



Climate Science and the Myths of Renewable Energy

Steve Goreham



Are Humans Destroying Earth's Climate?



**Former Vice President Al Gore,
Senate Foreign Relations Committee, January 28, 2009**

Are Humans Destroying Earth's Climate?



Dr. David Suzuki, 2014

We Live in a World of Superstition!



**People's
Climate
March
Apr. 29, 2017**

Climatism: The Belief that Humans Are Causing Dangerous Global Warming

Accepted by:

- More than 190 Heads of State
- The United Nations
- Most Scientific Organizations
- Most Fortune 500 Companies
- Most Universities

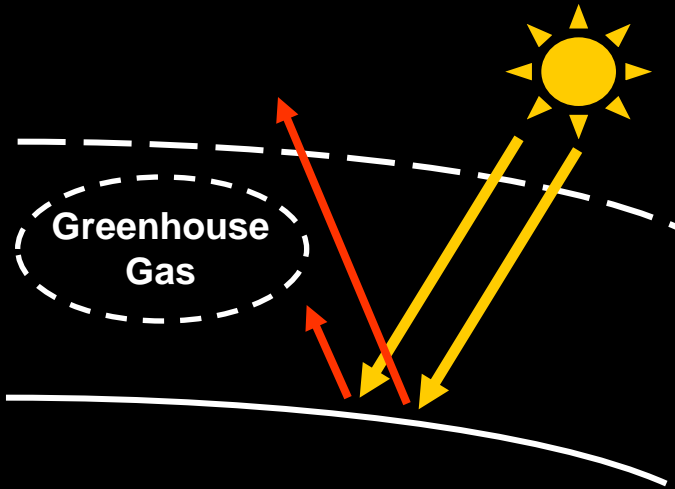


“They’re moving in herds!”

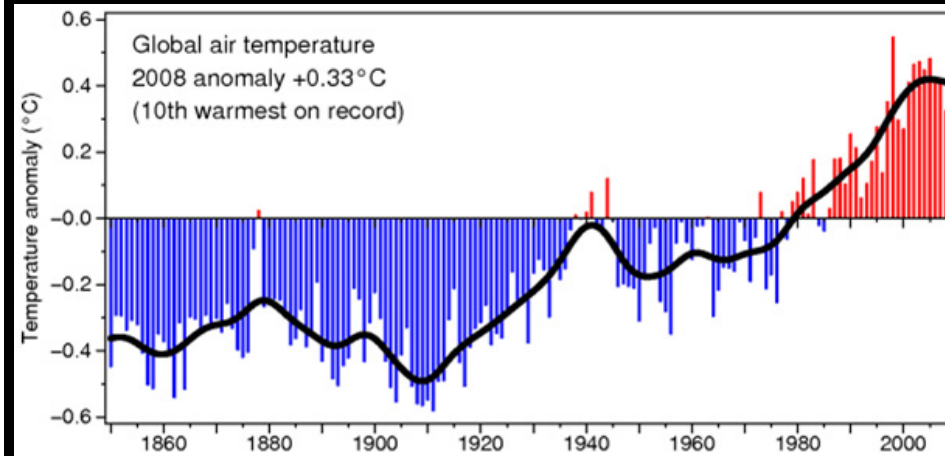
Over \$250 Billion per Year in Global Spending

“Simple Science” of Man-Made Global Warming

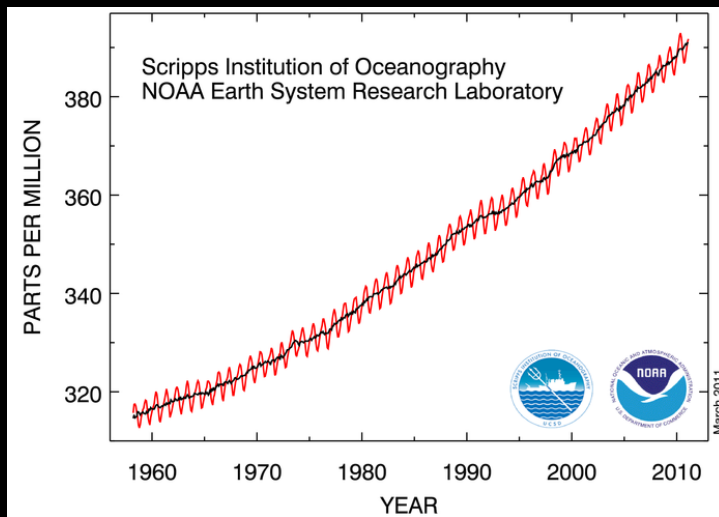
A. The Greenhouse Effect



C. Rising Global Temperatures



B. Rising Atmospheric CO₂ Level



D. Computer Model Projections



However—There is

No Empirical Evidence

that Increasing Greenhouse Gases

are the Primary Cause

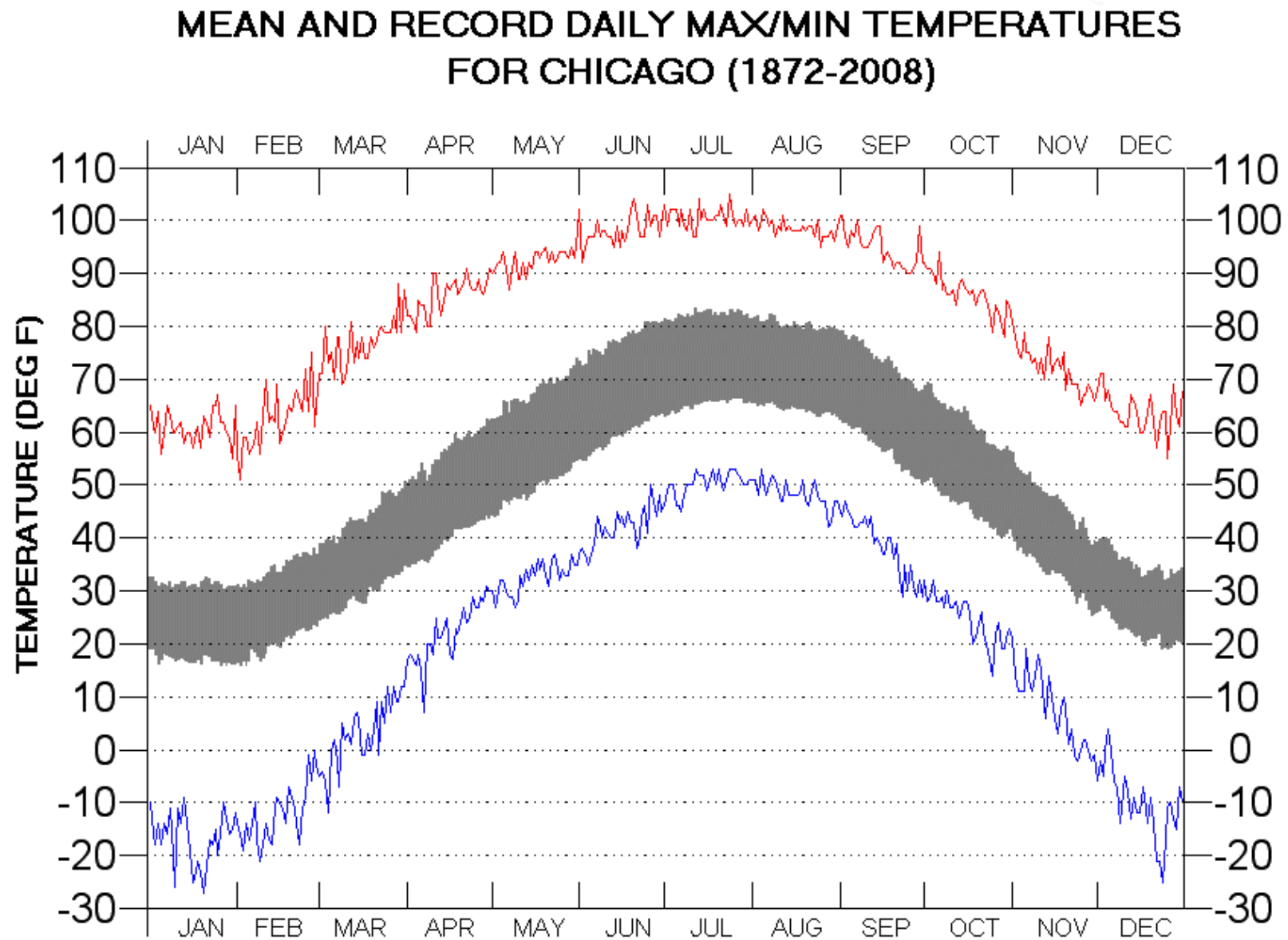
of Global Warming!

“...the increase in temperature in the 20th century is likely to be the largest of any century during the past 1,000 years.”

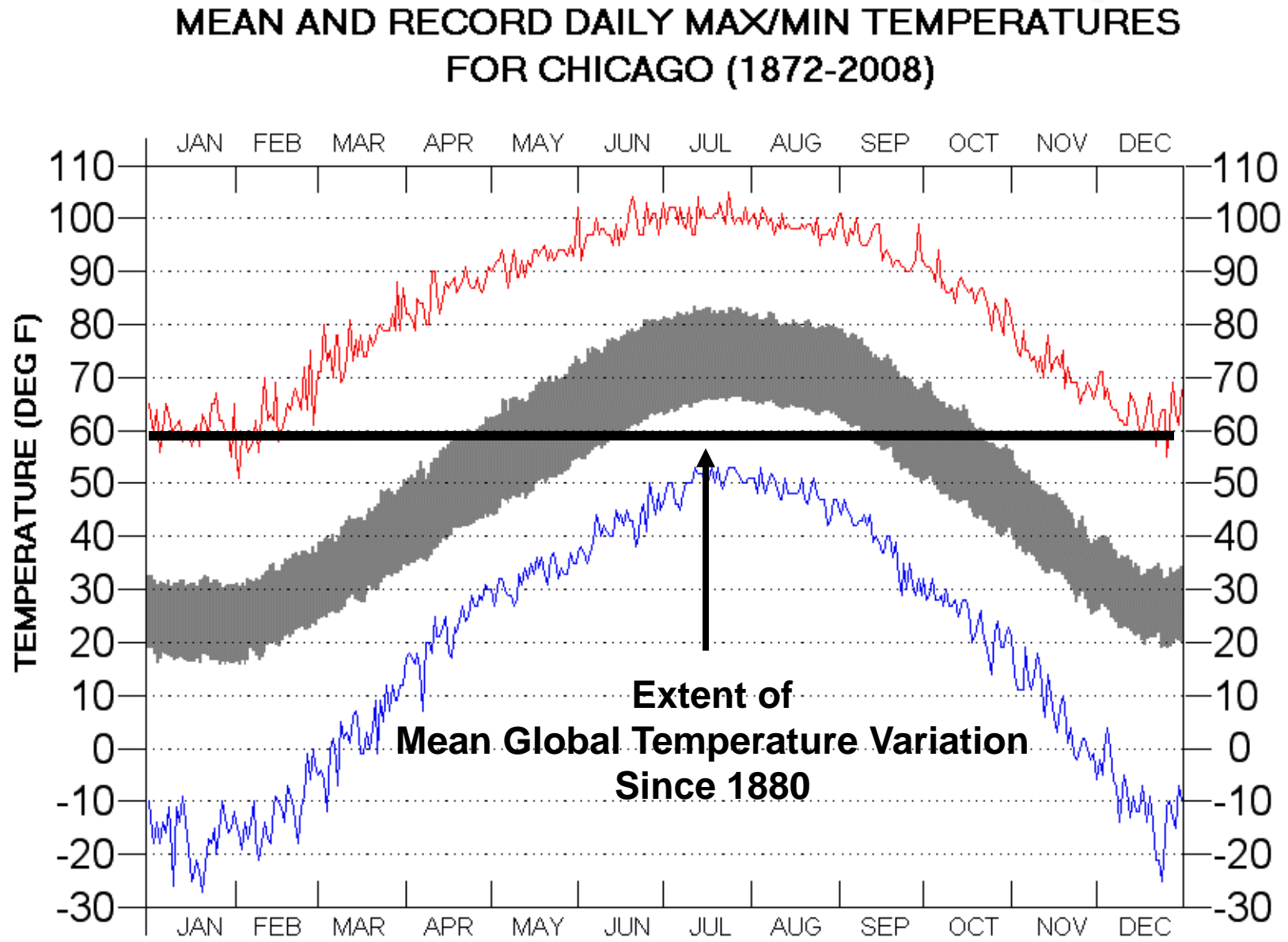
**— Intergovernmental Panel on Climate Change,
Third Assessment Report (2001)**



Temperature in Perspective



Temperature in Perspective



Evidence of Man-Made Warming?



Evidence of Man-Made Warming?



**Melting Ice is Evidence of Warming But,
Does Not Tell the Cause of the Warming**

Climate Change is Continuous!

Medieval Warm Period (900-1300 AD)

- Viking Eric the Red Settles Hvalsey Greenland—985 AD
- Settlement Grows to 5,000 by 1300
- Dies Out by 1408 as Climate Cools

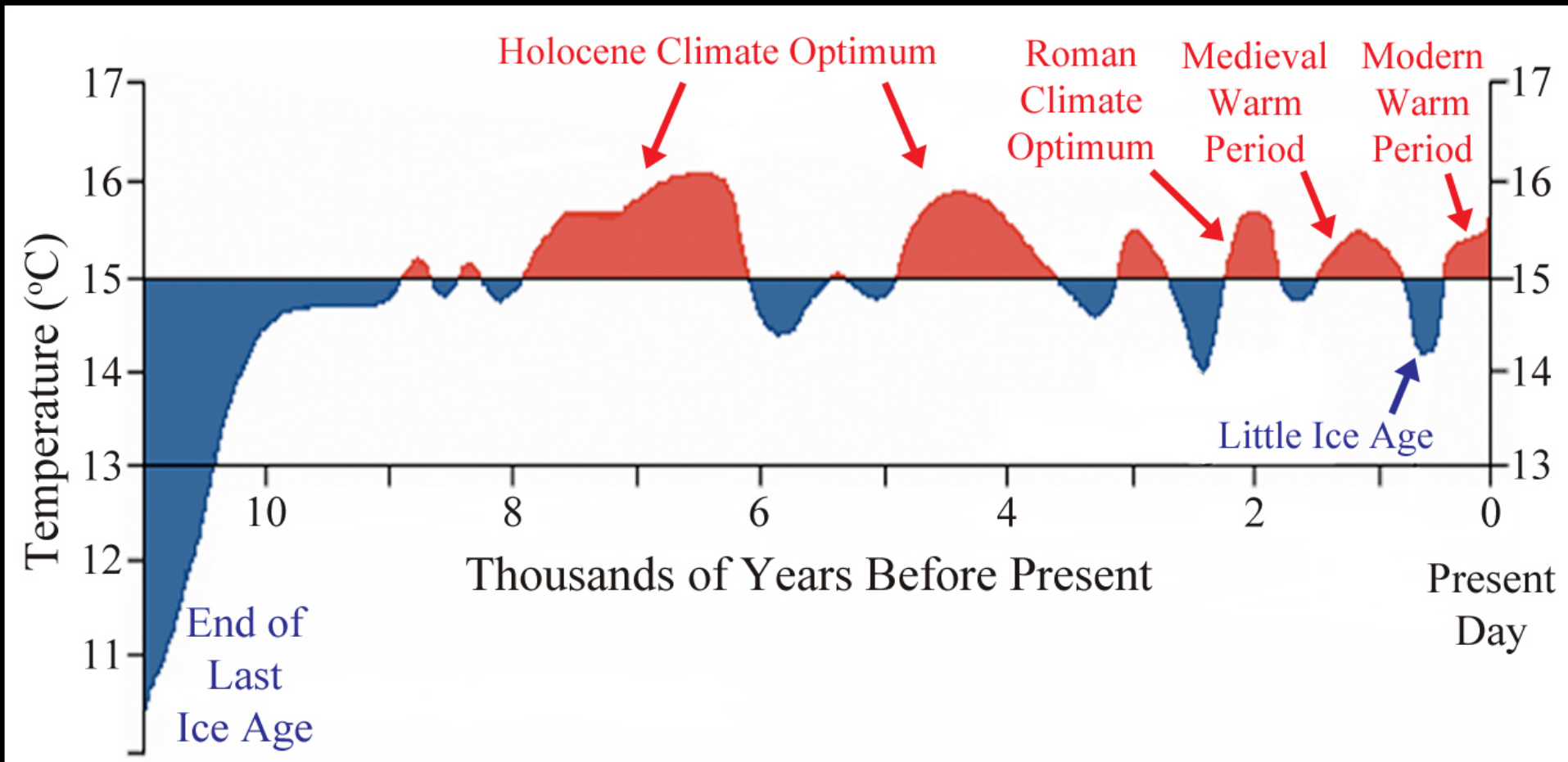
Little Ice Age (1300-1850 AD)

- Shorter Growing Seasons
- Famine in Europe
- Thames Freezes Hard at London



The 1500-Year Temperature Cycle

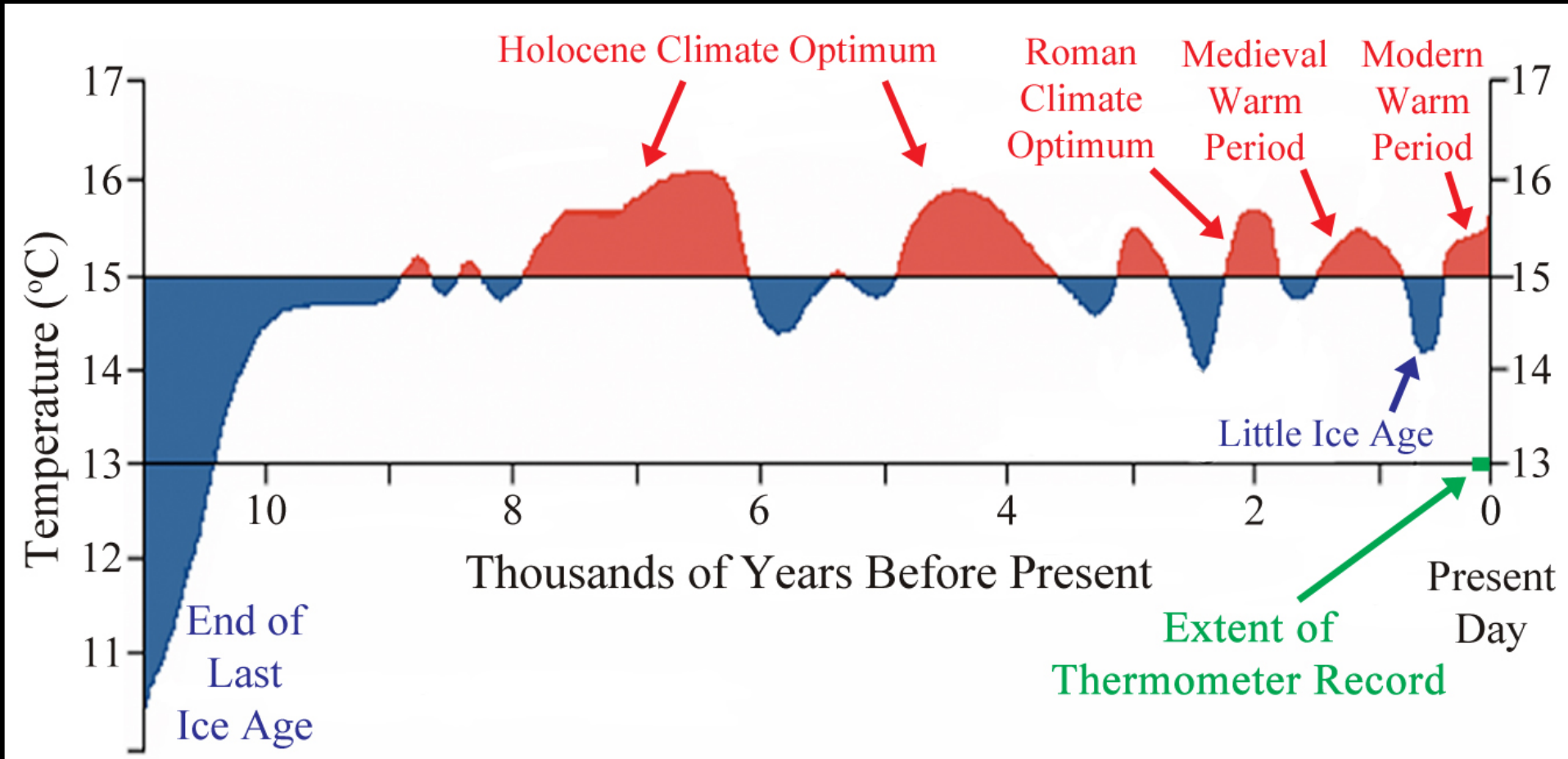
Ice Core Data from Crete Site in Central Greenland



Dansgaard (1984), Avery (2009)

The 1500-Year Temperature Cycle

Ice Core Data from Crete Site in Central Greenland



Dansgaard (1984), Avery (2009)

Evidence of Past Warmer Temperatures



**White Spruce 100km North of Current Tree Line—
Radio Carbon Date: 4940 ± 170**

Ball (2008)

WWW.THIS IS CLIMATE CHANGE.ORG



THEN
(1894)



NOW
(2008)

MENDENHALL GLACIER - ALASKA

Under the Mendenhall Glacier—A Forest!

