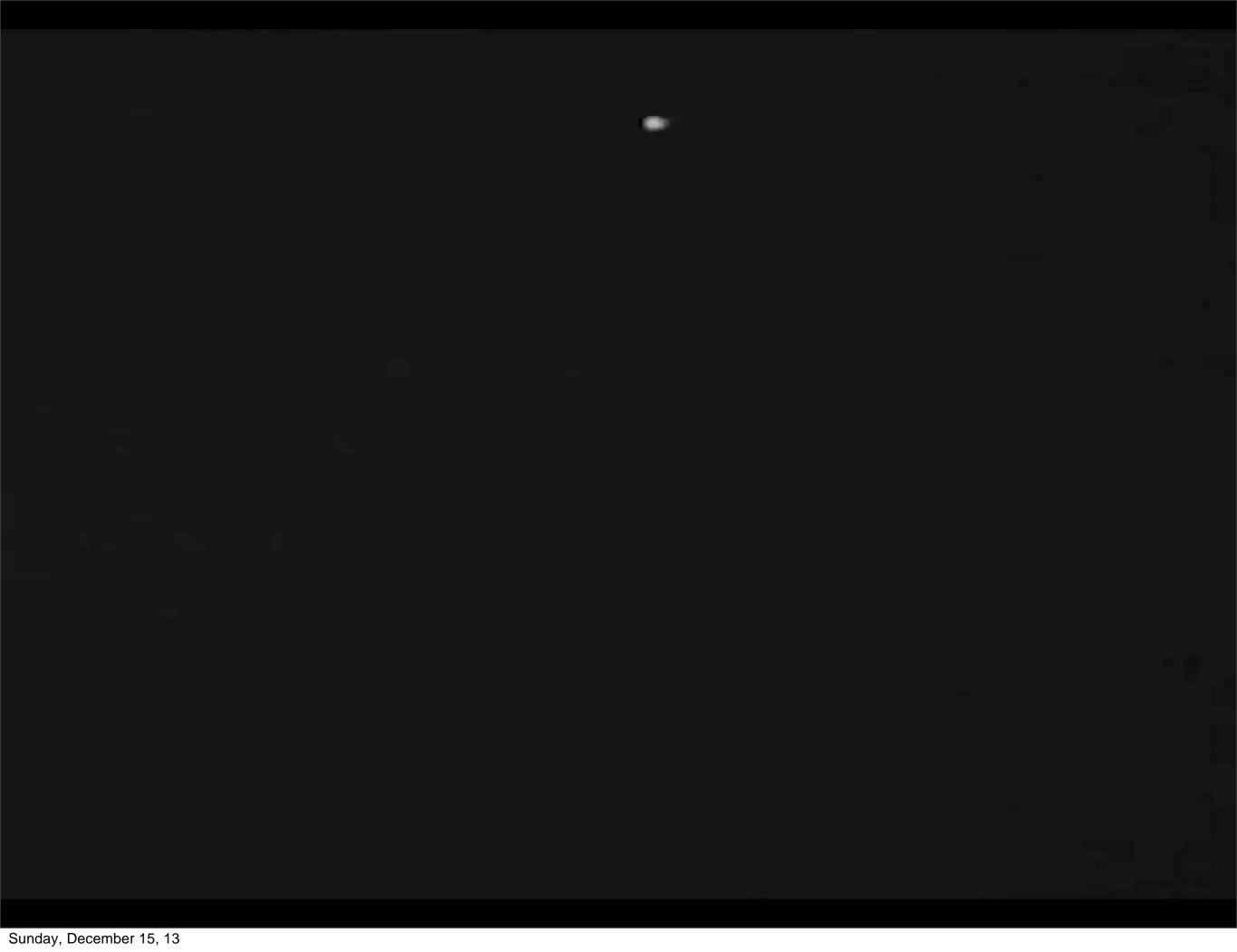


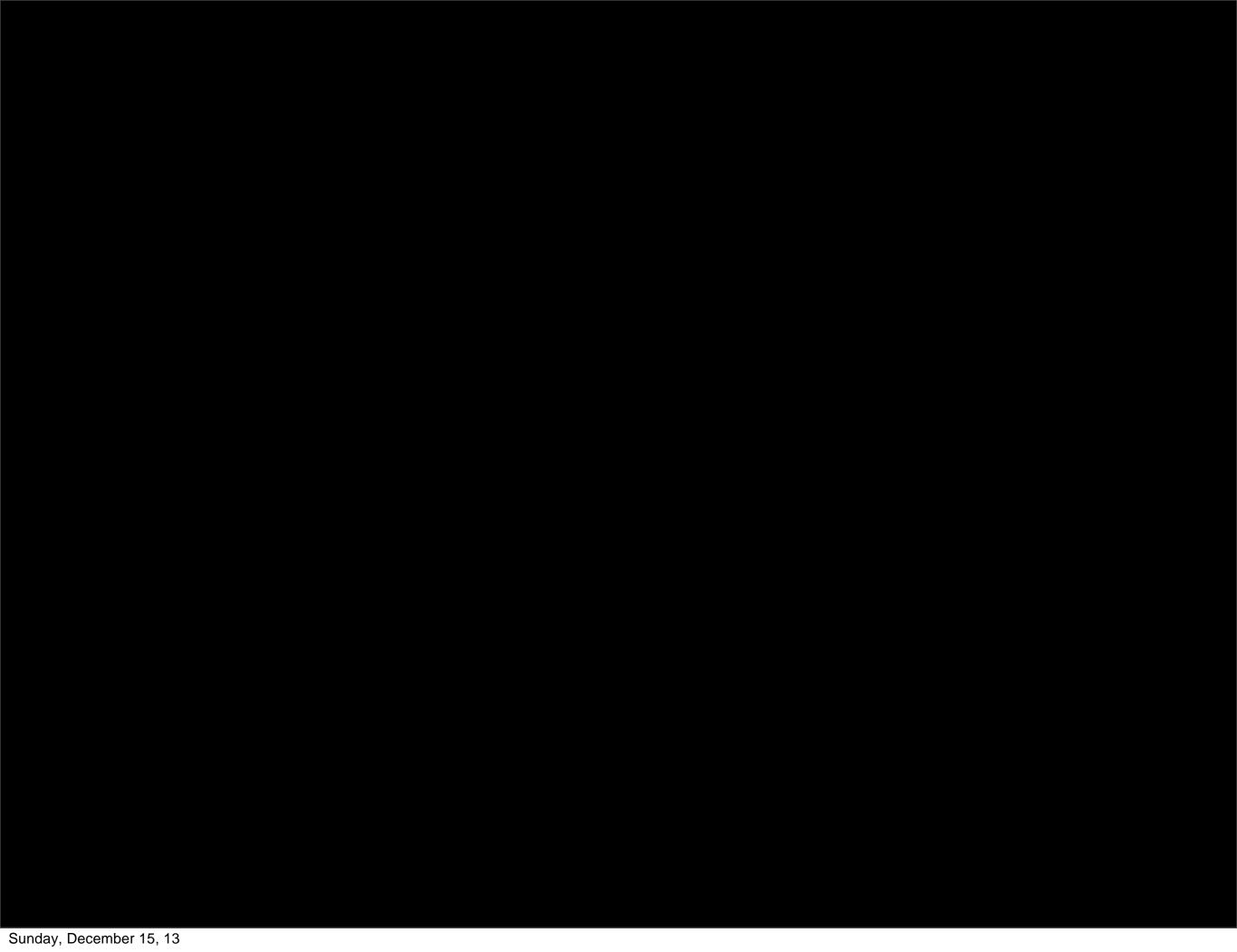


Sunday, December 15, 13











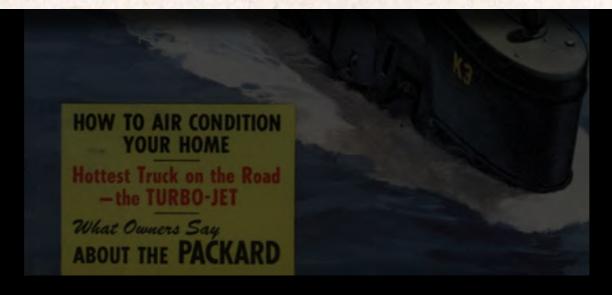


#### Growing Blanket of Carbon Dioxide Raises Earth's Temperature

Earth's ground temperature is rising 1½ degrees a century as a result of carbon dioxide discharged from the burning of about 2,000,000,000 tons of coal and oil yearly. According to Dr. Gilbert N. Plass of the Johns Hopkins University, this discharge augments a blanket of gas around the world which is raising the temperature in the same manner glass heats a greenhouse. By 2080, he predicts the air's carbon-dioxide content will double, resulting in an average-

temperature rise of at least four percent. If most of man's industrial growth were over a period of several thousand years, instead of being crowded within the last century, oceans would have absorbed most of the excess carbon dioxide. But because of the slow circulation of the seas, they have had little effect in reducing the amount of the gas as man's smoke-making abilities have multiplied over the past hundred years.

AUGUST 1953 119



# POPULAR MECHANICS

#### Growing Blanket of Carbon Dioxide Raises Earth's Temperature

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AUGUST 1953

119



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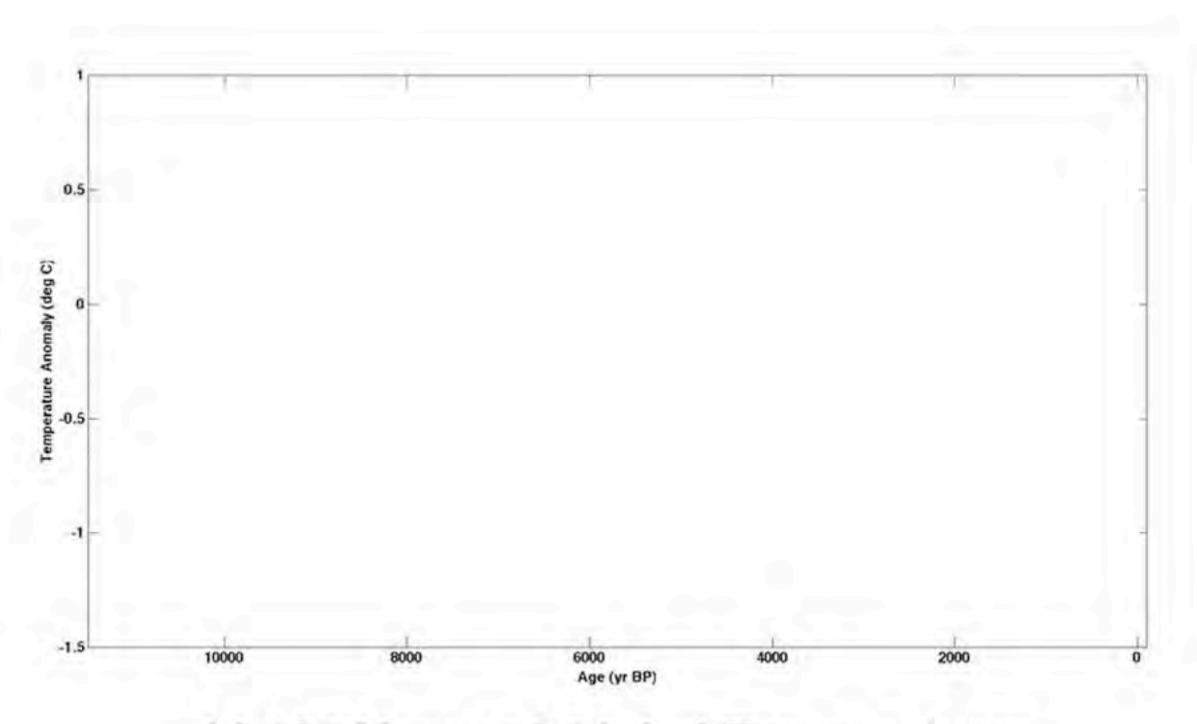
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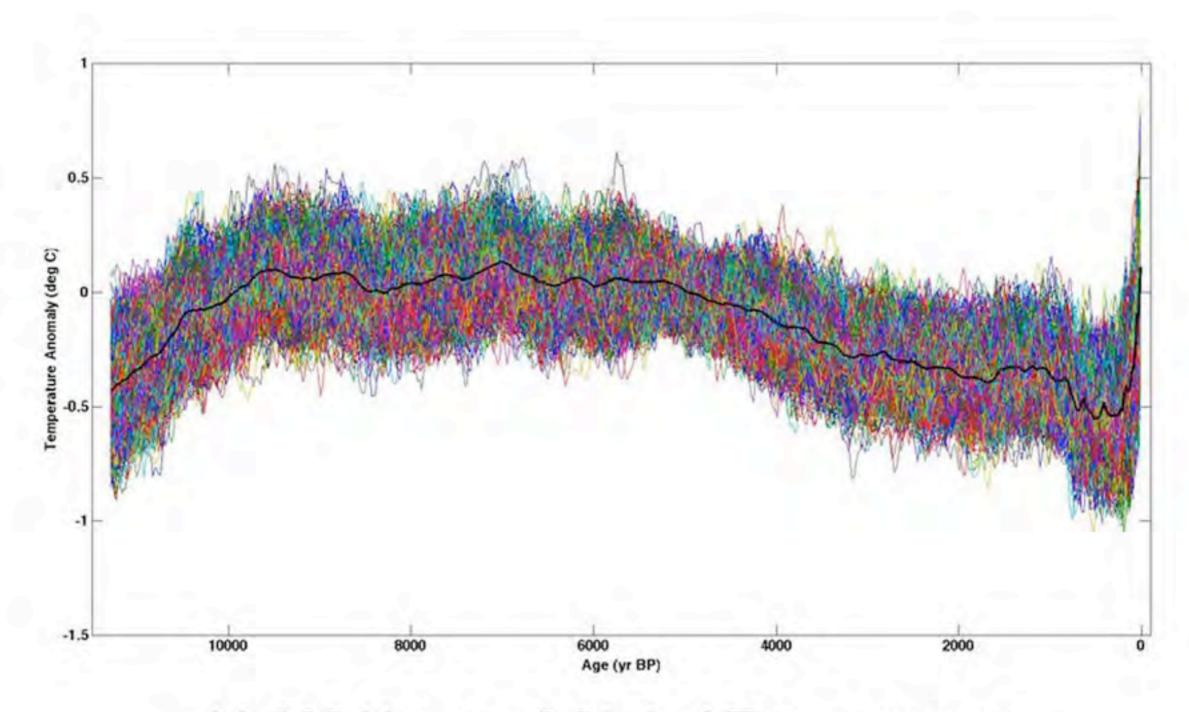
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**JGUST 1953** 



11,000 Years of Global Temperatures



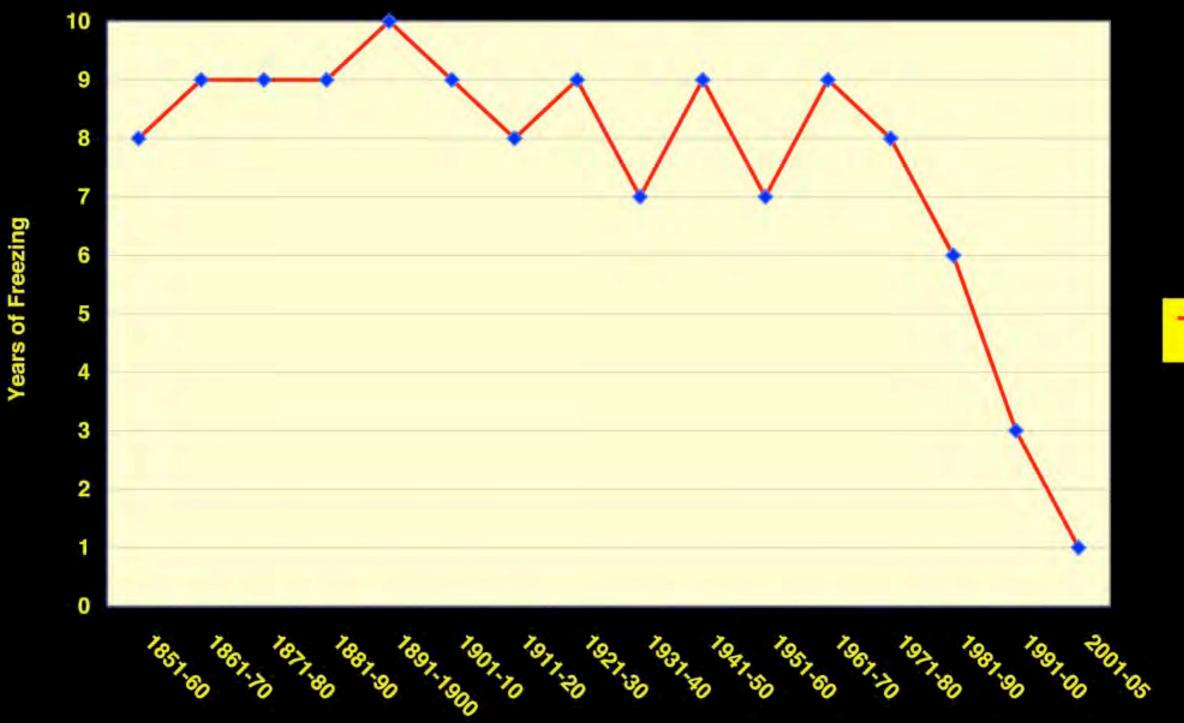
11,000 Years of Global Temperatures



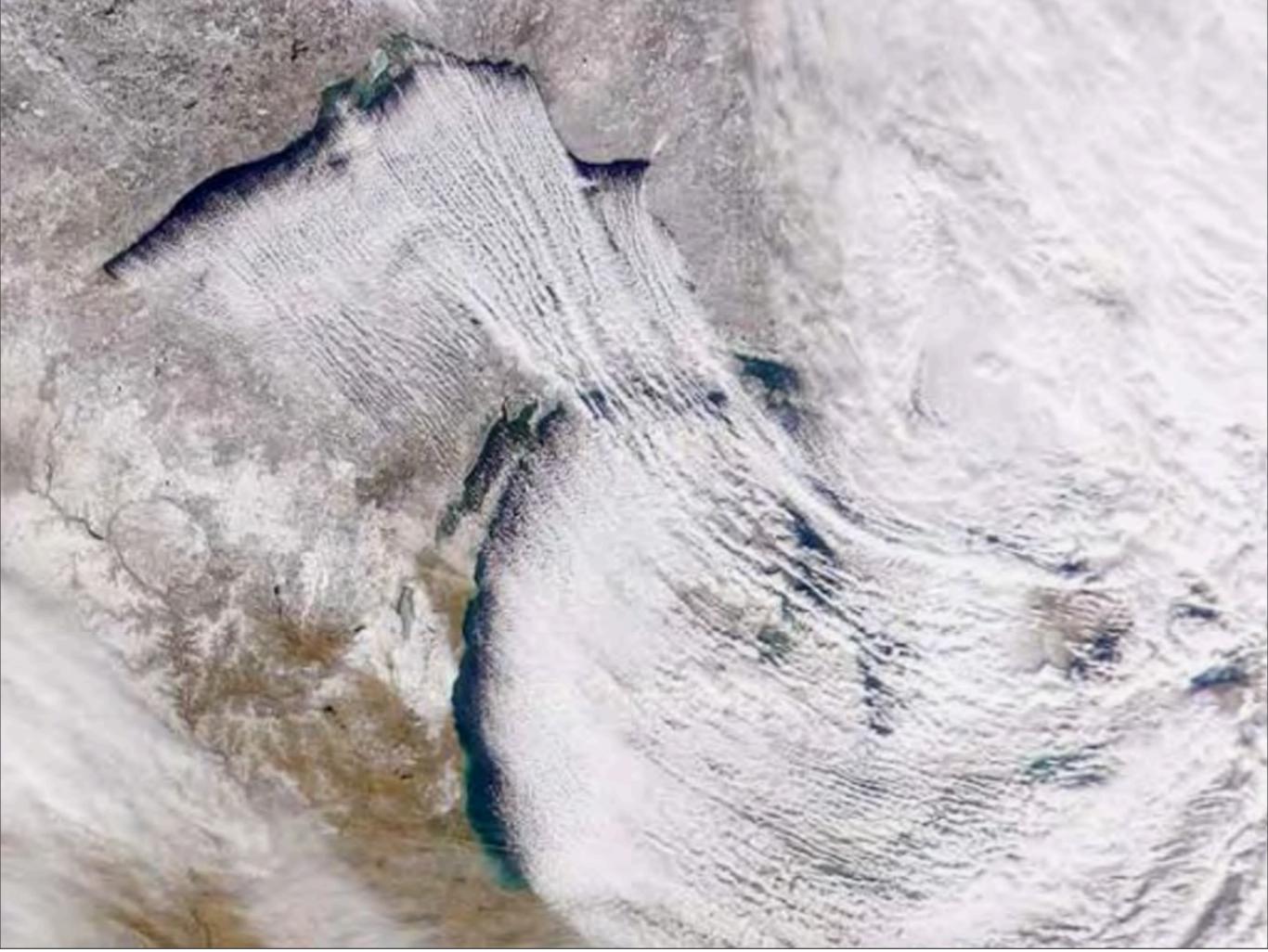
Sunday, December 15, 13



## Grand Traverse Bay - Freezing by Decade 1851-2003







Sunday, December 15, 13



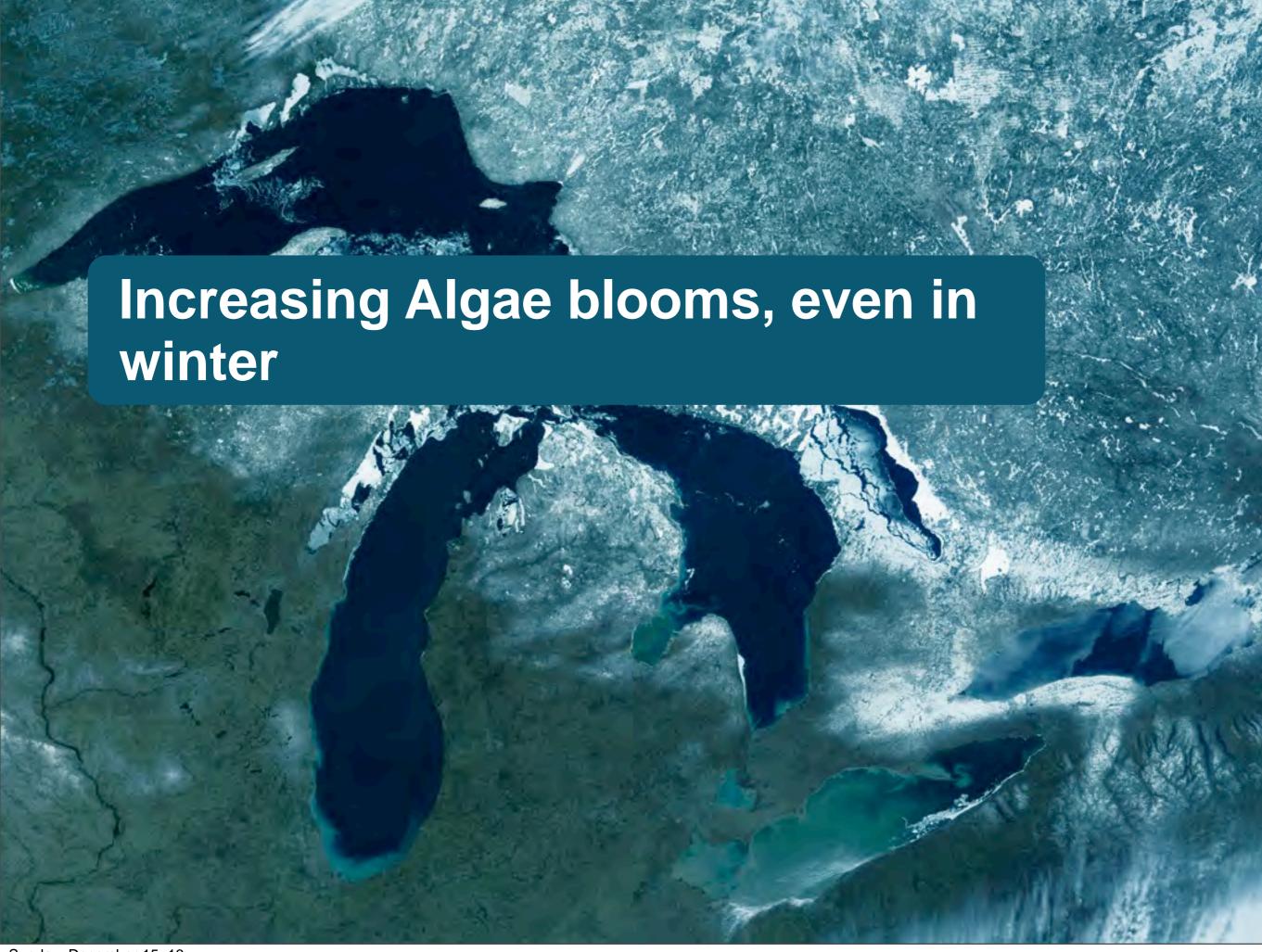
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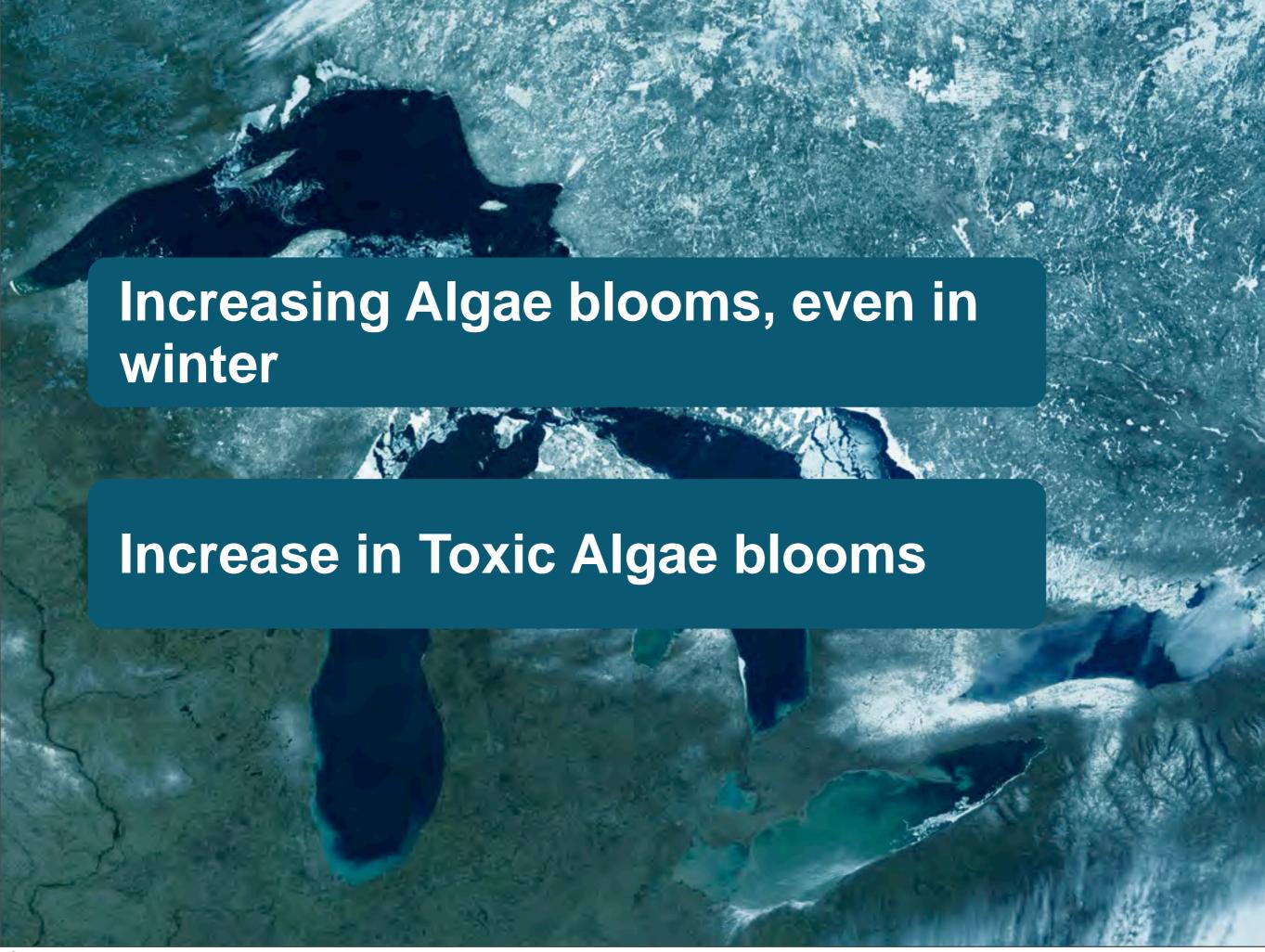


Sunday, December 15, 13



Sunday, December 15, 13







Sunday, December 15, 13







#### Munich Re the First Alerter to Global Warming



### Flood Inundation

#### 2.1 Climatic Variations

Investigations into the overall trend of claims experience are indispensable, and here climatic variations become most significant. Such investigations involve a study of thermodynamic processes such as, for example, the rising temperature of the earth's atmosphere (as a result of which glaciers and the polar caps recede, surfaces of lakes are reduced and ocean temperatures rise); changes in the earth's atmosphere due to the large-scale increase. in areas irrigated and cultivated and increases in humidity resulting therefrom, and lastly the pollution of the earth's atmosphere, e.g. rise of the CO2 content of the oir causing a change in the absorption of solar energy. We wish to enlarge on this complex of problems in greater detail, especially as as far as we know-its conceivable impact on the long-range risk trend has hardly been examined to date.

