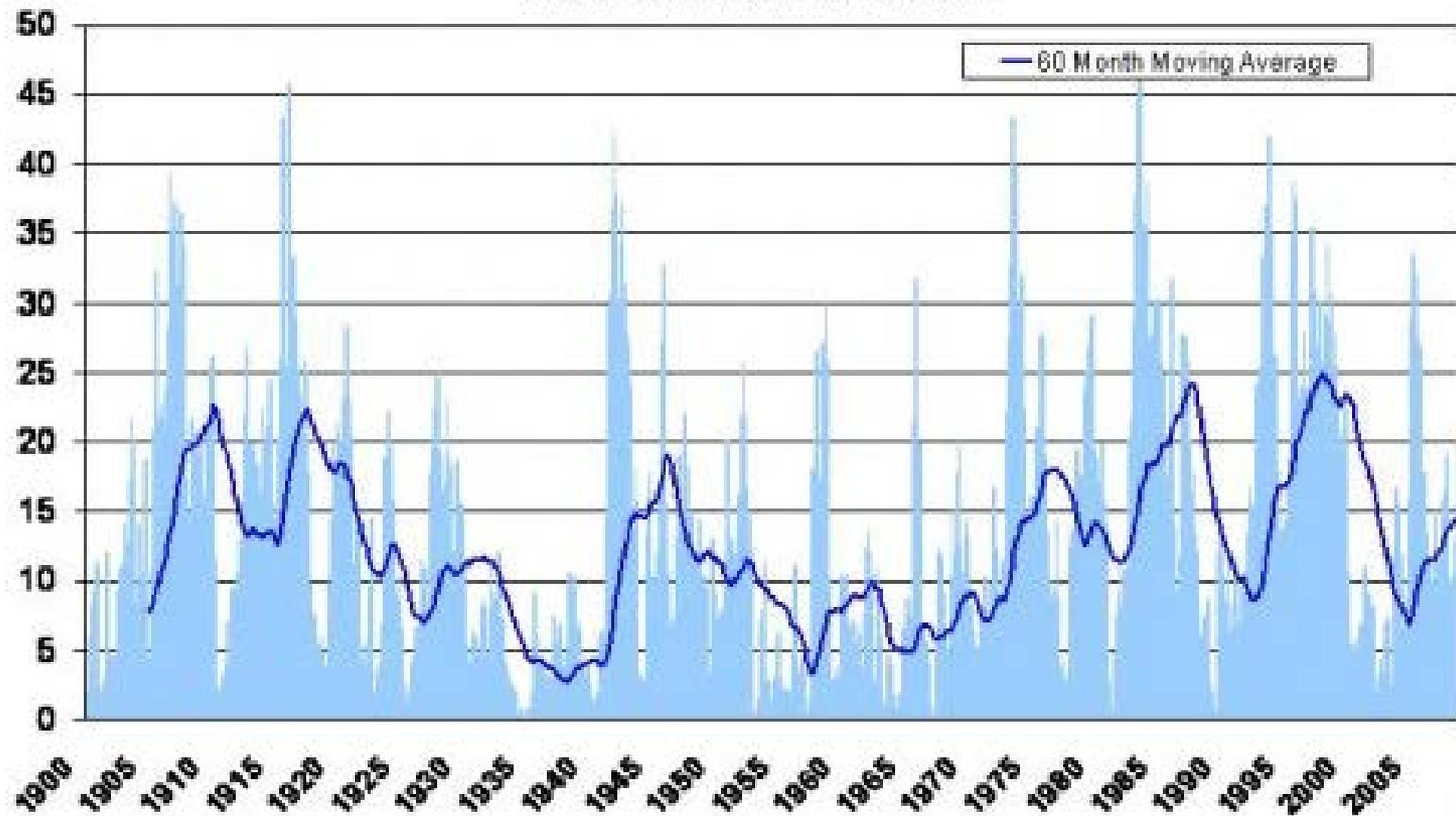
Extreme Drought Events



Extreme Wet Events

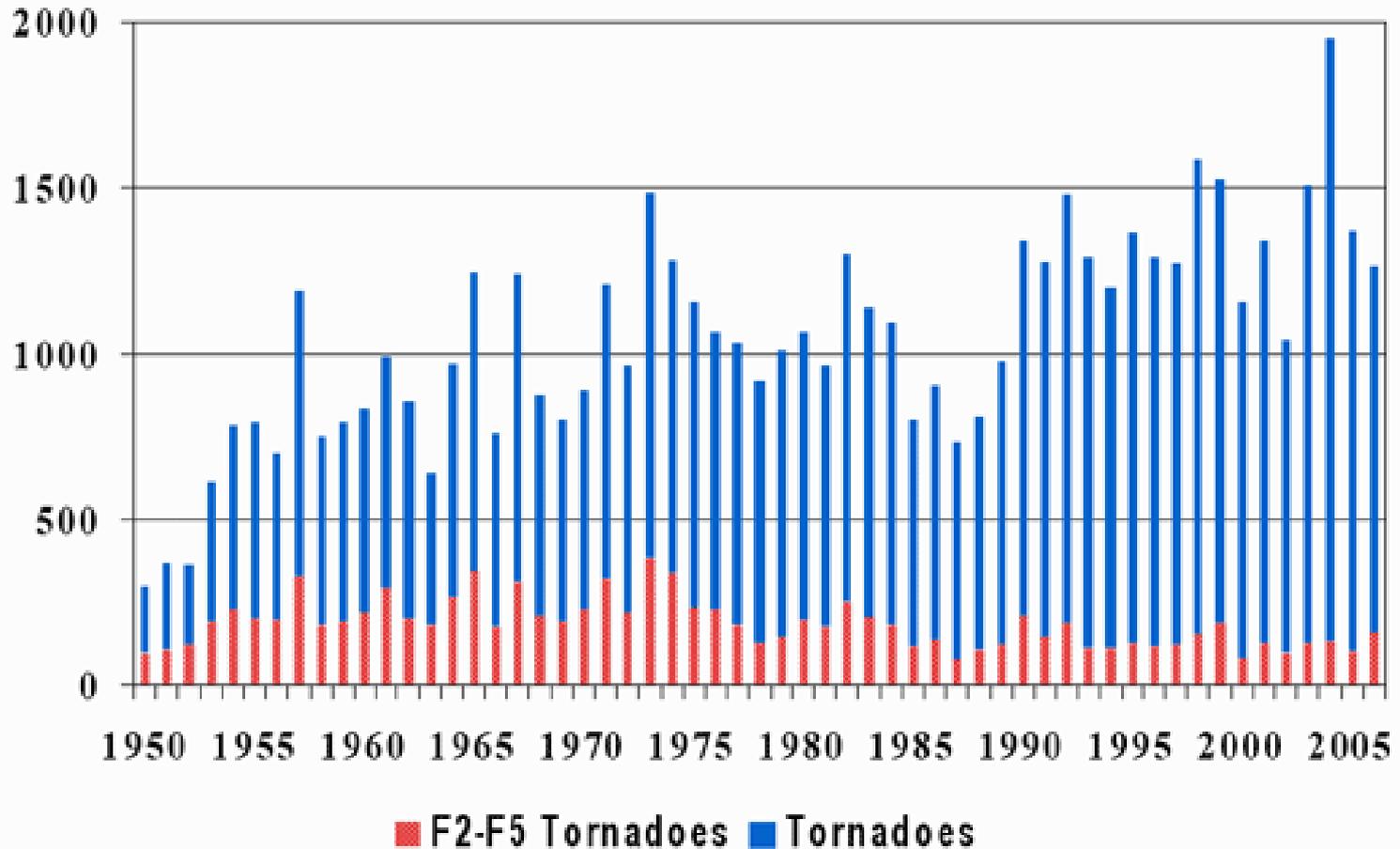
Percent of US Severely to Extremely Wet

Source: National Climate Data Center



Extreme Events – Tornadoes

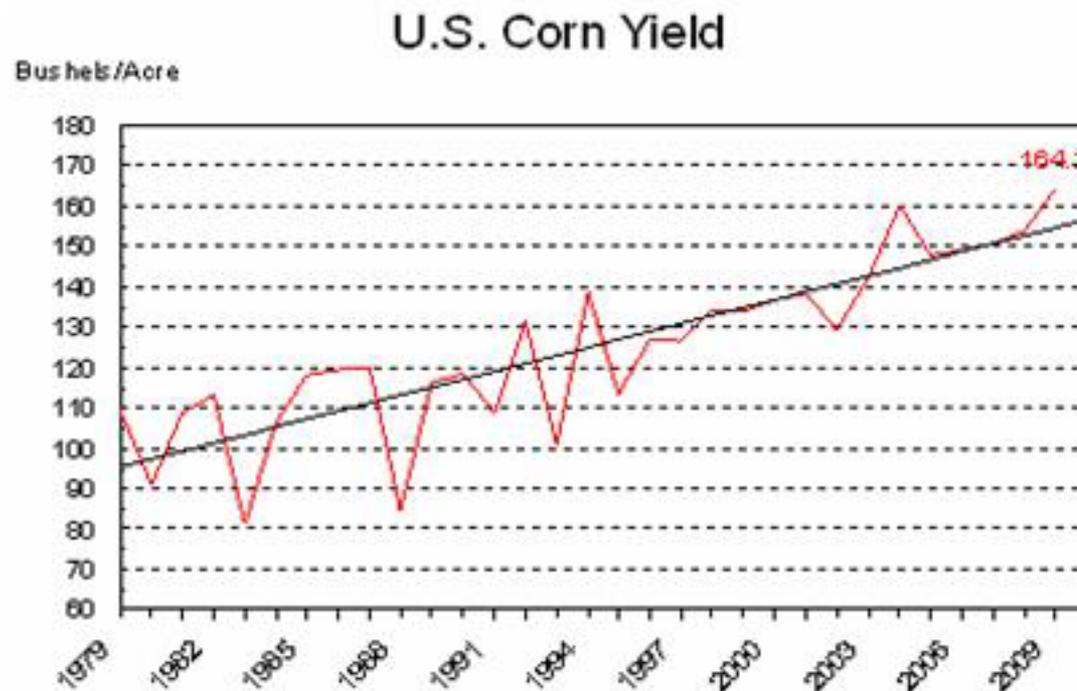
Tornado Reports (1950-2006)



Effects on Crops

"Corn likes it cool, but global warming is raising temperatures across the nation," said Environment America Global Warming Advocate Timothy Telleen-Lawton. "Hotter fields will mean lower yields for corn, and eventually, the rest of agriculture."

-- April, 2009



Climate Migration



HOME

ABOUT

PROGRAMMES

MAPS & GRAPHICS

PHOTO LIBRARY

PUBLICATIONS

NEWS & FEATURES

Overview

By region

By theme

By collection

Search library

About

About this site

Sitemap

News/feeds (RSS)

Feedback

Latest graphics

Access to sanitation in Yaoundé

Urban population trends, Kenya and Nairobi

Slum population in urban Africa

Historical population trend, Grahamstown 1840-1980