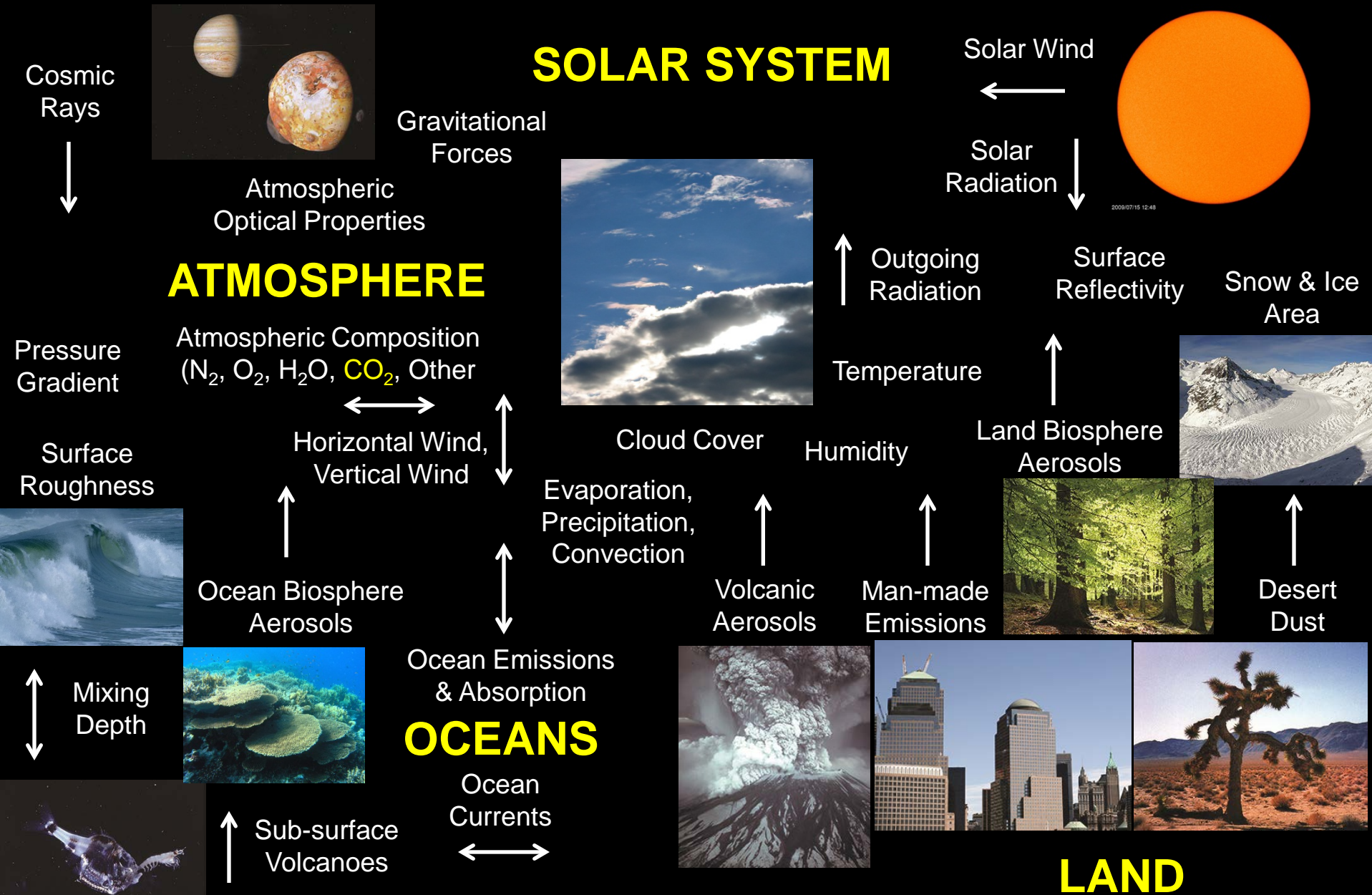


**Bradshaw
(2013)**



“...climate change is occurring and humans play a contributing role.”
**—New Jersey Governor,
Chris Christie**

CO₂: A Small Part of Earth's Climate System



CO₂ is a Trace Gas

Only Four of Every 10,000 Molecules Are Carbon Dioxide



Duke Cameron Arena (2010)

CO₂ is a Trace Gas

Humans Responsible for Part of One in 10,000 Molecules!



Duke Cameron Arena (2010)

**What is Nature's
Most Abundant
Greenhouse Gas?**

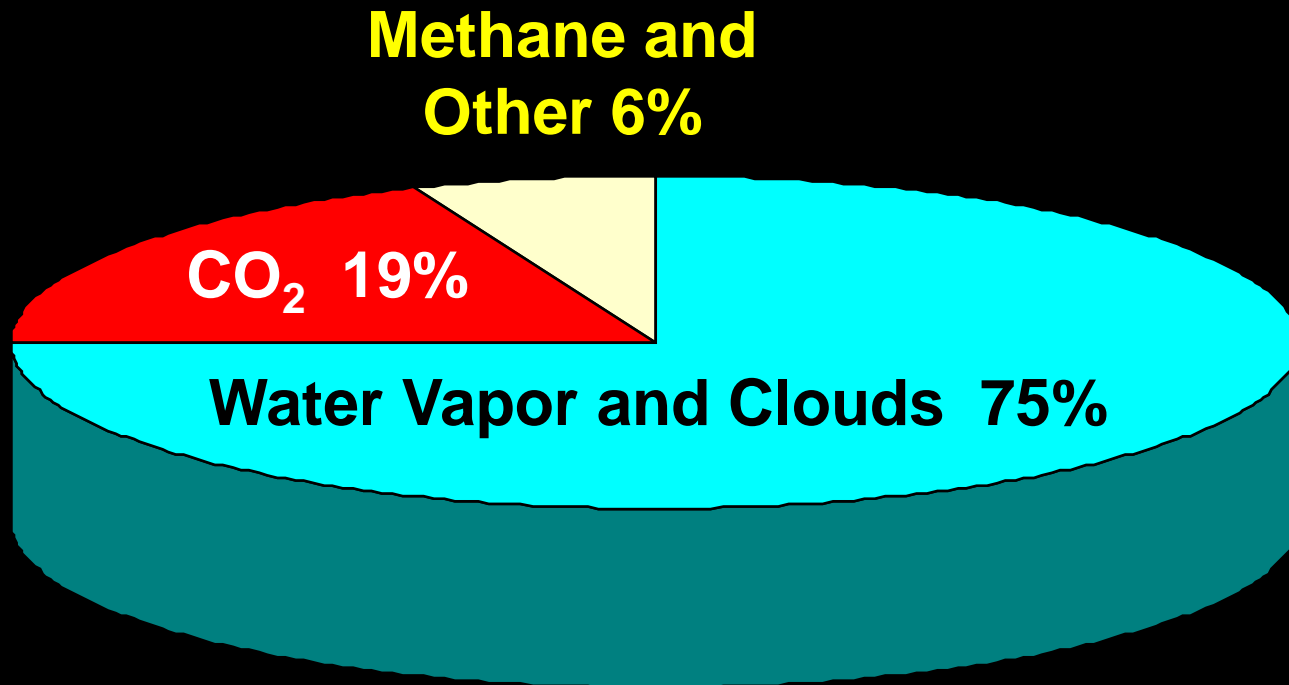
**What is Nature's Most Abundant
Greenhouse Gas?**

Water Vapor!

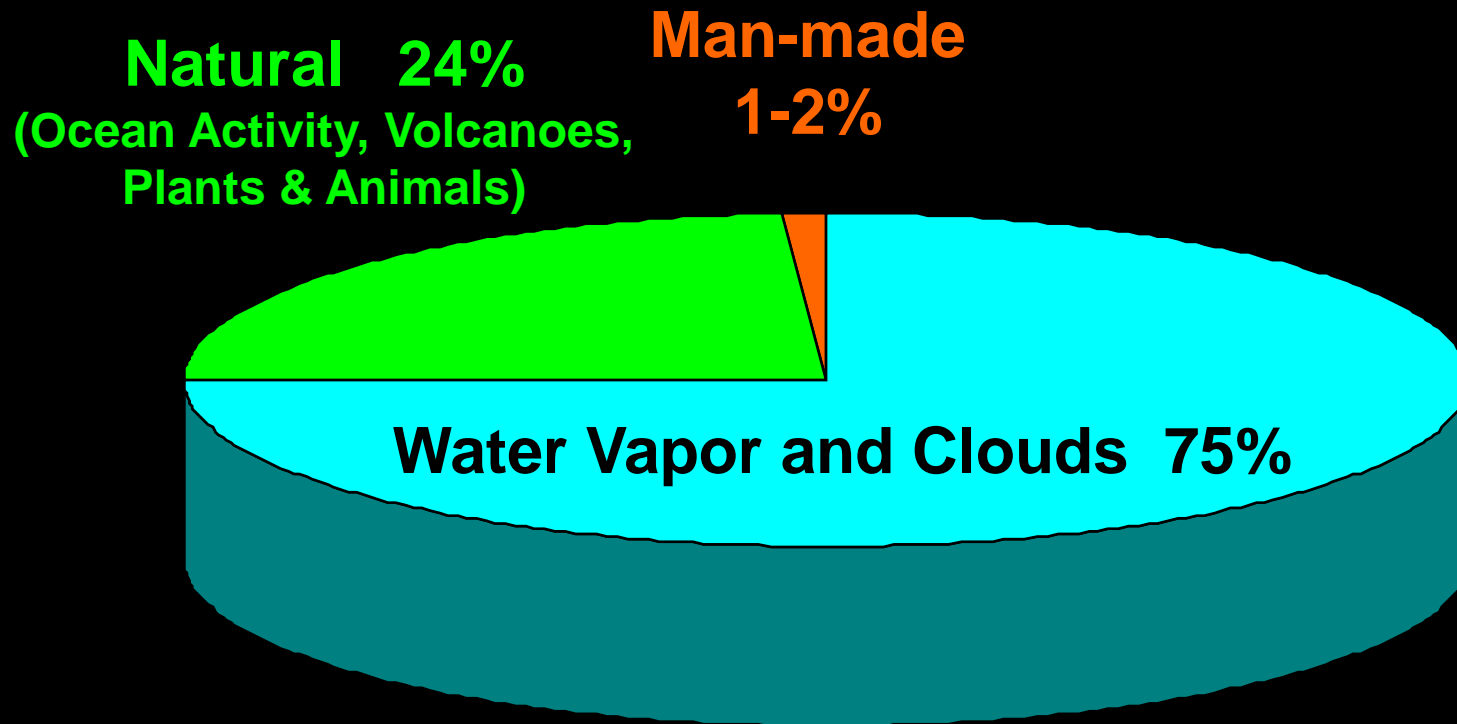


Greenhouse Effect in Earth's Atmosphere

(Greenhouse Gases are 1%-2% of Atmosphere)



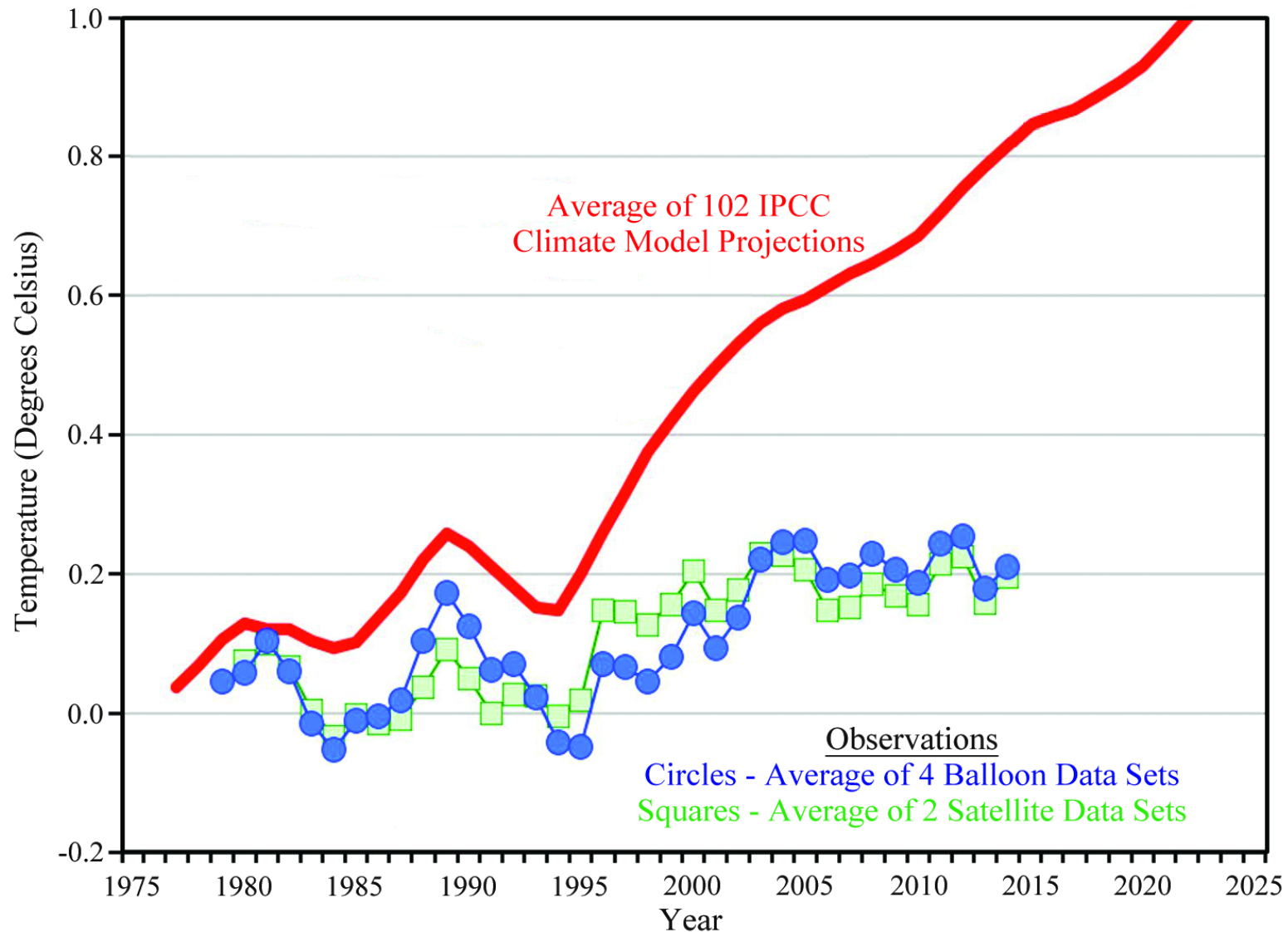
Human Contribution to Greenhouse Effect



Mankind Responsible for about 1 or 2 Parts in 100!

Satellite Temperature Data: Models Are Wrong

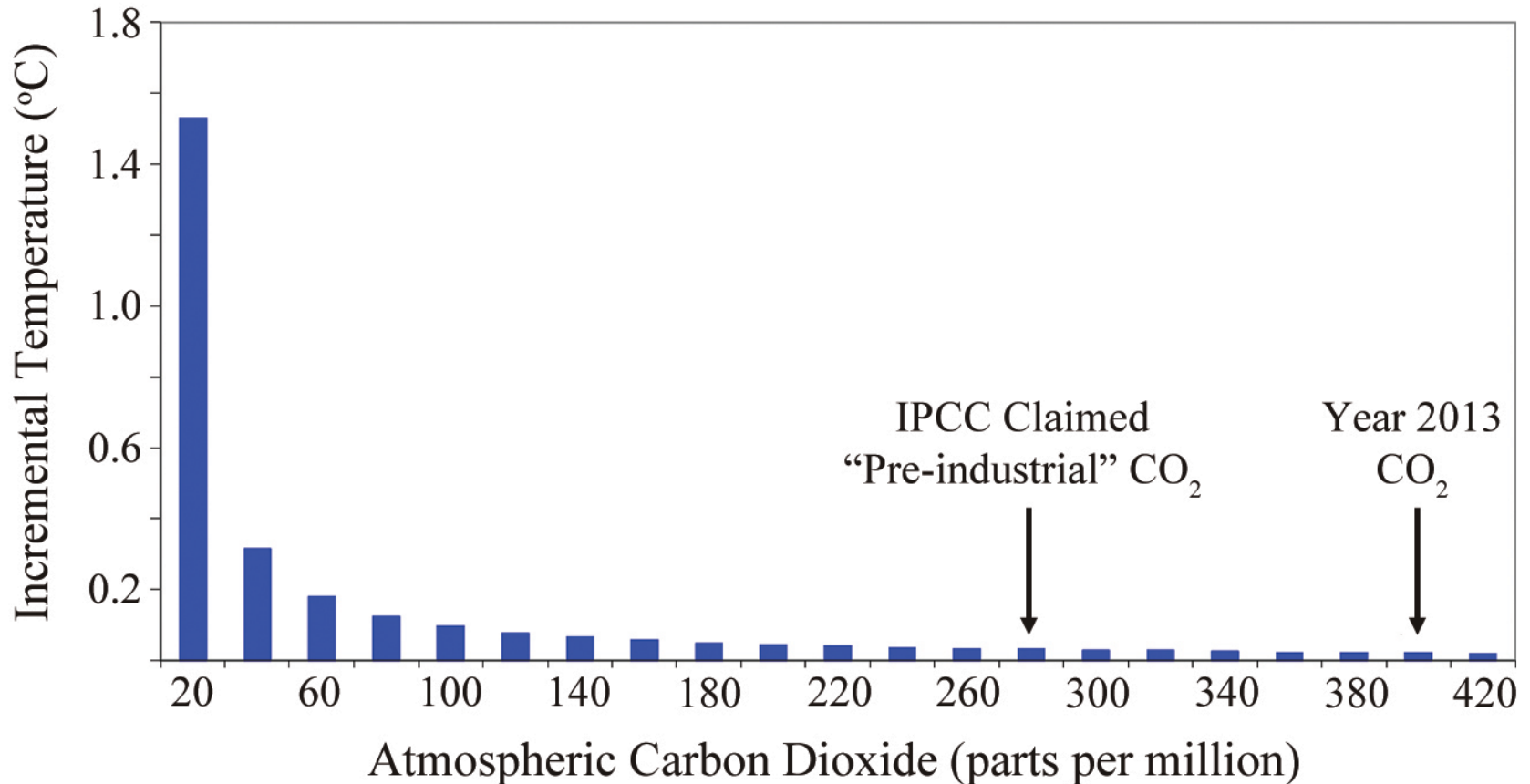
Mid-Tropospheric Temperatures vs. Model Projections