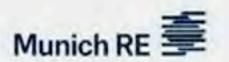
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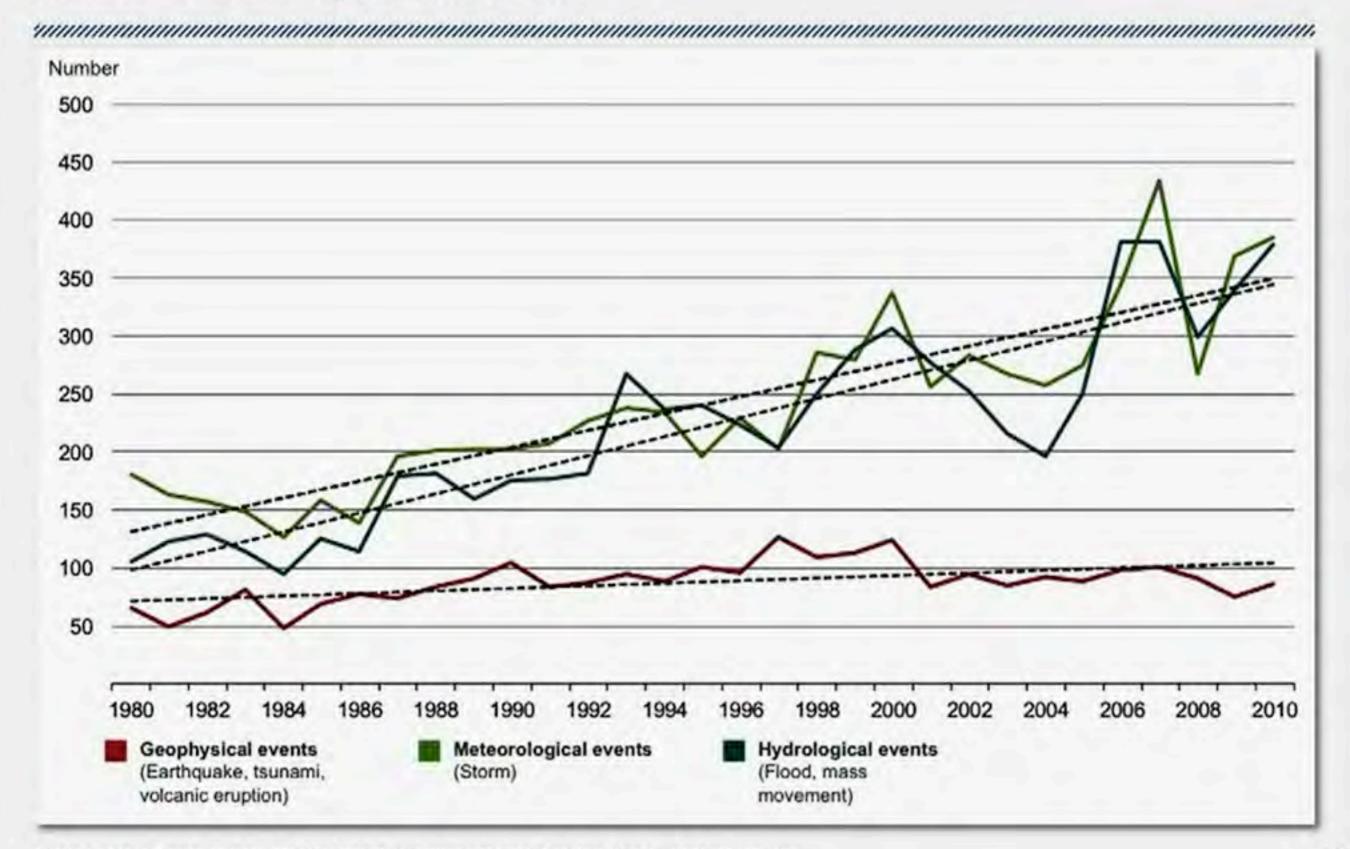
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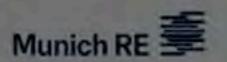
MR-Publication Flood / Inundation (August 1973)

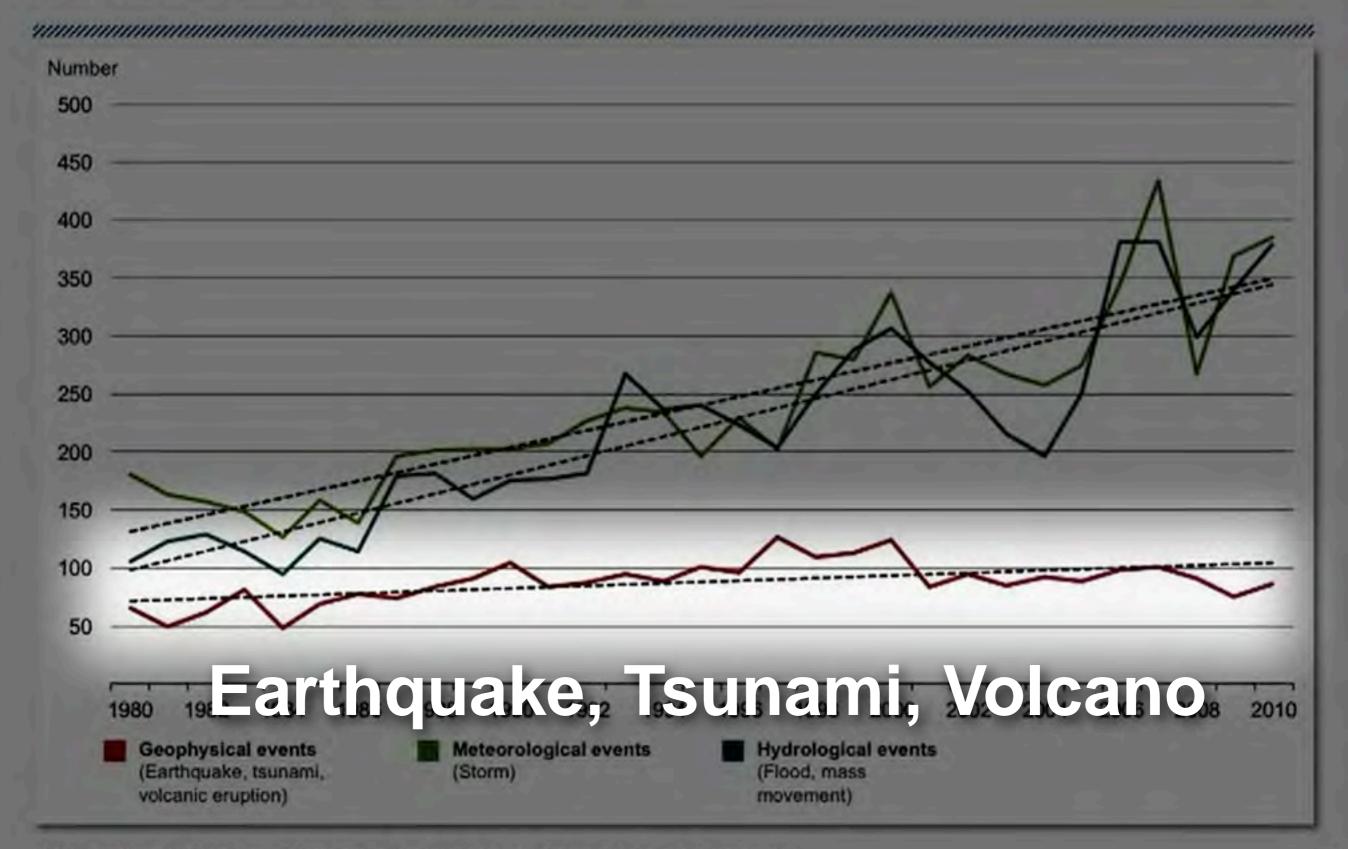
### Natural catastrophes worldwide, 1980 – 2010 Number of events by peril with trend



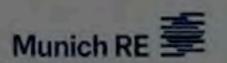


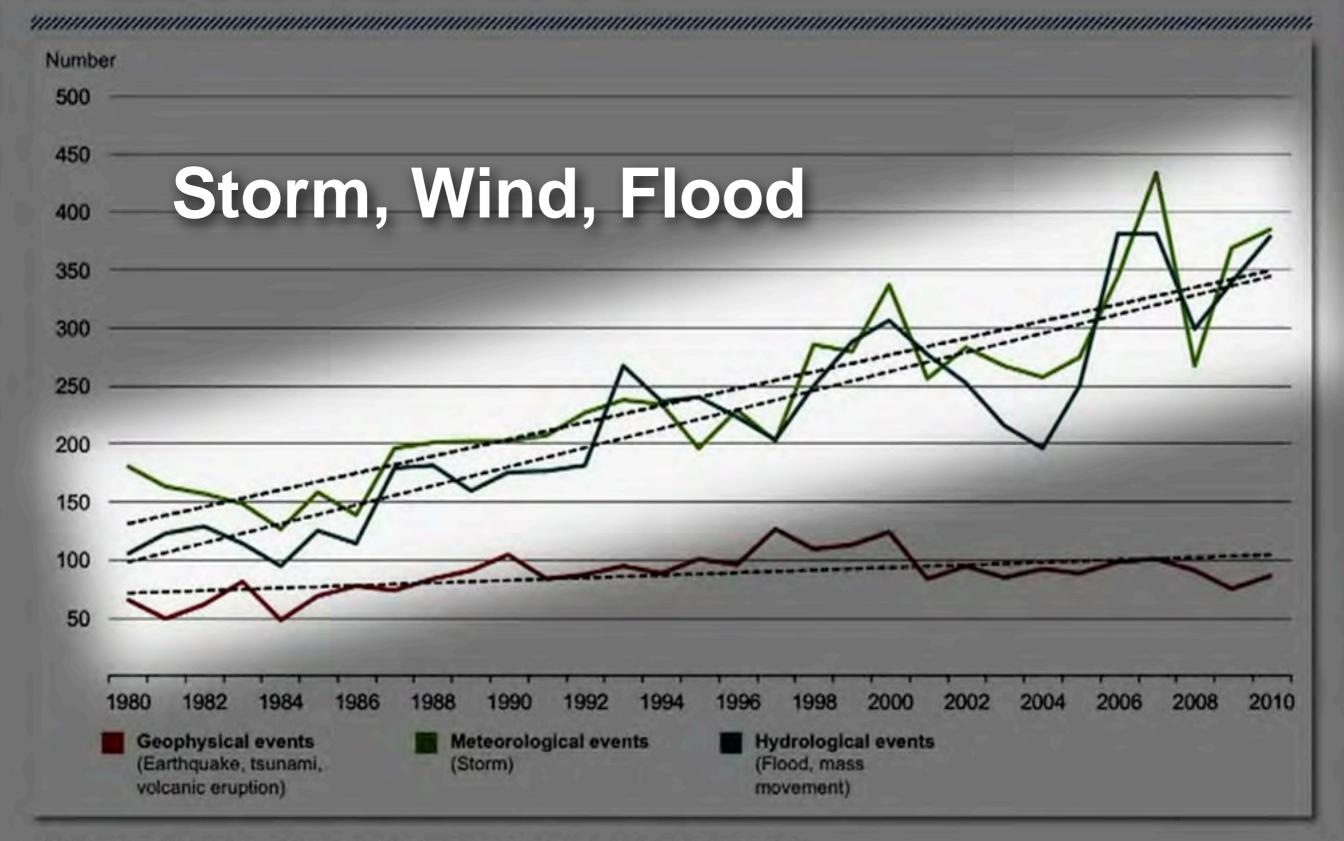
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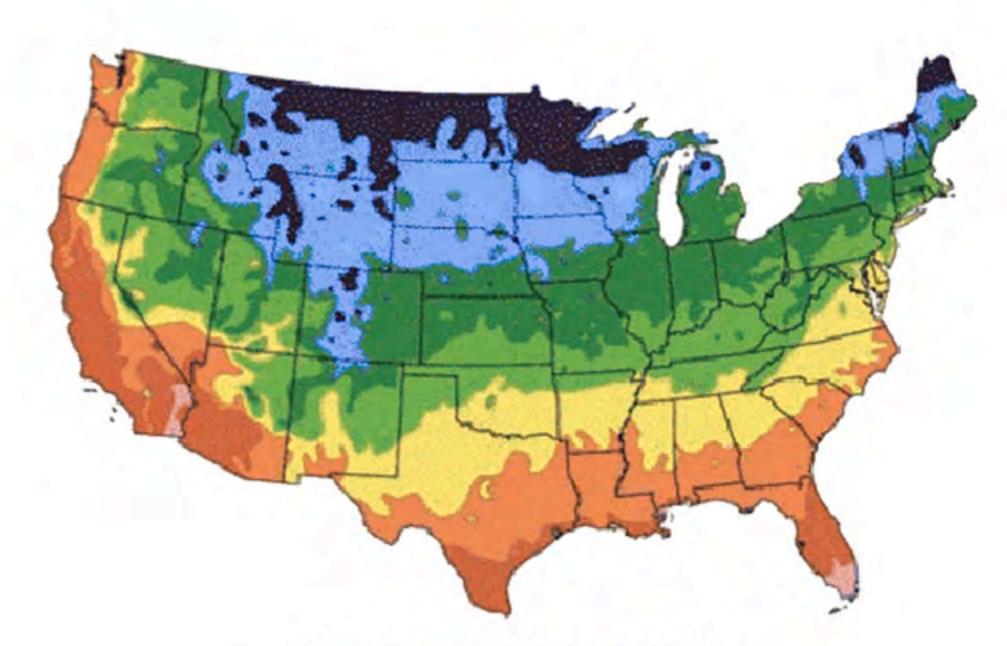


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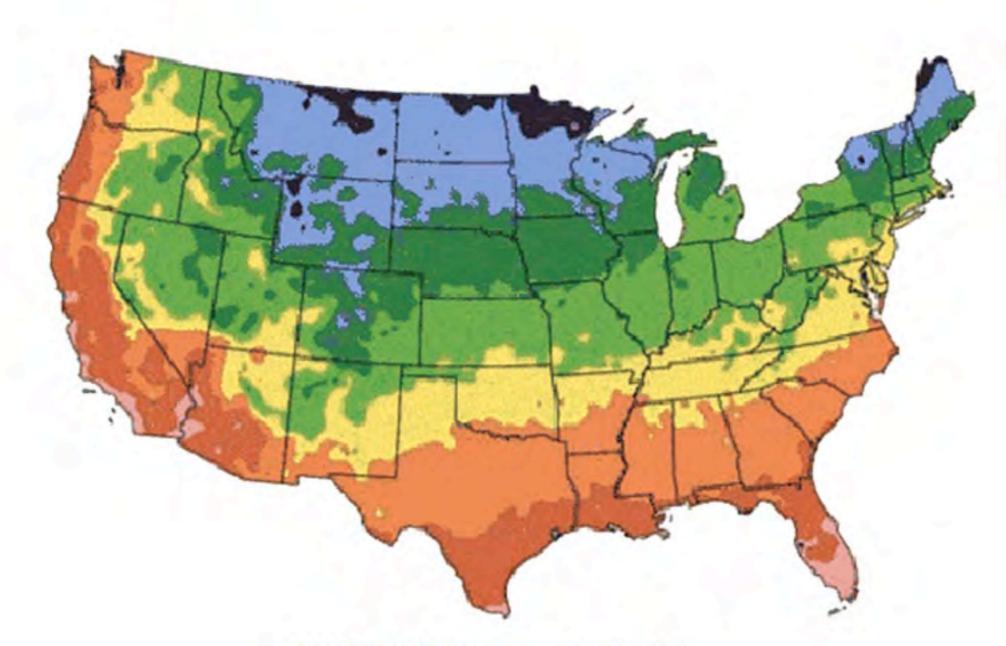




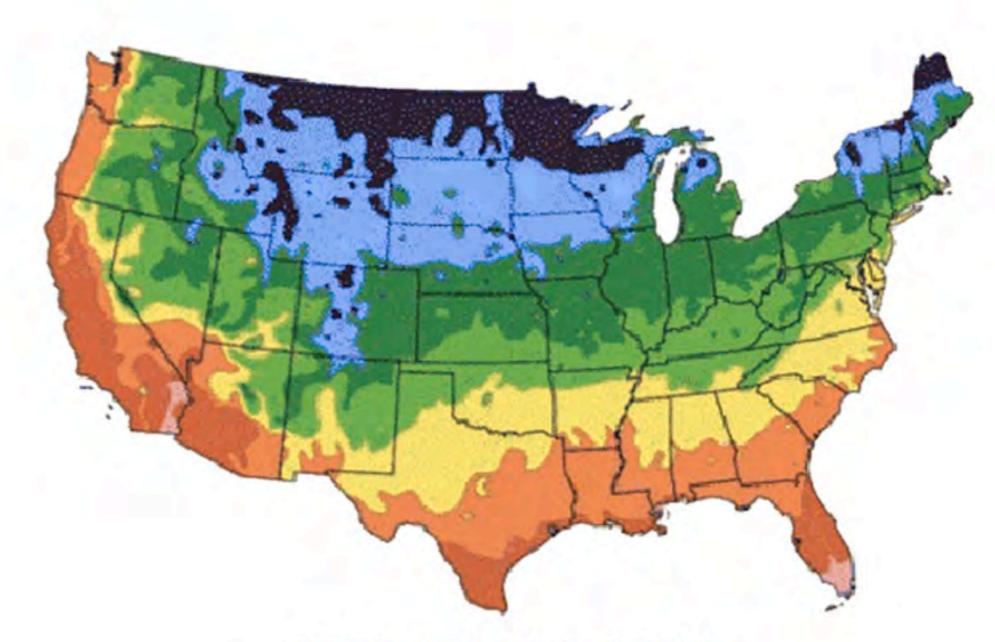




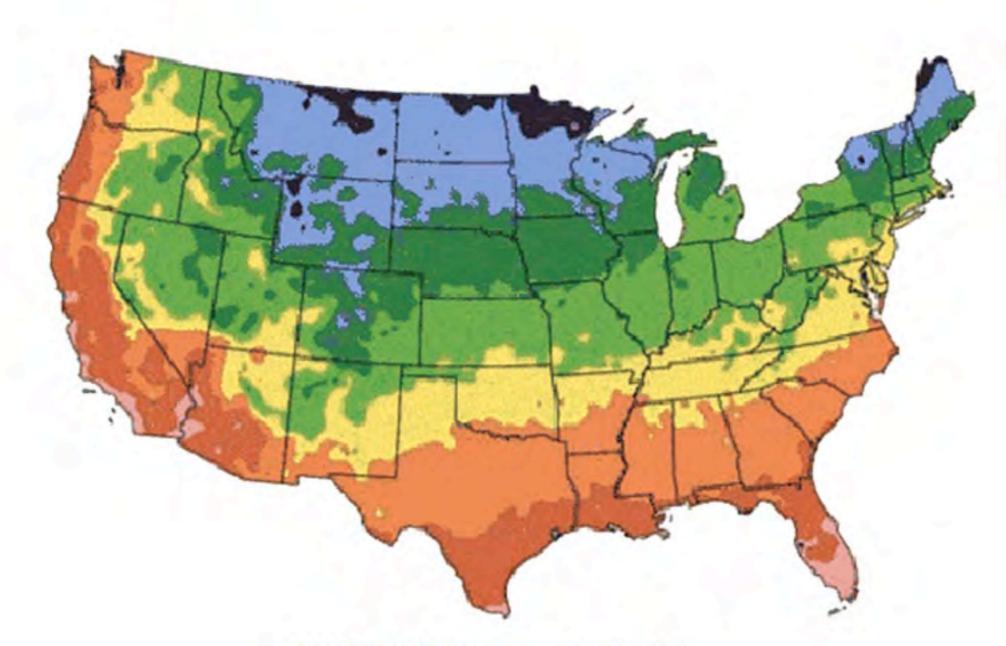
2006 by The National Arbor Day Foundation



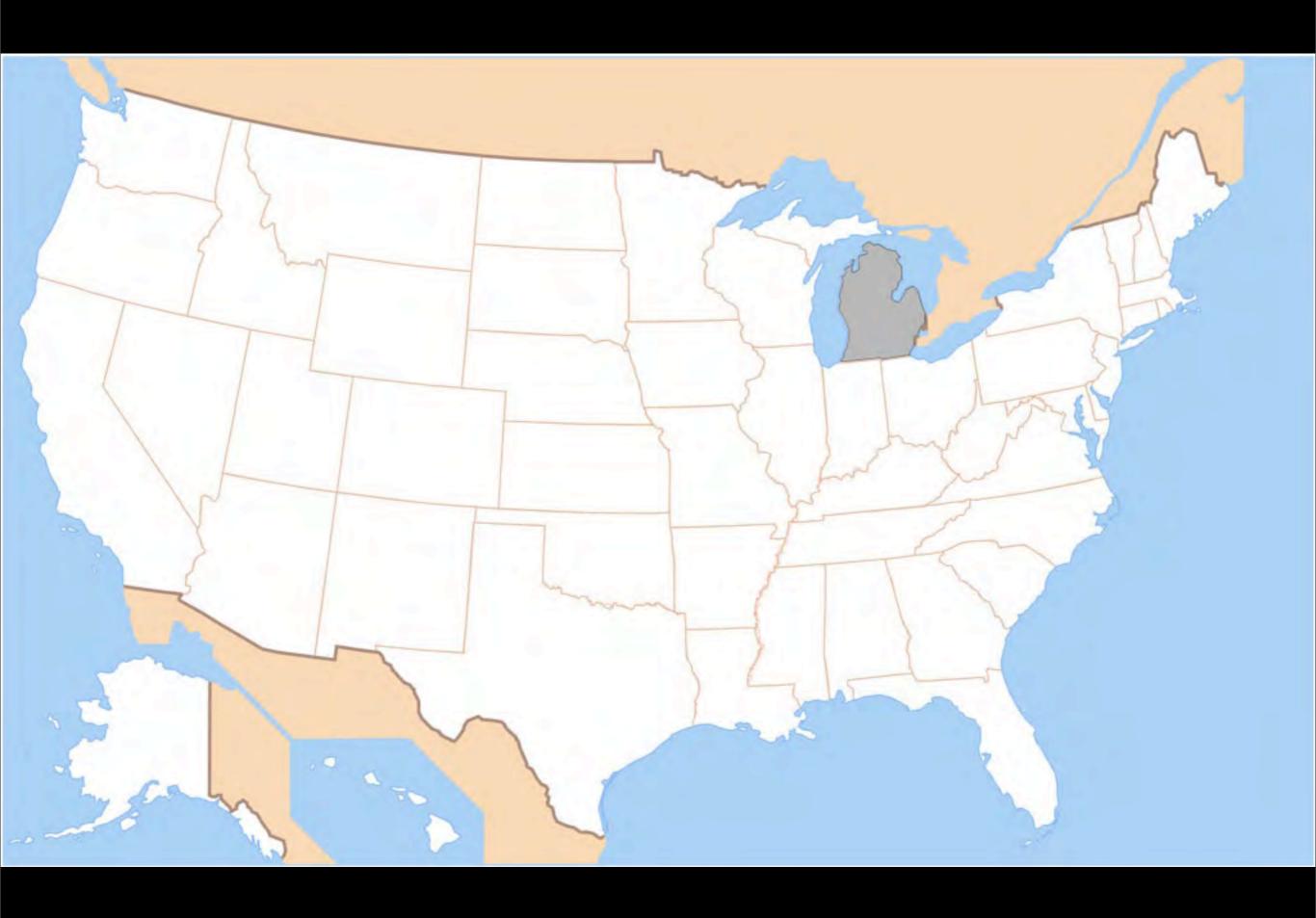
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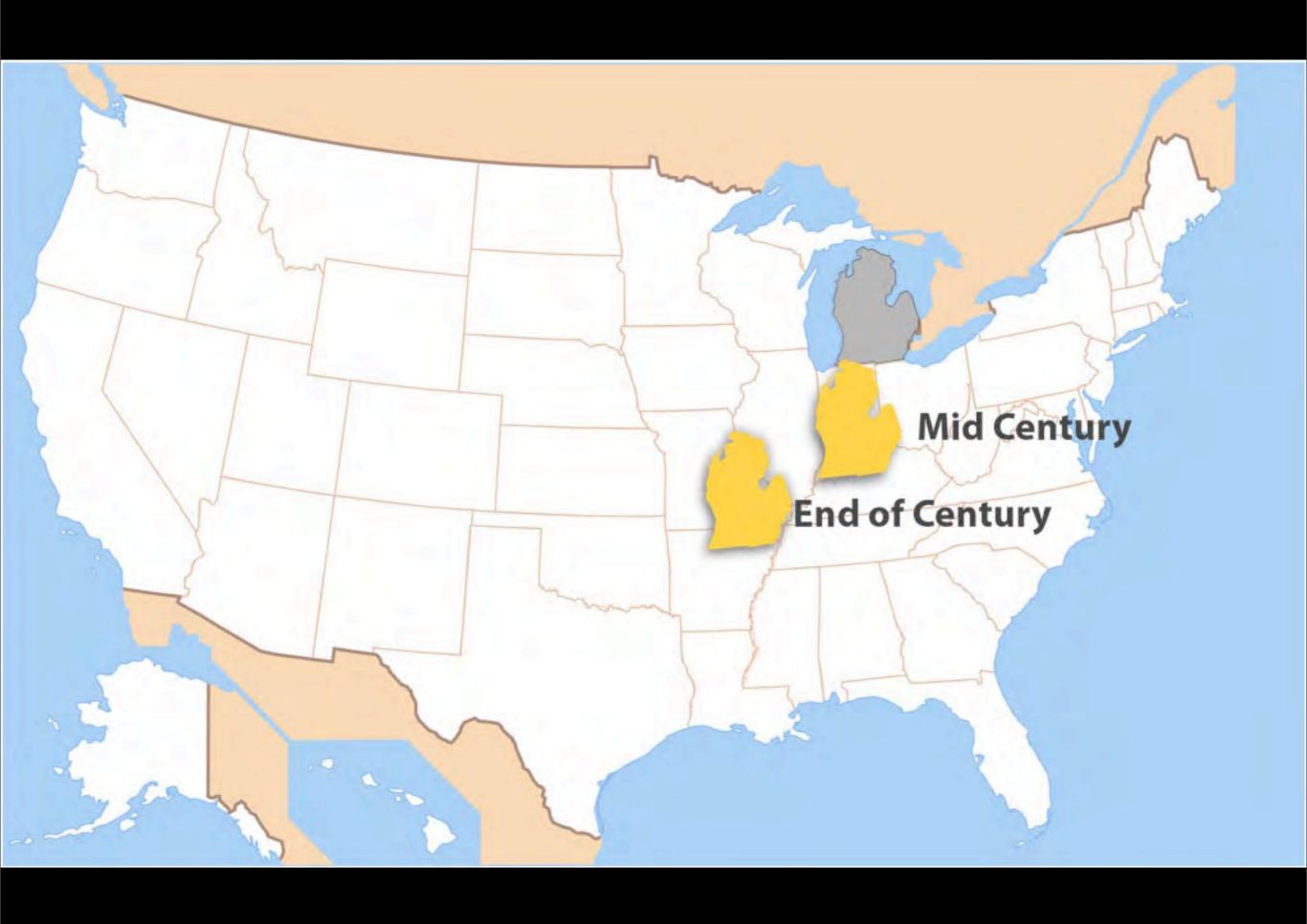
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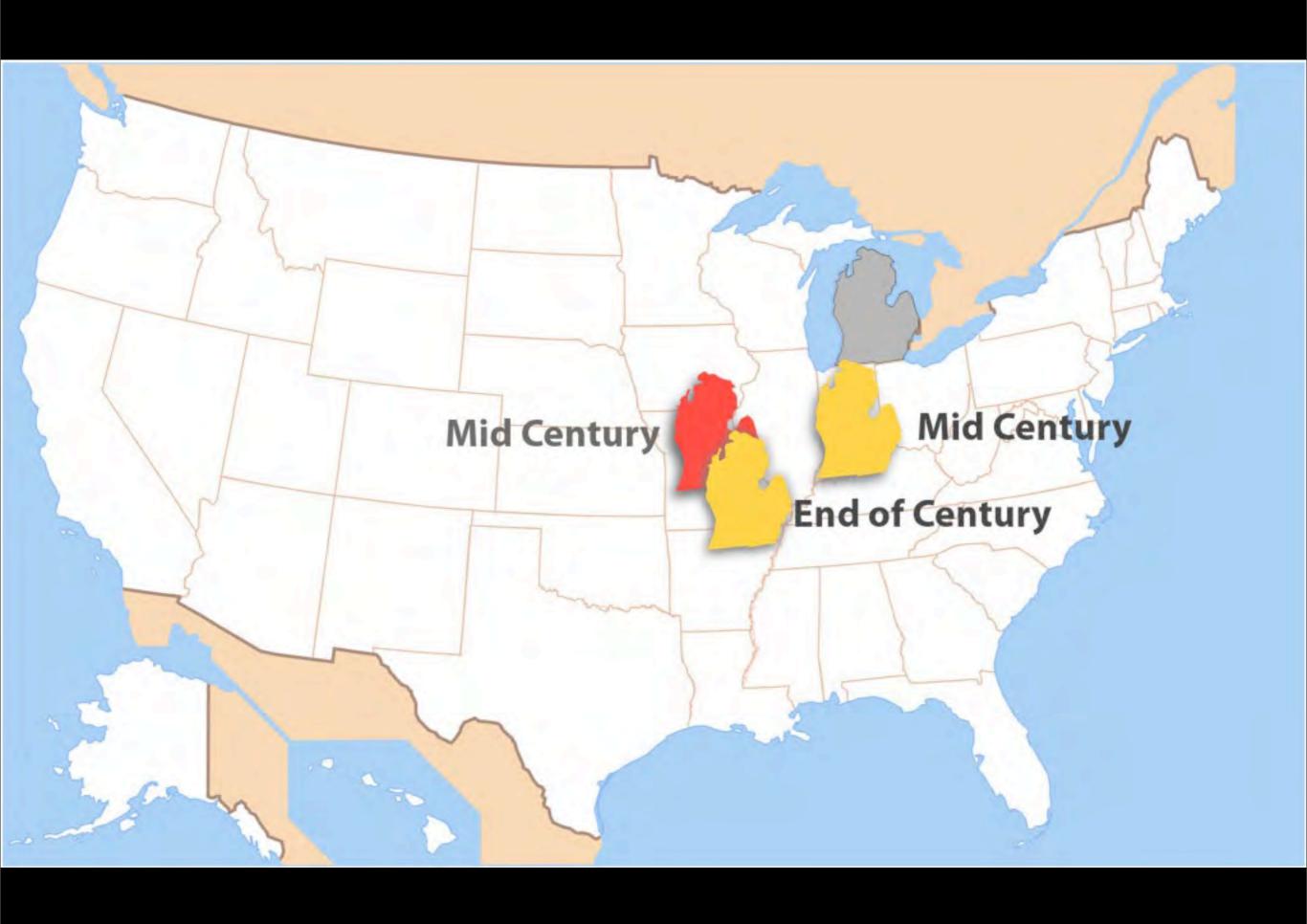