Urban growth rate in Africa

Access to sanitation in urban Africa

Sources of water for domestic use in Port Harcourt

Water supply and demand in Nairobi

Population distribution in Africa

More information and download links below the graphic.

Fifty million climate refugees by 2010

Fifty million climate refugees by 2010 (map/graphic/illustration)

Click here, or on the graphic, for full resolution.

Fifty million climate refugees by 2010. Today we find a world of asymmetric development, unsustainable natural resource use, and continued rural and urban poverty. There is general agreement about the current global environmental and development crisis. It is also known that the consequences of these global changes have the most devastating impacts on the poorest, who historically have had limited entitlements and opportunities for growth.

Common Problems with Catastrophic Studies

- Measurement Technology Bias

- Tornados & Hurricanes
- Ocean Acidification

- One sample makes a trend

- Katrina
- Polar Bears

- What is normal ?

- Glacier Retreat

- Everything looks like a nail

- Oyster die off
- Butterfly die off

The Problem with the Hype

- There are other emissions that are more harmful that still need to be addressed
- Driving environmentally stupid behavior
 - Subsidizing corn ethanol / biodiesel
 - Windmills & solar power
 - Biomass Energy
- There are many other areas where more impact is possible on more people for less resources.

To Sum Up

- The predicted amount of warming is unlikely
- The impending catastrophe is unproven
- To demand extraordinary changes to our economies and way of life requires extraordinary proof that just isn't there.
- There is no compelling need to remake our societies.

Thank You !!

- “Facts are stubborn things; and whatever may be our wishes, our inclinations, or the dictates of our passion, they cannot alter the state of facts and evidence.”

John Adams, 1770