**Christy
(2014)**

CO₂ Can't Cause Dangerous Warming

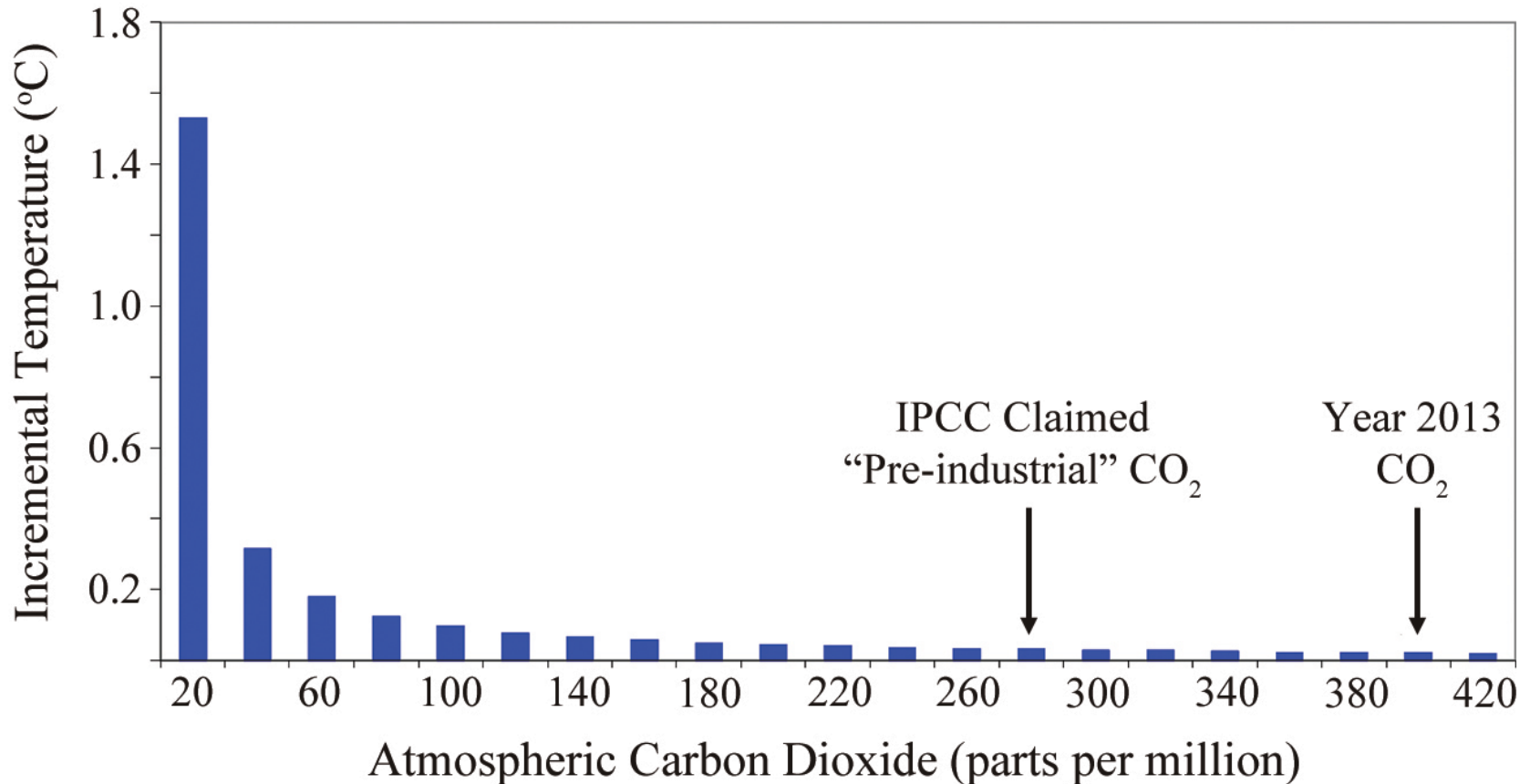
The Diminishing Effect of Atmospheric Carbon Dioxide



Archibald (2008)

CO₂ Can't Cause Dangerous Warming

The Diminishing Effect of Atmospheric Carbon Dioxide



Archibald (2008)

Doubling Atmospheric CO₂ Only Adds About 1°C!

Key Issue: Feedback from Water Vapor

- All Climate Models Assume Additional Temperature Increase from Water Vapor
- But Satellite Data Shows that Clouds May Reduce Warming from CO₂
Lindzen and Choi (2011),
Spencer and Braswell (2007)



Key Issue: Feedback from Water Vapor

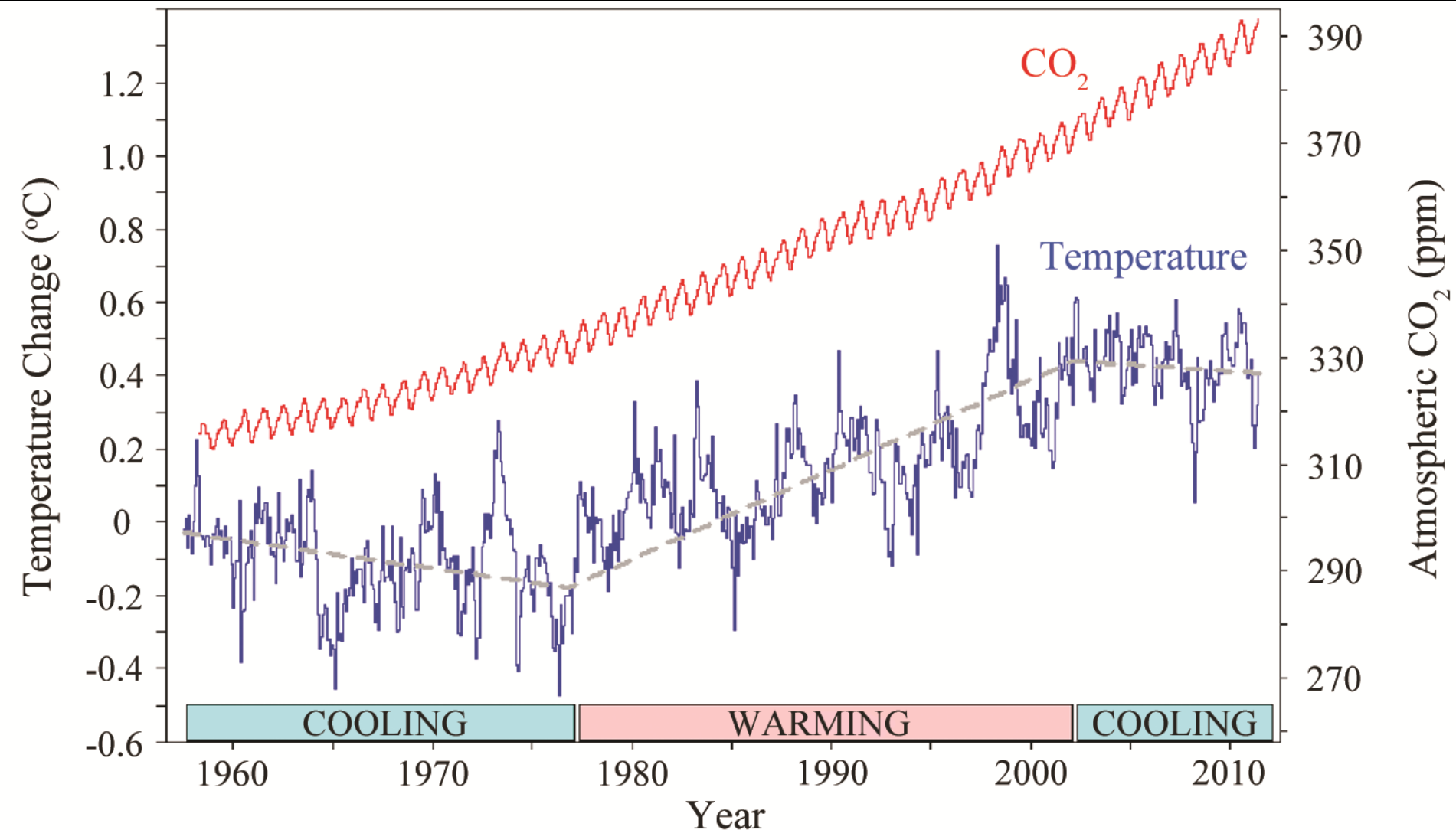
- All Climate Models Assume Additional Temperature Increase from Water Vapor
- But Satellite Data Shows that Clouds May Reduce Warming from CO₂
Lindzen and Choi (2011),
Spencer and Braswell (2007)



**It's Improbable that CO₂ is Controlling
Earth's Water Cycle!**

**So What Caused the
Late 20th Century Warming?**

Temperature Doesn't Track CO₂ in Short Term

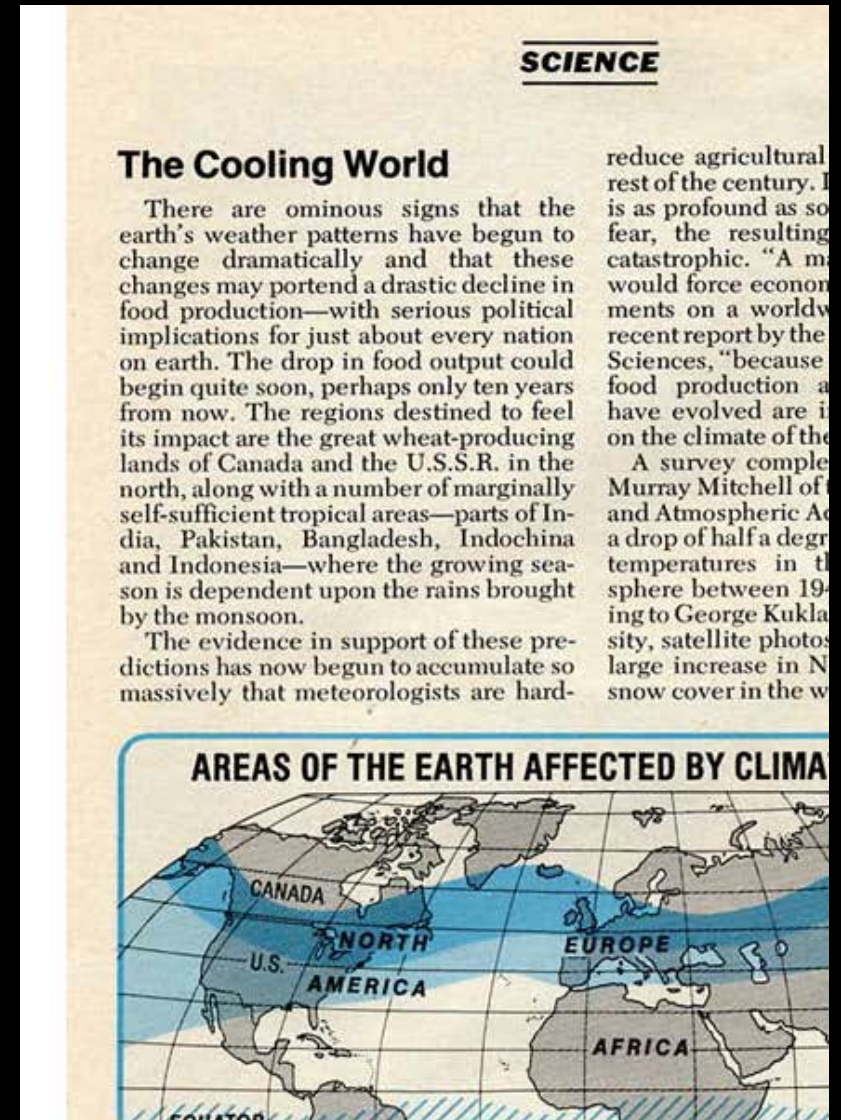


(NOAA Mauna Loa, CRU HadCRUT3, Climate4You, 2011)

The Ice Age Scare of the 1970s



Time April 8, 1977

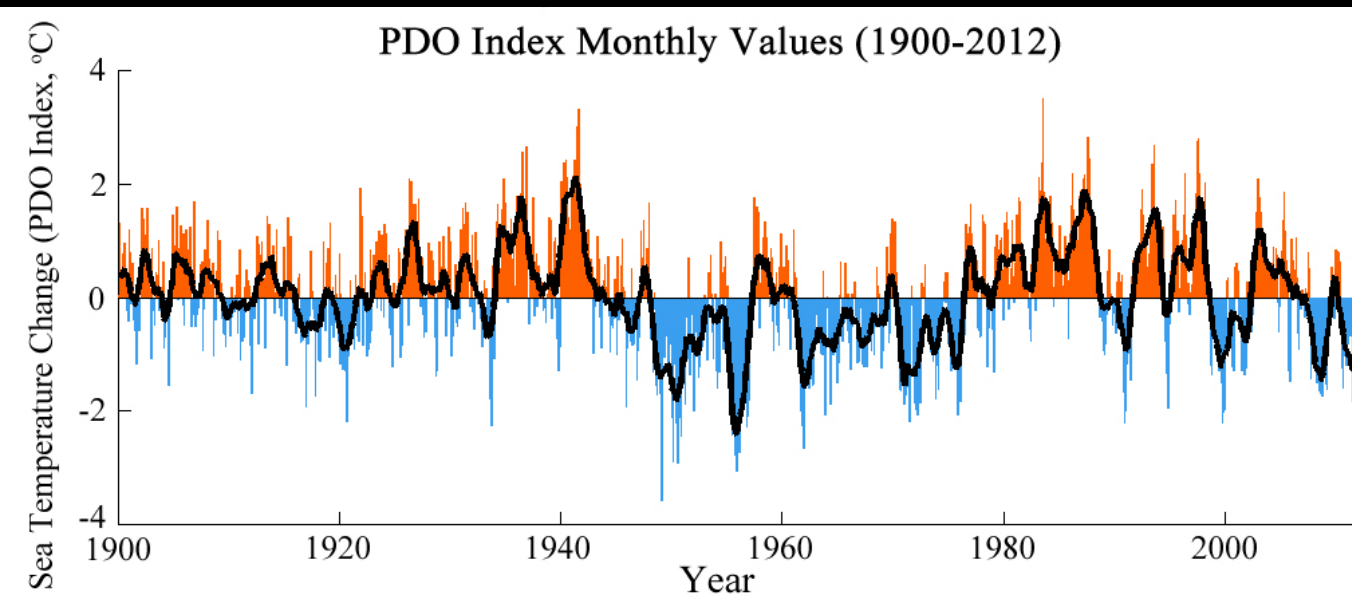
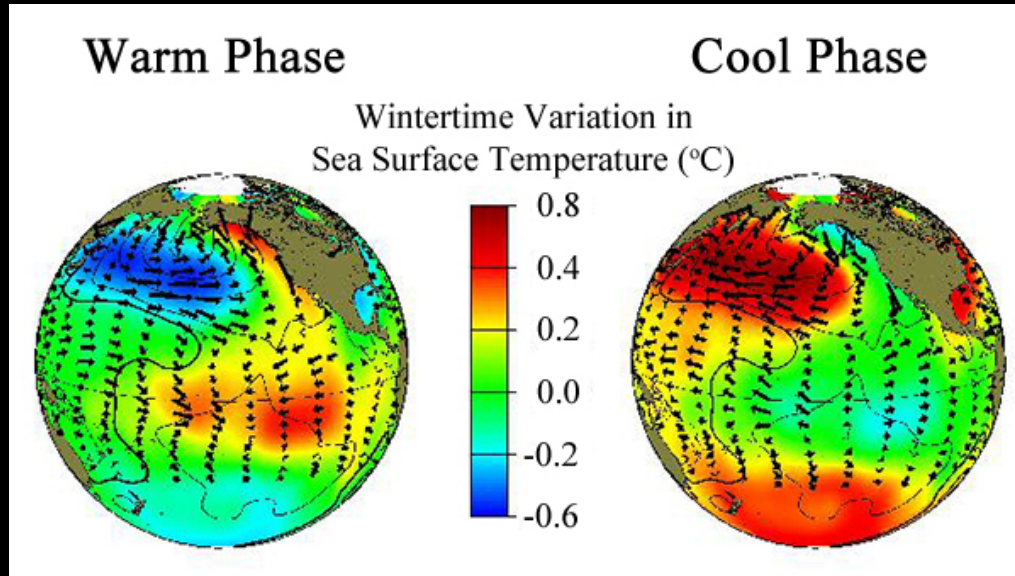