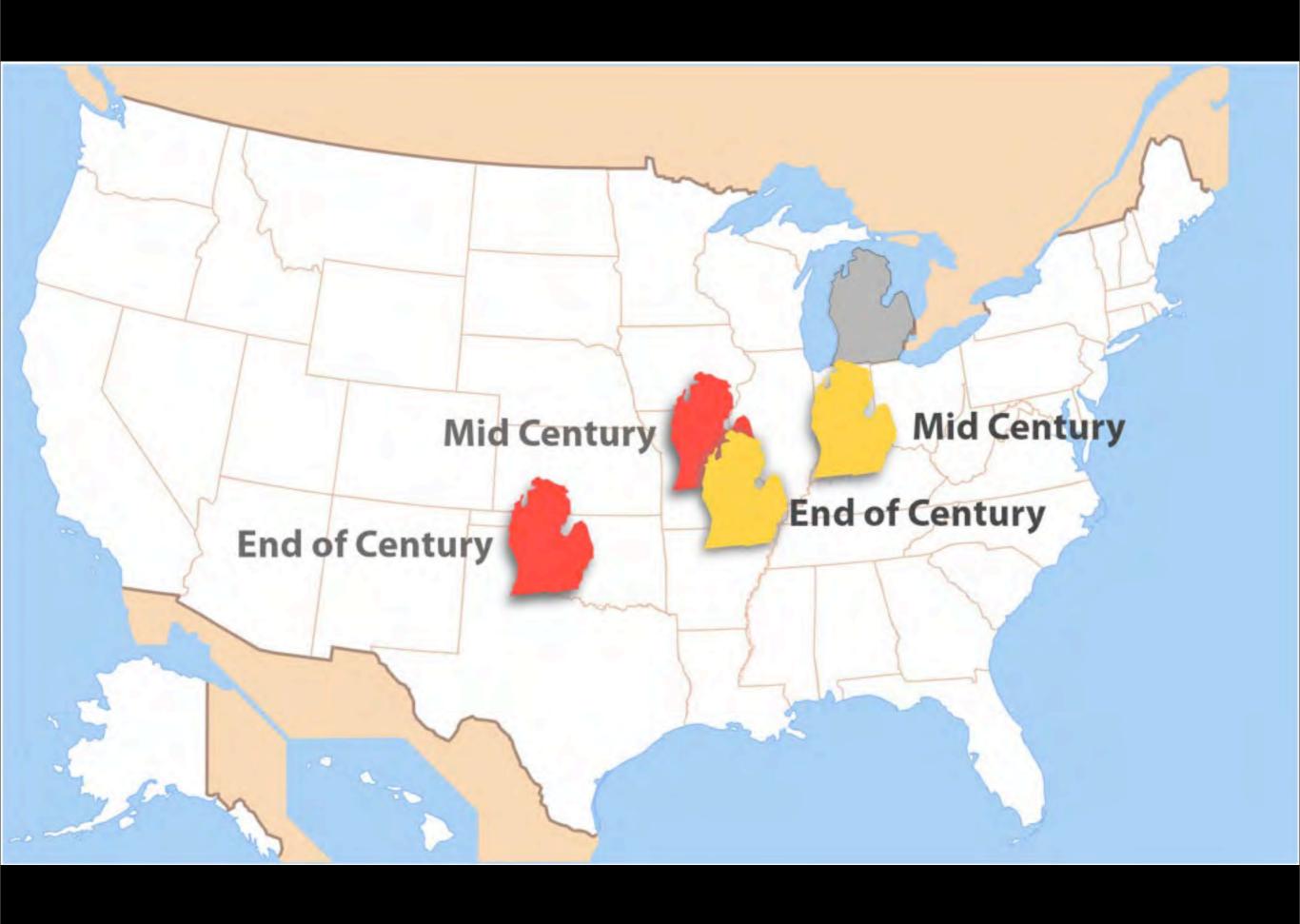
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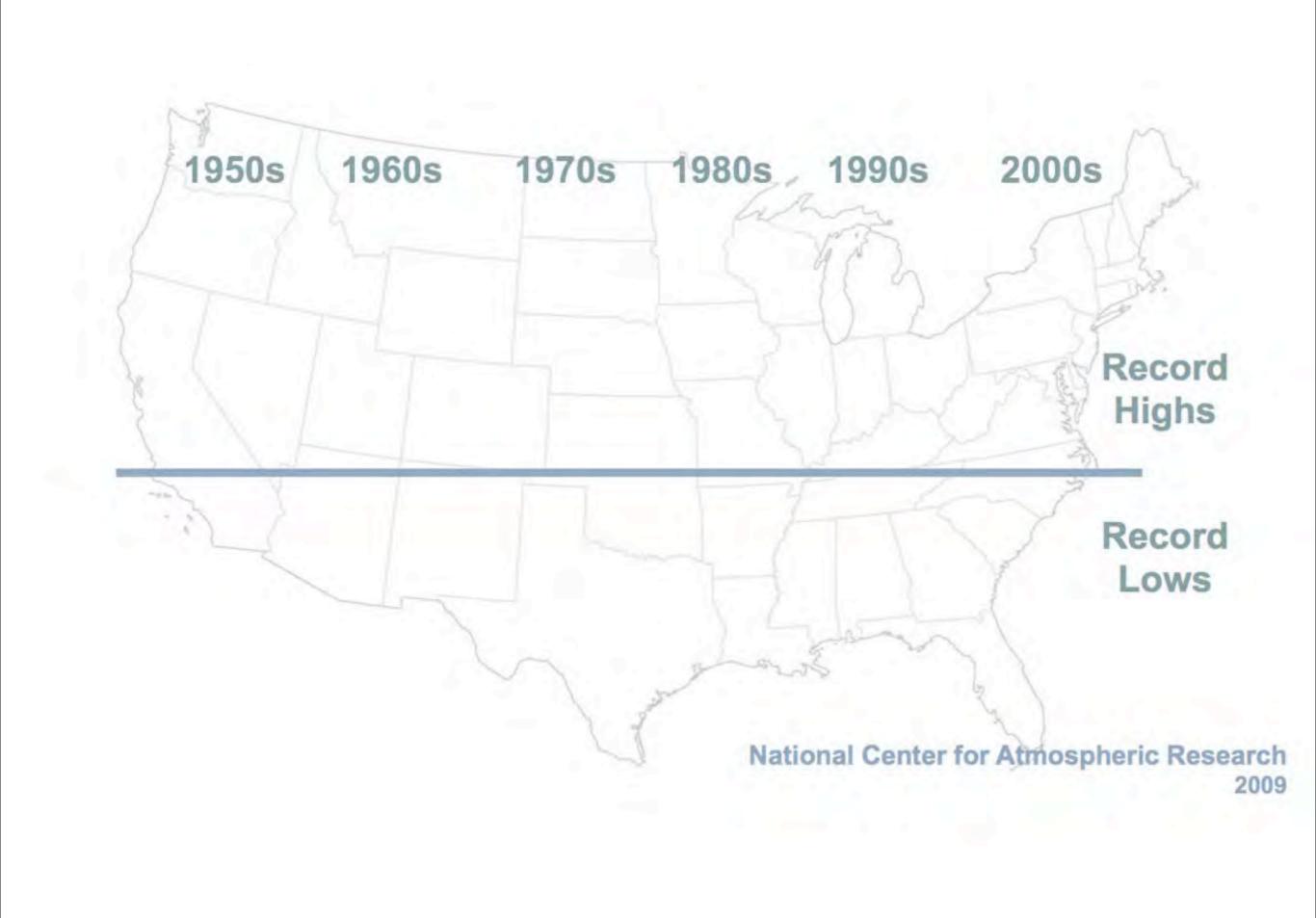


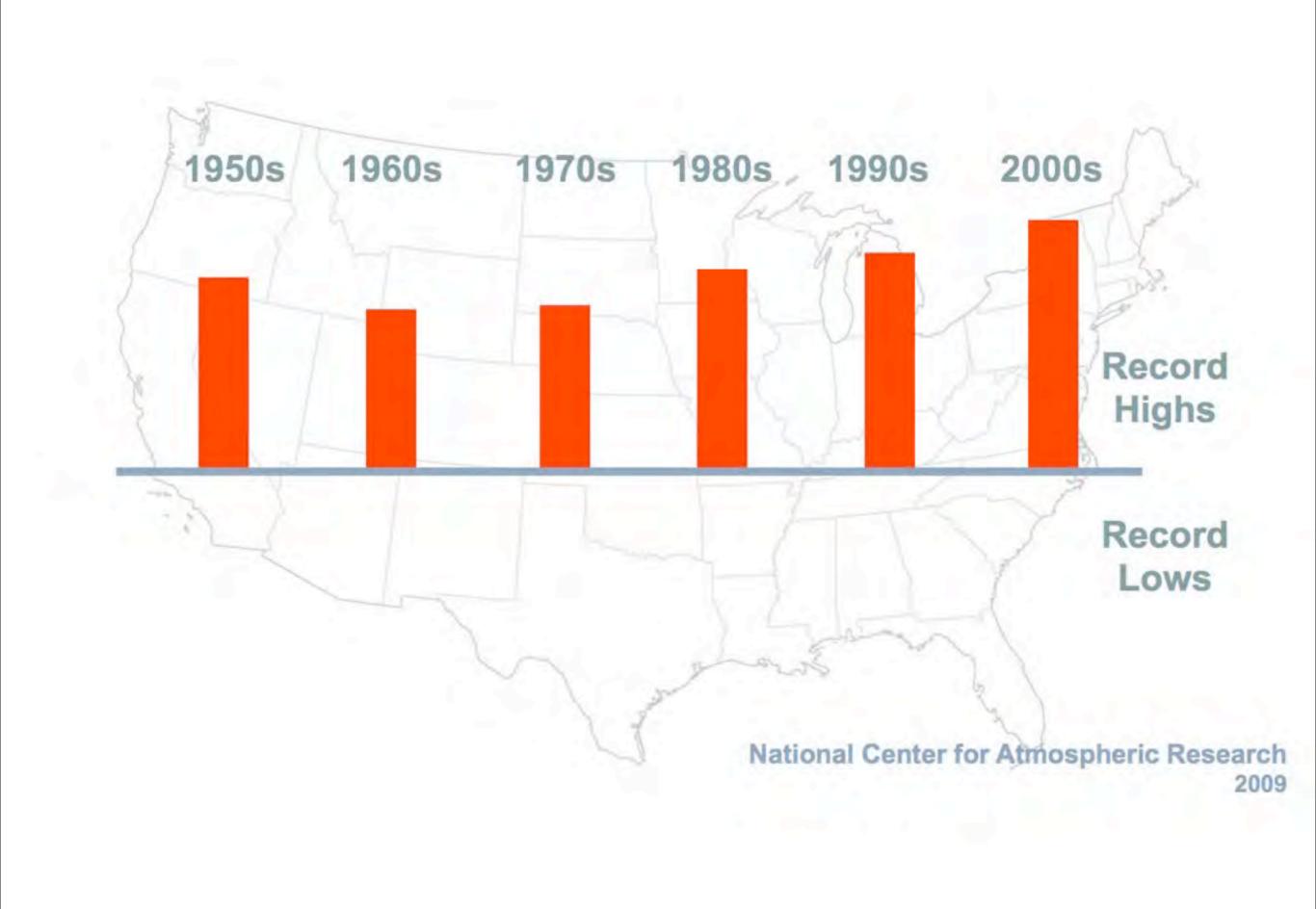


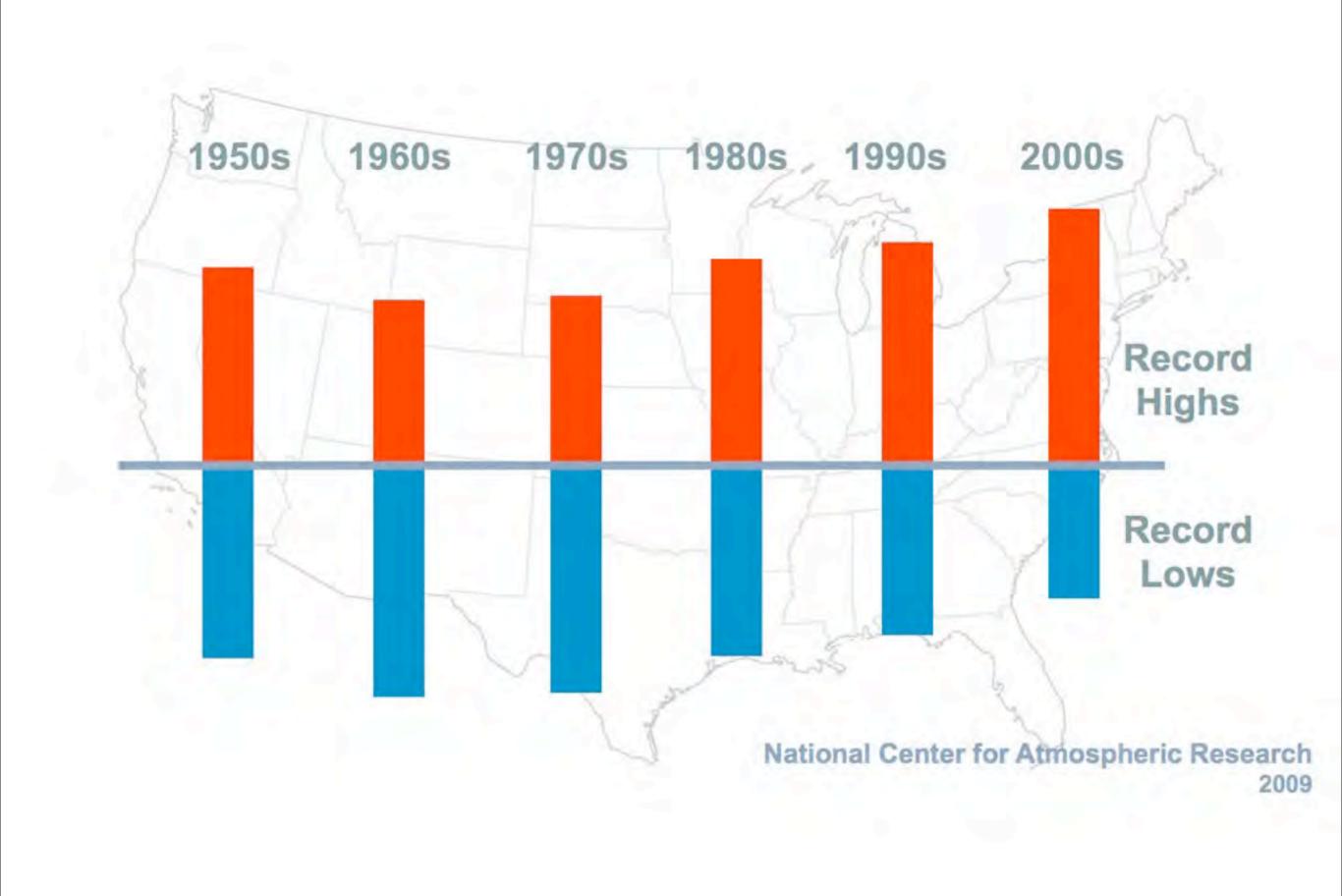


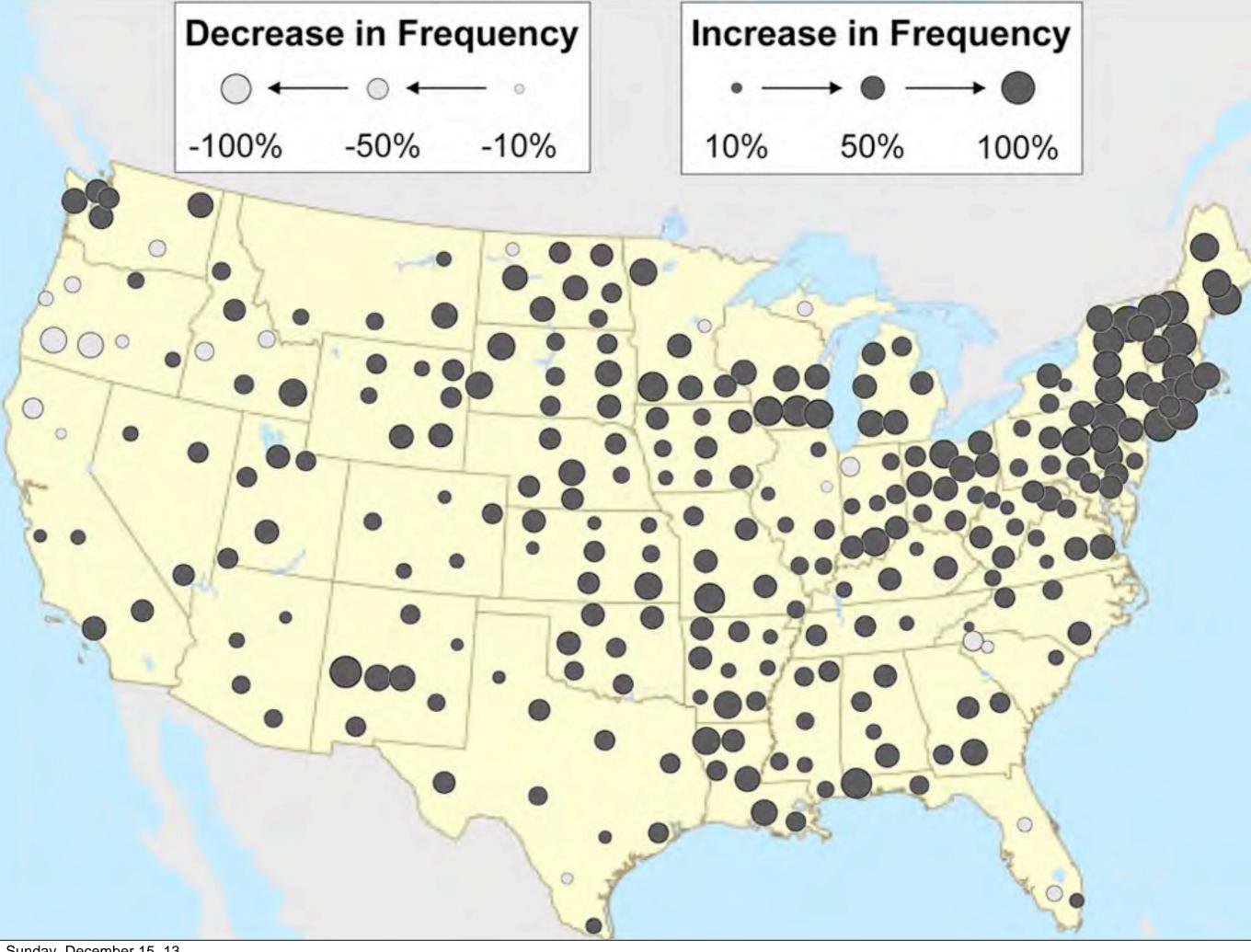




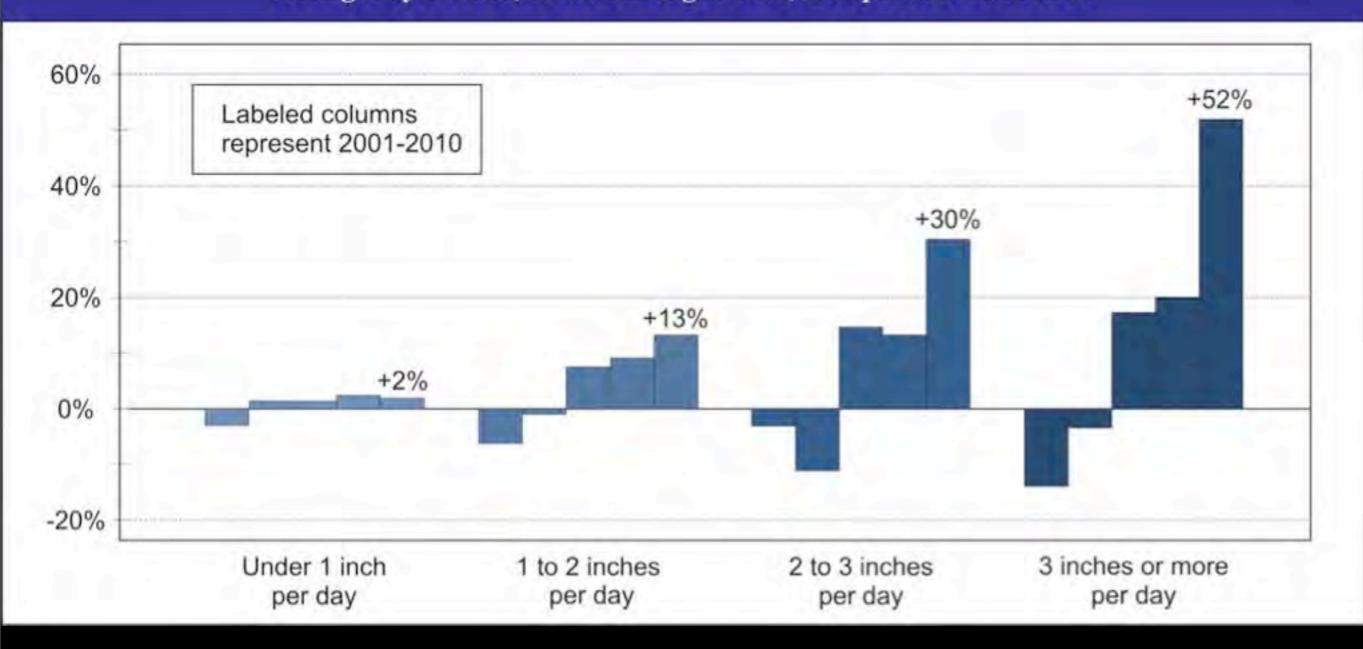




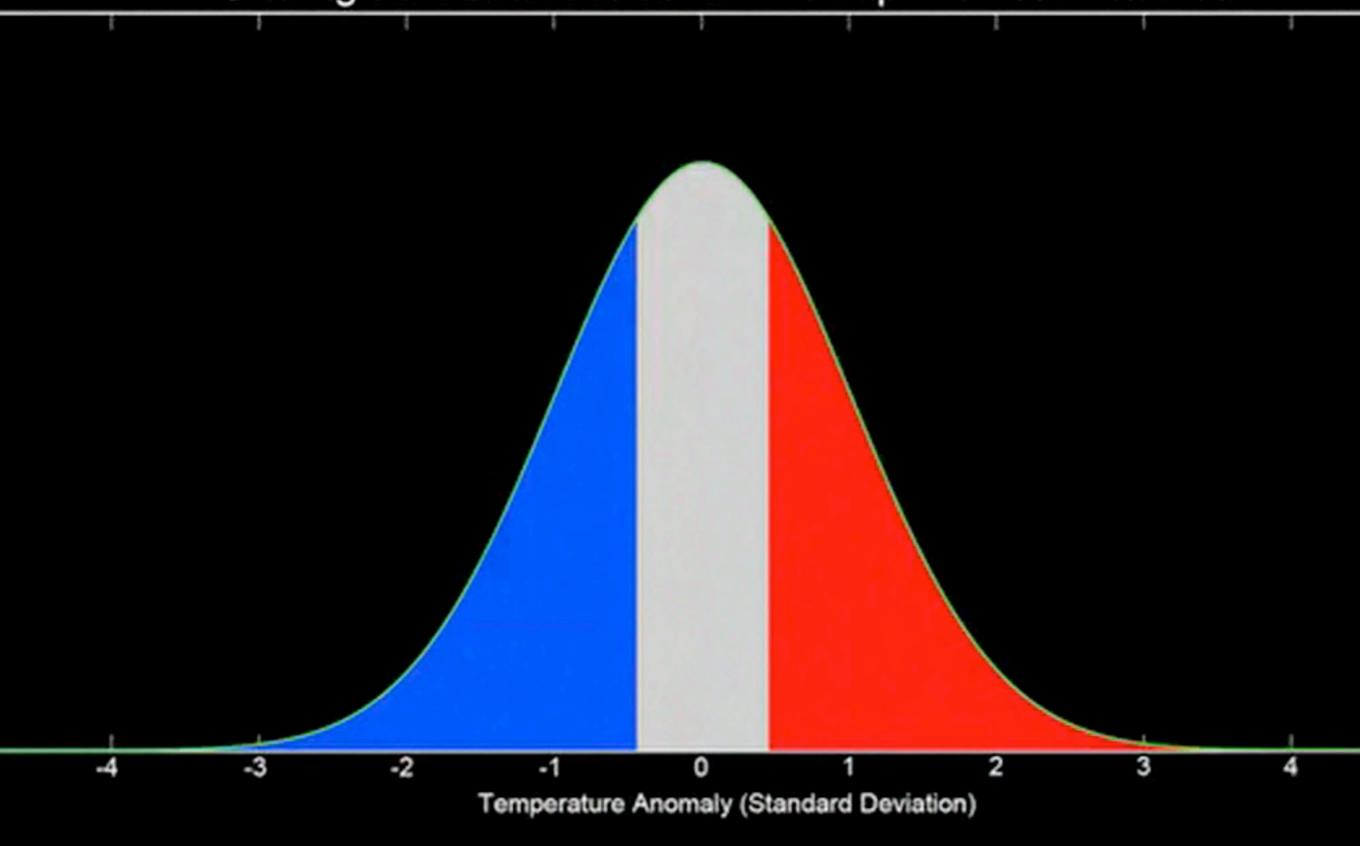




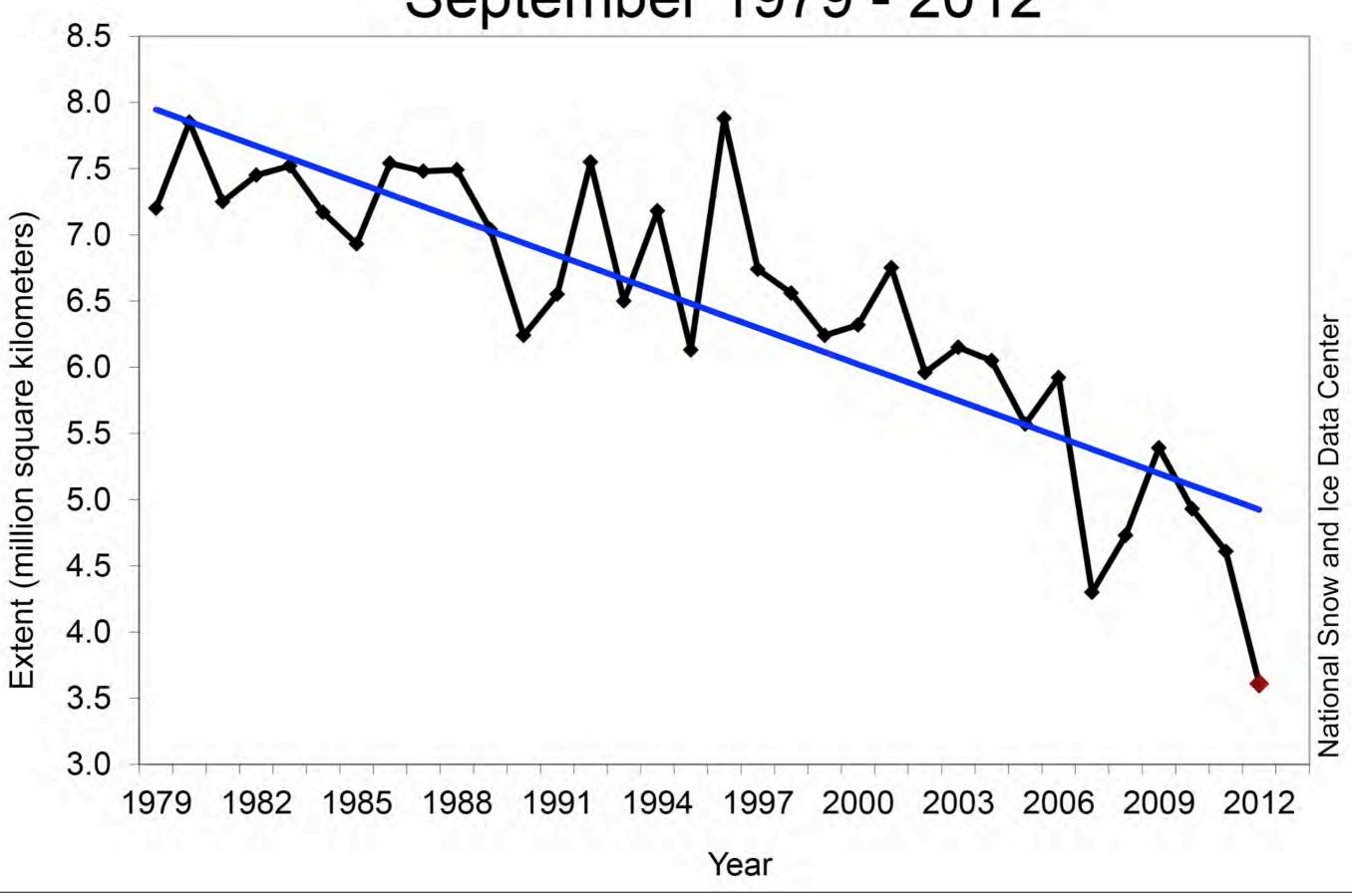
#### Frequency of Storms by Size in the Midwest Changes by Decade, 1960s Through 2000s, Compared to 1961-1990