Newsweek April 28, 1975

Pacific Ocean: The Largest Earth Feature

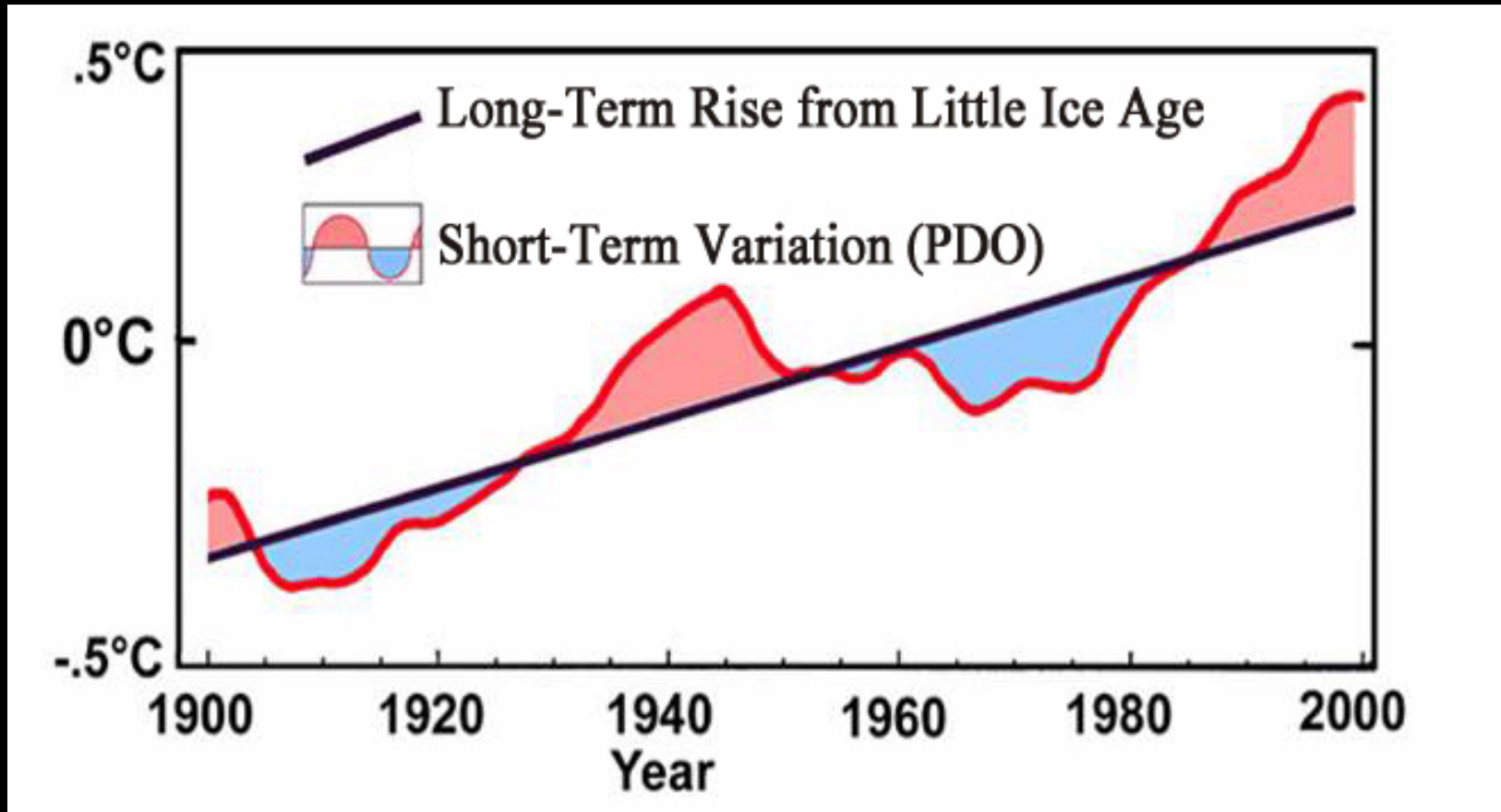


30-Year Cycle: Pacific Decadal Oscillation



**University of
Washington,
JISAO (2013)**

Natural Factors Explain Global Warming

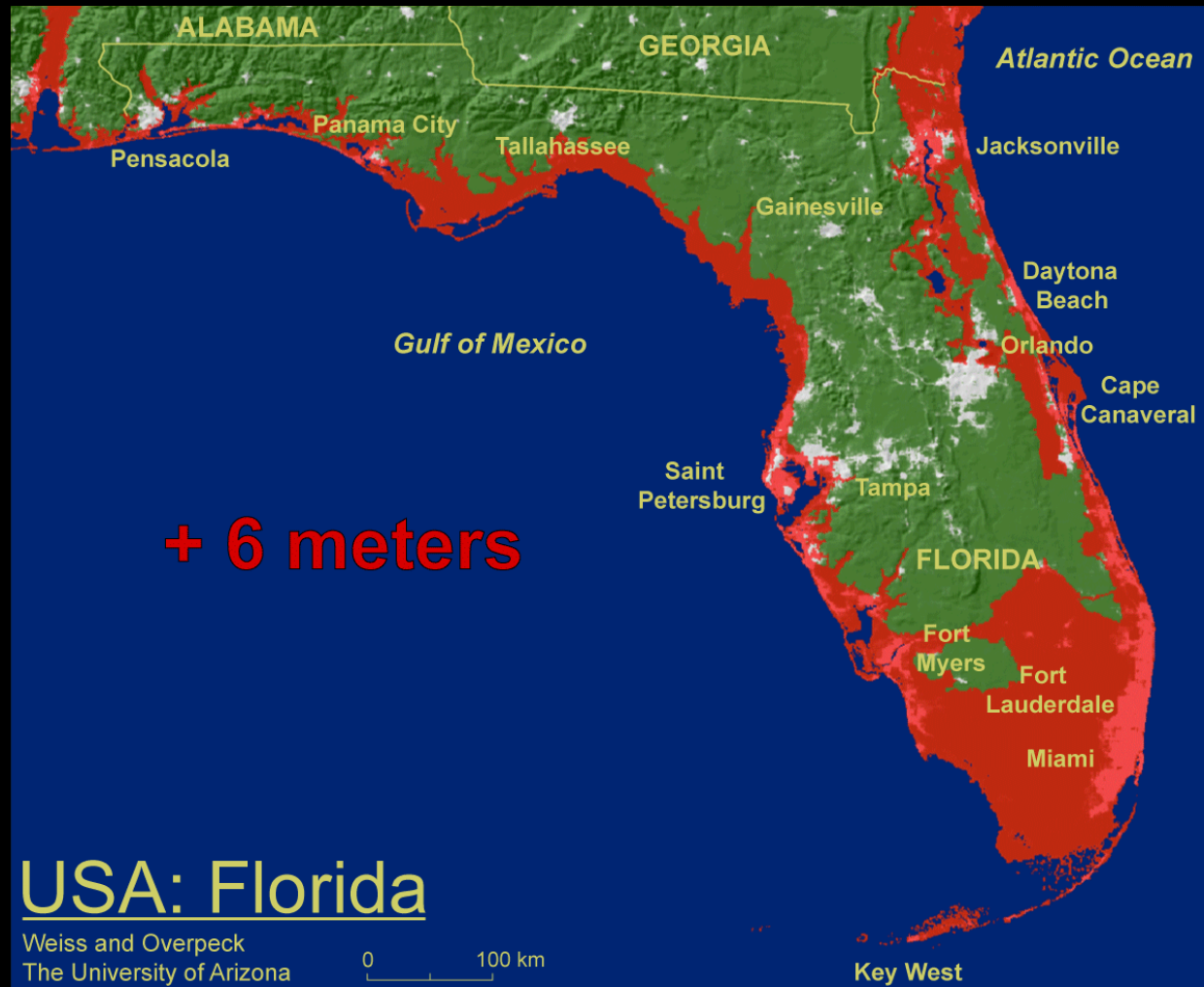


“... It is quite obvious that the temperature change during the last 100 years or so includes significant natural changes ... It is very puzzling that the IPCC reports state that it is mostly due to the greenhouse effect.”

— Dr. Syun-Ichi Akasofu (2009)

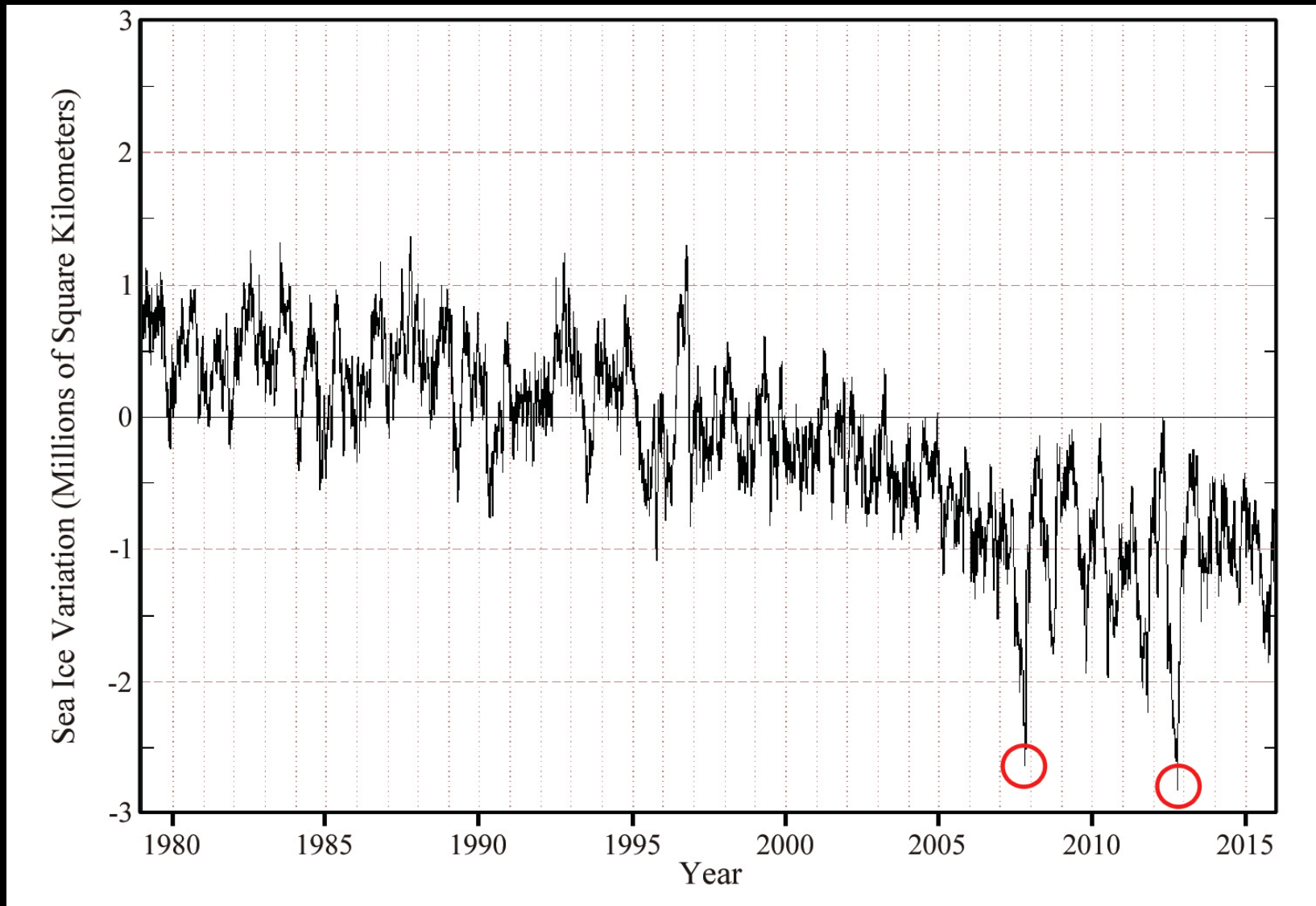
But What About Sea Level Rise?

Al Gore and James Hansen Warn of a 20-foot Ocean Rise by 2100



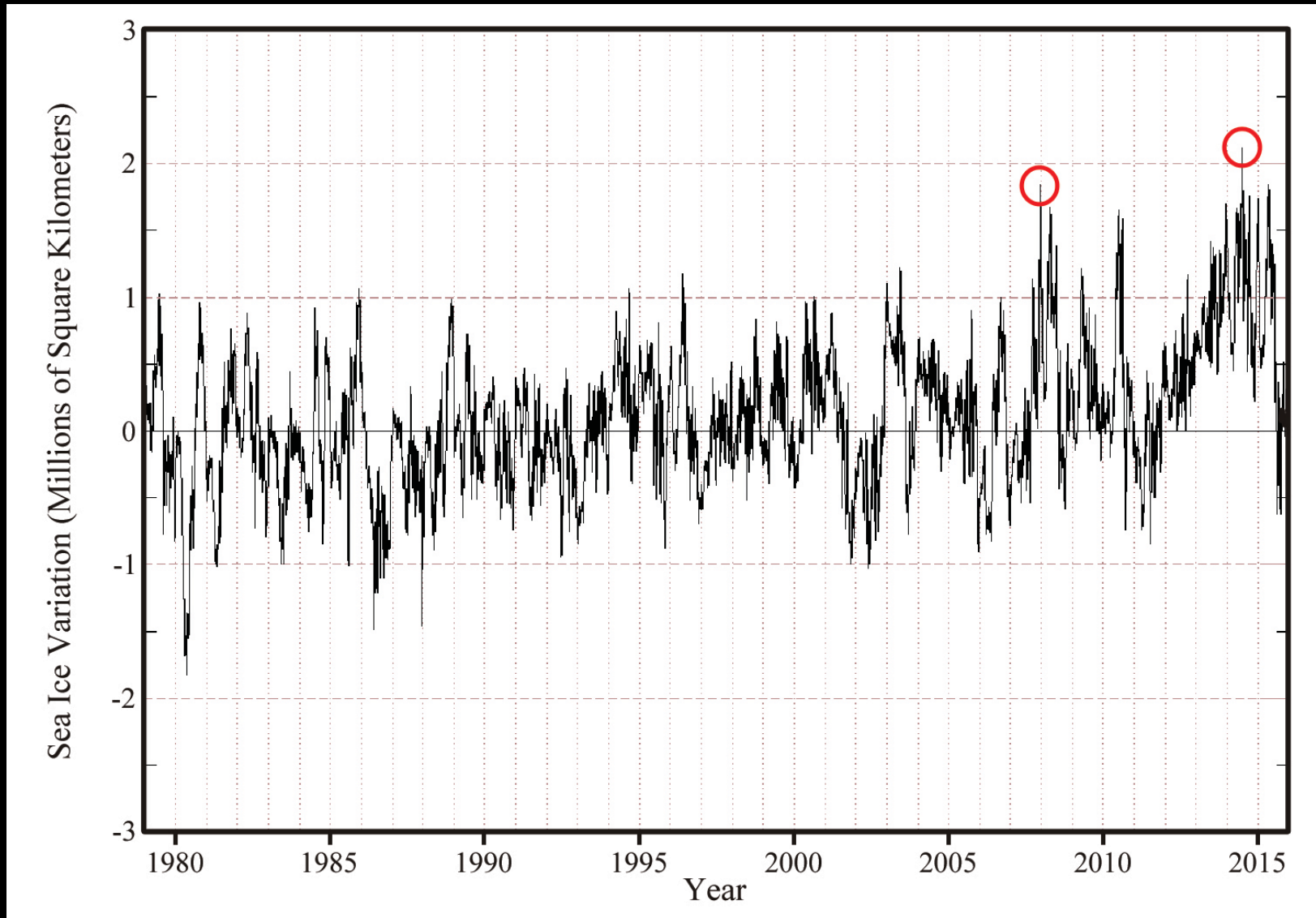
Weiss and Overpeck (2009)

Arctic Ice Recently Reached a 30-Year Low



University of Illinois Polar Research Group (2015)

Antarctic Sea Ice Expanding for 30 Years



University of Illinois Polar Research Group (2015)

Amundson-Scott South Pole Station



National Science Foundation (2005)

Greenland Icecap: Is It Disappearing?



The Story of the P-38 Glacier Girl



**Crash Landed in
Greenland July 15, 1942**

Lost Squadron (2007)

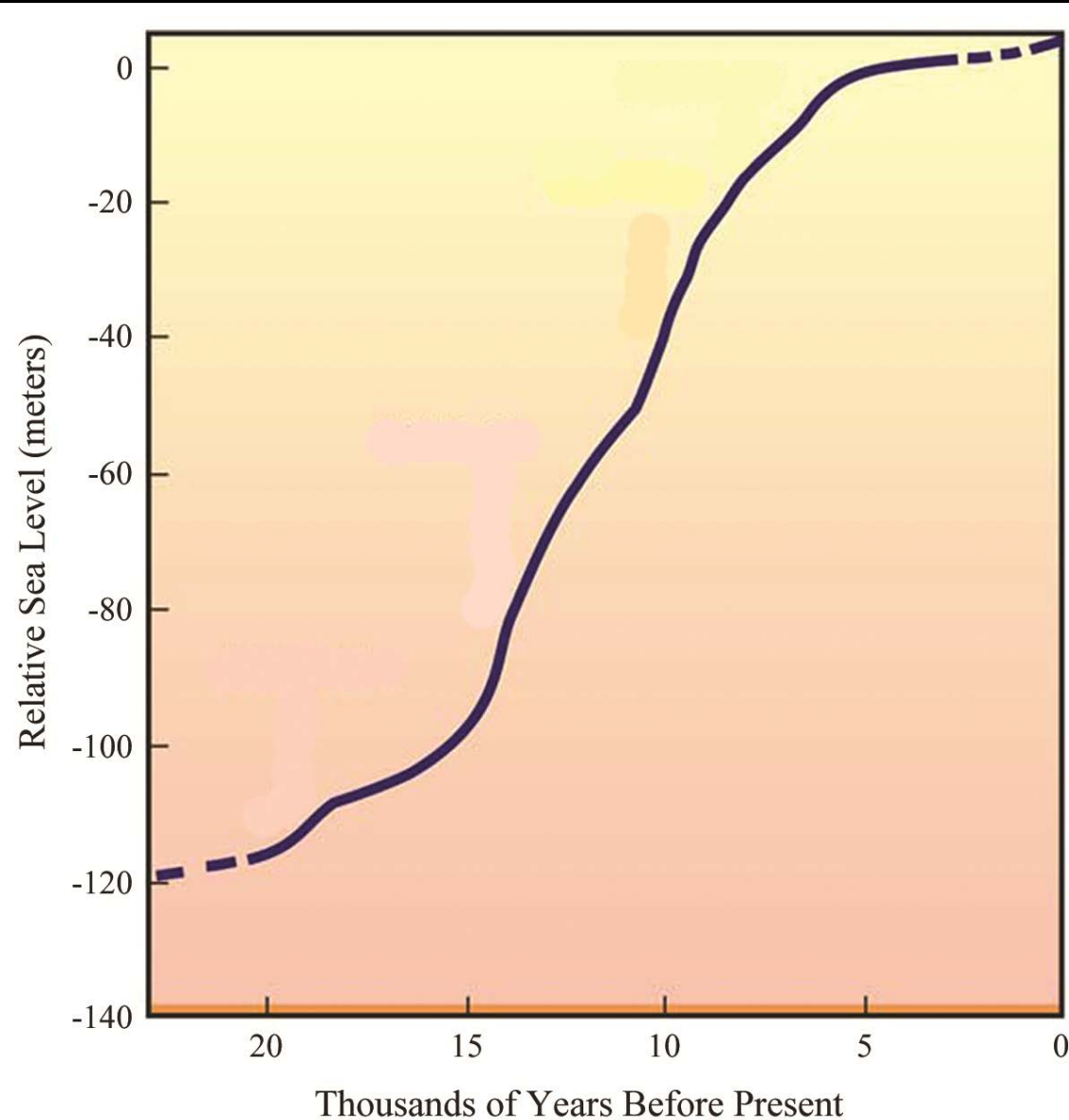
The Story of the P-38 Glacier Girl



- Crash Landed in Greenland July 15, 1942
- Rescued in 1992:

**From Under
268 Feet of Ice!**

Oceans Rising for Last 20,000 Years



**Sea Levels Rose
7-8 Inches Per Century
Over Last 150 Years**

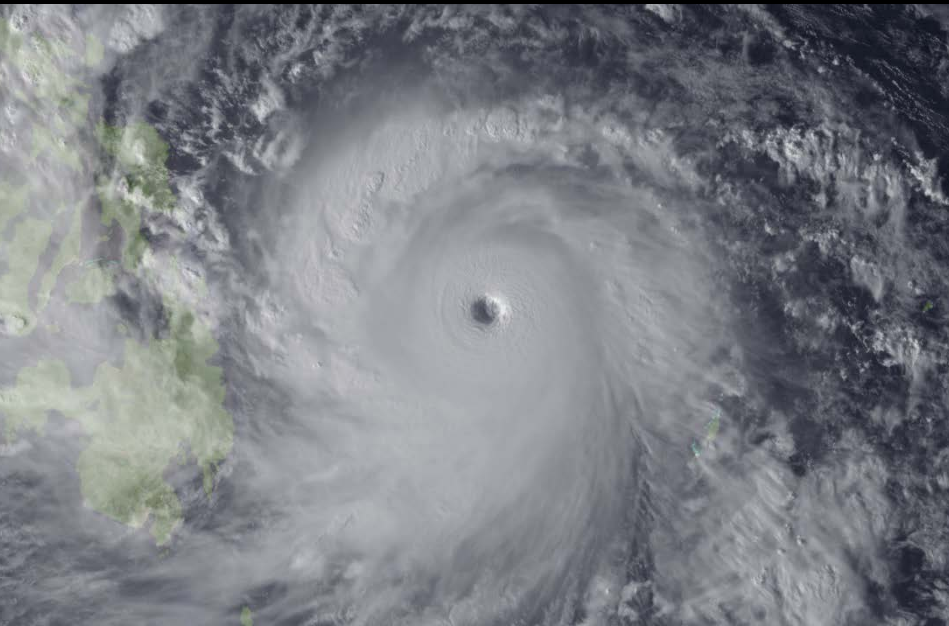
NASA (2007)



Wish You Were Here!

Manhattan
Water Ski Capital of the World

But Aren't Natural Disasters Evidence of Man-Made Climate Change?

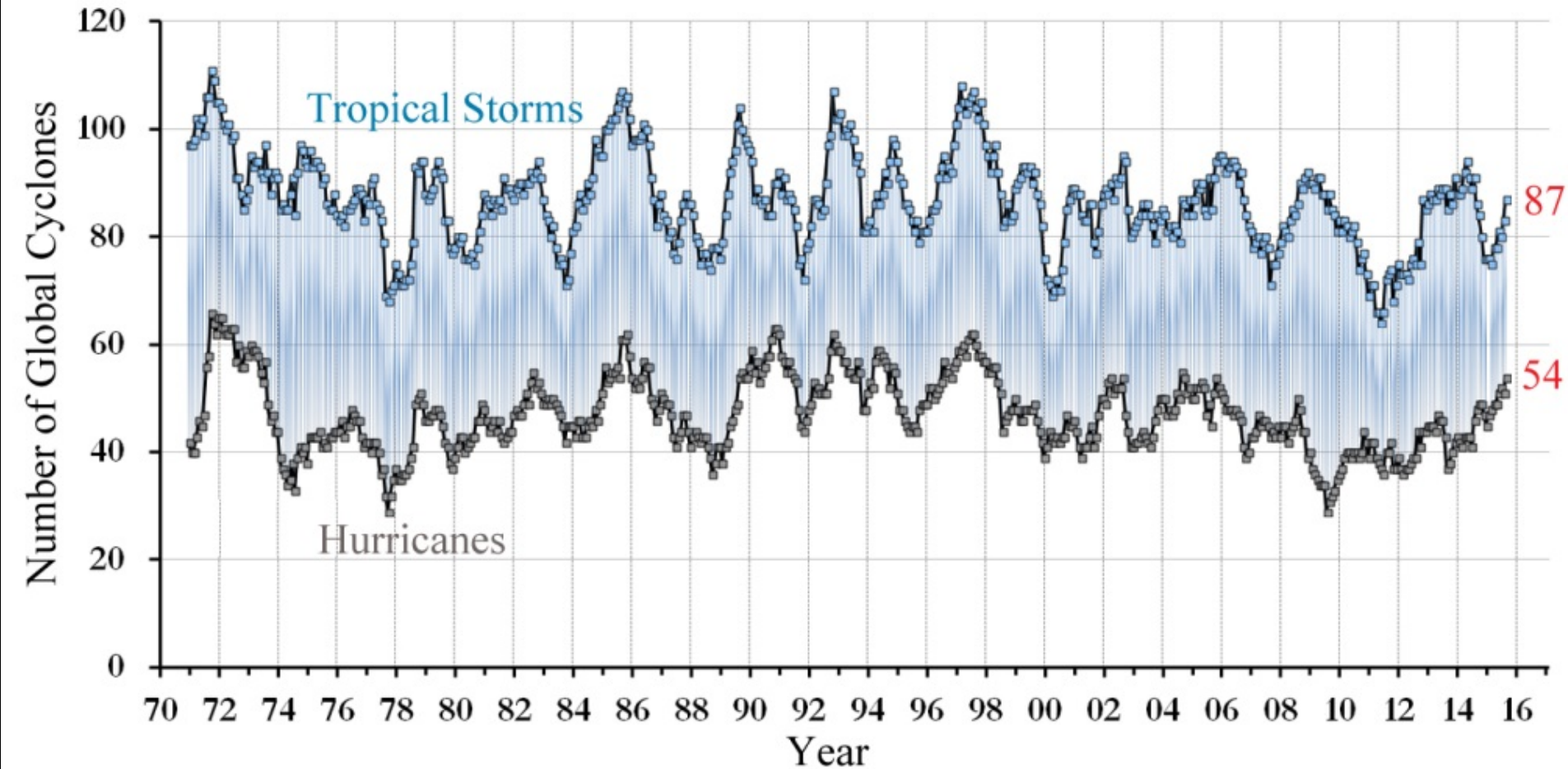


Are Weather Events More Extreme?