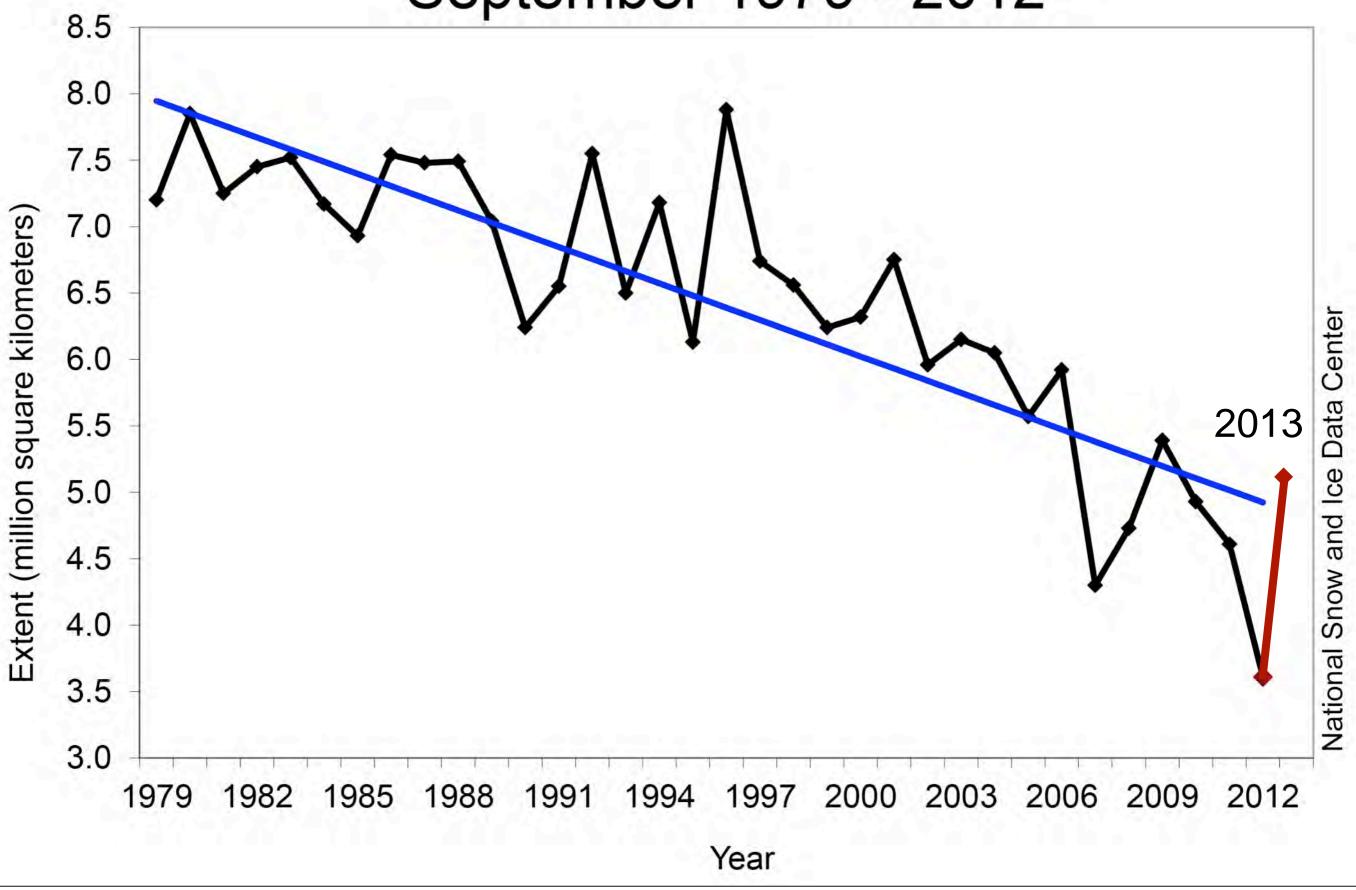
### Shifting Distribution of Summer Temperature Anomalies



Average Monthly Arctic Sea Ice Extent September 1979 - 2012



Average Monthly Arctic Sea Ice Extent September 1979 - 2012





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## And now it's global COOLING! Record return of Arctic ice cap as it grows by 60% in a year

- Almost a million more square miles of ocean covered with ice than in 2012
- BBC reported in 2007 global warming would leave Arctic ice-free in summer by 2013
- Publication of UN climate change report suggesting global warming caused by humans pushed back to later this month

By DAVID ROSE

PUBLISHED: 18:37 EST, 7 September 2013 UPDATED: 07:01 EST, 8 September 2013









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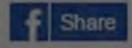
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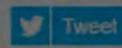
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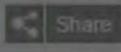
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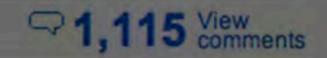


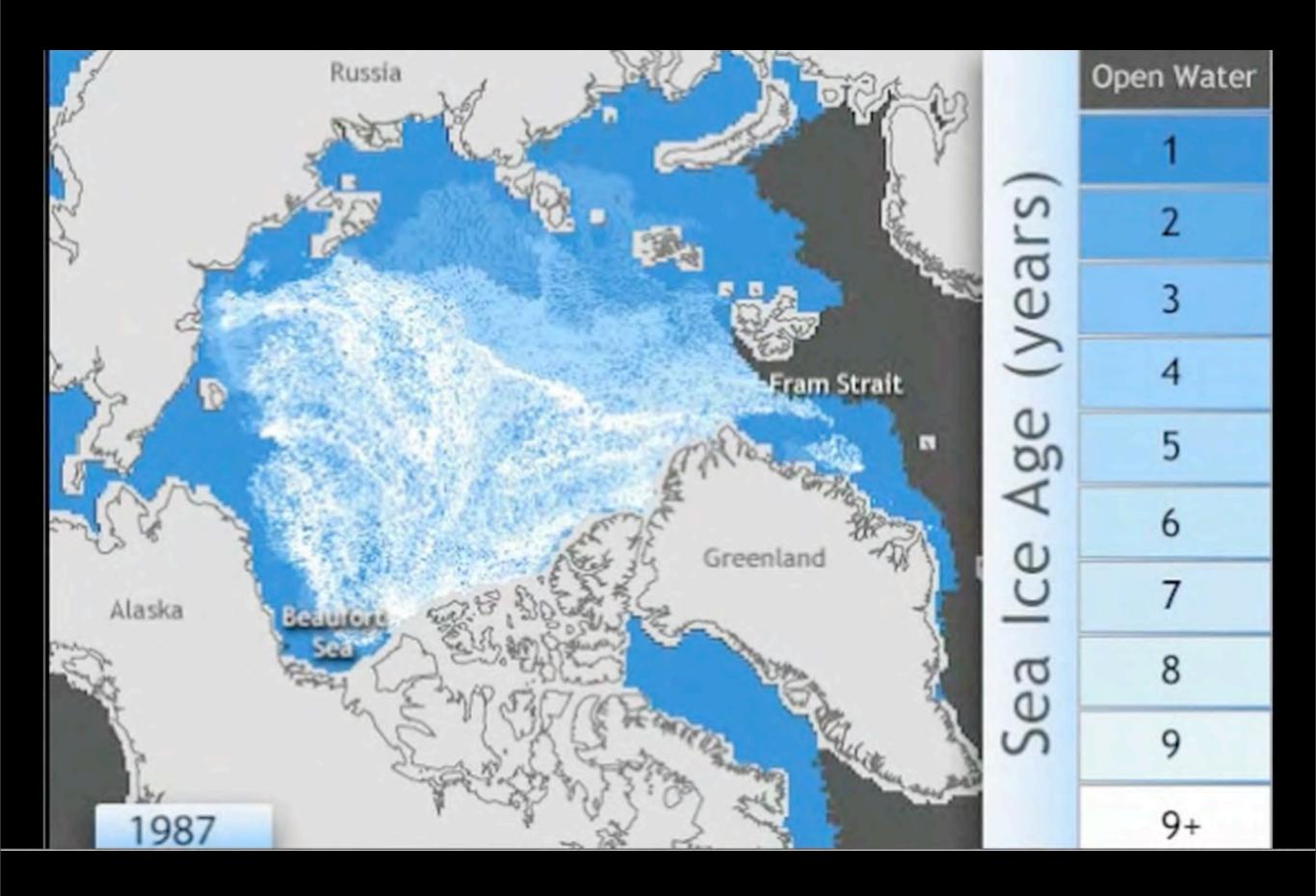


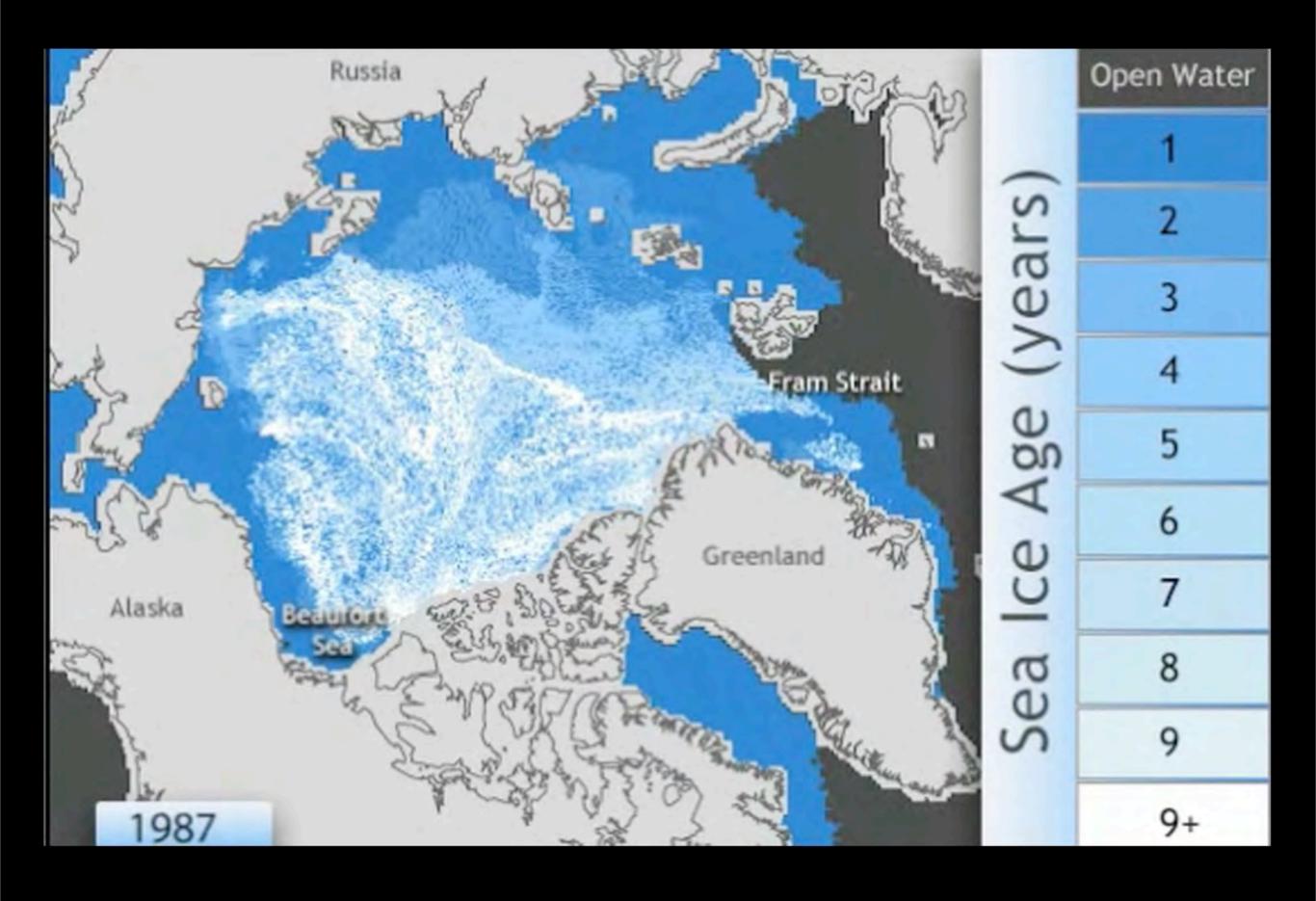


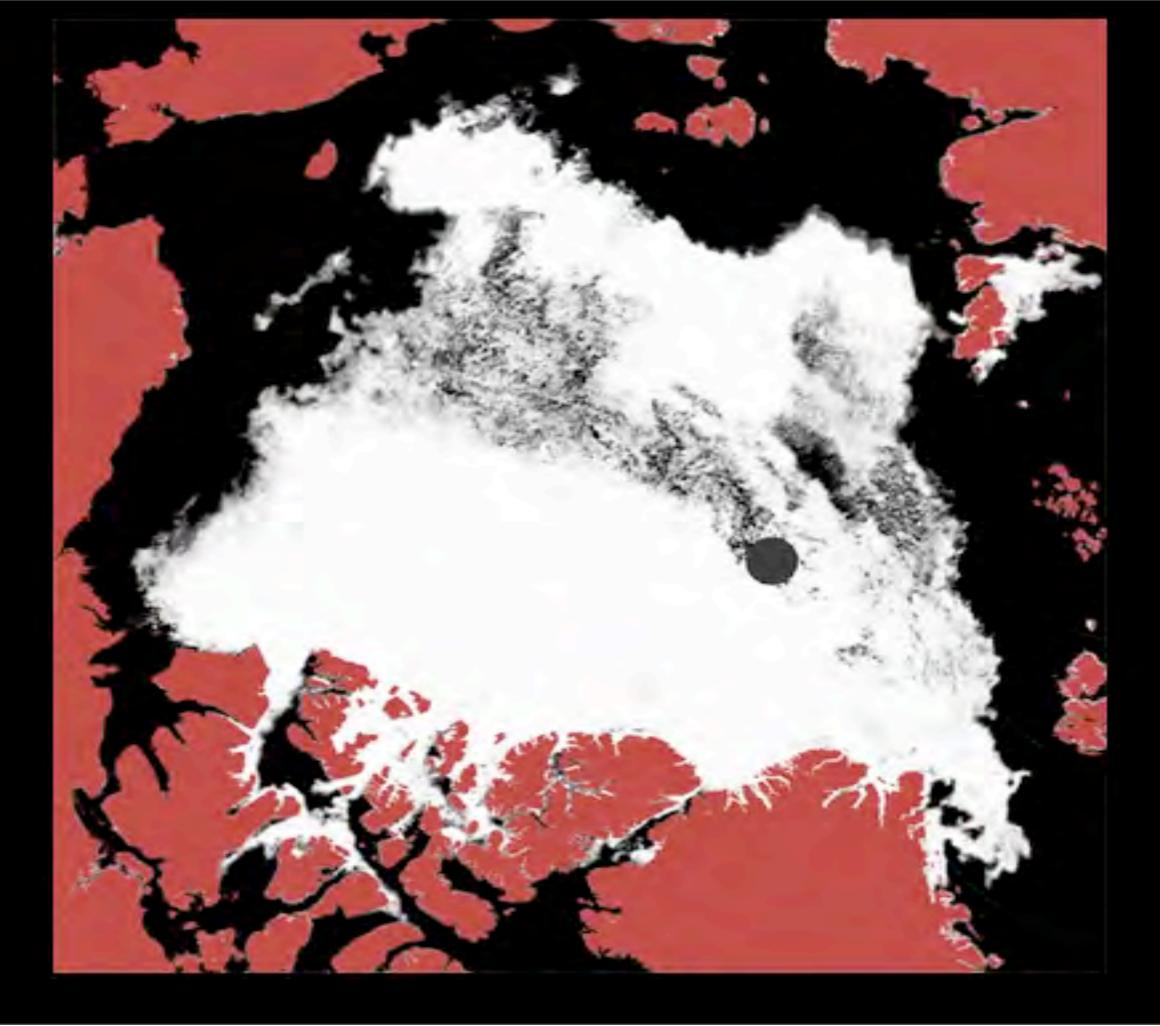


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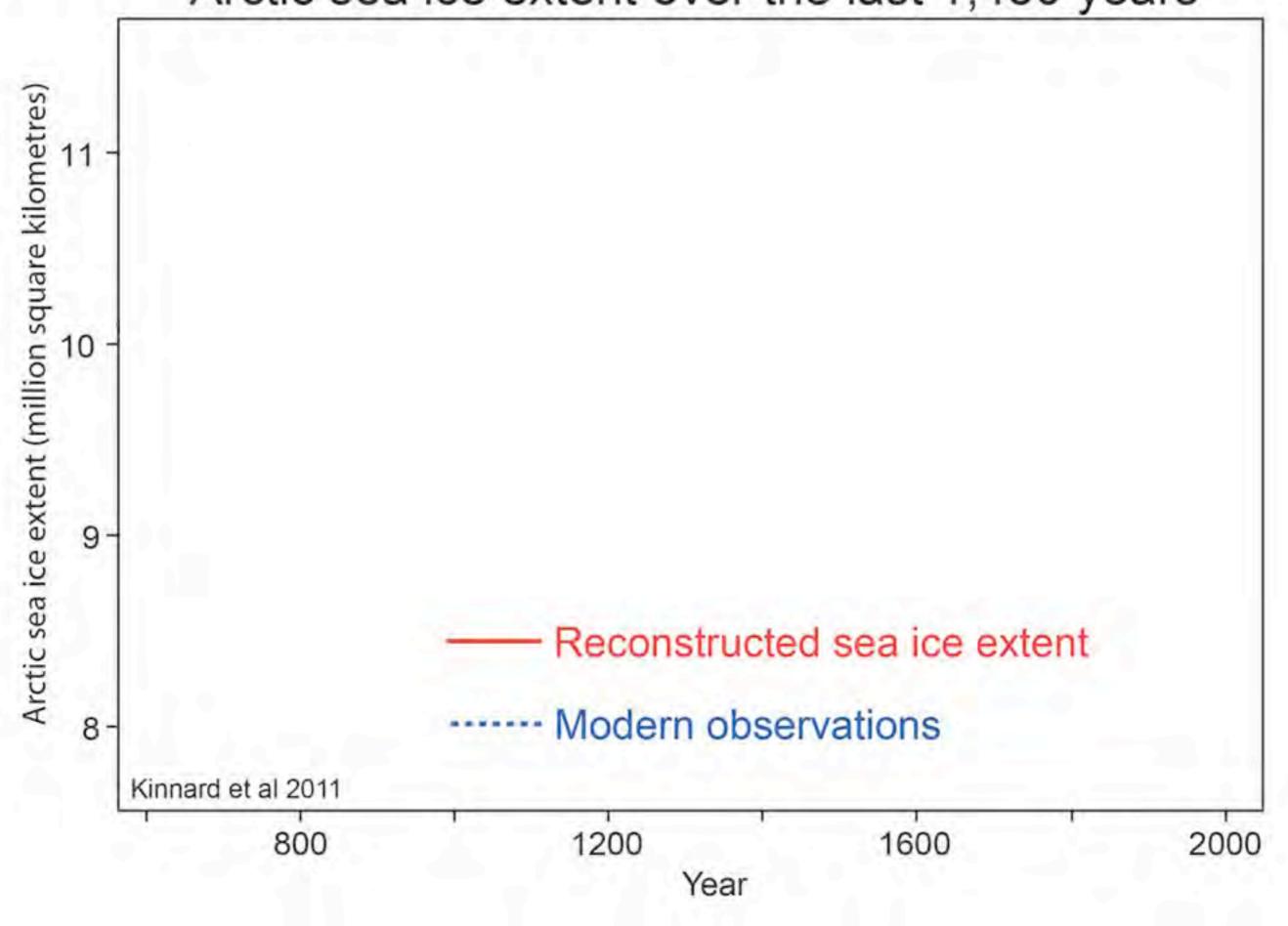




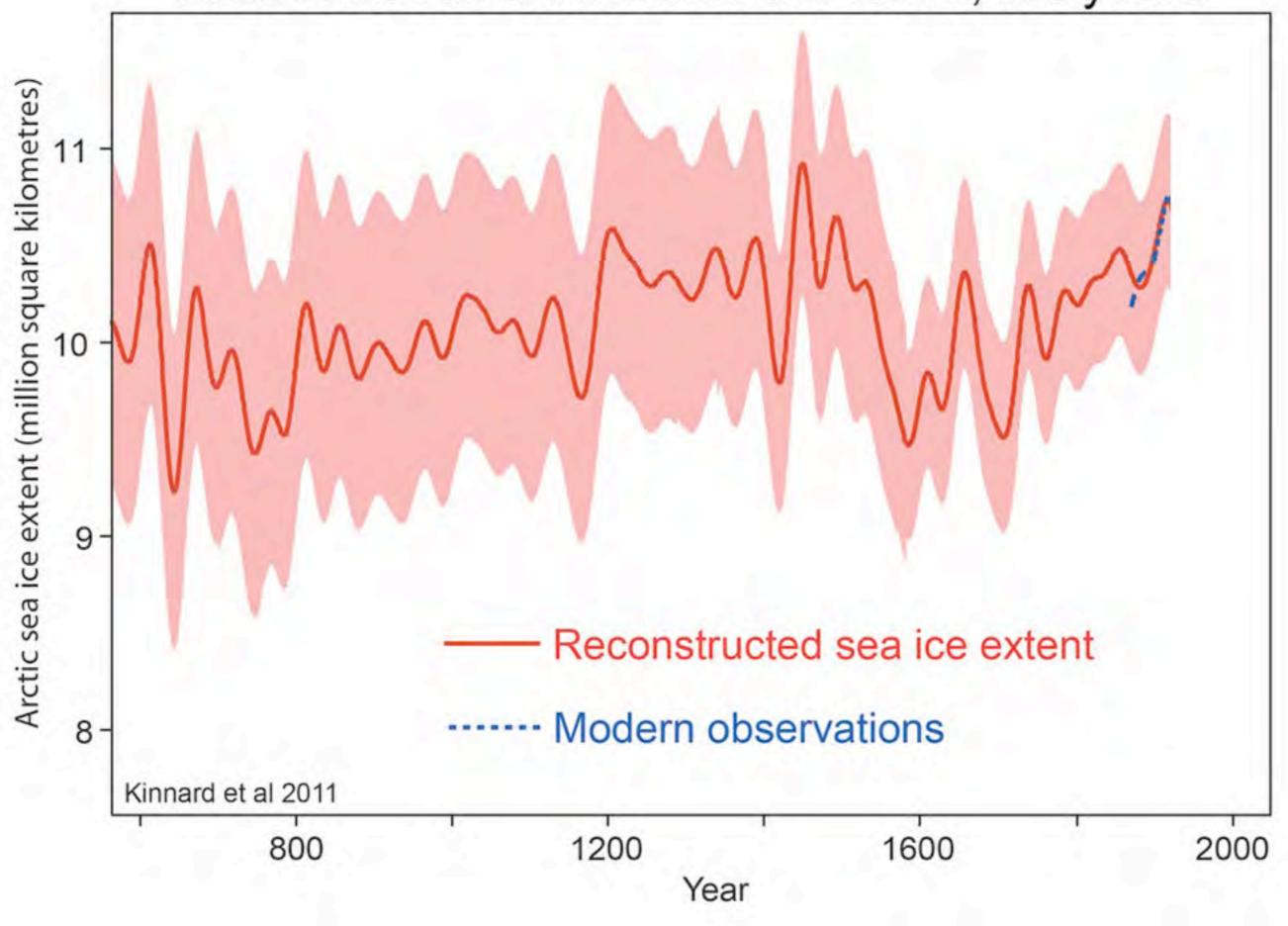




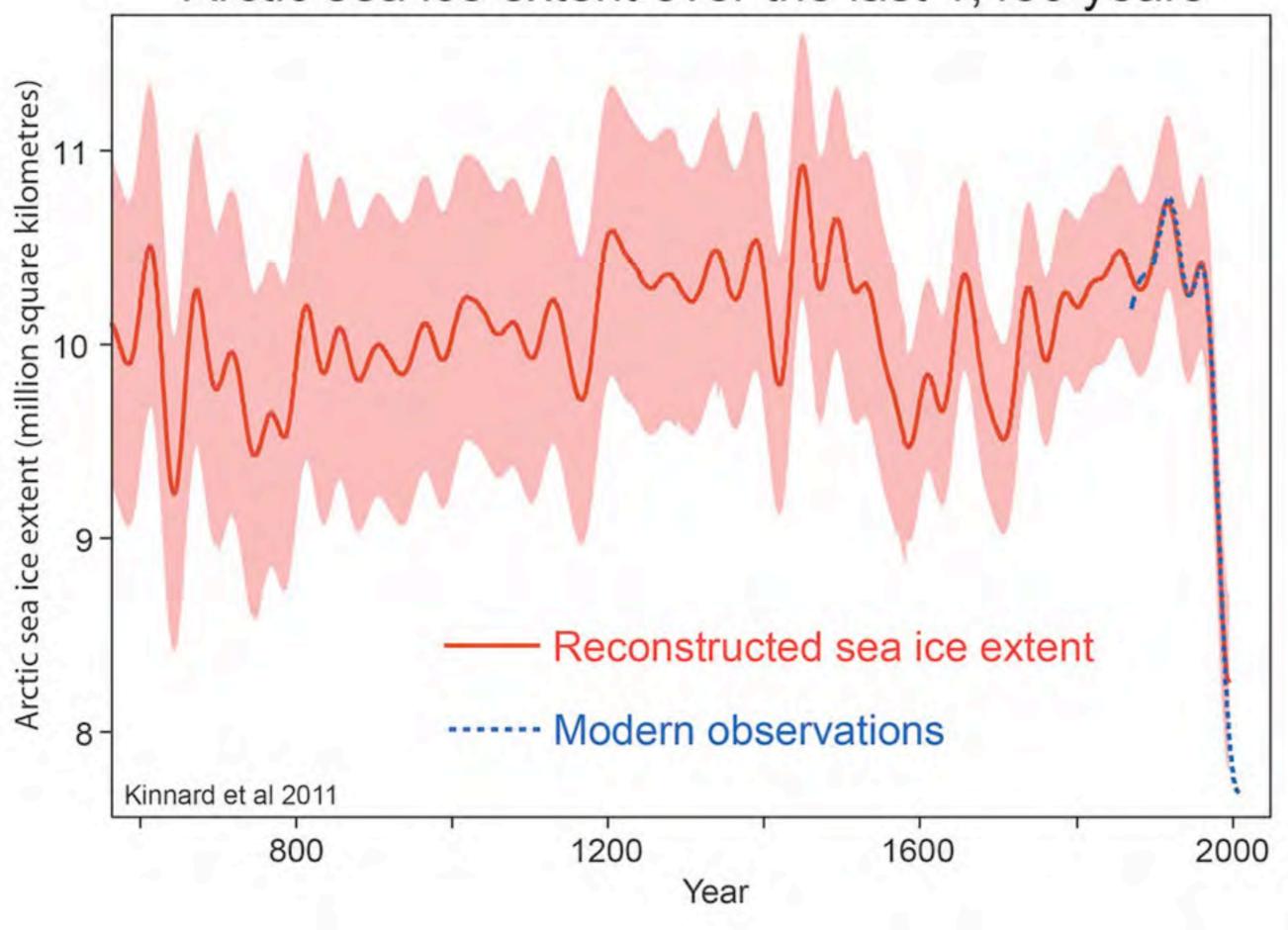
### Arctic sea ice extent over the last 1,450 years

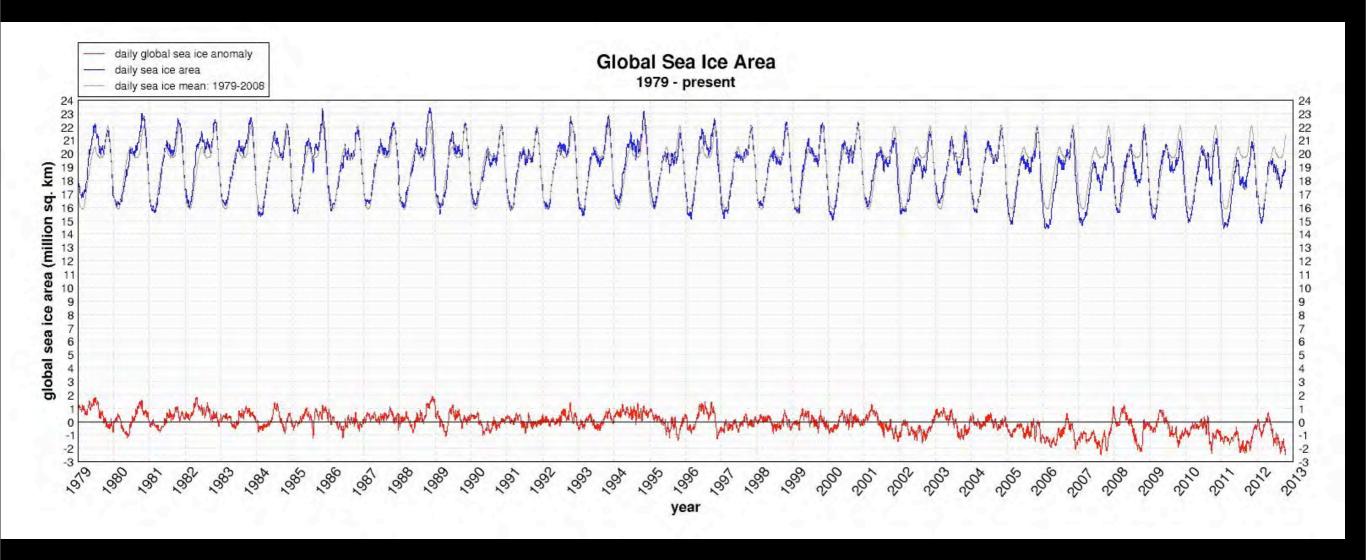


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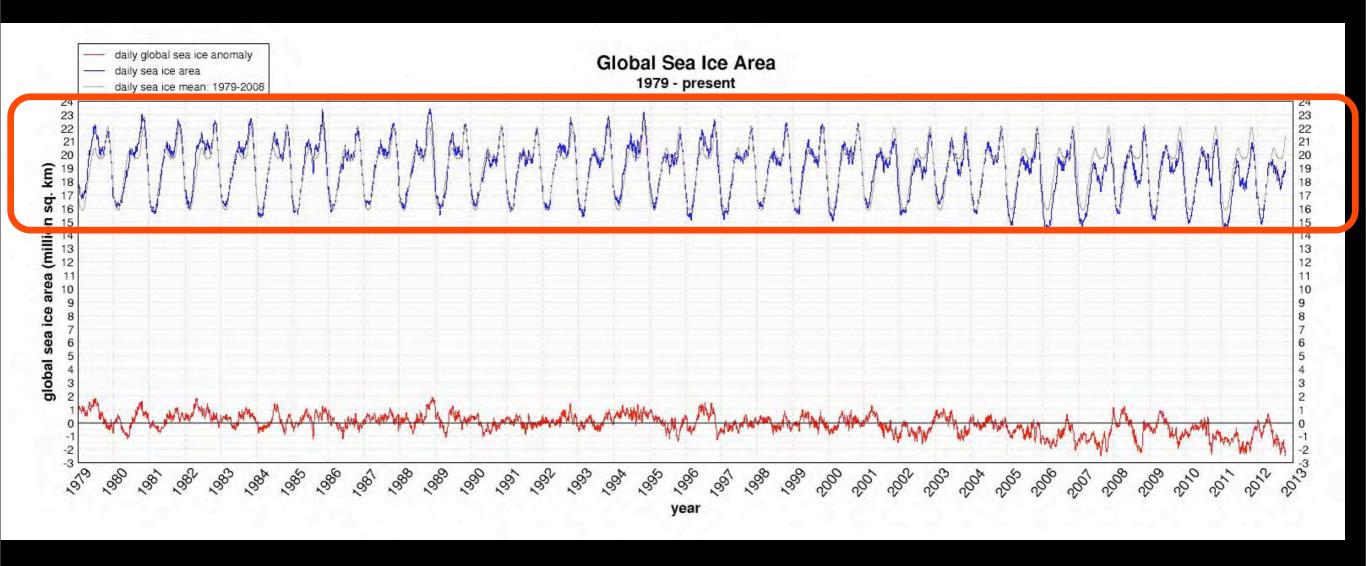