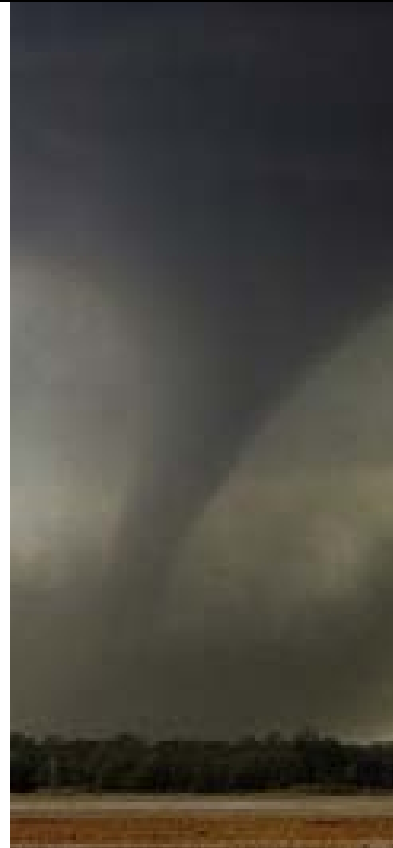
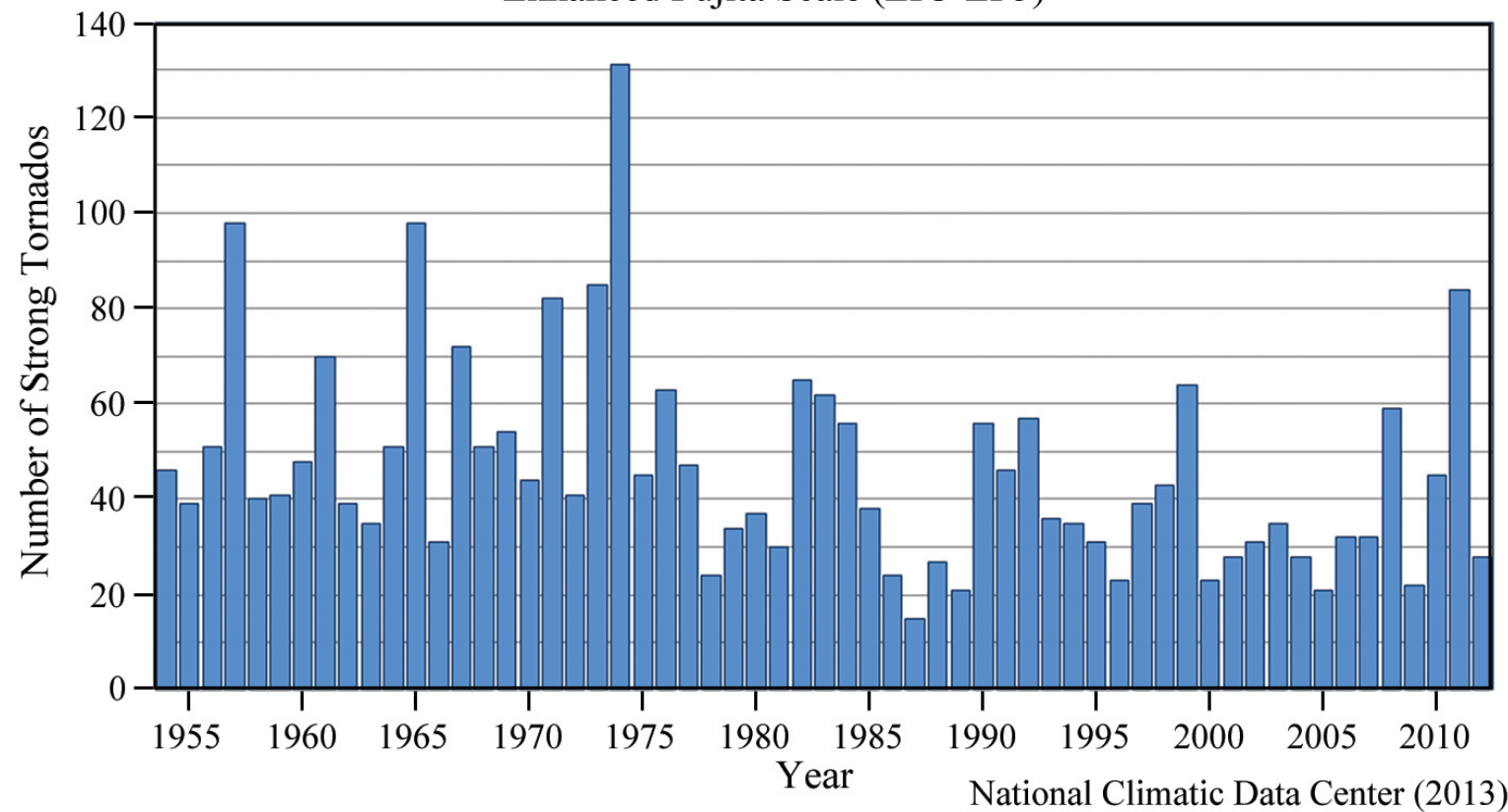
Dr. David Suzuki, 2014

No Increase in Tropical Storm Frequency



No Increase in U.S. Tornado Intensity

U.S. Count of Strong to Violent Tornadoes (1954-2012)
Enhanced Fujita Scale (EF3-EF5)



Great Plains Drought of 2012

- 80% of US Agricultural Land in Drought
- USDA Designated Over 2,000 Counties Disaster Areas

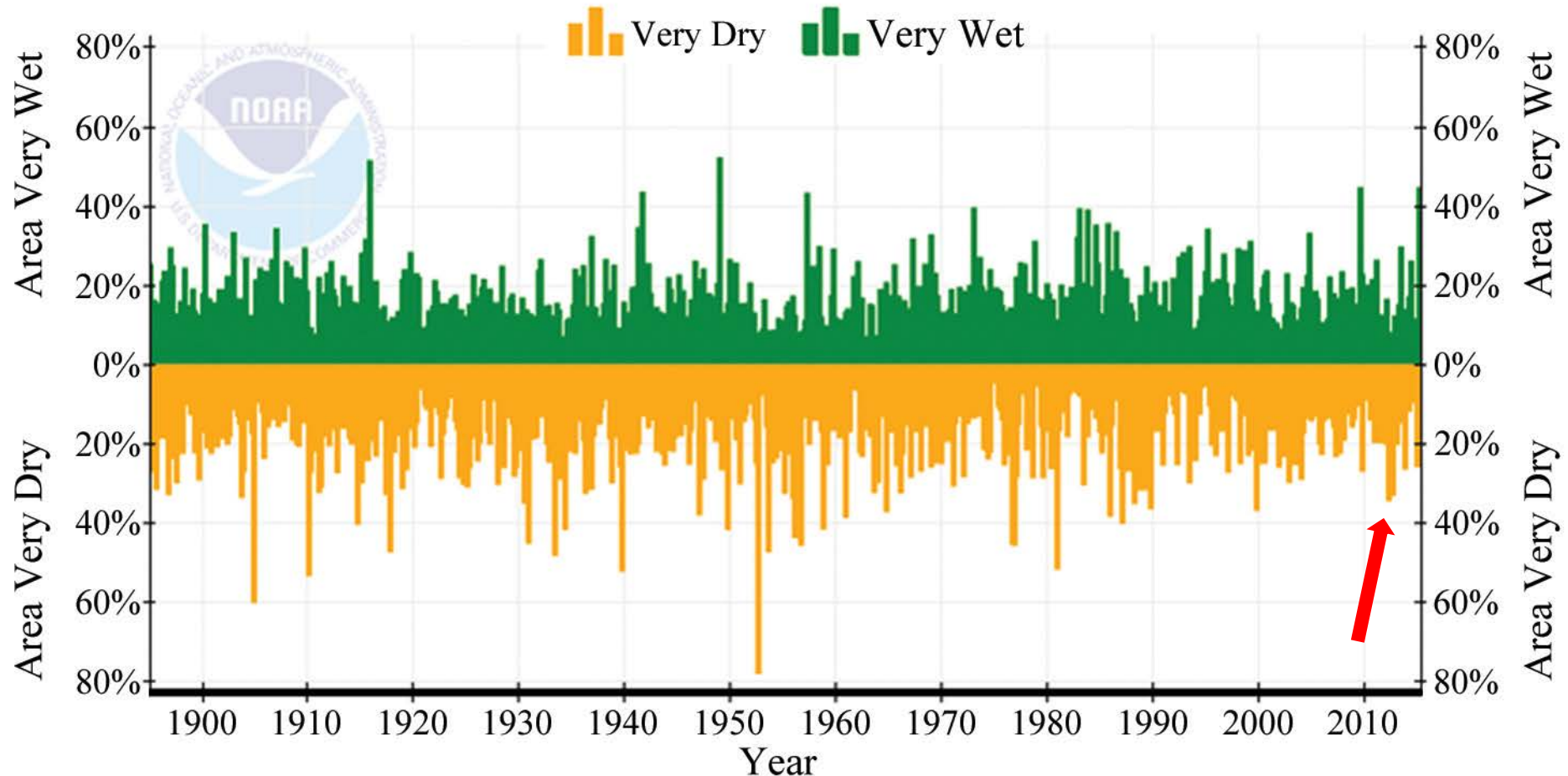
“This is what I and many other climate scientists have been warning about...This is what global warming looks like on a regional or personal level.”

—Dr. James Overpeck, 2013



No Trend of Increasing in Drought or Flood

Continental US Very Dry and Very Wet Area (1895-2015)



We All Want Clean Air and Water



**First Drop,
Peshtigo River,
Wisconsin**

“Carbon dioxide is a pollutant.”

**— The News Media, the
US Environmental Protection Agency**

Carbon Pollution?



House of Commons, October 3, 2016

Carbon Dioxide is NOT Pollution!

- CO_2 is an Odorless, Harmless, Invisible Gas
- We Inhale Air with Little CO_2 , but Breathe Out 4% CO_2





What Do Cannabis Growers Know That Mr. Trudeau Doesn't Know?



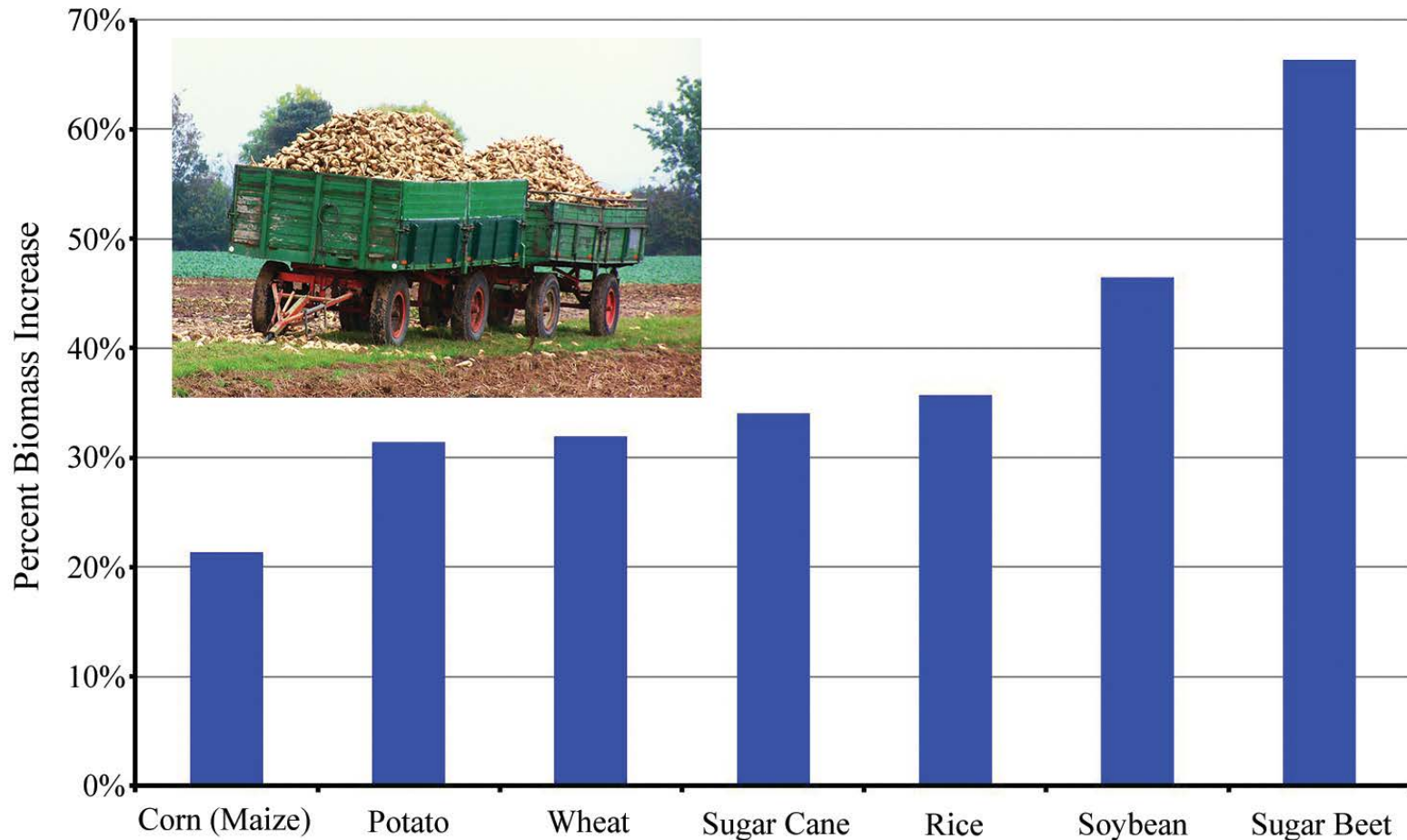
CO2 Makes Plants Grow!



CO₂ is Green!

- CO₂ is Plant Food, Essential for Life on Earth

Increased Food Crop Growth from Increased CO₂
(Additional 300 ppm Atmospheric CO₂ Concentration)



Idso
(2011)

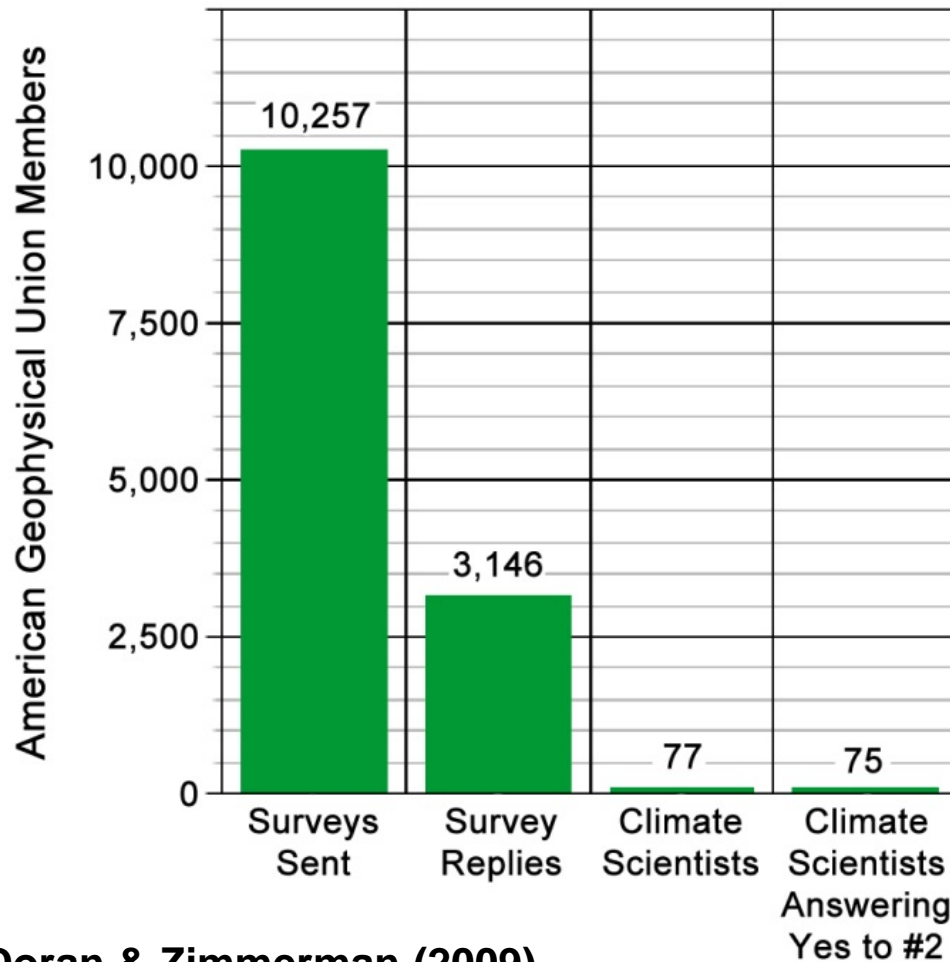
97% of Scientists Accept Man-Made Warming?



**President Barack Obama,
Georgetown University, June 25, 2013**

97% of Scientists Accept Man-Made Warming?

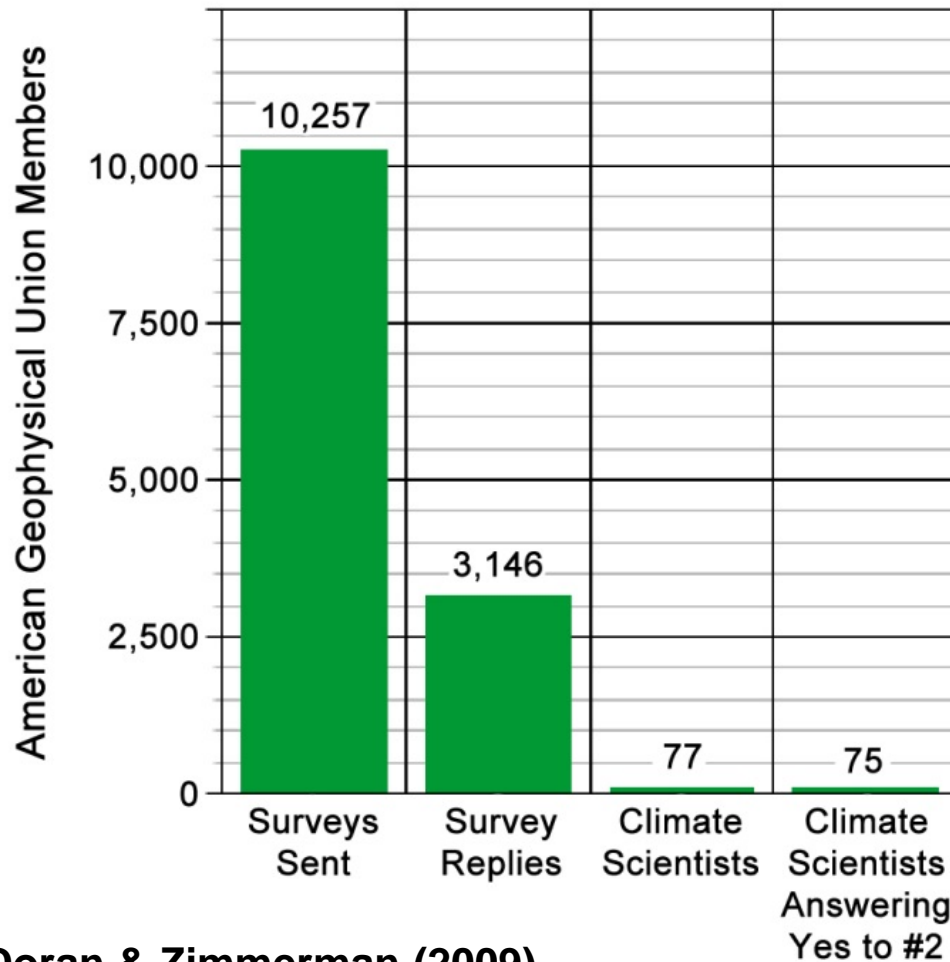
AGU Climate Science Survey Results



1. When compared with pre-1800 levels, do you think that mean global temperatures have generally risen, fallen, or remained relatively constant?
2. Do you think human activity is a significant contributing factor in changing mean global temperatures?

97% of Scientists Accept Man-Made Warming?

AGU Climate Science Survey Results



1. When compared with pre-1800 levels, do you think that mean global temperatures have generally risen, fallen, or remained relatively constant?
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**The Opinion of Only
75 Scientists!**

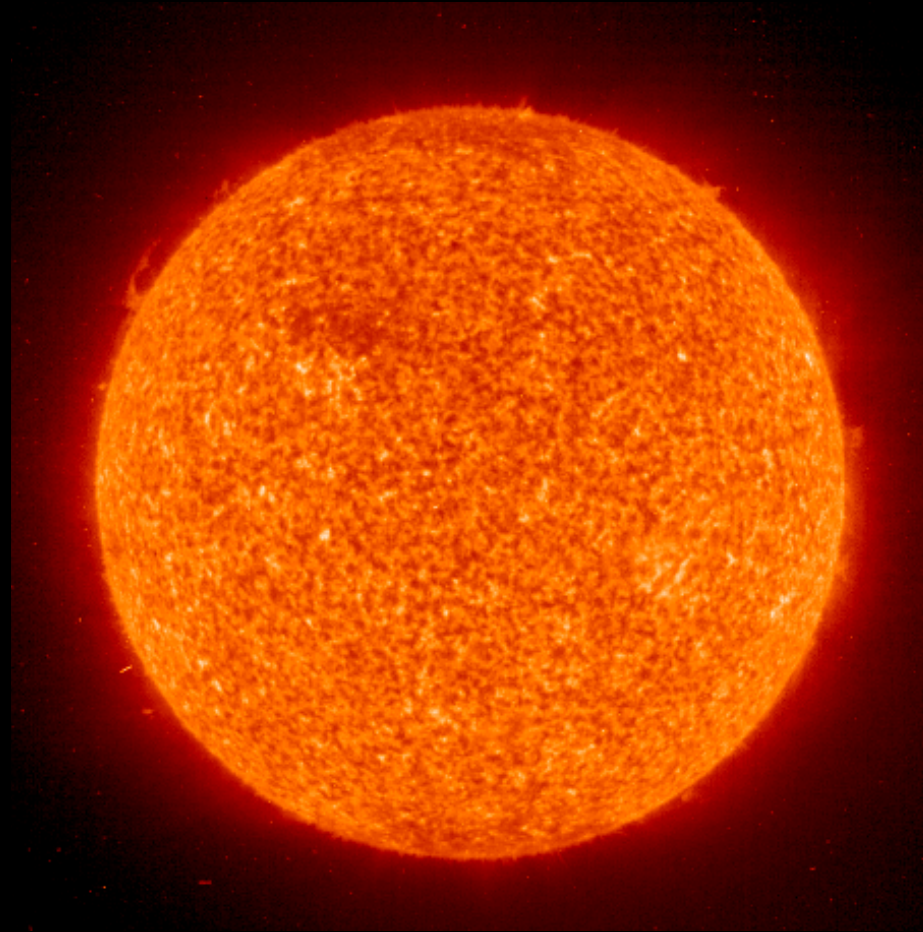
Global Warming Petition Project (2007)

**Signed by 31,478 American Scientists,
Including 9,029 with PhDs**

“...There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth’s atmosphere and disruption of the Earth’s climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.”

Climate Change is Natural, Not Man-Made

- **Global Warming is Caused by Natural Cycles of Earth**
- **Earth's Climate Cycles are Driven by the Sun**
- **Man-made Greenhouse Gases Play Only a Minor Role in Global Warming**

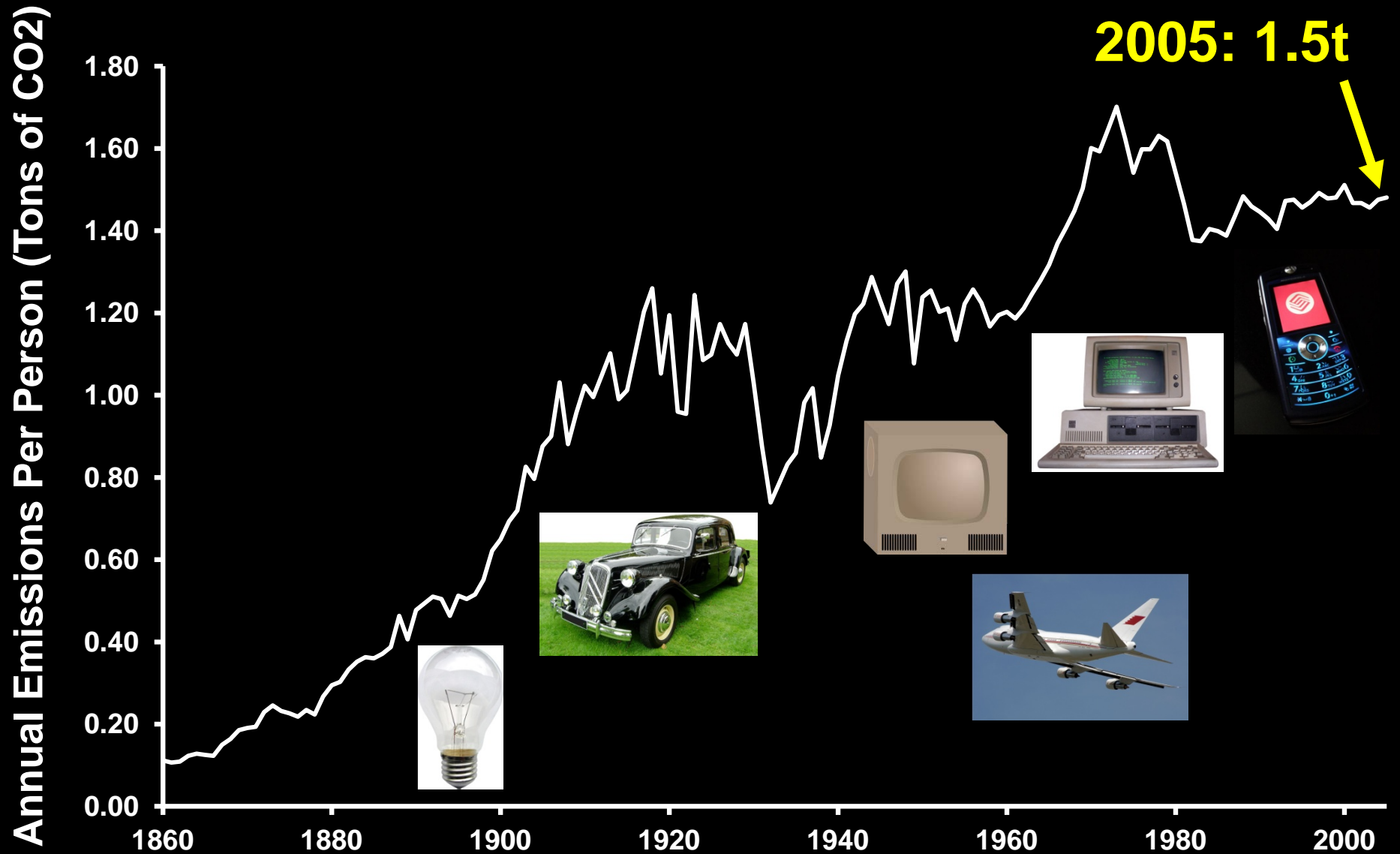




The Myths of Renewable Energy

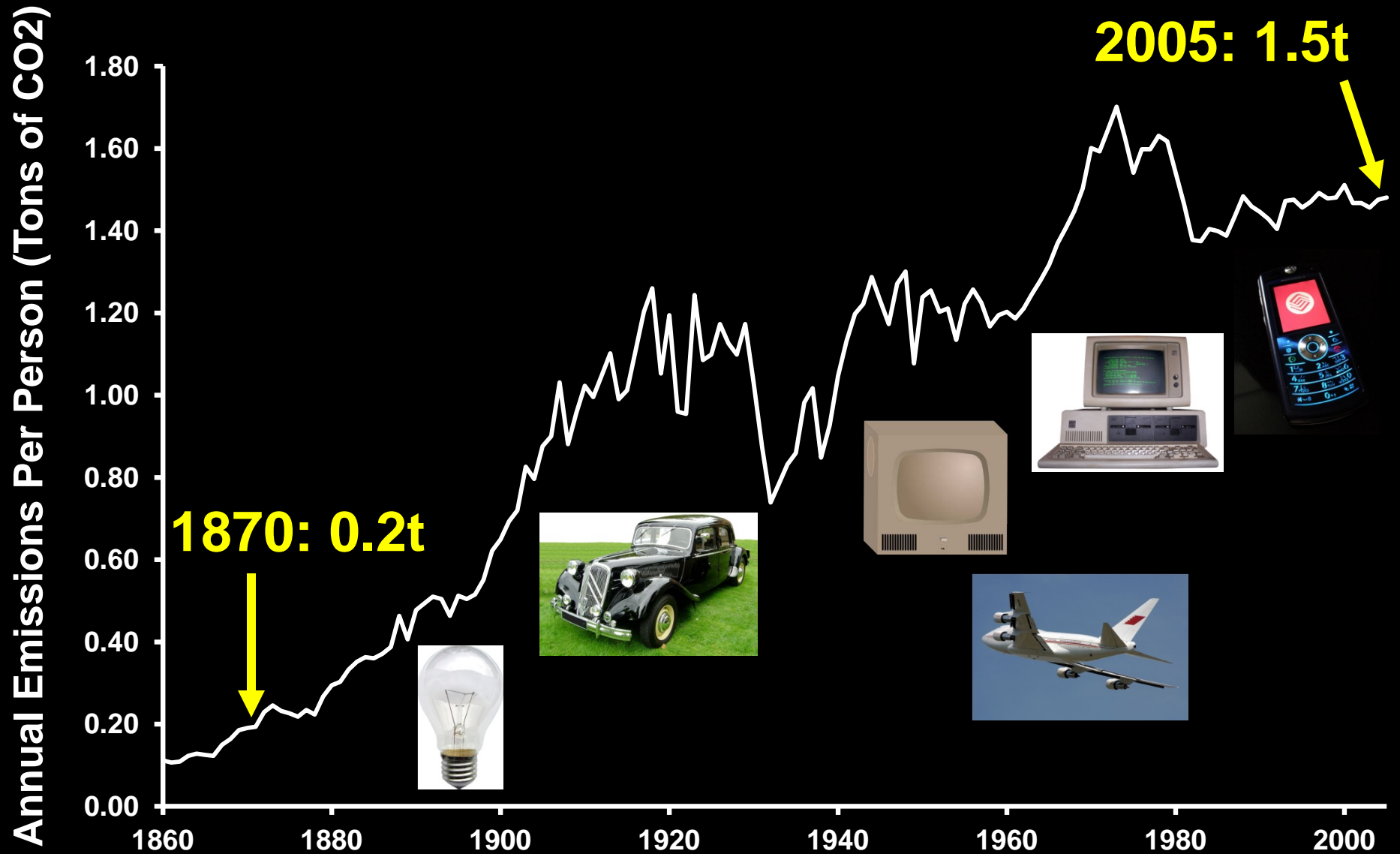


Proposed: 83% U.S. Emissions Cut



Data: US Census and CDIAC

Proposed: 83% U.S. Emissions Cut



Data: US Census and CDIAC

Claim: Renewable Energy is the Answer

“...repowering America with 100 percent of its electricity from clean energy sources within 10 years.”

— wecansolveit.org (2006)

Solar Power Seen Meeting 20% of Needs By 2000; Carter May Seek Outlay Boost

By WALTER S. MOSSBERG

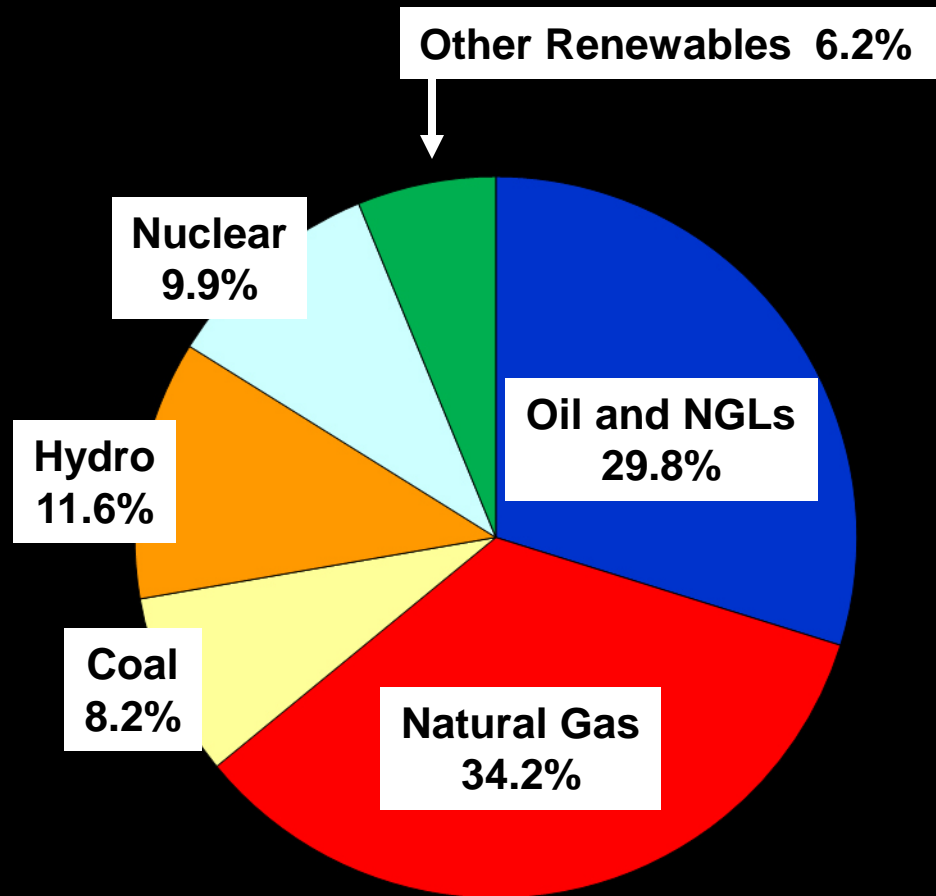
Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON—Federal planners have concluded that solar energy can contribute as much as 20% of U.S. energy needs by the

that a second, smaller review group be named to tailor policy options to a specific goal, preferably the environmental council's projection of a 25% solar share of U.S. energy by 2000.

Energy Reality: Domination By Hydrocarbons

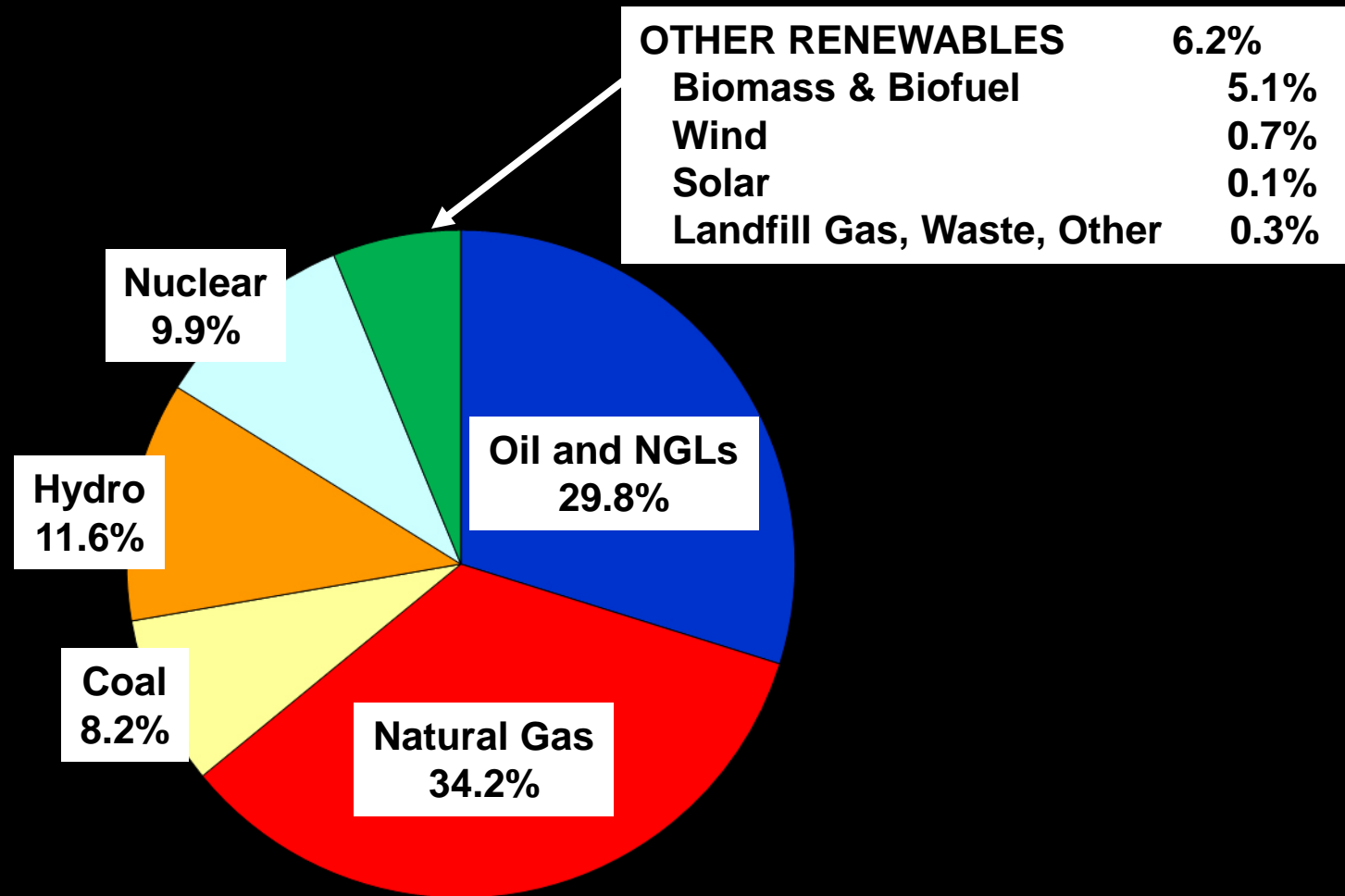
Canadian Primary Energy Supply 2014



Natural Resources Canada (2016)