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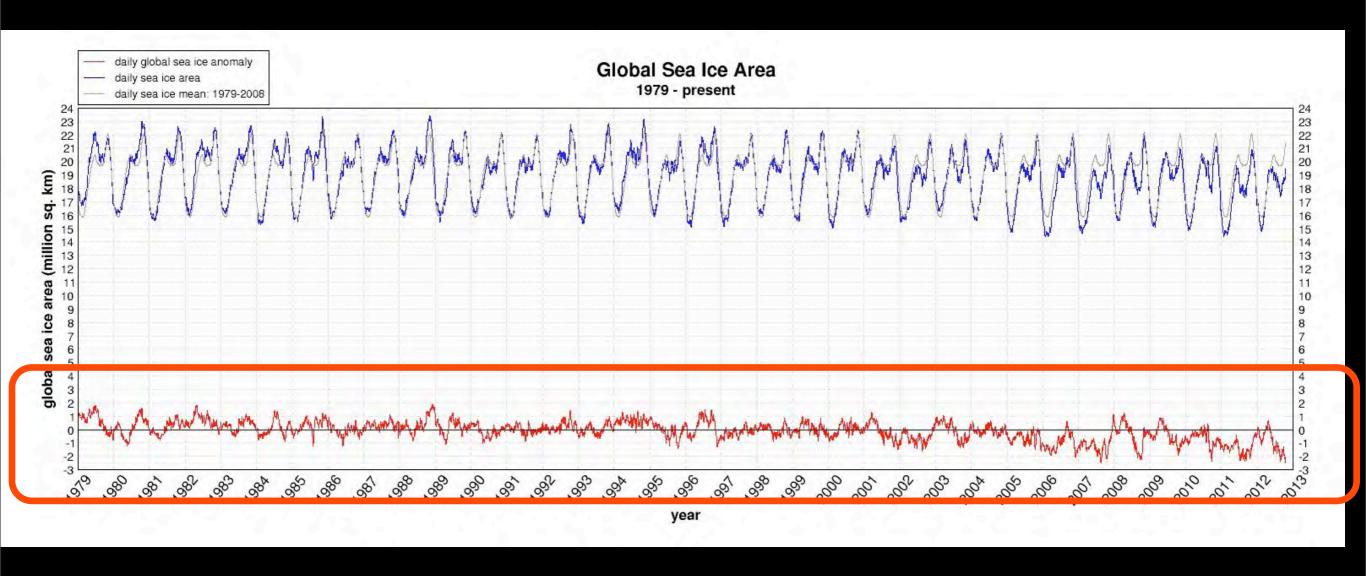




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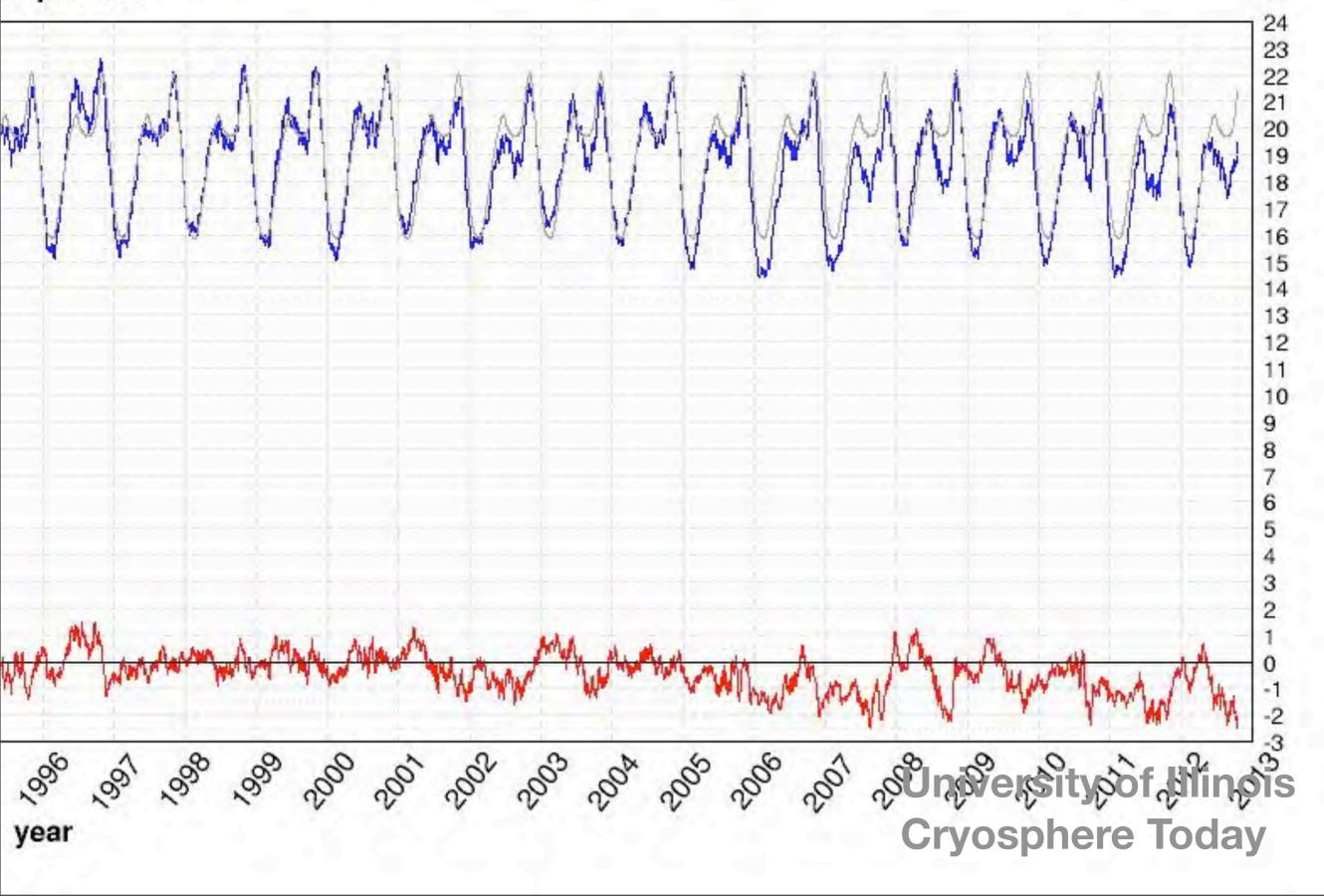
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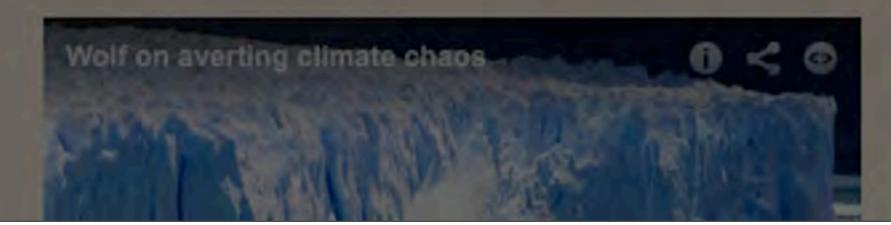
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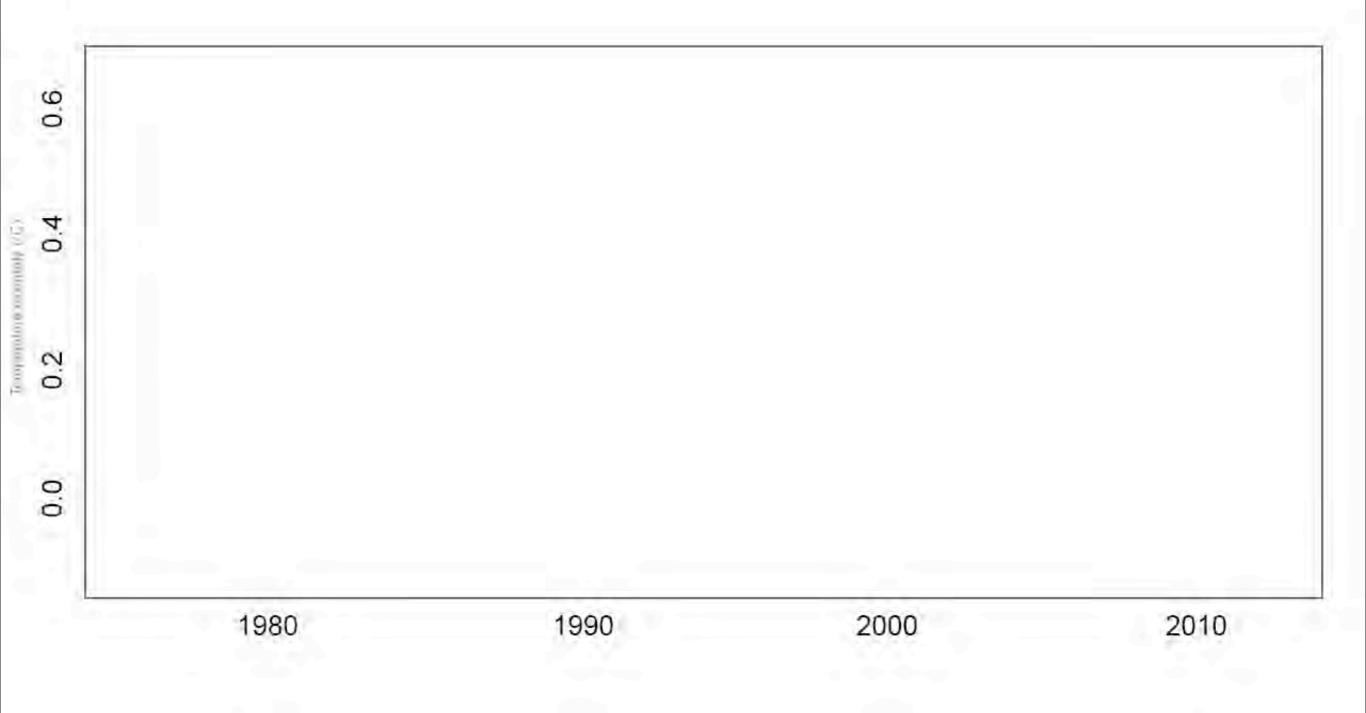
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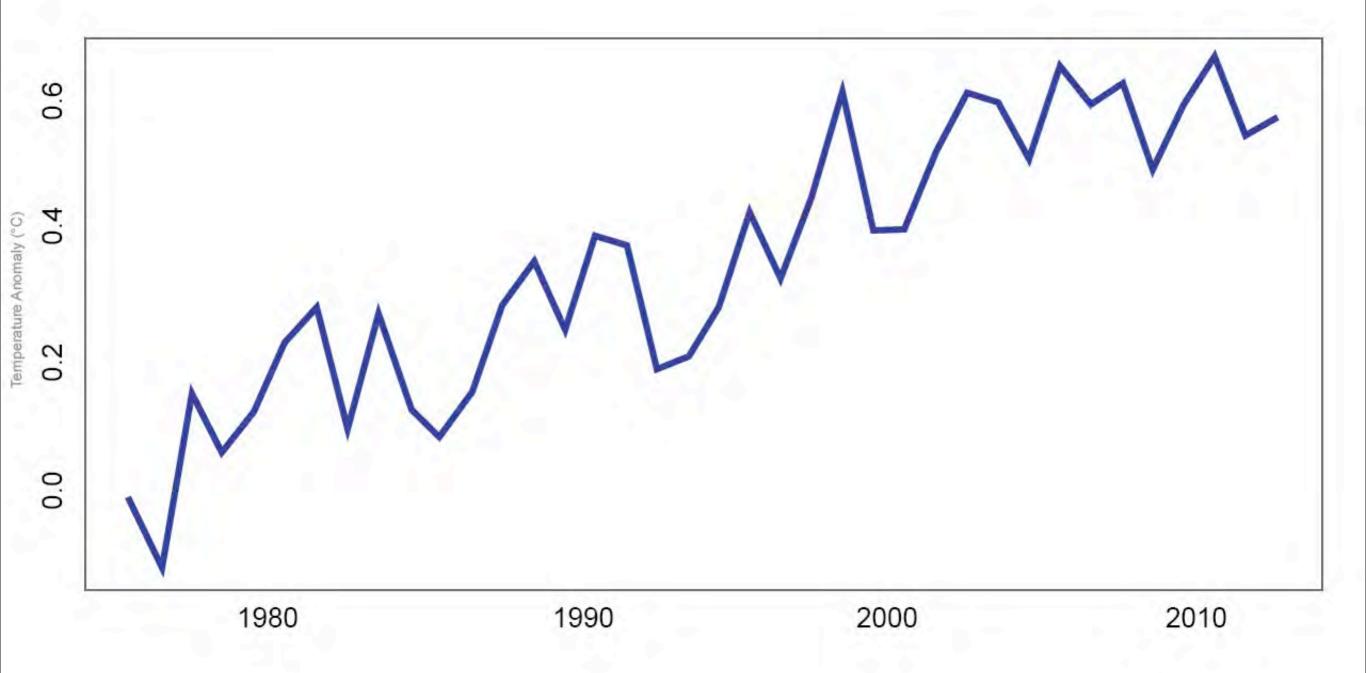
# Global warming likely to be slower than predicted, scientists say

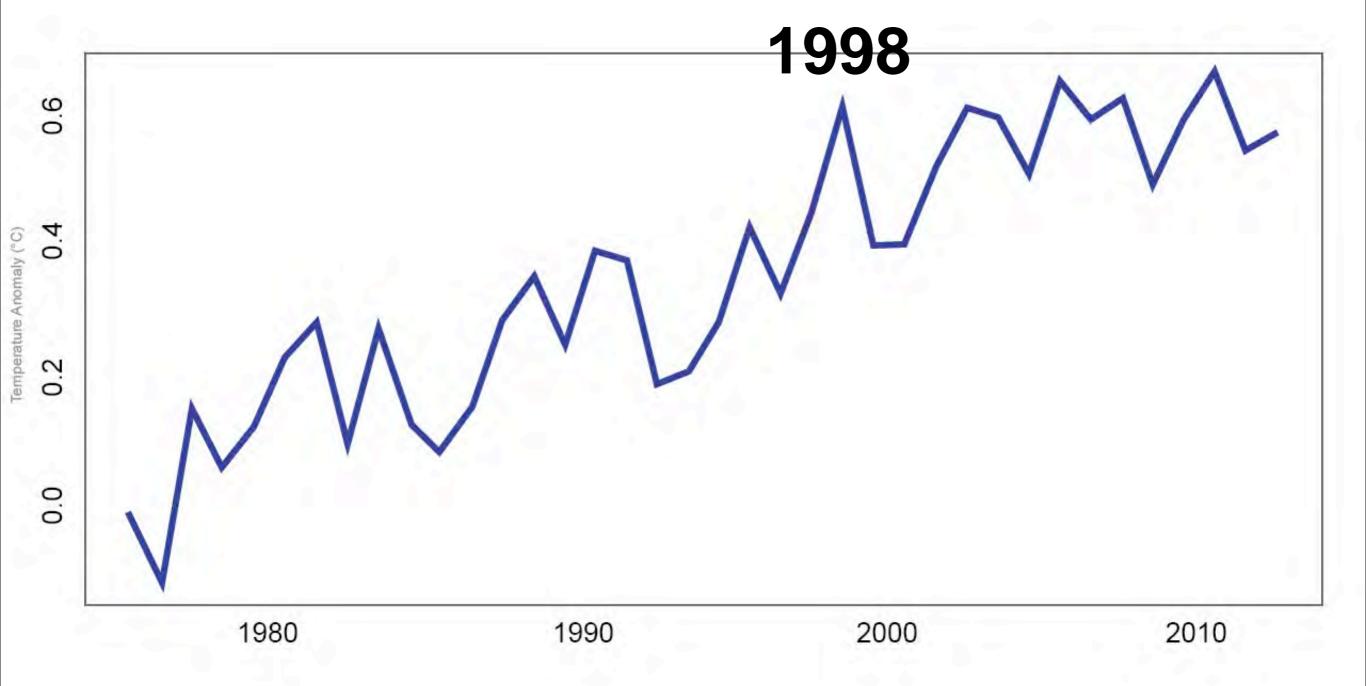
By Pilita Clark, Environment Correspondent

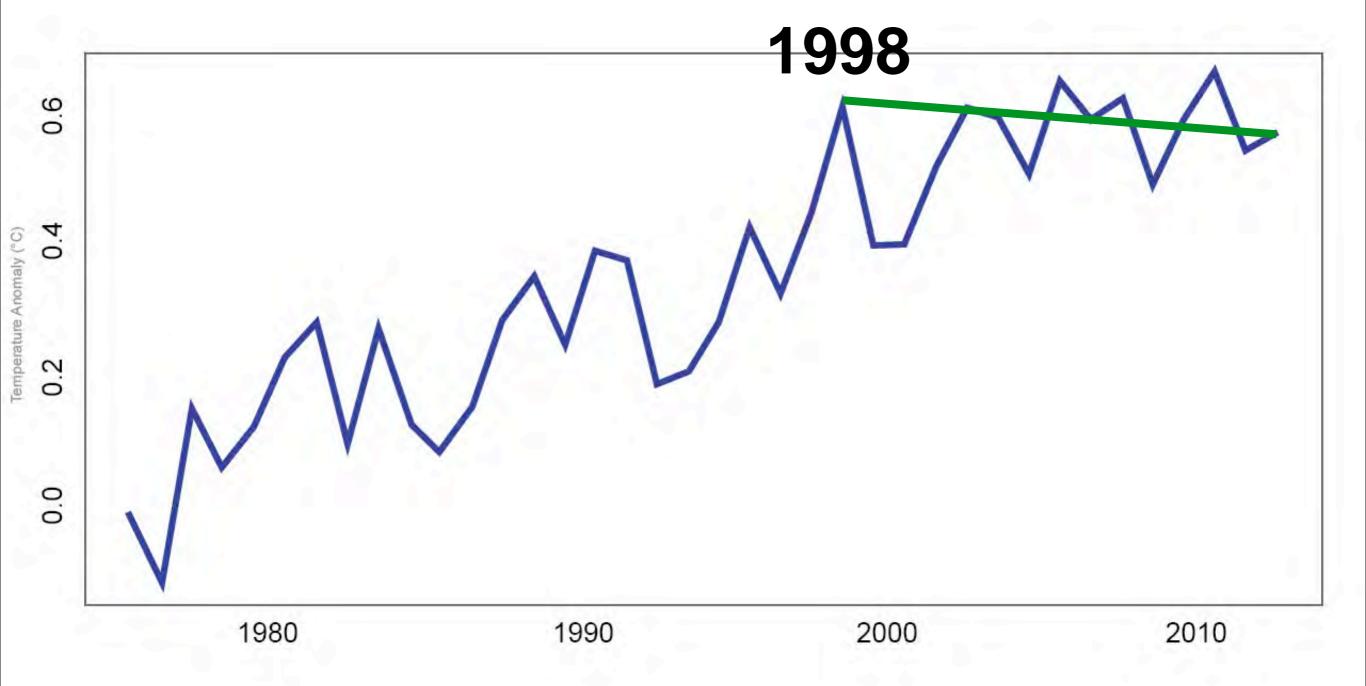
The earth may warm at a slightly slower rate in coming decades than scientists were predicting six years ago, according to a paper published on Sunday by researchers from Oxford university, Nasa and nearly a dozen other institutions.