Energy Reality: Domination By Hydrocarbons

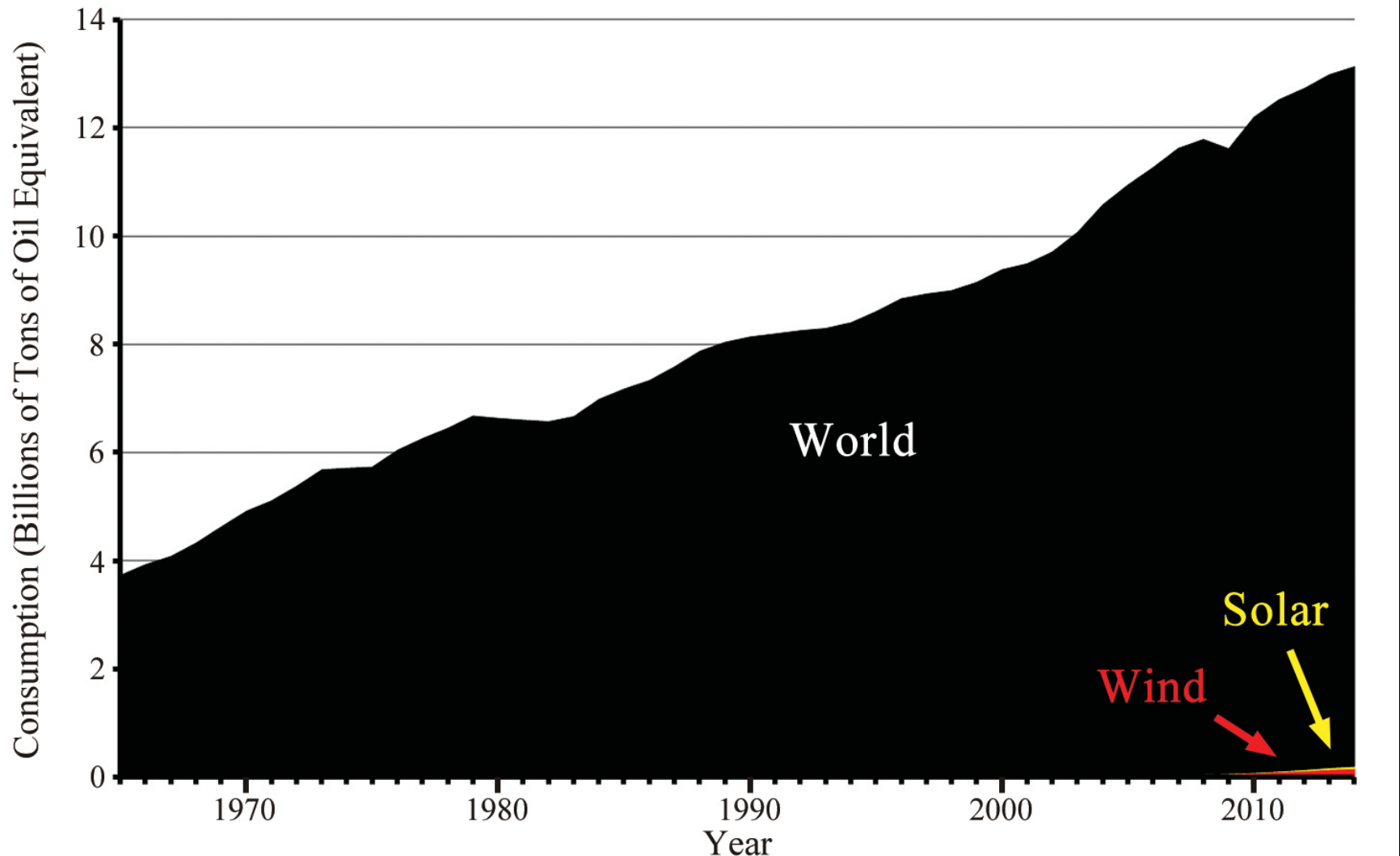
Canadian Primary Energy Supply 2014



Natural Resources Canada (2016)

Wind, Solar, and the Energy Mountain

Total World, Wind, and Solar Energy Consumption (1965-2014)



(BP, 2015)

Solar Mania in Germany

More than One Million Solar Installations

- Capacity Factor: **10.4% of Rated Output** in 2014
- About 1% of Germany's Energy, 6% of Electricity
- Over \$400 Billion in Subsidies Paid & Obligated



Solar Mania in Germany

More than One Million Solar Installations

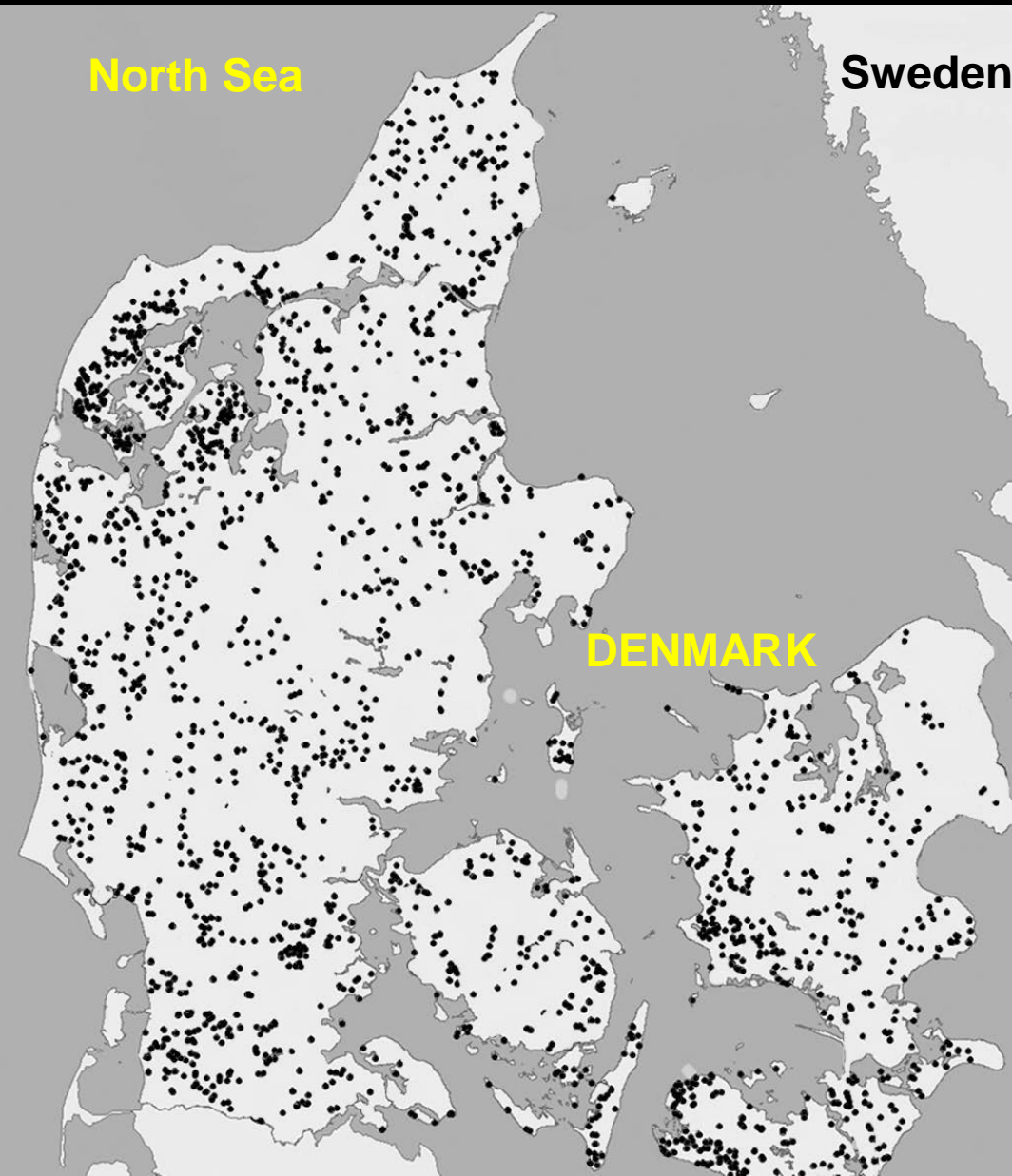
- Capacity Factor: **10.4% of Rated Output** in 2014
- About 1% of Germany's Energy, 6% of Electricity
- Over \$400 Billion in Subsidies Paid & Obligated



“To produce solar power in Germany is as sensible as to grow pineapples in Alaska.”

***—Juergen Grossman, CEO
of Energy Utility RWE***

Climate Madness in Denmark



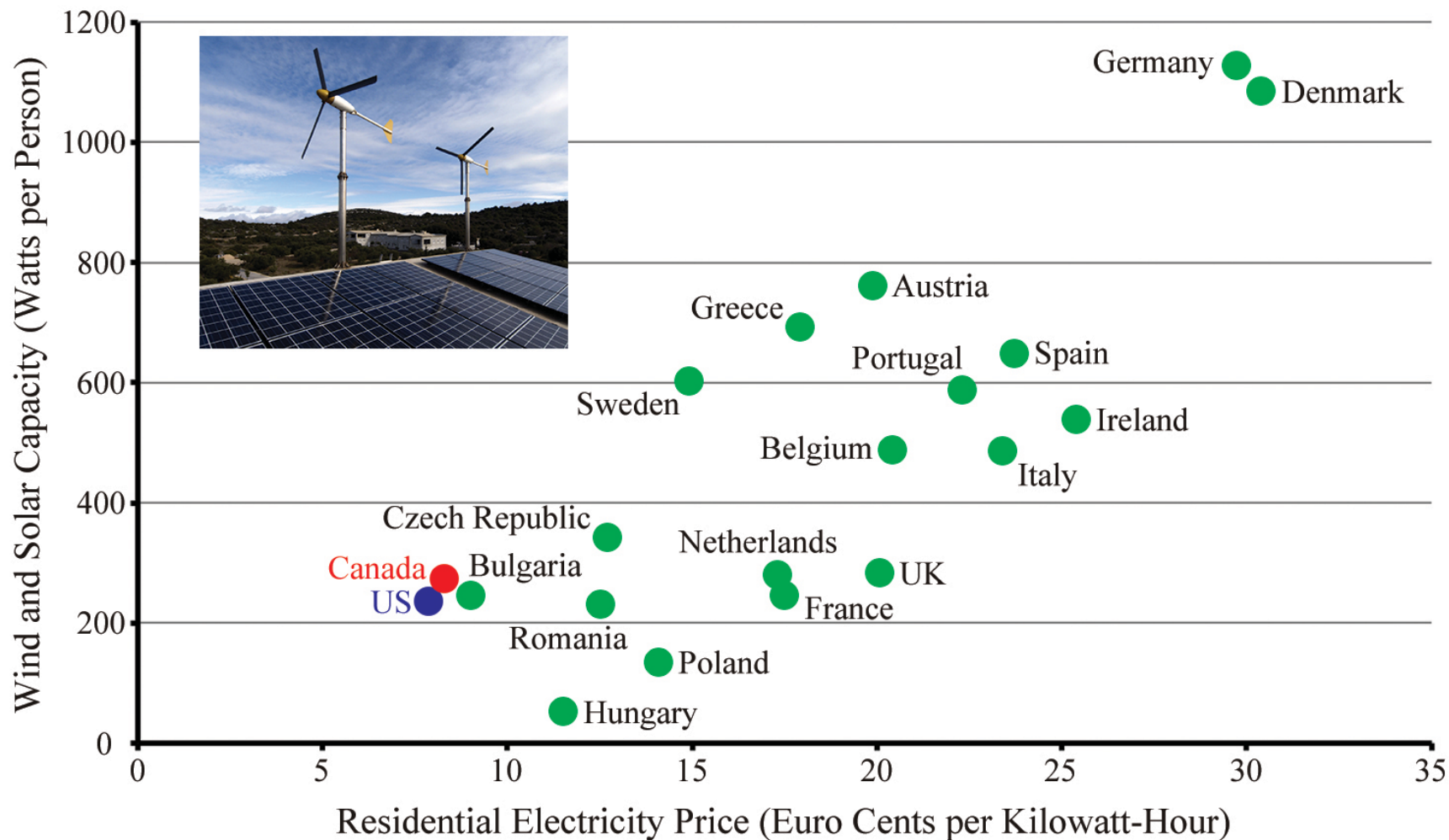
**5,000 Wind Towers,
Ave. Output = 1.3 GW**

**All Could be Replaced By
One Conventional
Power Plant!**



The More Wind and Solar...

Wind, Solar, and Electricity Prices in Europe



Ontario Hydro, Eurostat, EurObserv'ER, World Bank, EIA (2015)

Does Solar Provide Net Energy Gain?

Ferroni and Hopkirk 2016 Germany/Switzerland
Photovoltaic Solar Analysis (ERoEI):

Energy Returned over 25-Year Life = 2,203 kW-hr/m²

<u>Energy Invested</u>	<u>kW-hr/m²</u>
PV System Production	1,300
Grid Buffering	349
Installation, Maintenance, Capital	<u>1,115</u>
TOTAL	2,664

**Returned Only 82% of
Energy Invested!**



Canada—Negative Energy Gain from Solar!

Are Humans
Crazy?



↑ Negative Solar Energy Gain

35° North Latitude

↓ Positive Solar Energy Gain

Biomass Energy's Big Secret?



Biomass Energy's Big Secret?

Biomass Fuels

Don't Reduce CO₂ Emissions!



Biomass Emissions “Accounting Error”

- 1996 IPCC Ruling:
Burning Biomass is
“Carbon Neutral”
- CO₂ from Biomass Fuel
Not Counted by Canada,
the US, and the EU
- Studies Show that Biomass Fuel
Does Not Reduce Emissions
 - European Environment Agency (2011)
 - National Academy of Sciences (2011)



Power Plants Fueled by Wood?

Drax Power Station

- 3,960 Megawatts of Output
- 36,000 Tons of Coal per Day, 140 Coal Trains per Week



Drax Power Station, UK (Glazzard)

Powered by Wood Chips from the USA!

Drax Power Station

- 3,960 Megawatts of Output
 - **Conversion of Half of Plant to Wood Fuel**
-
- **Shipped 3,000 Miles from the US**
 - Plant Conversion Cost £700 Million (\$1.1 Billion)
 - Subsidy £1 Billion/year
 - **Double Electricity Cost**



Drax Power Station, UK (Glazzard)

Climate Absurdity In Argentina

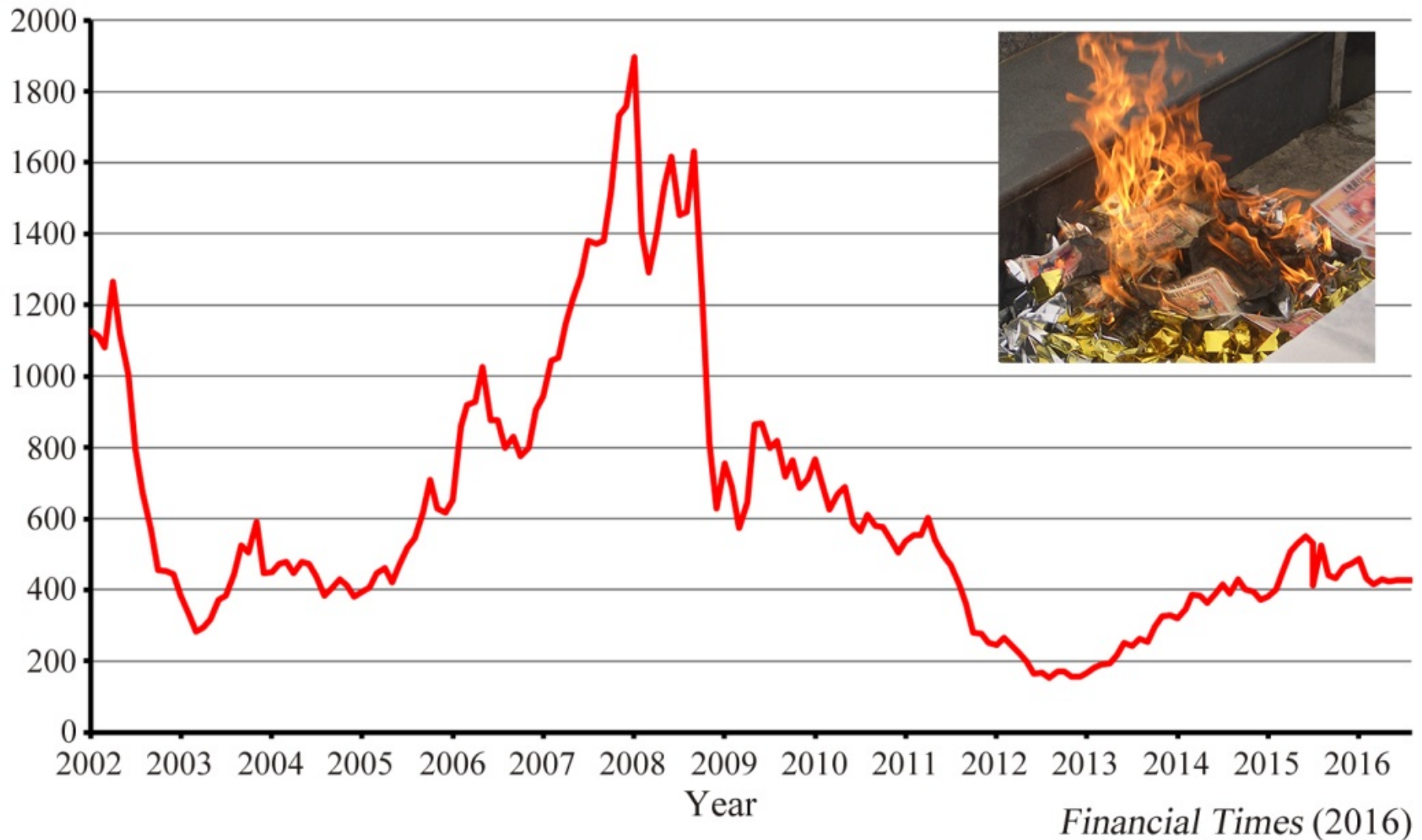


The Coming Upheaval in Energy and Climate Regulation



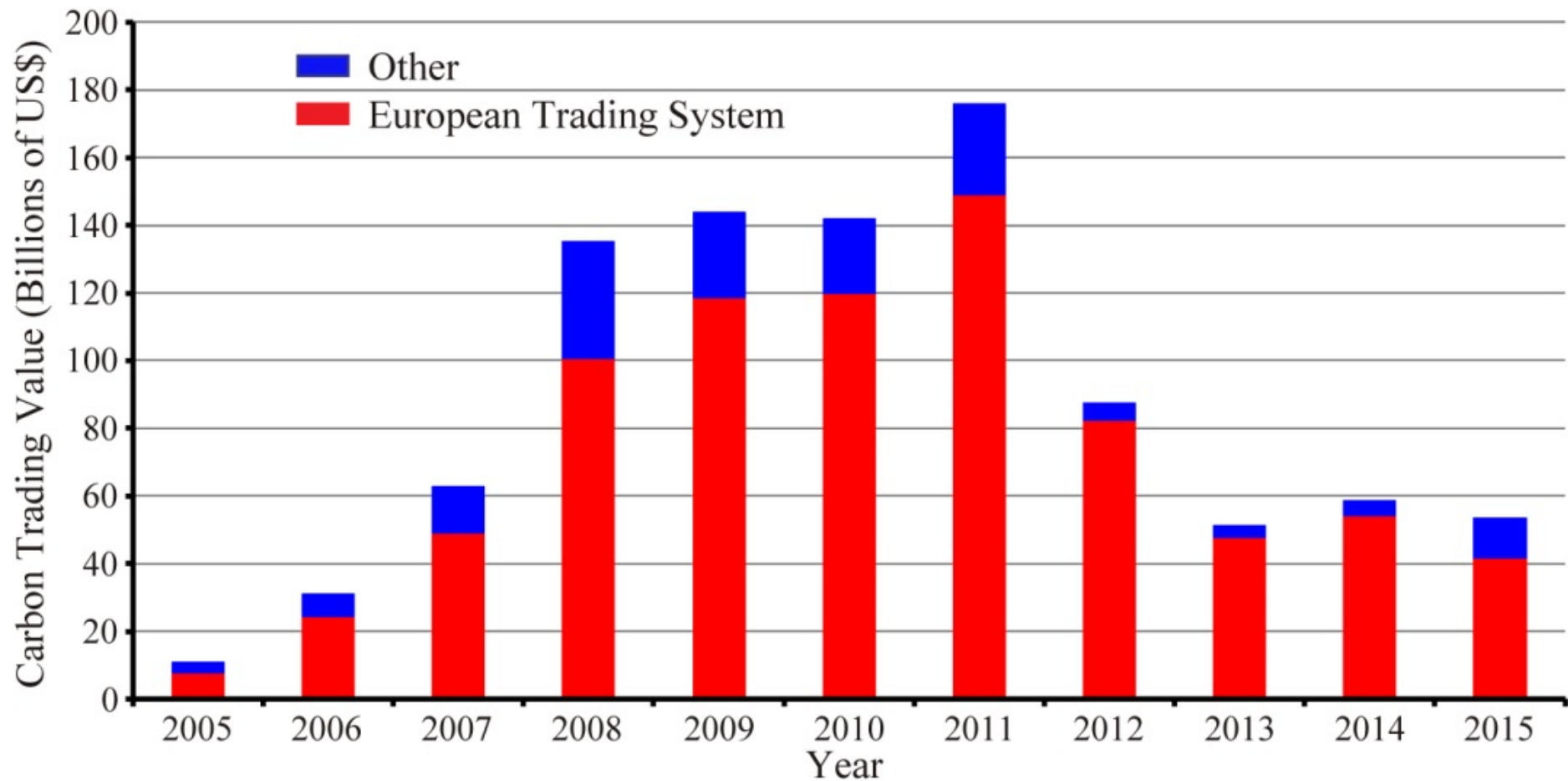
So, How's Your Green Energy Stock Doing?