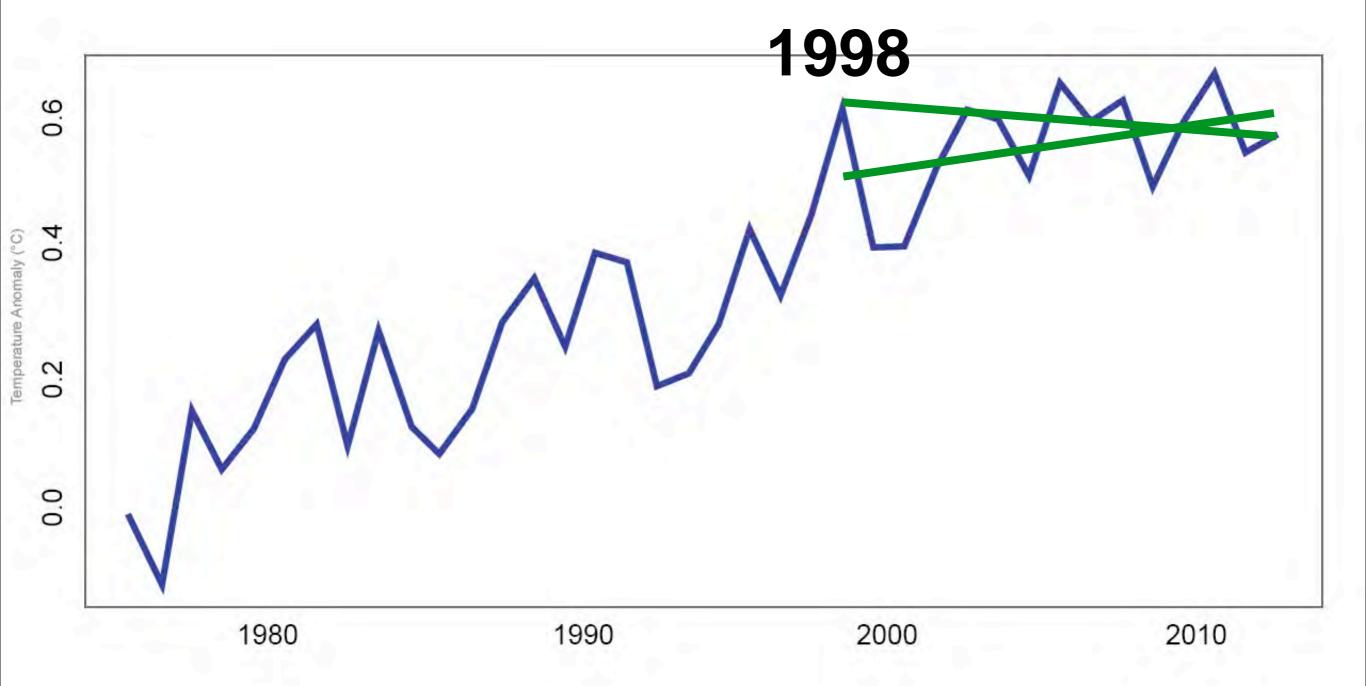


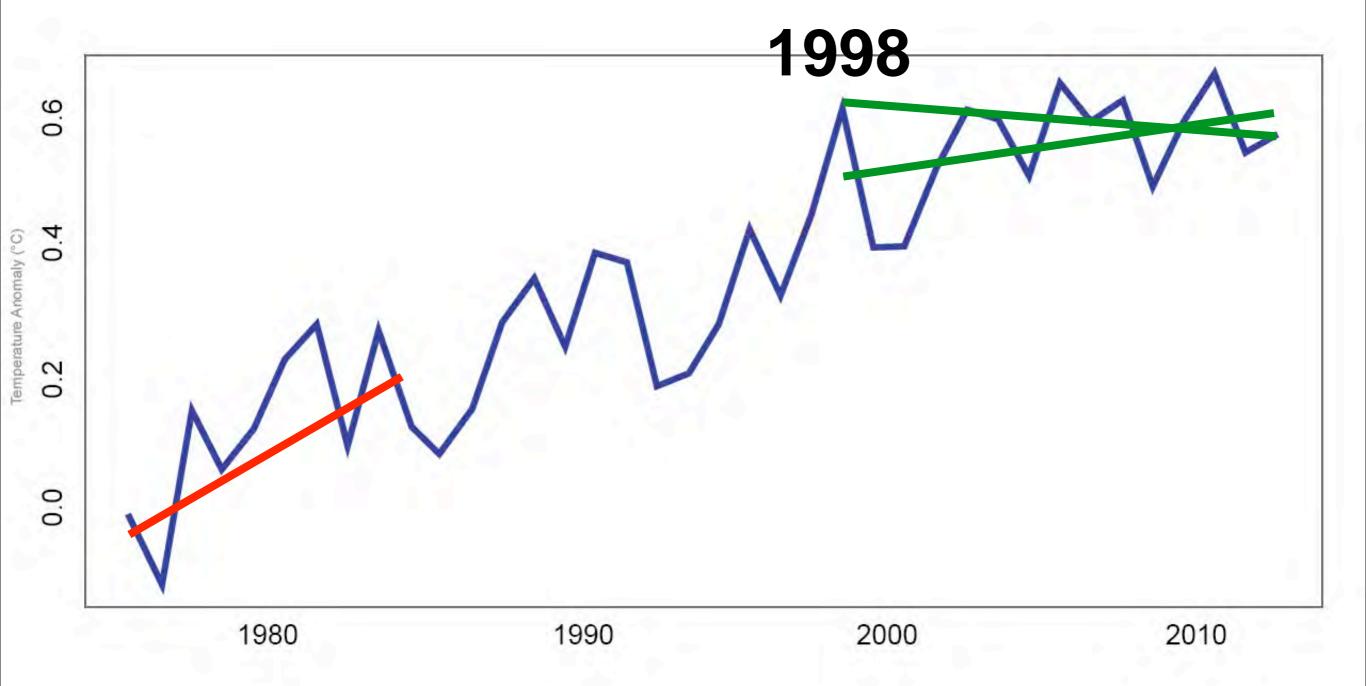


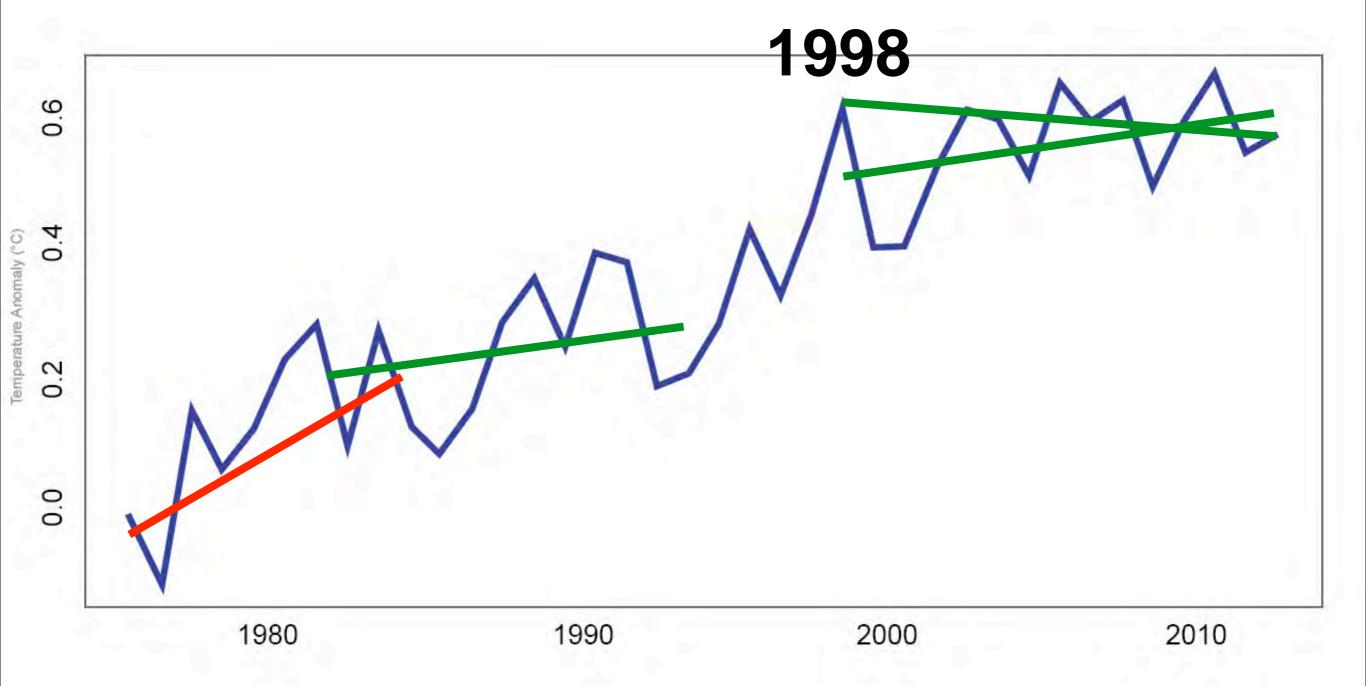


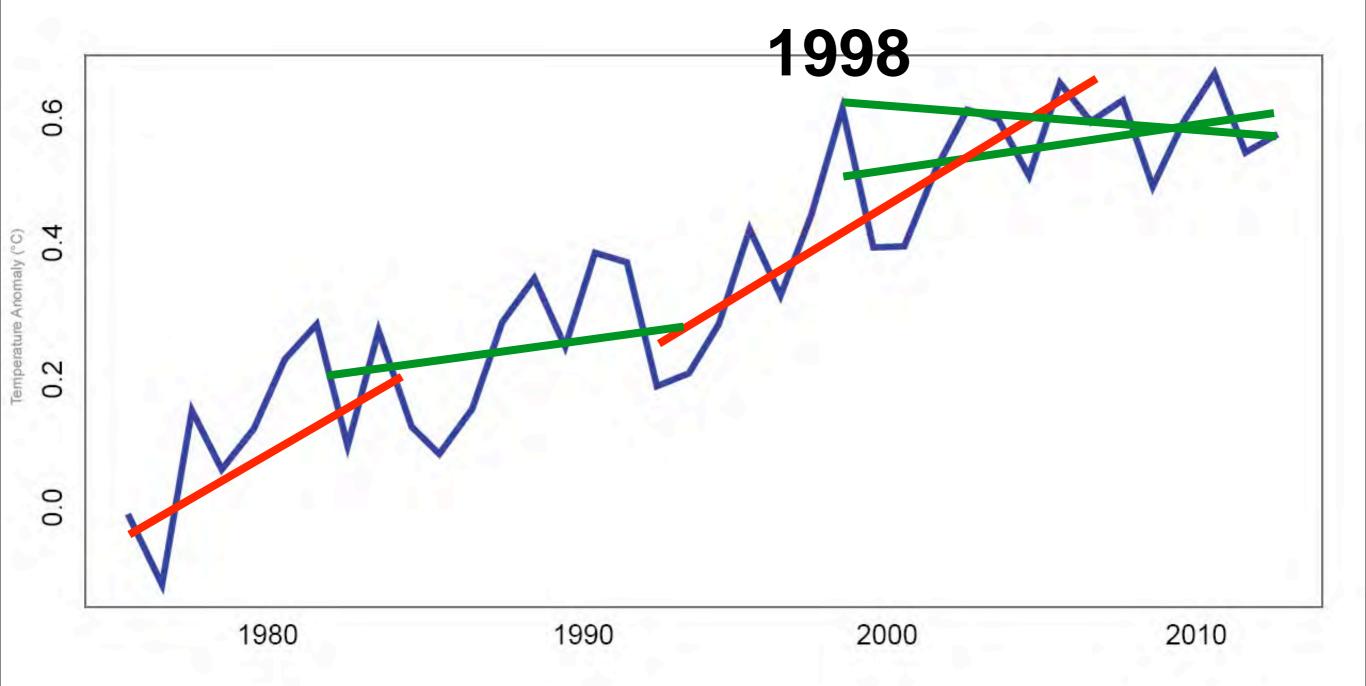


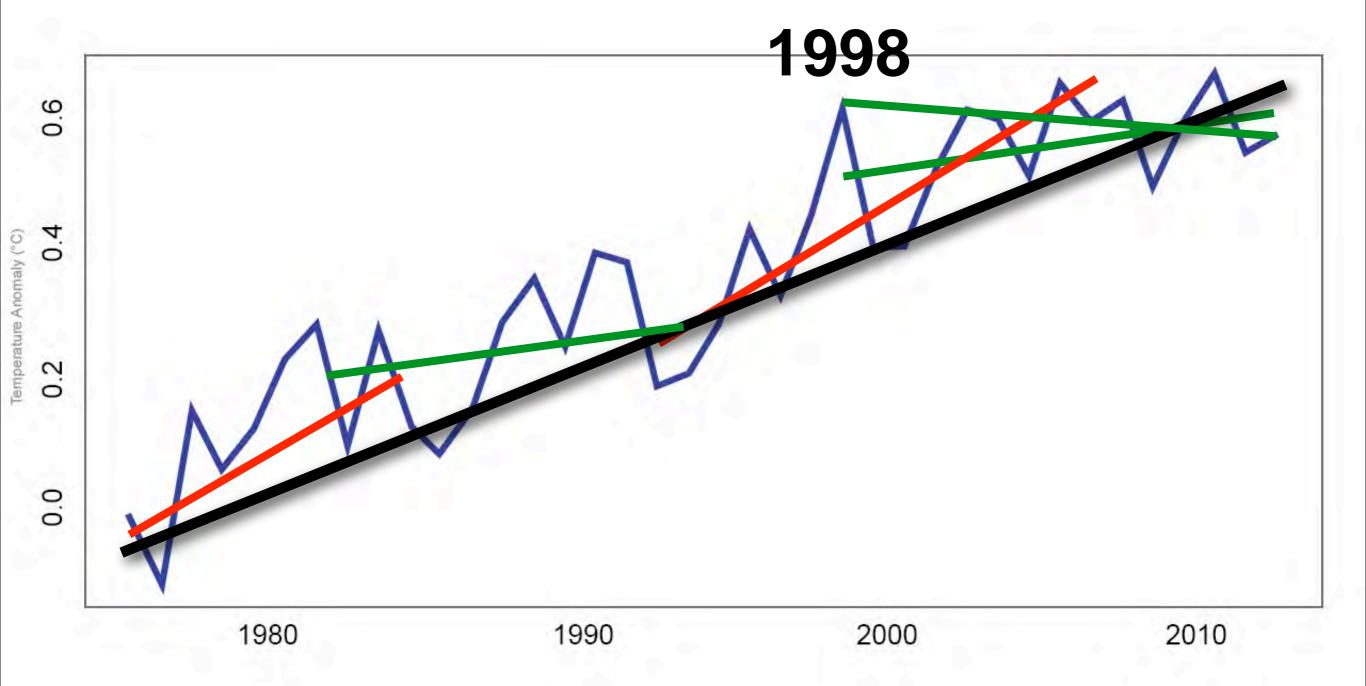


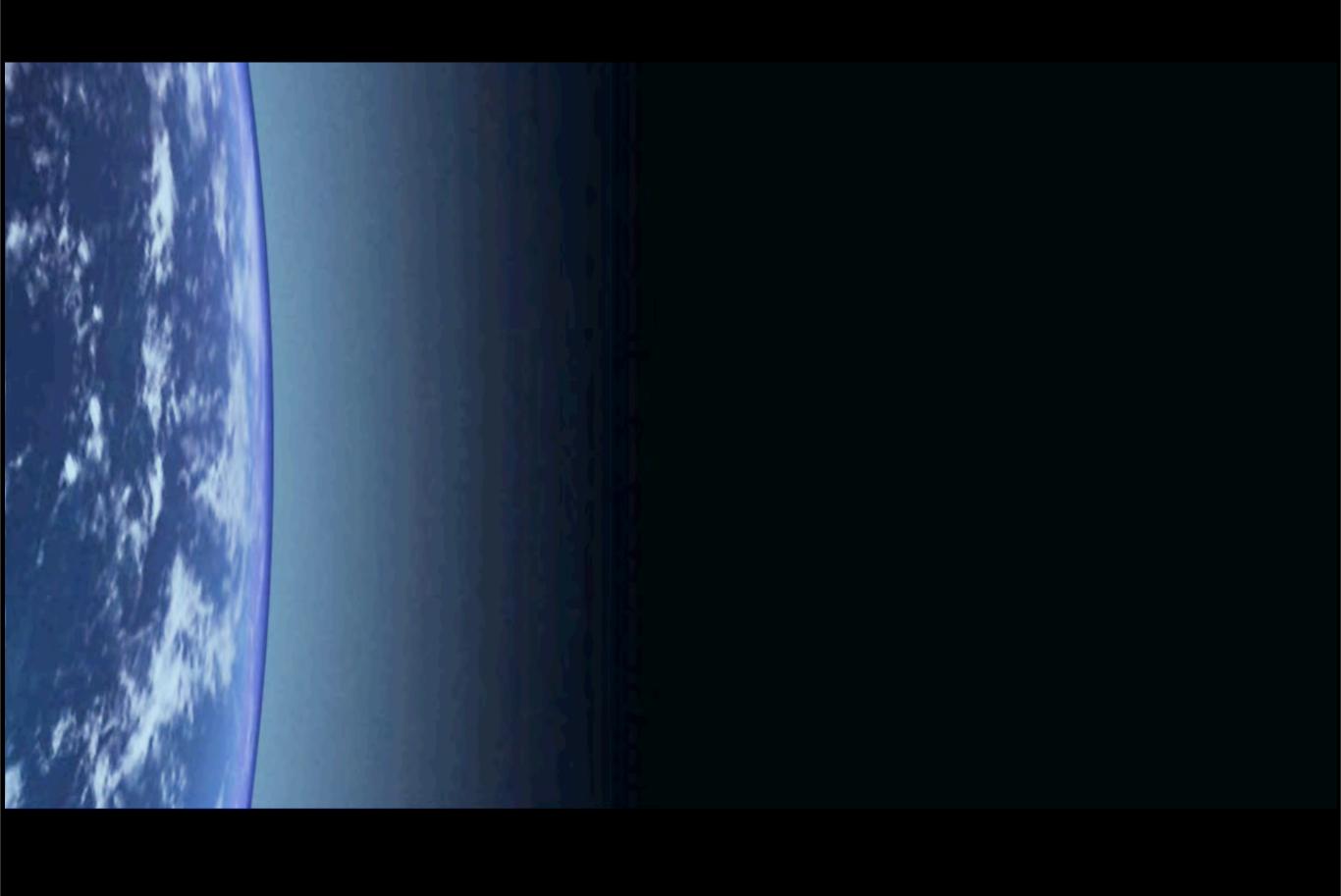


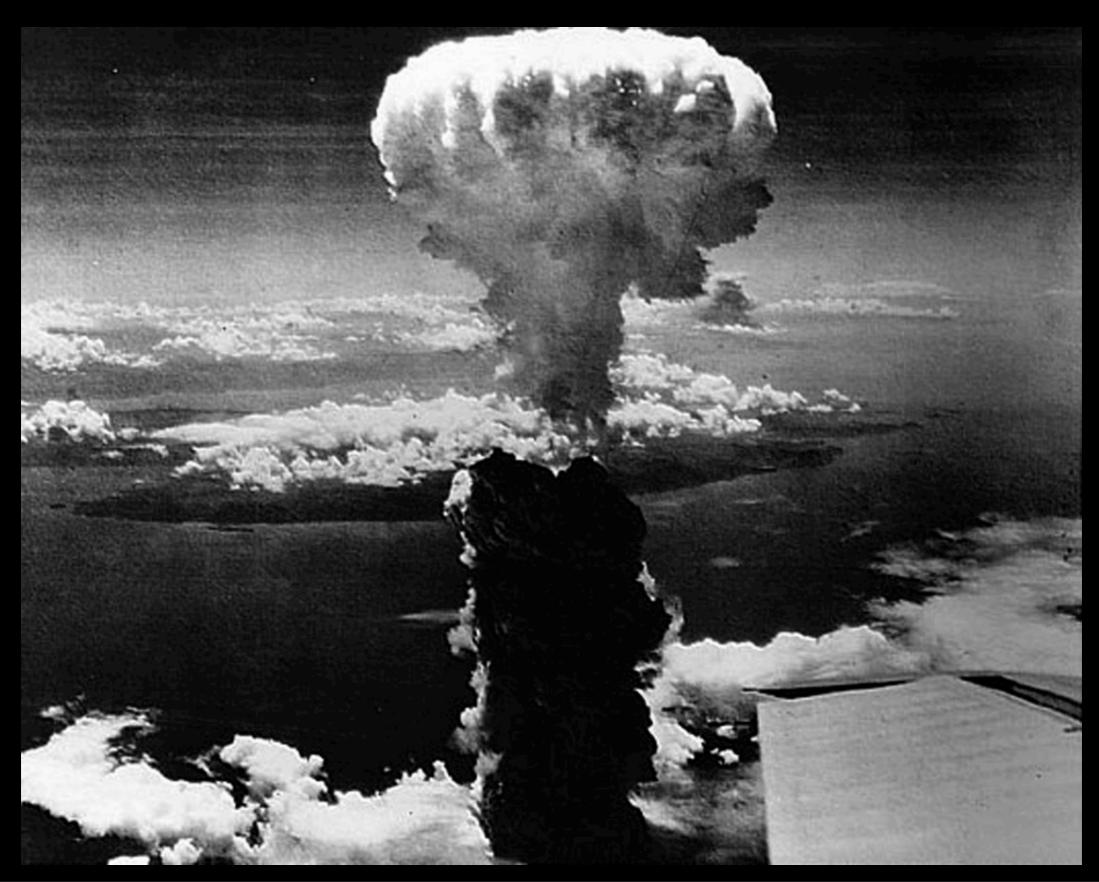


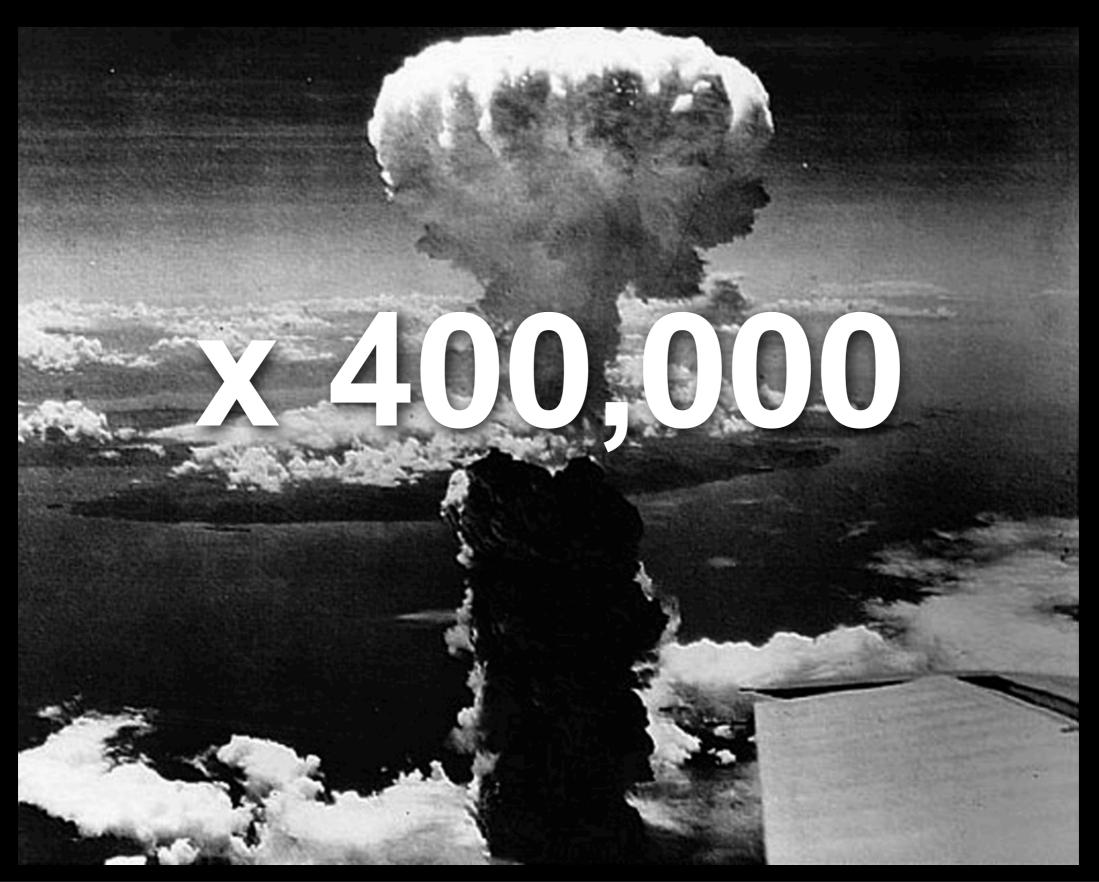


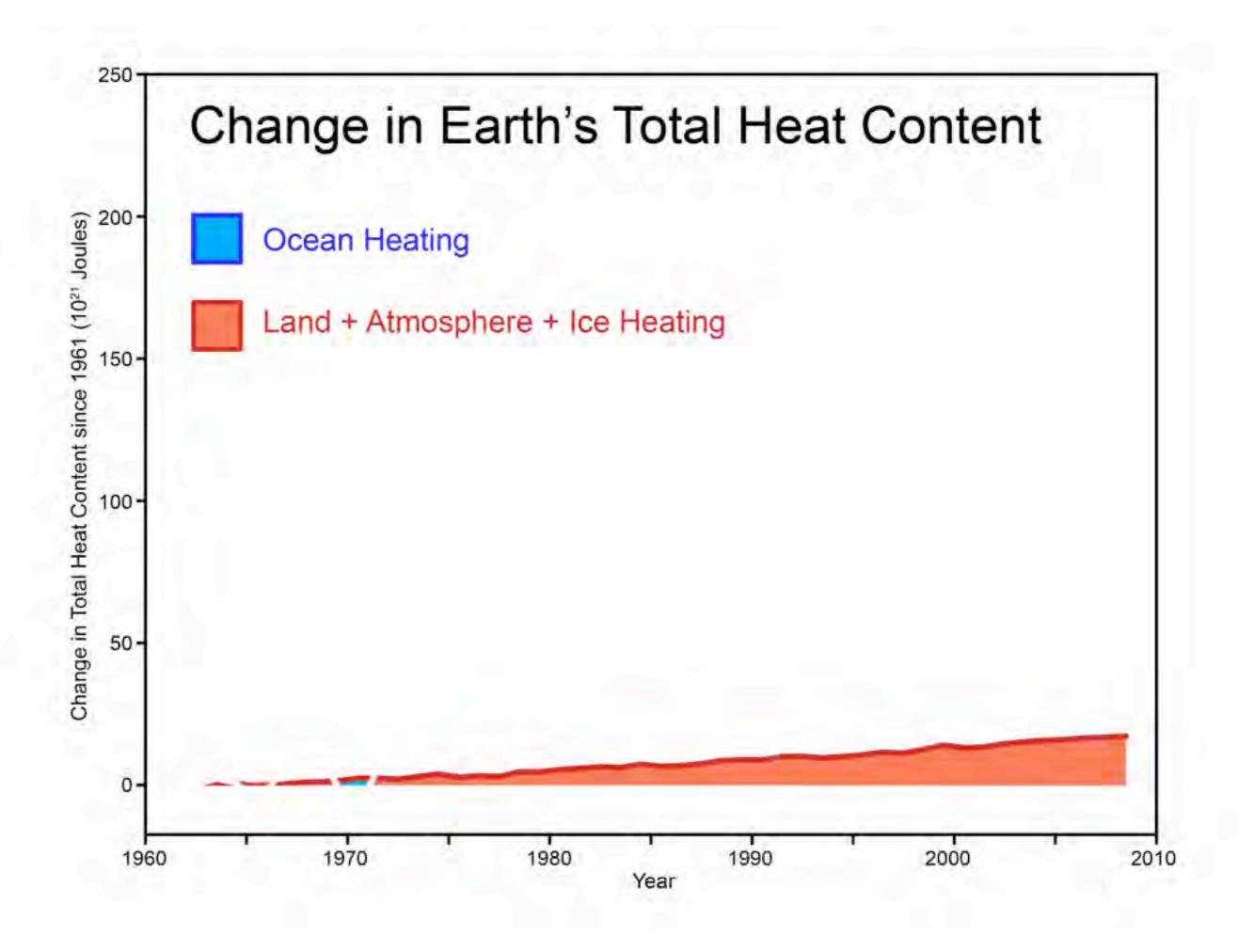


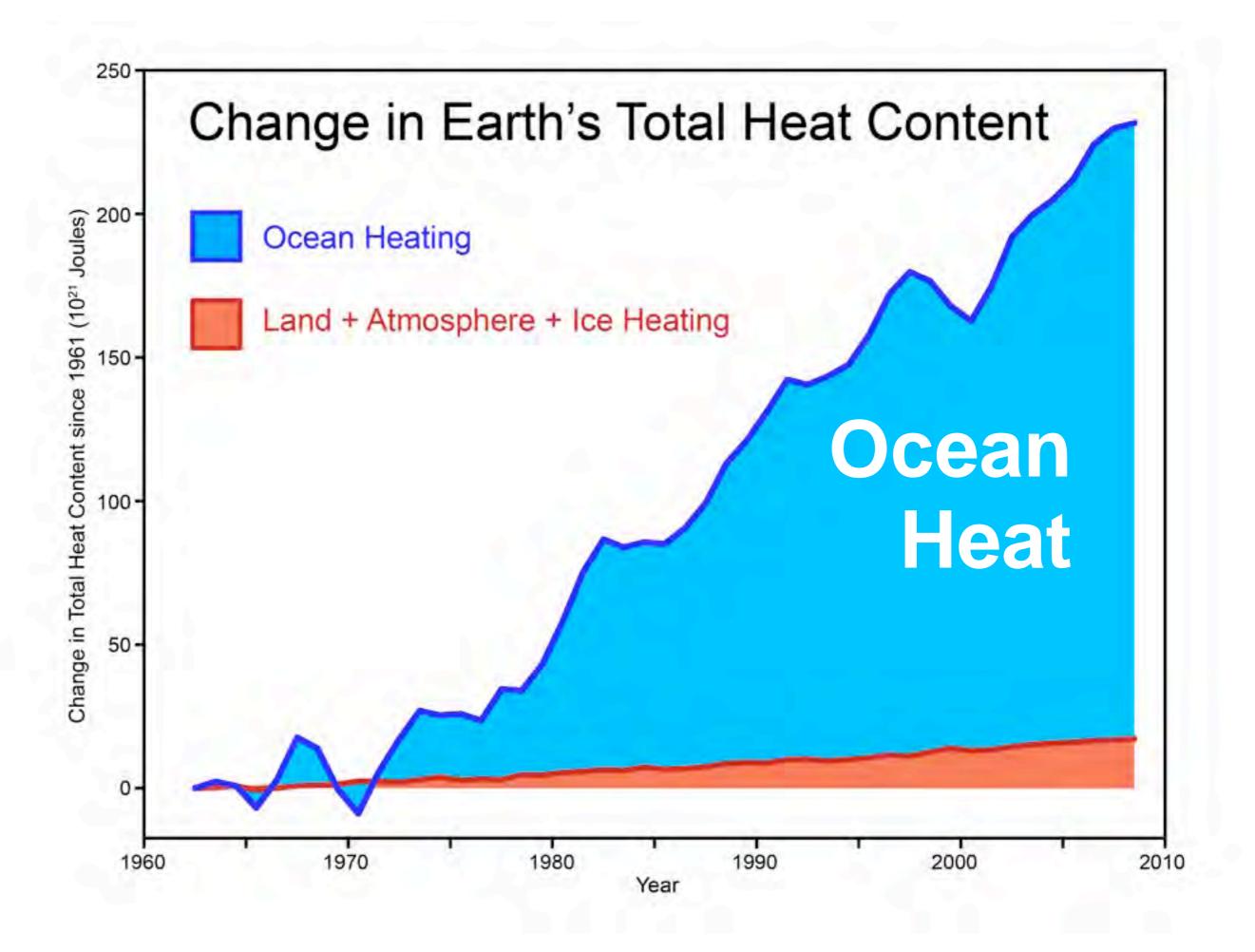


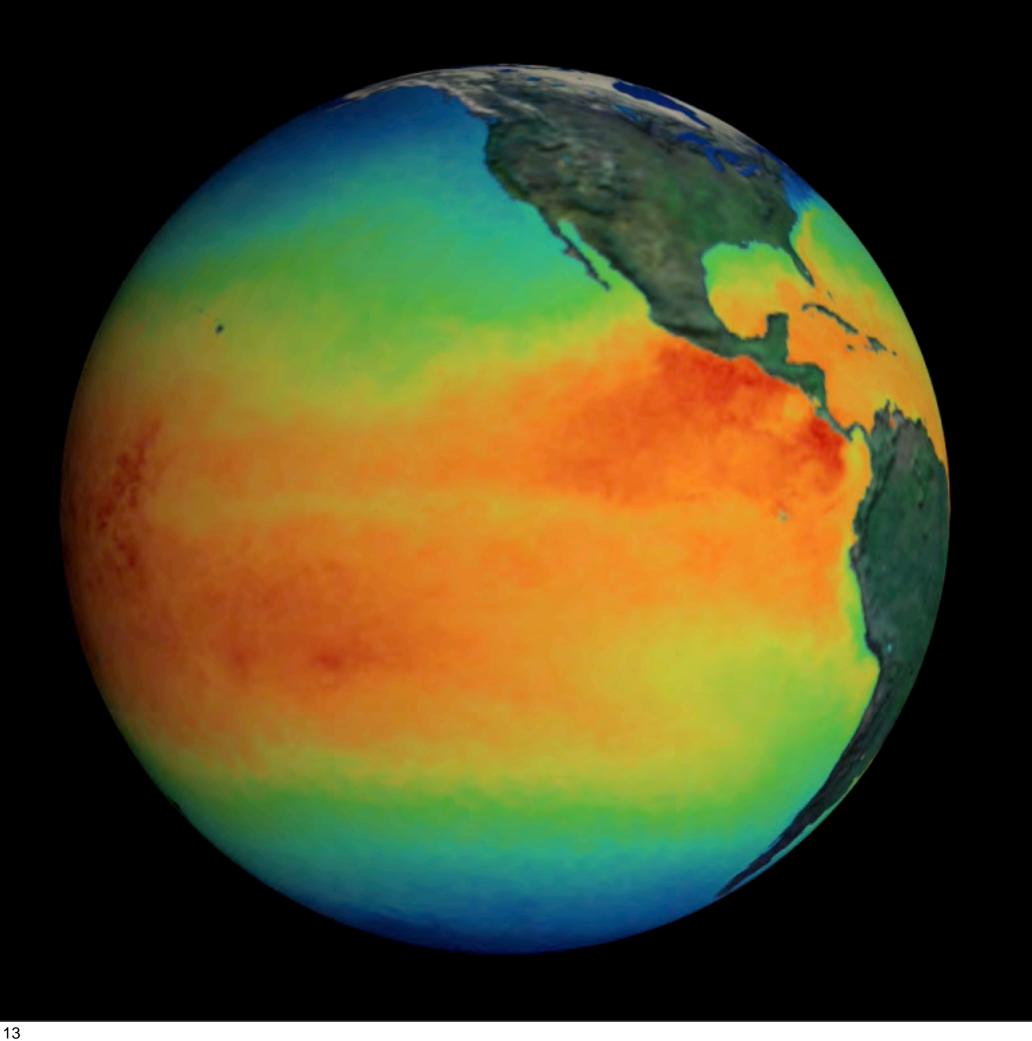


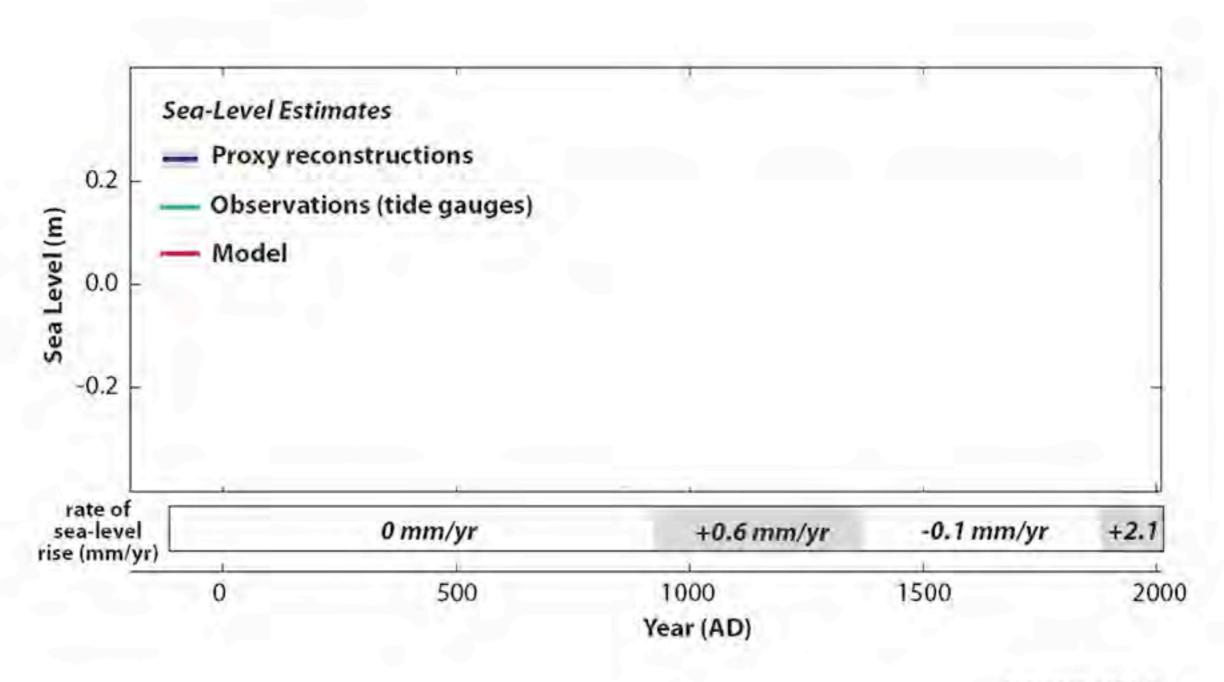


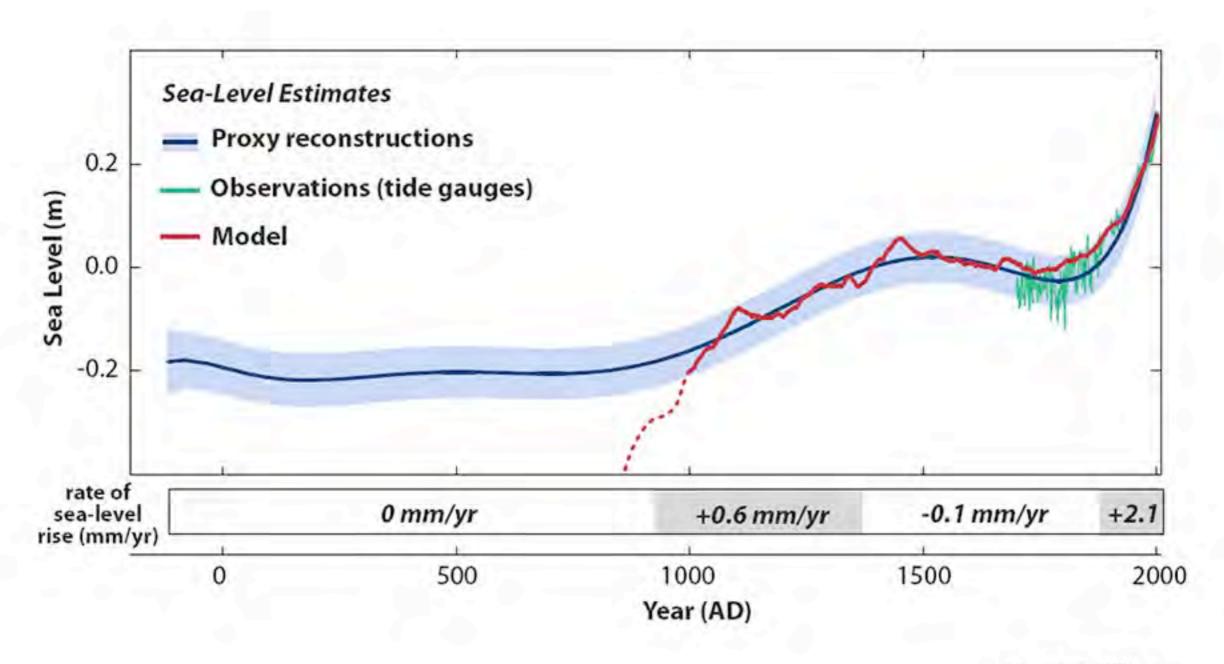












Kemp 2011

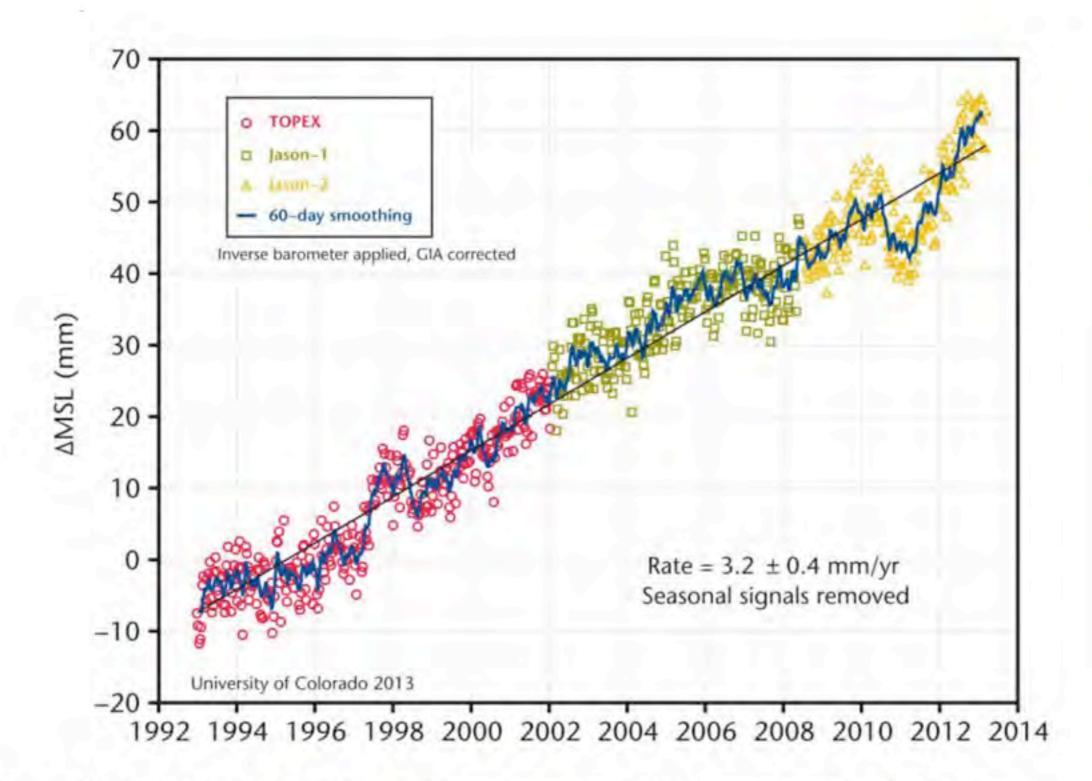
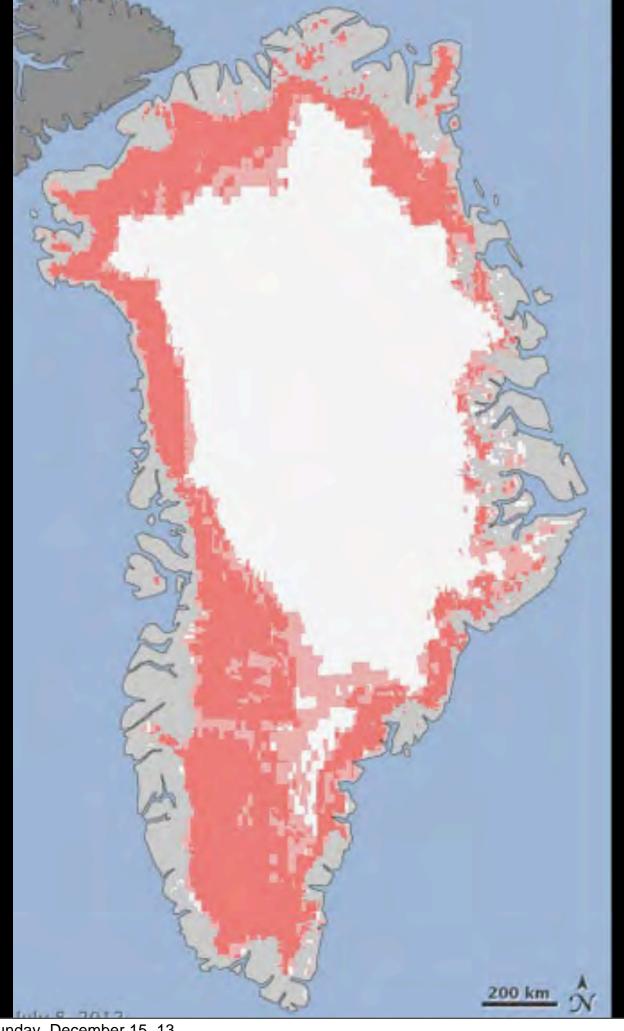


Figure 19: Time-series of global average sea level since 1993 based on satellite altimeter observations. (Source: <a href="http://sealevel.colorado.edu">http://sealevel.colorado.edu</a>, Nerem et al, 2010).

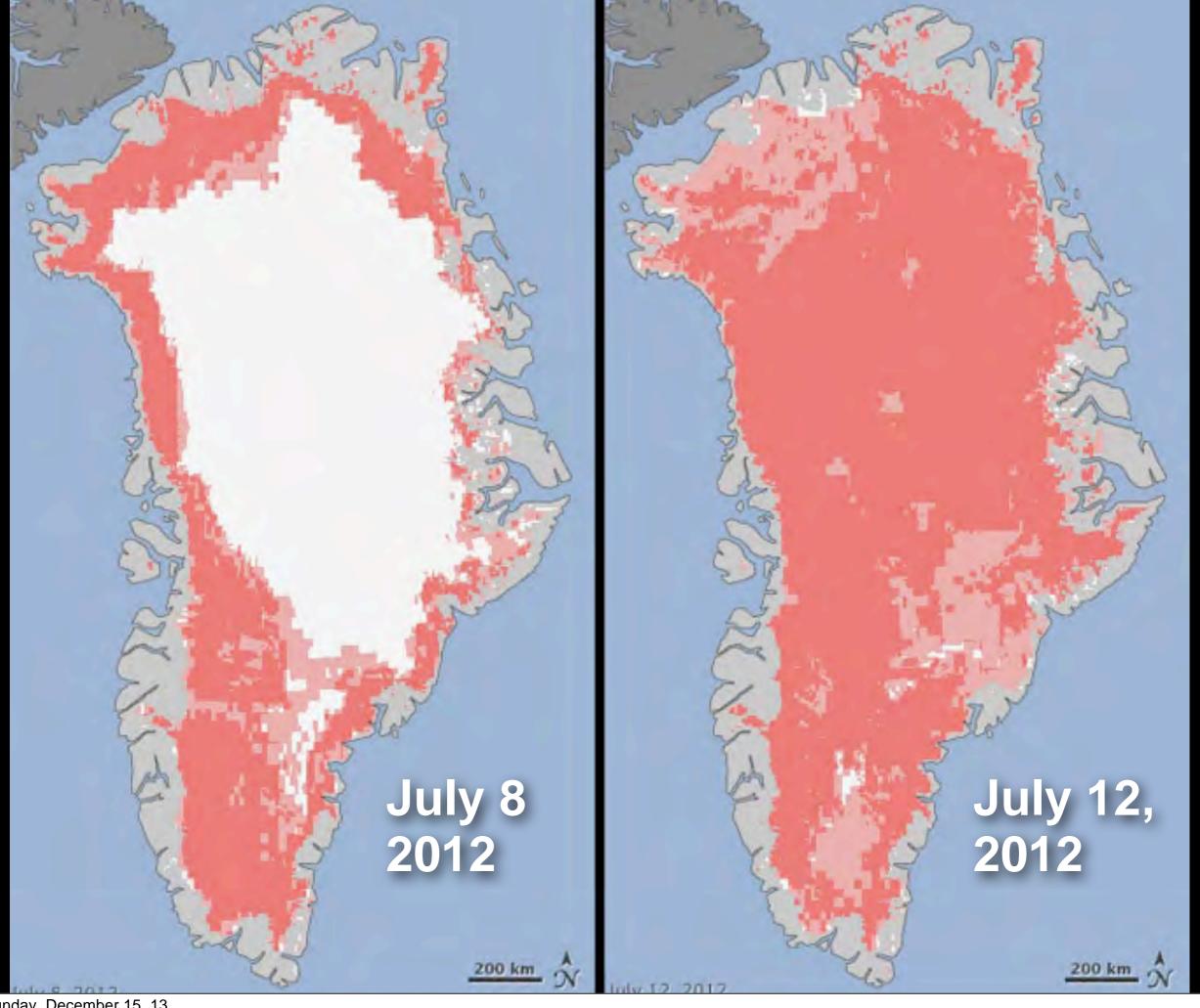




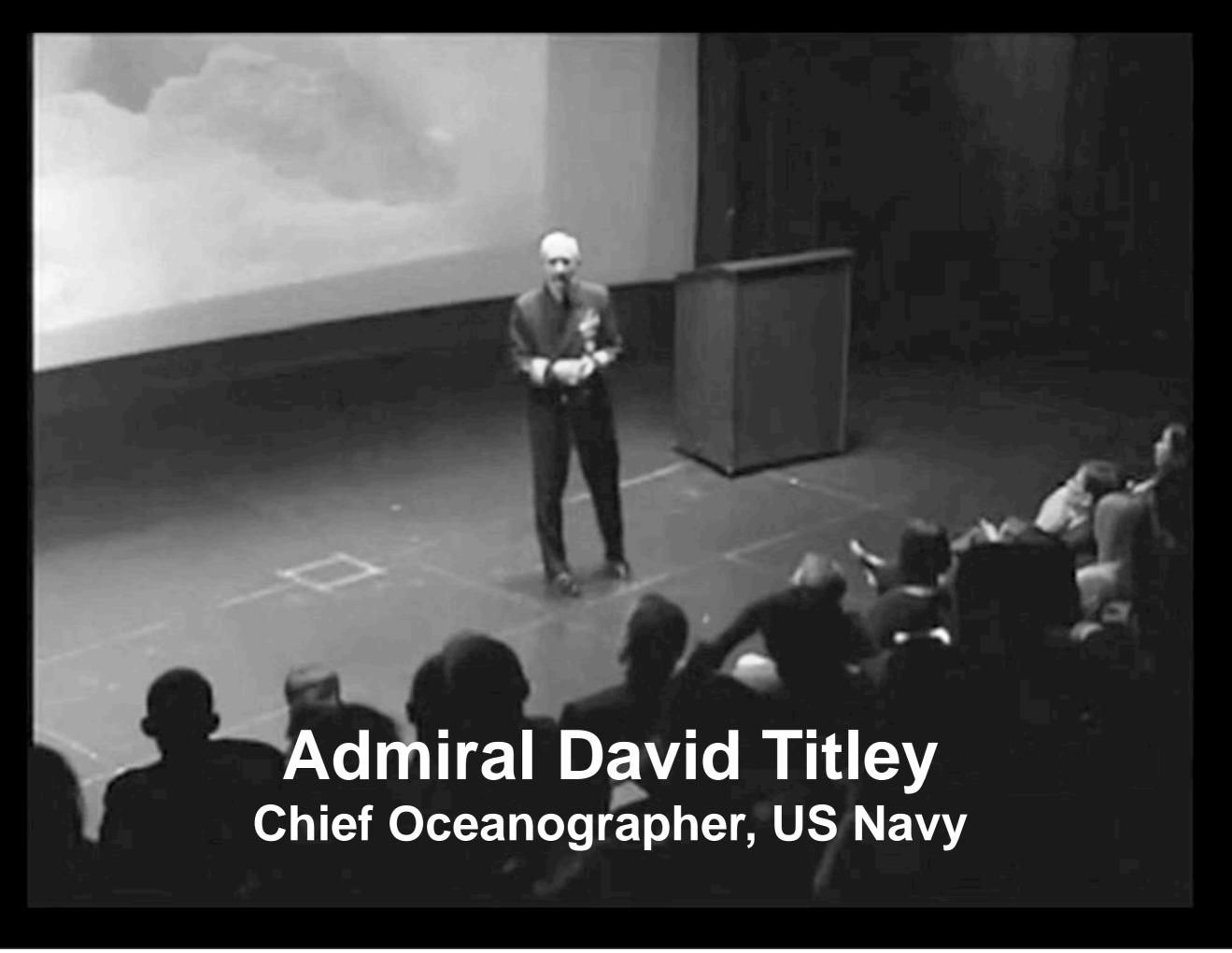


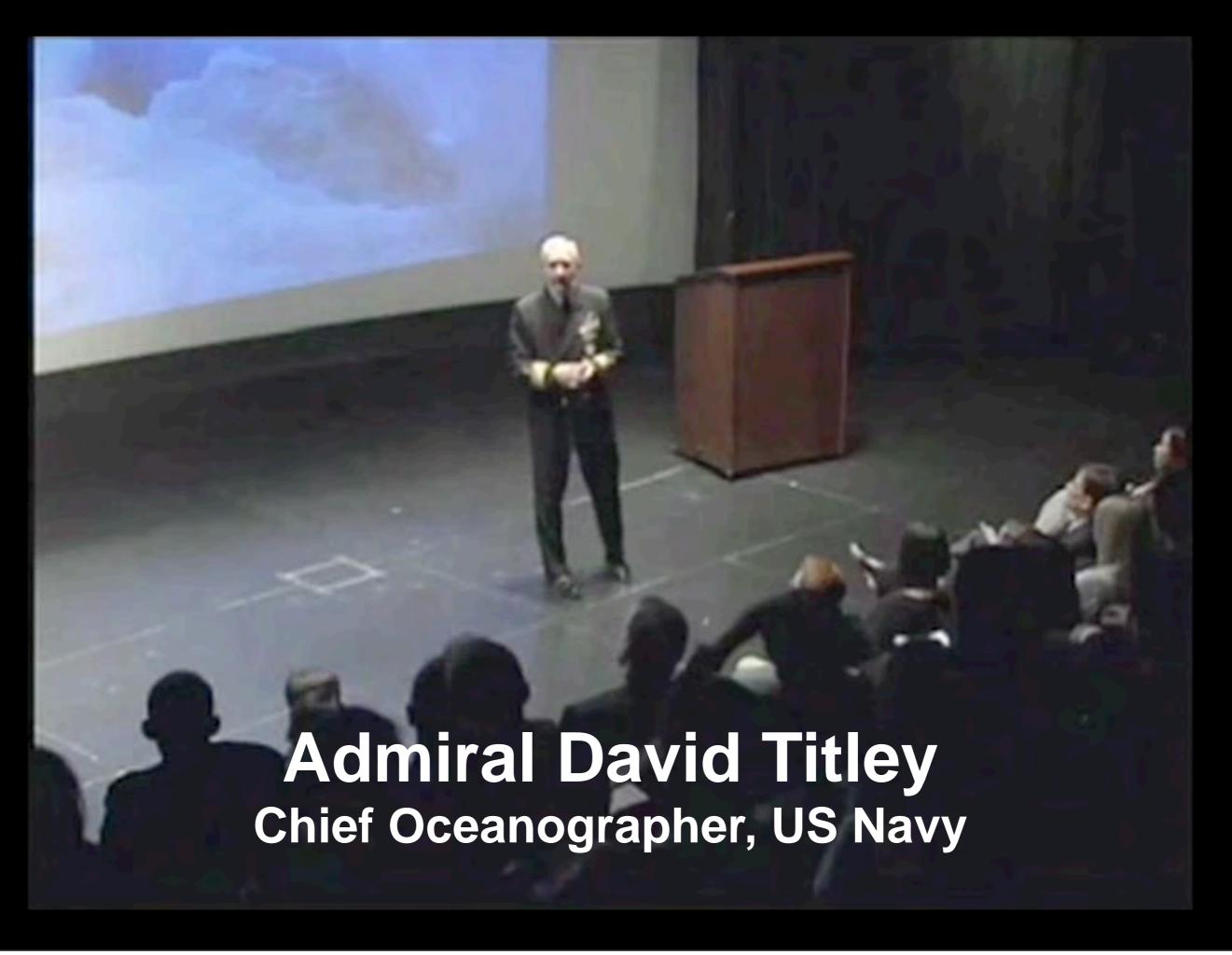


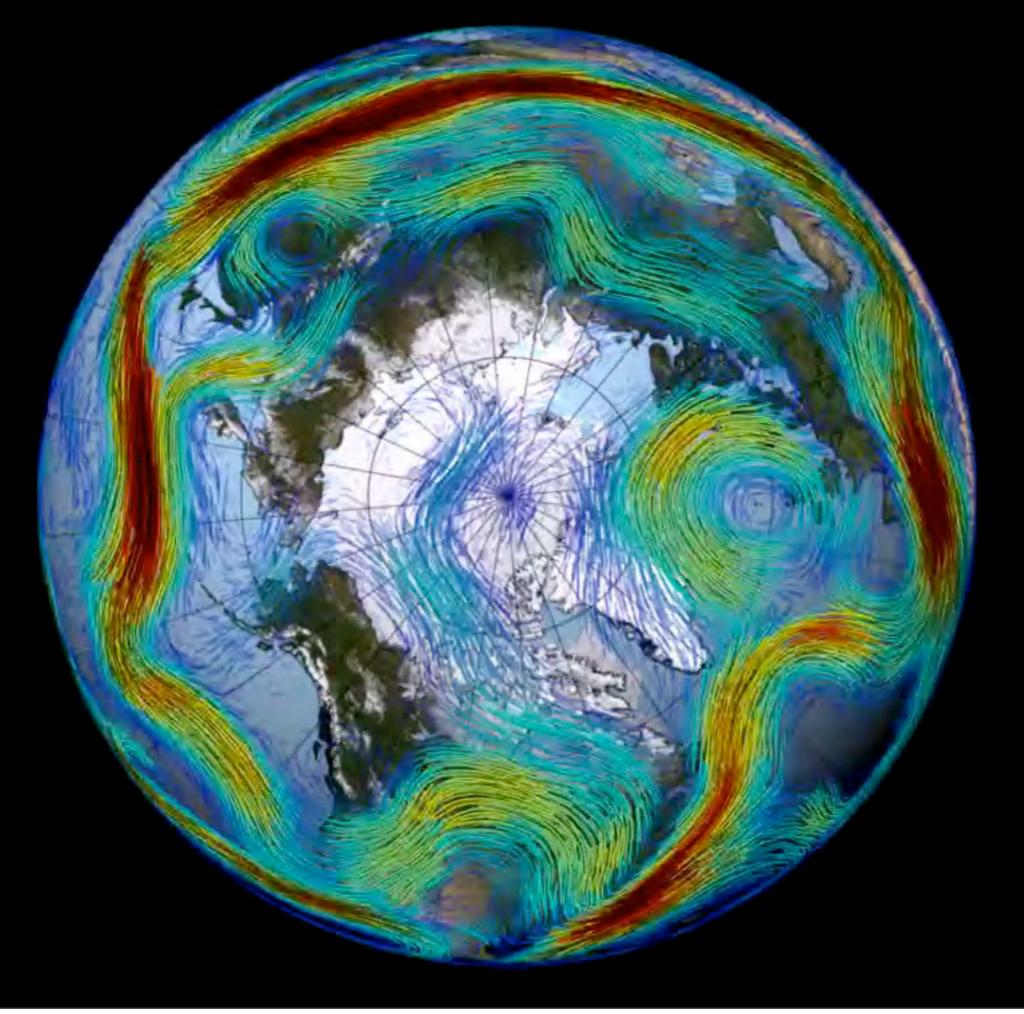
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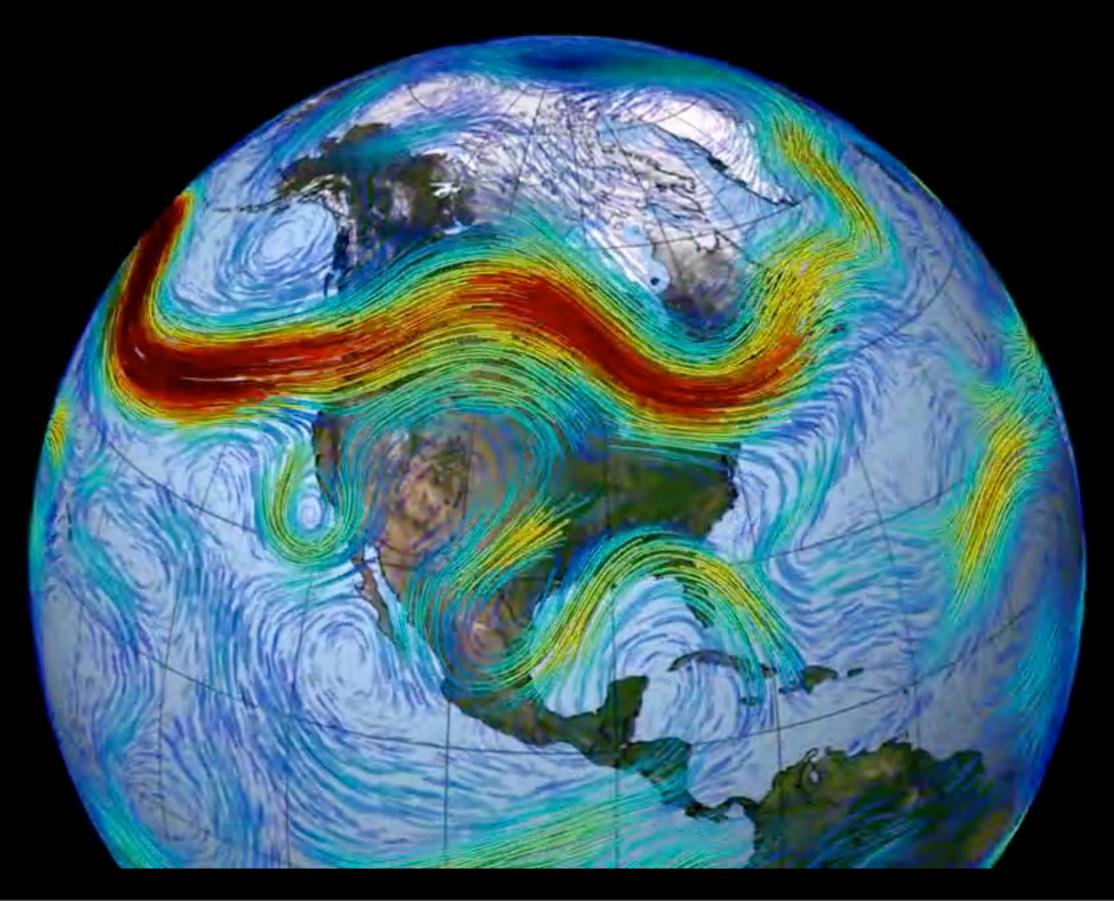