RENIXX Index: Largest Renewable Energy Companies



The Carbon Markets Are Failing

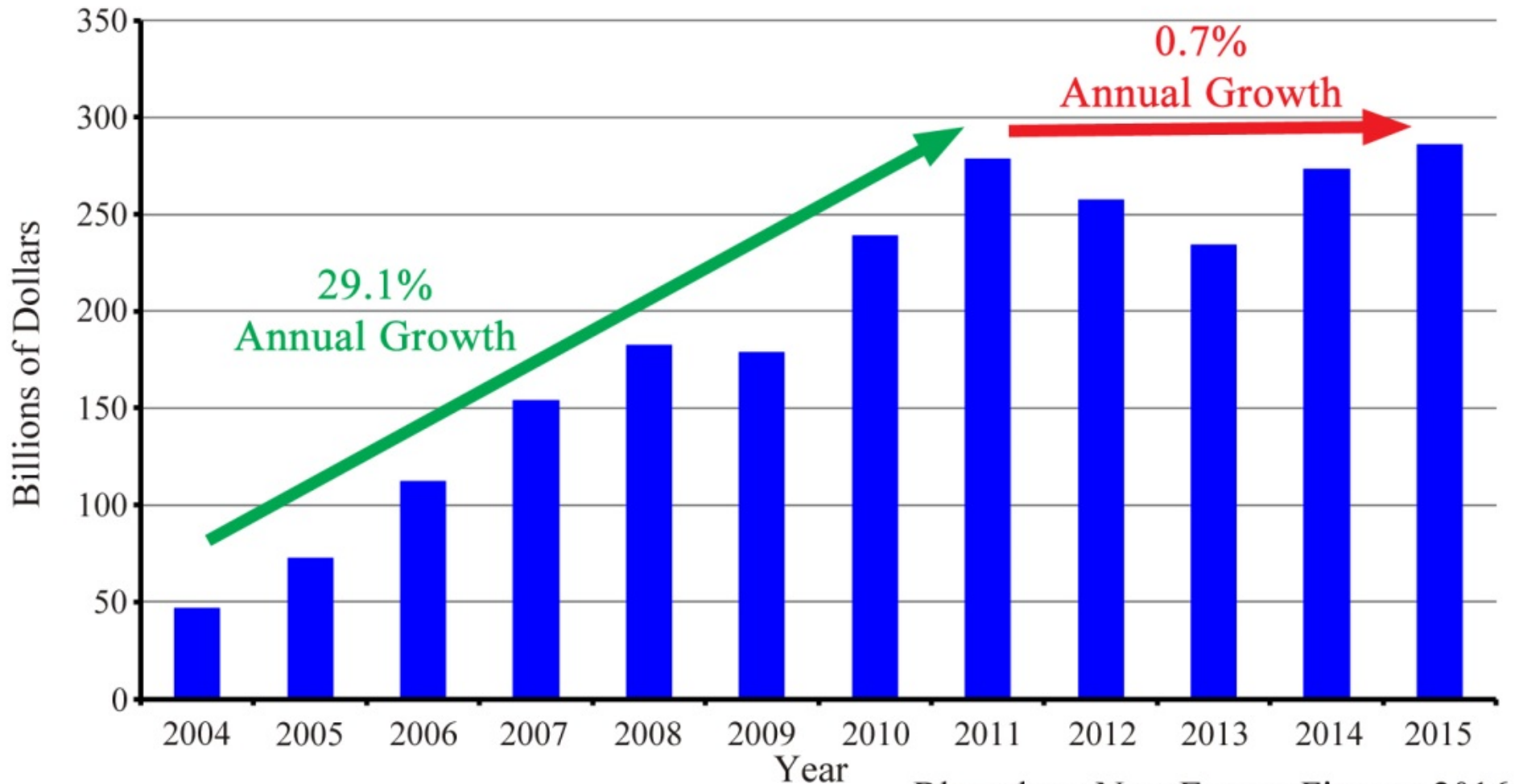
Global Carbon Trading Value (2005-2015)



World Bank (2012), Thomson Reuters (2016)

Flattening Renewable Energy Investment

Global Investment in Renewable Energy 2004-2015



Bloomberg New Energy Finance 2016

Europe: Rollback of Renewable Subsidies

England

- Coming Competitive Bidding
- Wind and Solar Subsidy Cuts

➡ Wind and Solar Projects Cancelled

Germany

- Feed-In Tariff Reductions
- Exports of Subsidized Power Ending

➡ Solar Employment Dropped 50%
Renewable Company Bankruptcies

Belgium

- Subsidy Cuts & Tax Increases

➡ Renewable Activity Halted

Spain

- Feed-In Tariff Ended
- 7.5% Profit Cap

➡ 75,000 Renewable Layoffs,
Solar Investment Down 90%



Italy

- 10.5% “Robin Hood” Tax in 2013

➡ Bankruptcies, Investments Down

Rolling Blackouts in South Australia



Adelaide, AU
October, 2016

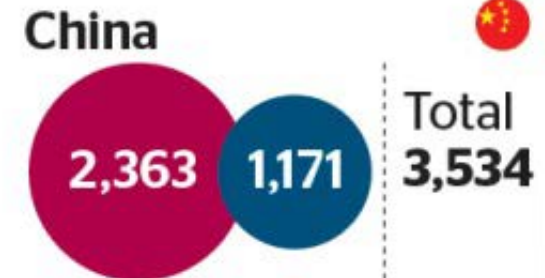
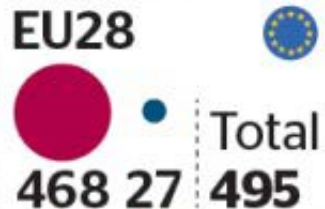
The Mark of a Undeveloped Nation?

International: Coal Plants Are In!

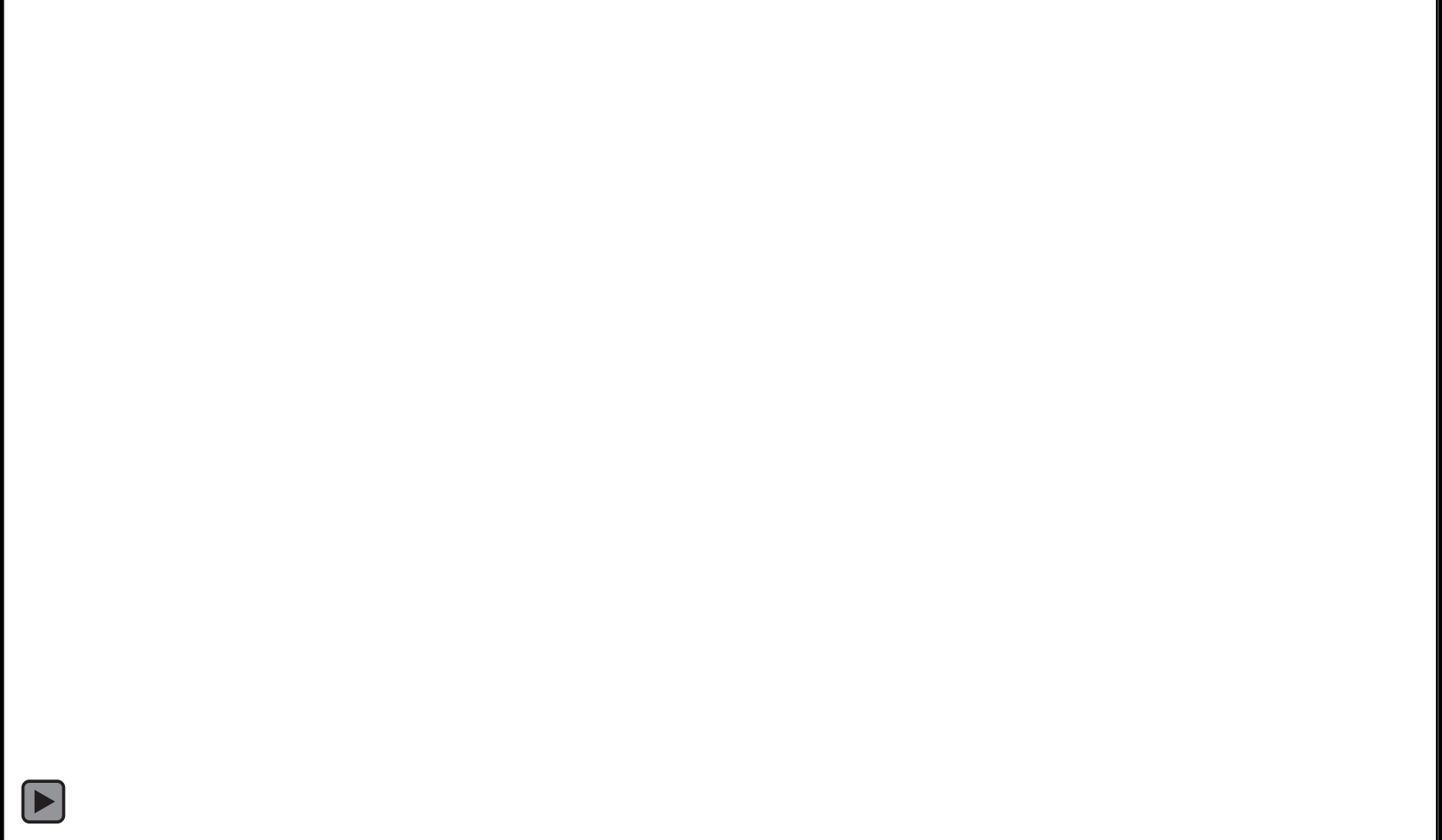
2,400 New Coal Plants Under Construction or Planned

Coal fired power stations

■ Existing
■ Planned



US Shift: A Huge Rock Thrown Into the Pond?

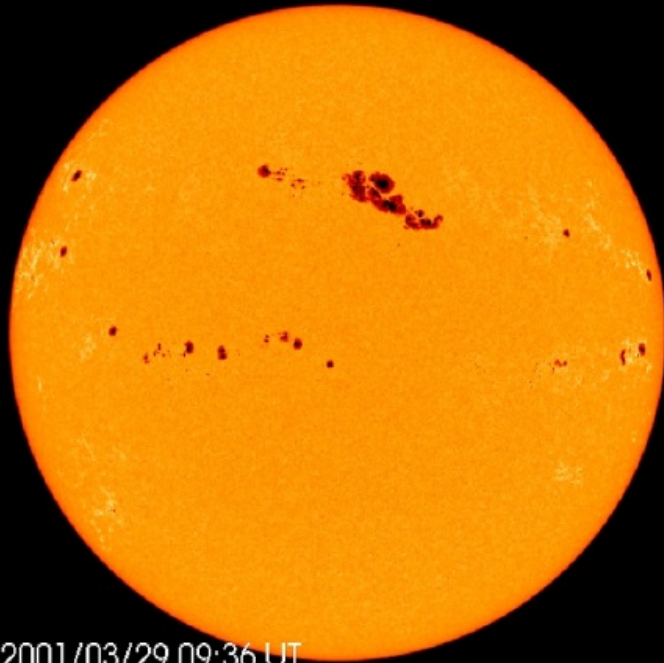


Mick Mulvaney
Director of Office of Management and Budget
March 16, 2017

Climate Forecast: Period of Cooling?

Cooling Oceans:

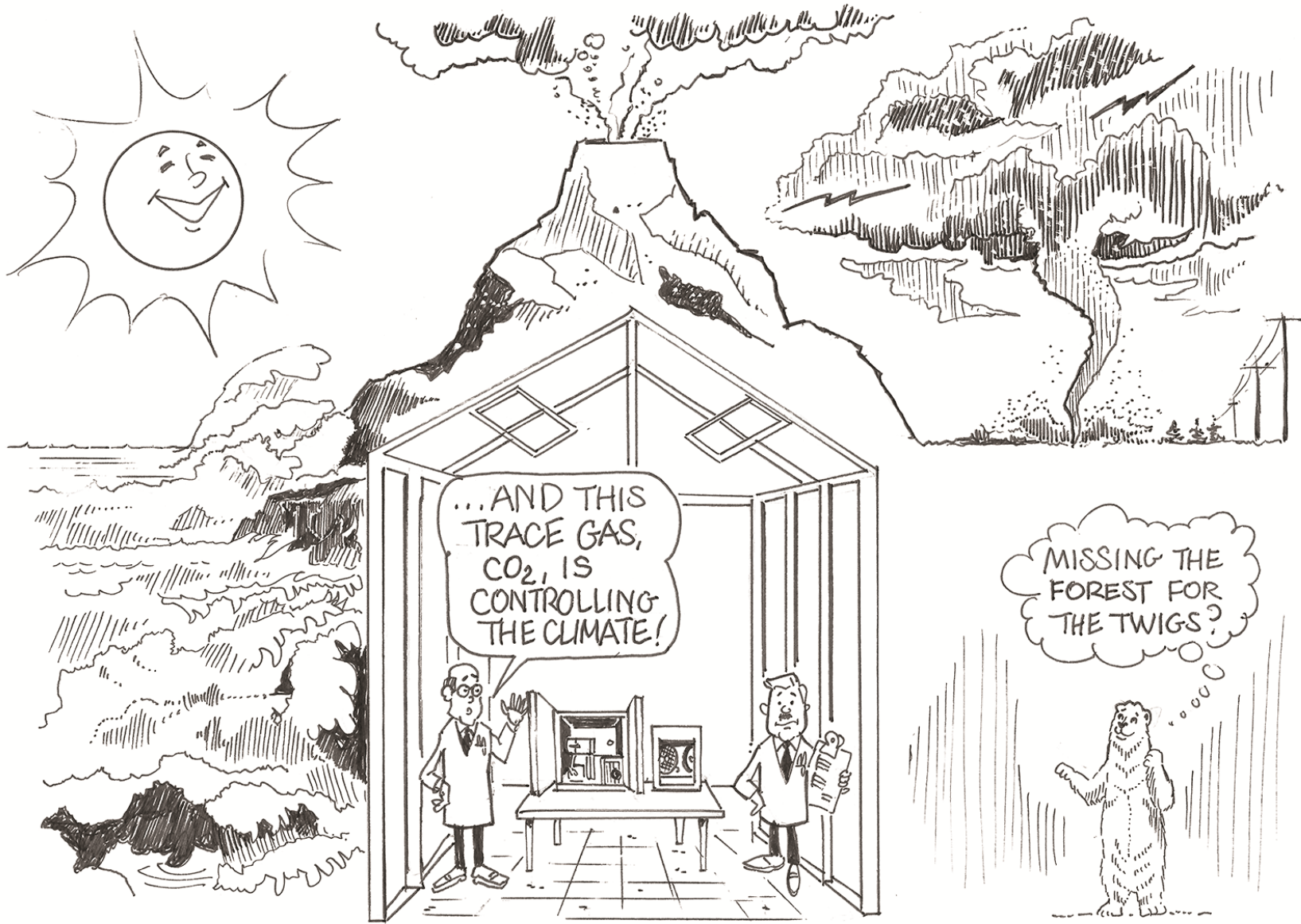
- Pacific Ocean in Cool Phase (PDO)
- Atlantic Ocean to Follow (AMO)



Less Active Sun:

- Low Solar Activity for Sunspot Cycle 24

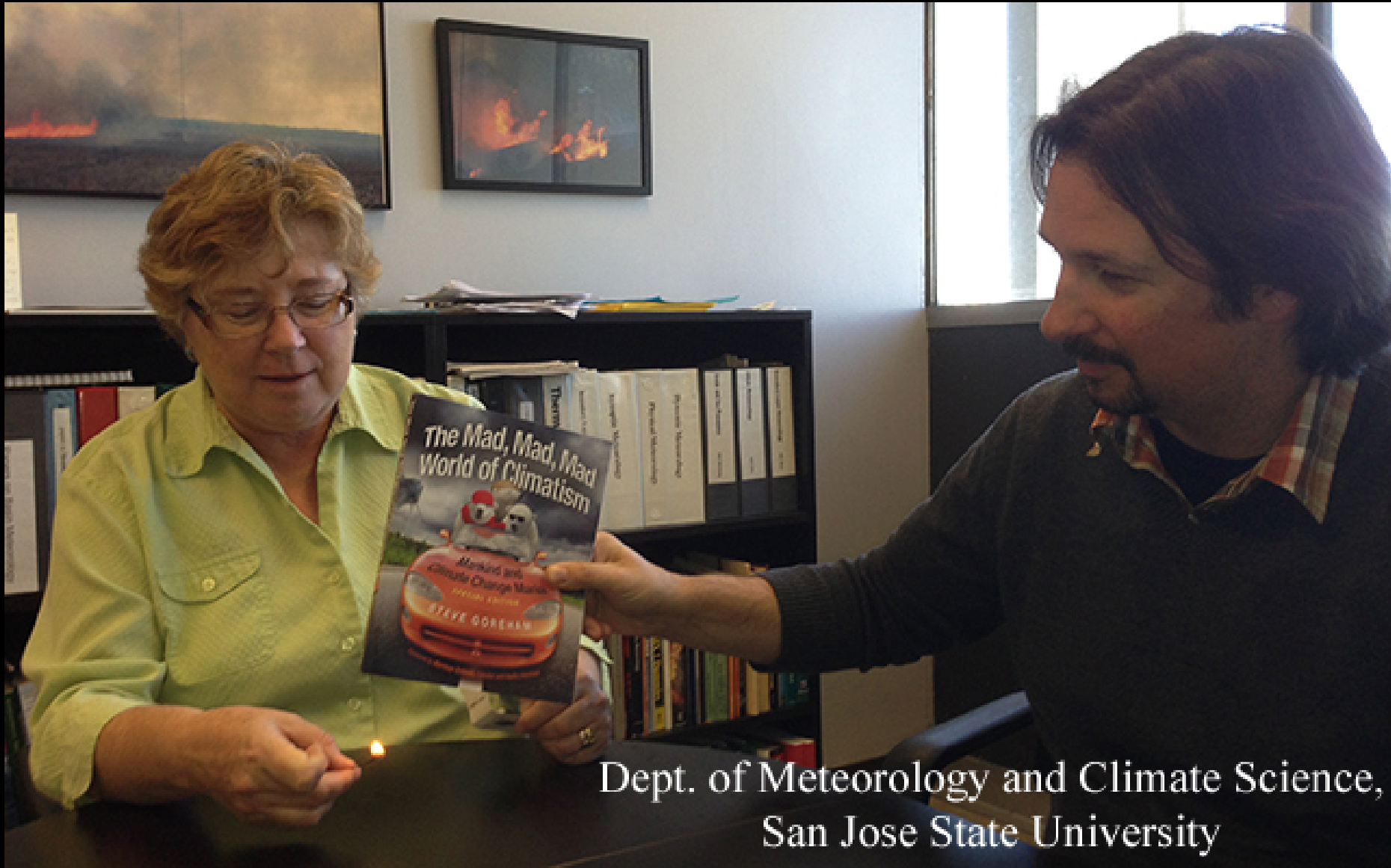
Climate Change is Natural, Not Man-Made



Cartoon
By
Lynch

What Can You Do?

1. Educate Yourself— Challenge the “Consensus”



Dept. of Meteorology and Climate Science,
San Jose State University

2. Educate Your Company

ENERGY AND SUSTAINABILITY: *A MINORITY REPORT*

Steve Goreham

- Energy fact and fiction
- False foundations of sustainable development
- Three trends driving global energy
- Coming upheaval in energy and climate regulation
- Elements of a sensible corporate environmental policy

Program: Up to a half day of interactive presentation, customized for your company and industry

For: Corporate executives, policy committees, boards of directors



Steve Goreham

Steve Goreham

Executive Director
Climate Science Coalition of America
www.stevegoreham.com