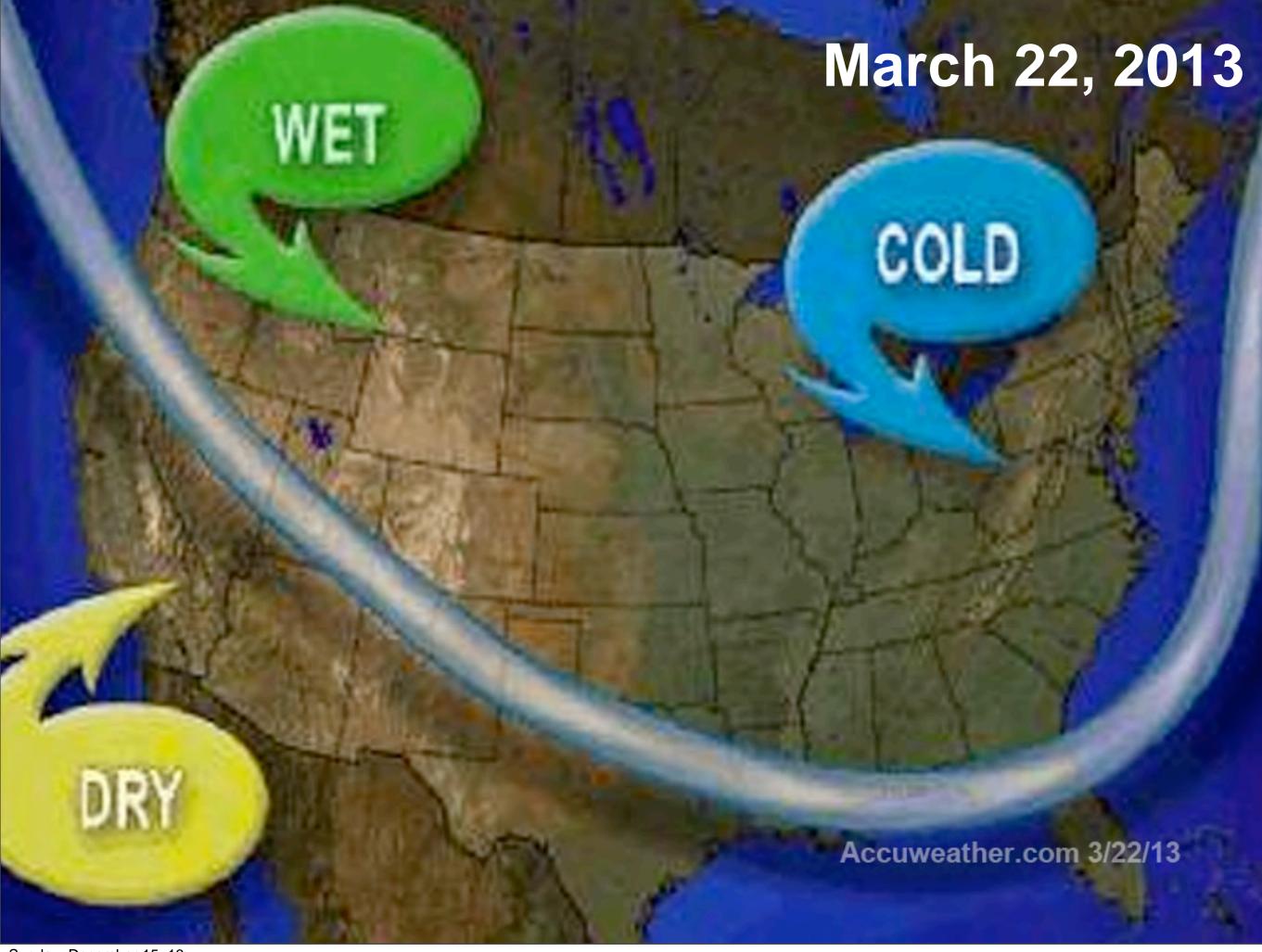




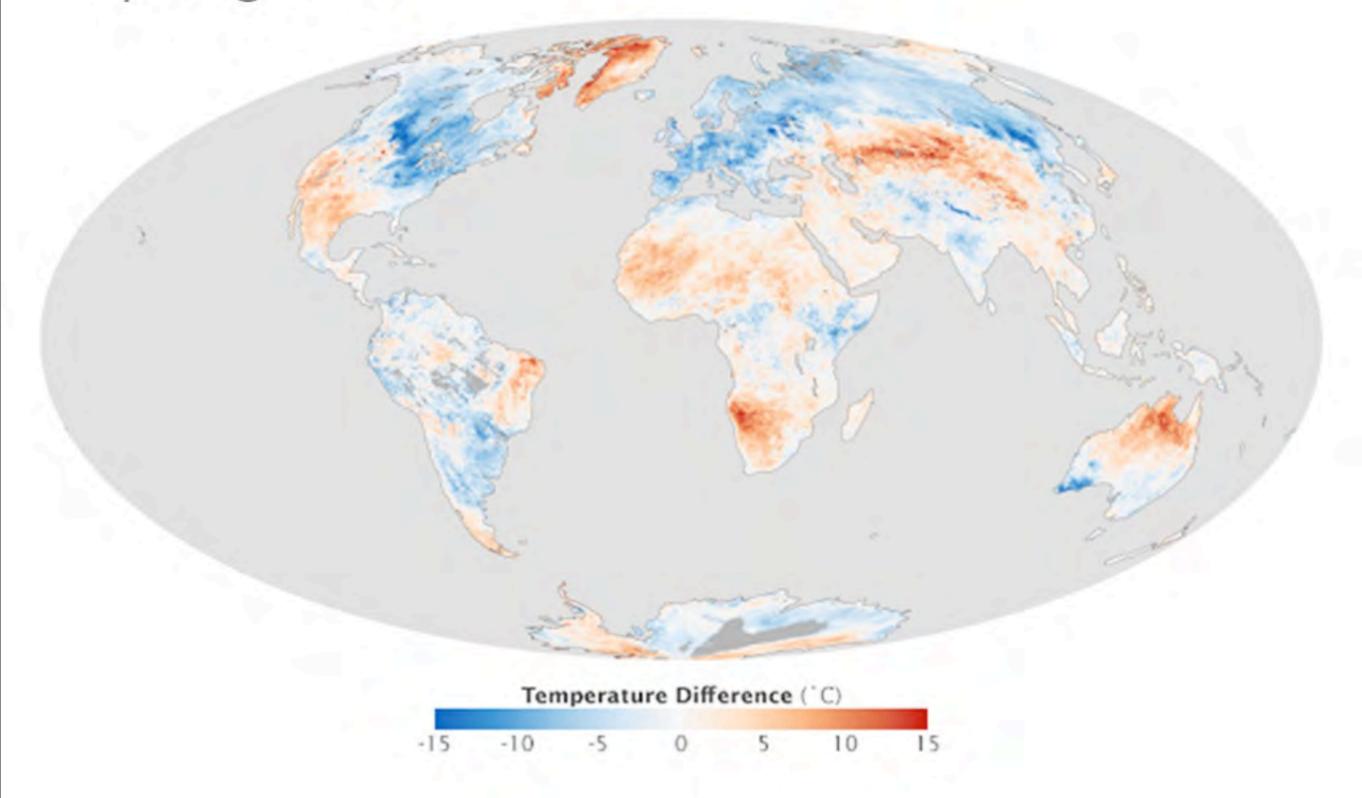


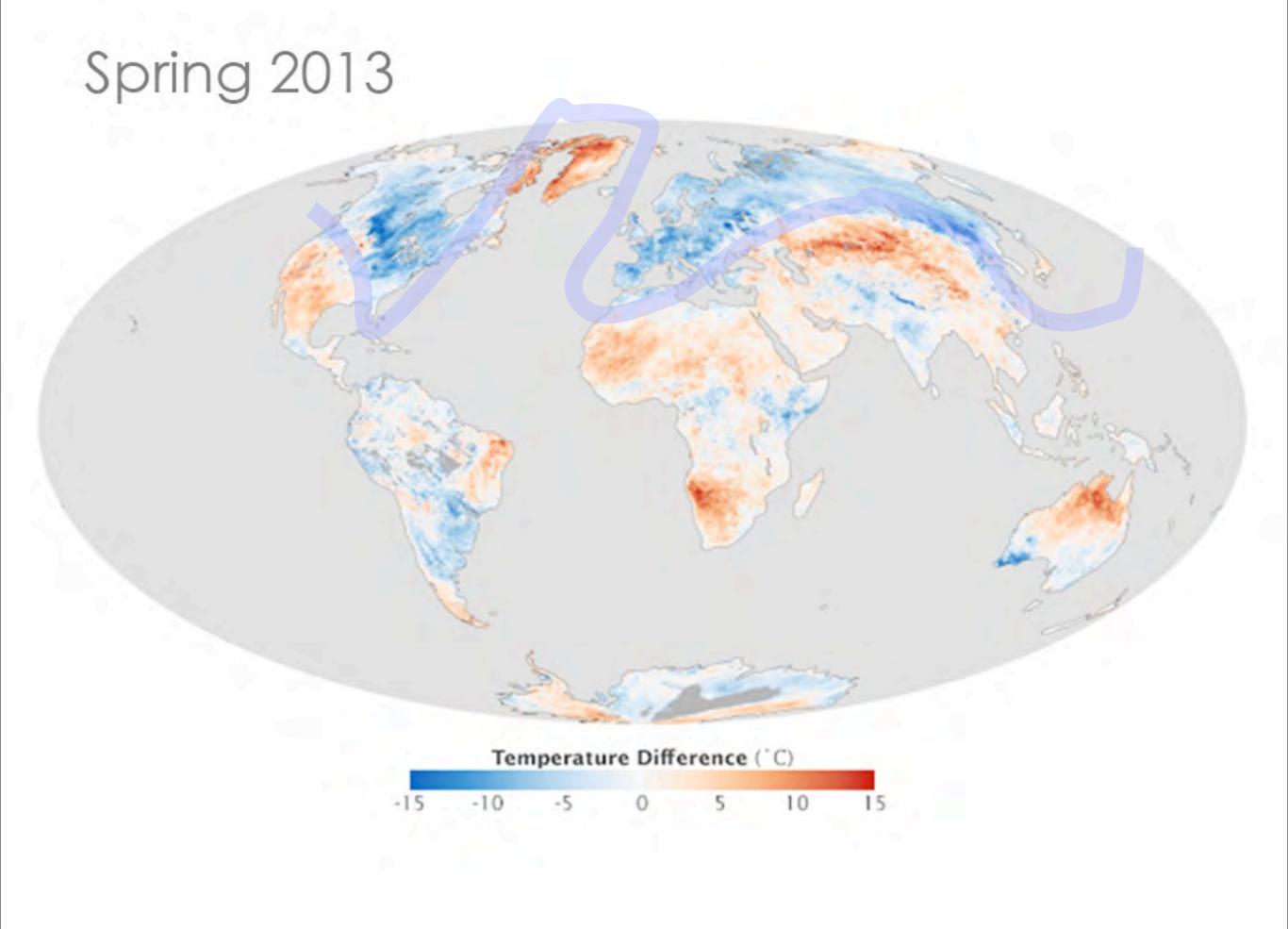






#### Spring 2013

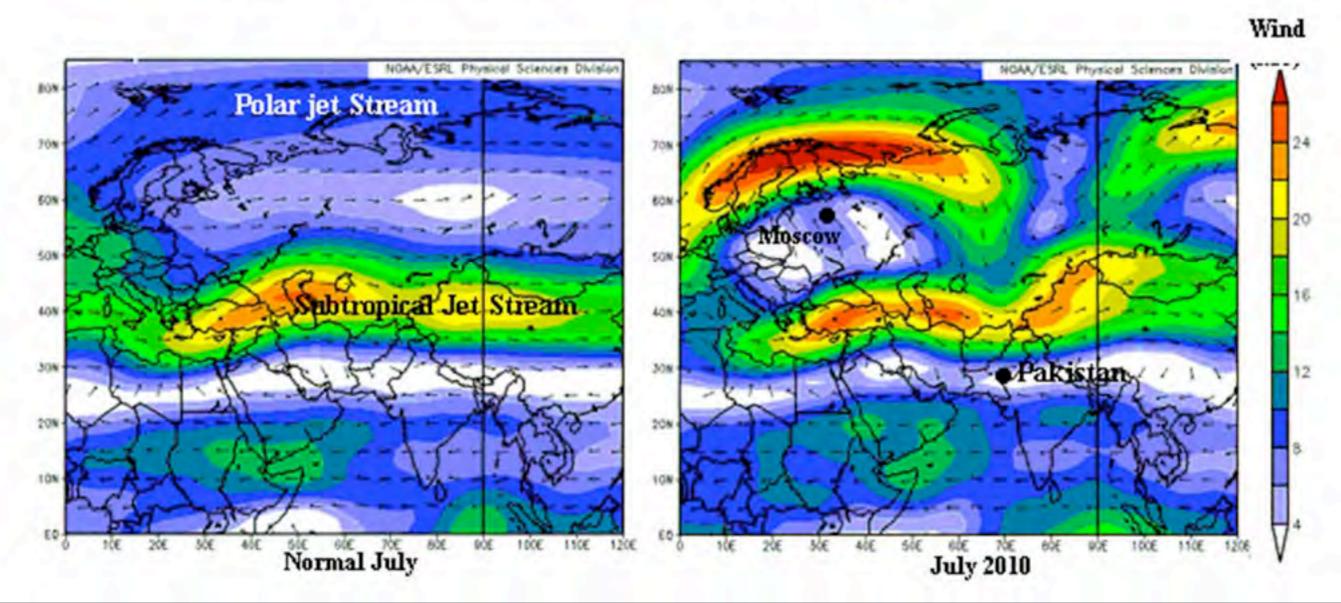


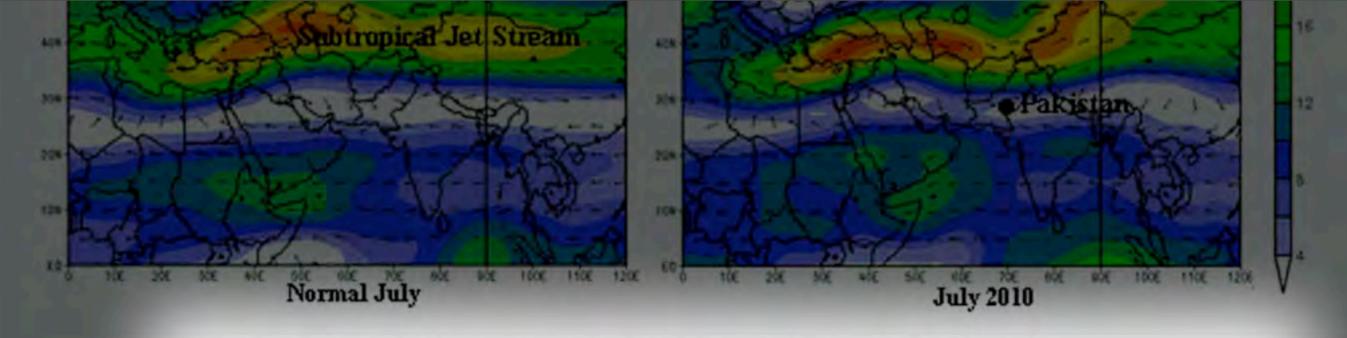


# Topics / WIRED.CO.UK

### Jet stream 'kink' causing Pakistan floods and Russian heatwave

SCIENCE / 16 AUGUST 10 / by DUNCAN GEERE LE





Meteorologists studying the upper atmosphere above the northern hemisphere have drawn a link between the wildfires raging across western Russia and the dramatic flooding in northern Pakistan, pinning the blame on an unusual 'kink' in the polar jet stream that has remained frozen in place for more than a month.

A jet stream is a fast-moving current of air that wiggles around the world at an altitude of around 10 and 12 kilometres above ground.

There's two branches usually in place in the

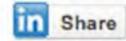
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#### Muscovites Flee Worst Heat 'in 1,000 Years'; Death Rate Doubles

By Denis Maternovsky and Maria Levitov - Aug 9, 2010 10:47 AM ET















protect herself from acrid smoke in central Moscow, Photographer: Natalia Kolesnikova/AFP/Getty Images

Muscovites fled the Russian capital in record numbers as extreme heat combined with acrid smoke from wildfires, slowing trading on the city's main stock exchange and emptying restaurants.

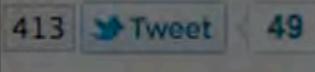
More than 104,400 people flew out of Moscow yesterday, topping the previous 2010 record of 101,000, according to the Federal Air Transportation Agency. On Aug. 7, 95,000 left the it y plane, 20 percent more than the year-earlier date, agency spokesman Sergei Izvolsky said by telephone today.

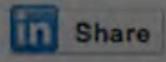
Moscow set a daily heat record of 35.5 degrees Celsius (95.5

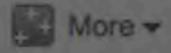
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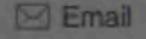
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Muscovites fled the Russian capital in record numbers as extreme heat combined with acrid smoke from wildfires, slowing trading on the city's main stock exchange and empt restaurants.

Russia 2010

More than 104,400 people flew out of Moscow yesterday, topping the previous 2010 record of 101,000, according to t

## Pakistan 2010



# Pakistan 2010



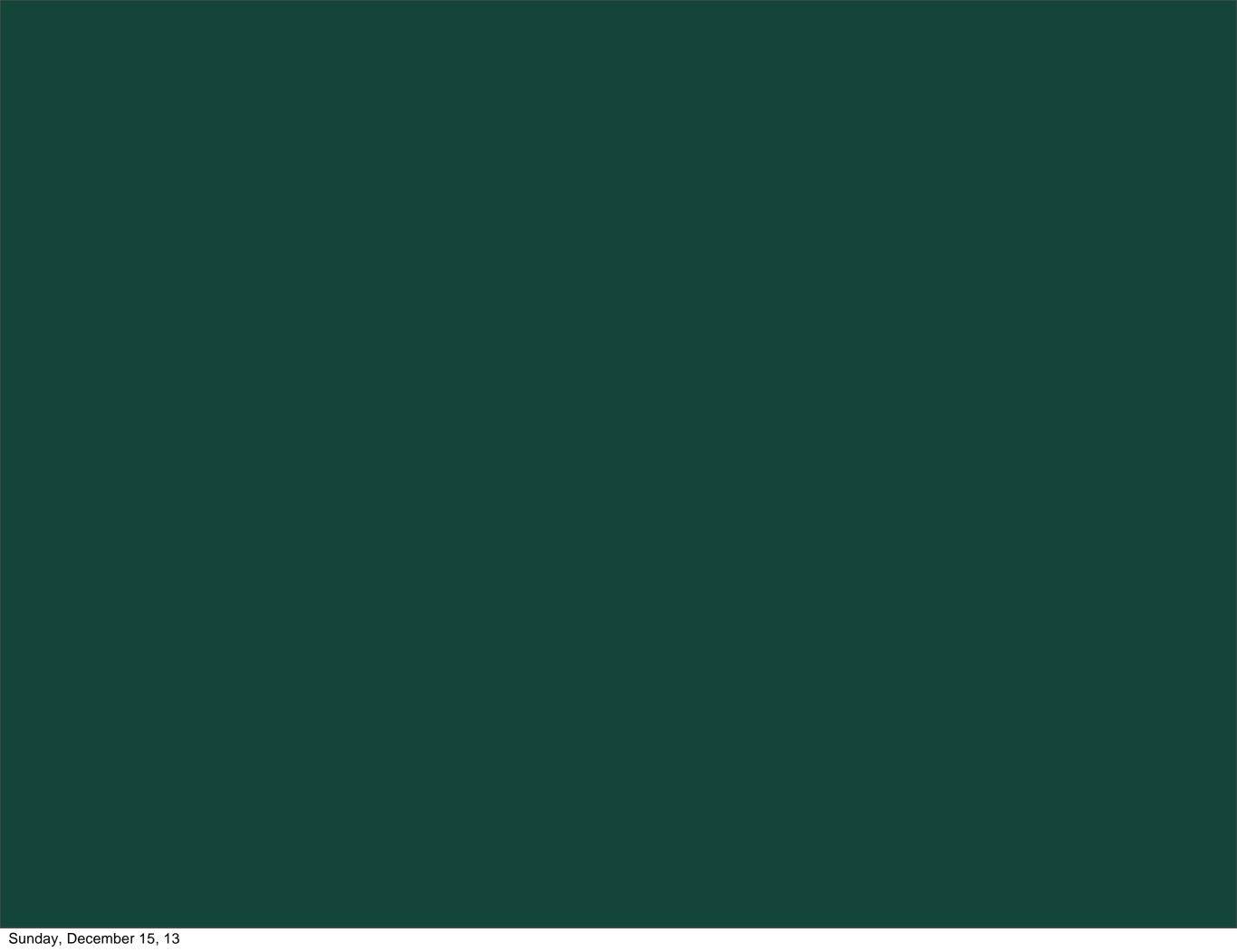
"I will tell you that the defense review of the United States Pentagon next week is going to come out and list climate change for the first time as an instability factor that affects our troops and may in fact wind up costing us lives down the road,"

Senator John Kerry - 2010

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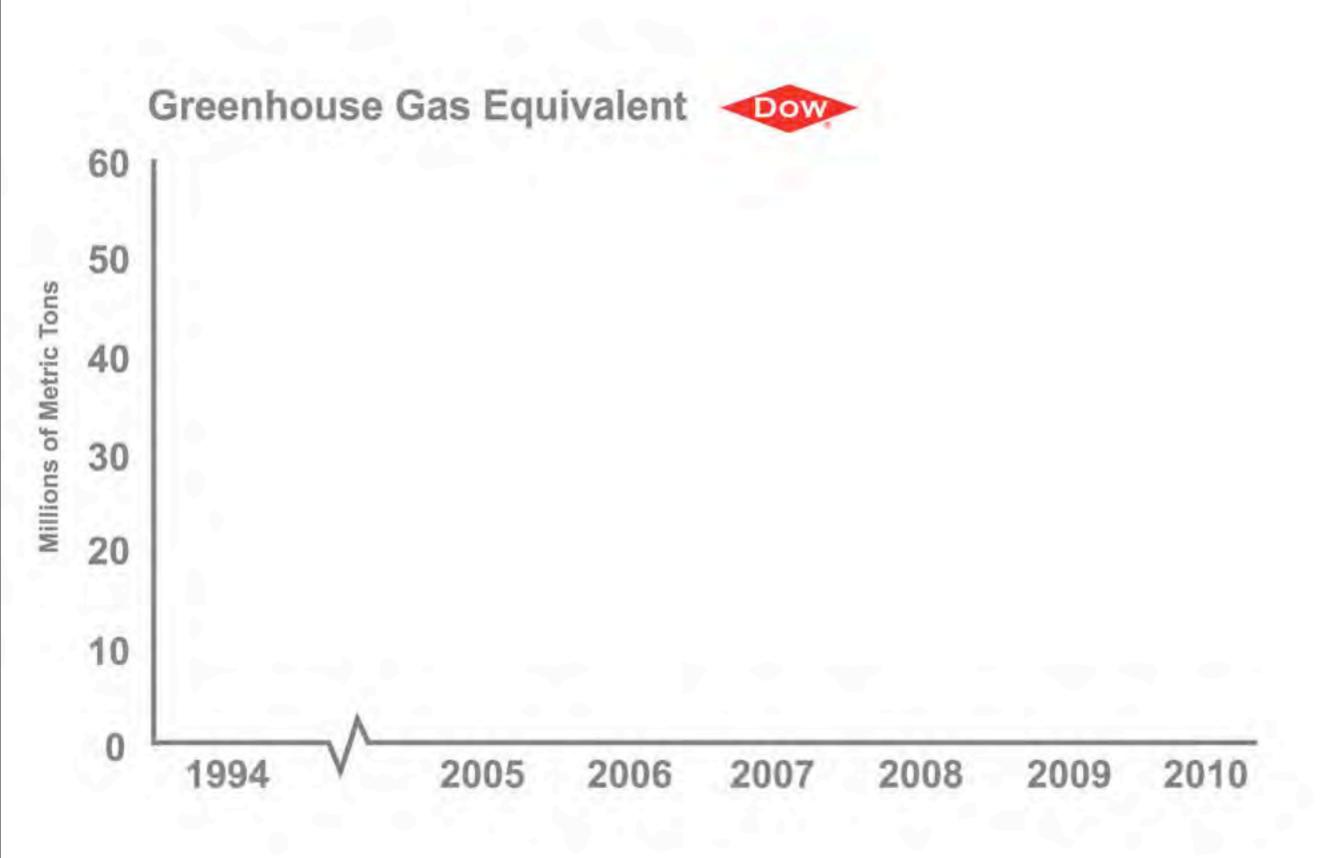




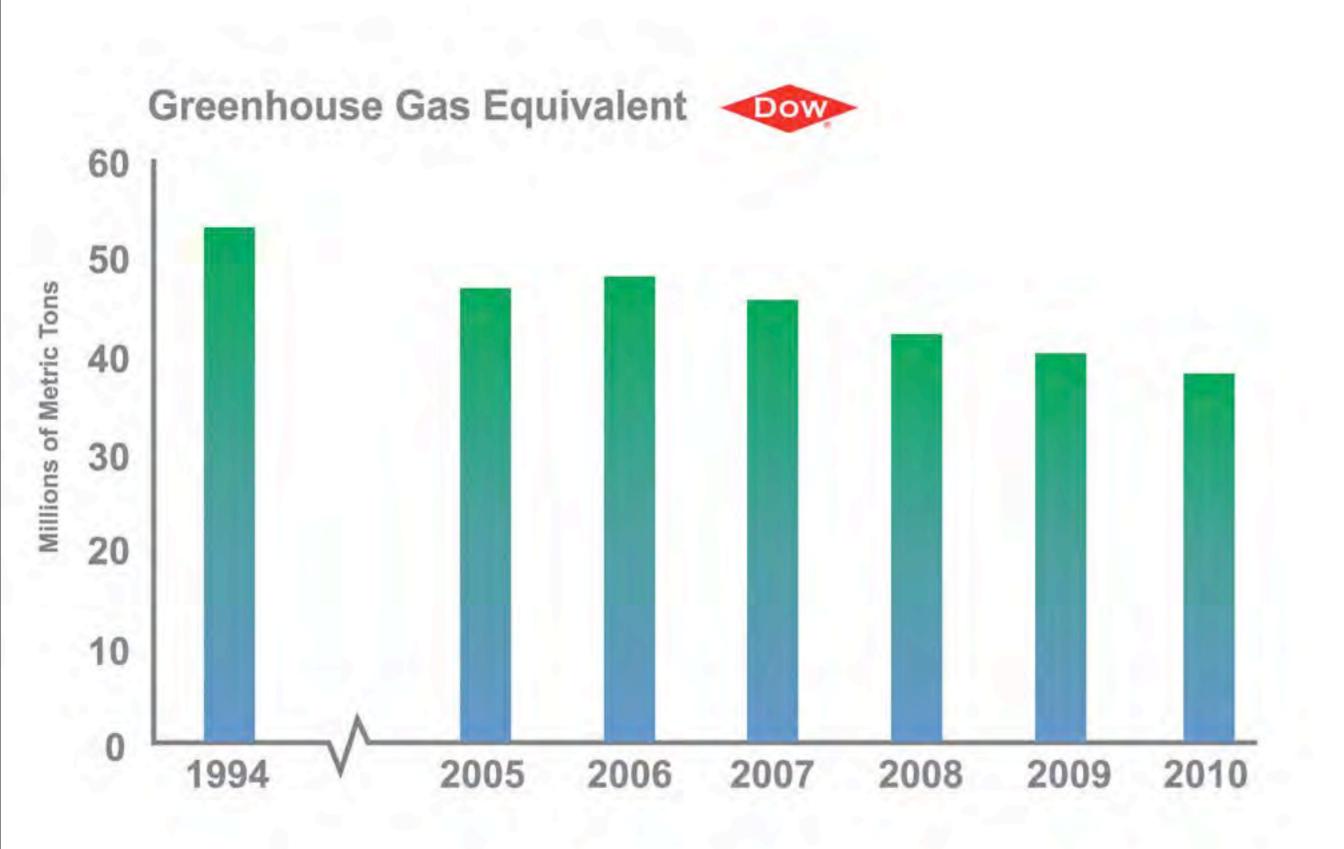
# The good news is - we have solutions

# "Climate change is real and the most urgent environmental issue our society faces."

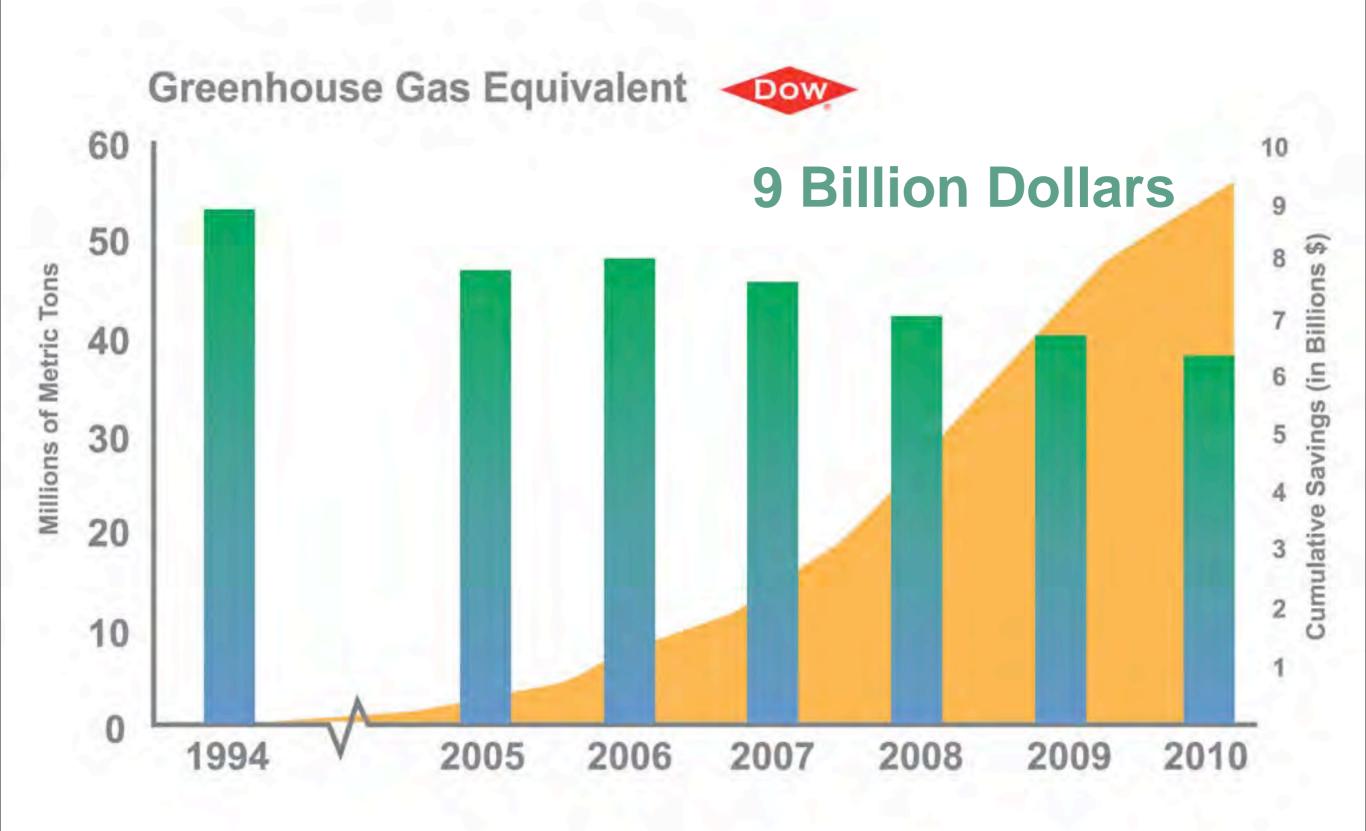
Andrew Liveris
CEO Dow Chemical



**Dow 2010 Global Initiative Report** 



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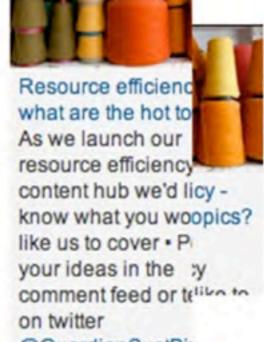
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### Disney, Microsoft and Shell opt for selfimposed carbon emissions taxes

Where governments have failed to act, some big firms have taken matters into their own hands







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Guardian Professional, Tuesday 26 March 2013 13.18 EDT



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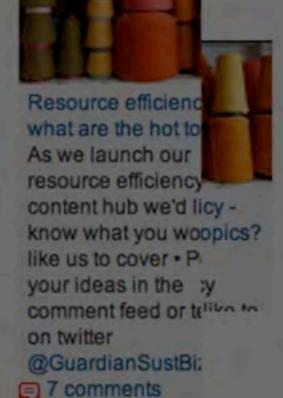
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"WASHINGTON — More than two dozen of the nation's biggest corporations, including the five major oil companies, are planning their future growth on the expectation that the government will force them to pay a price for carbon pollution as a way to control global

warming."

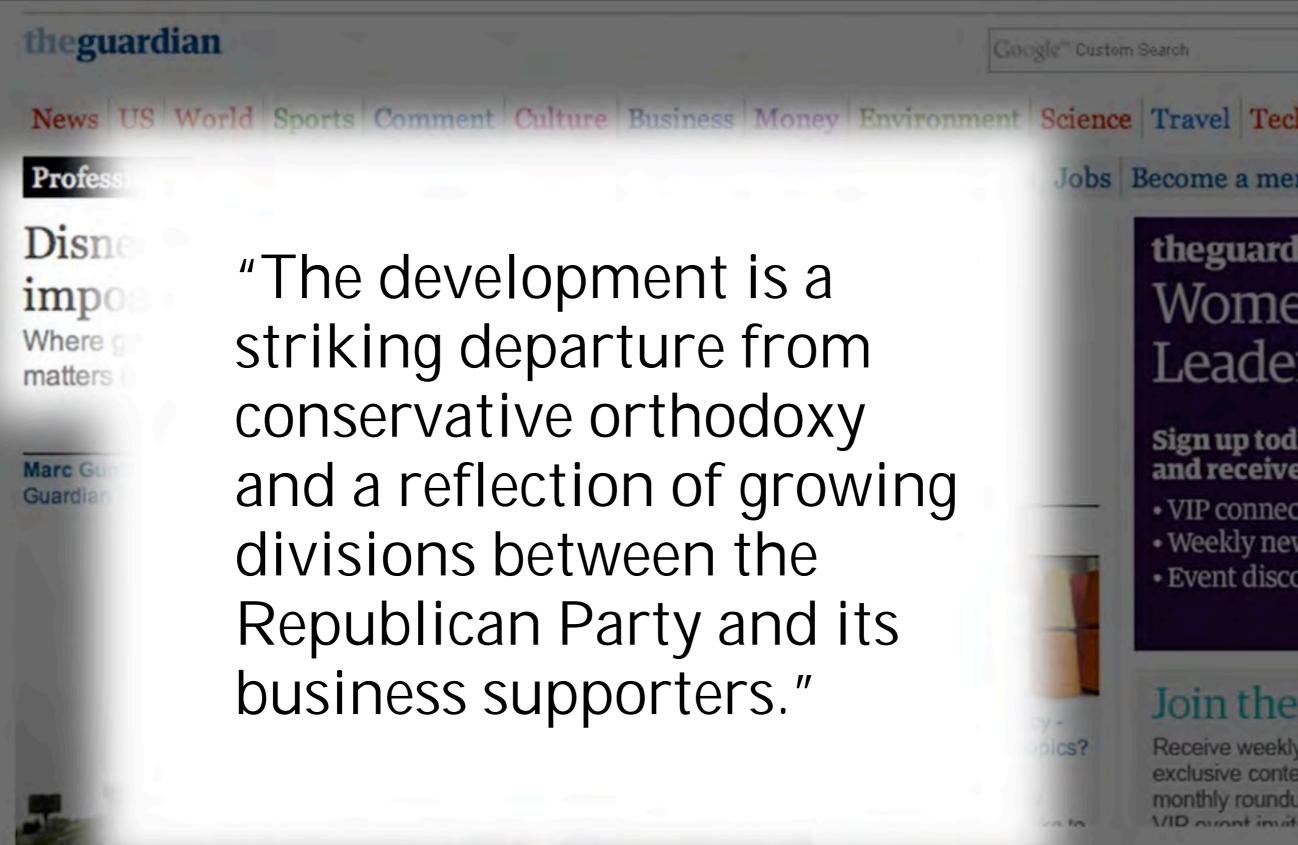
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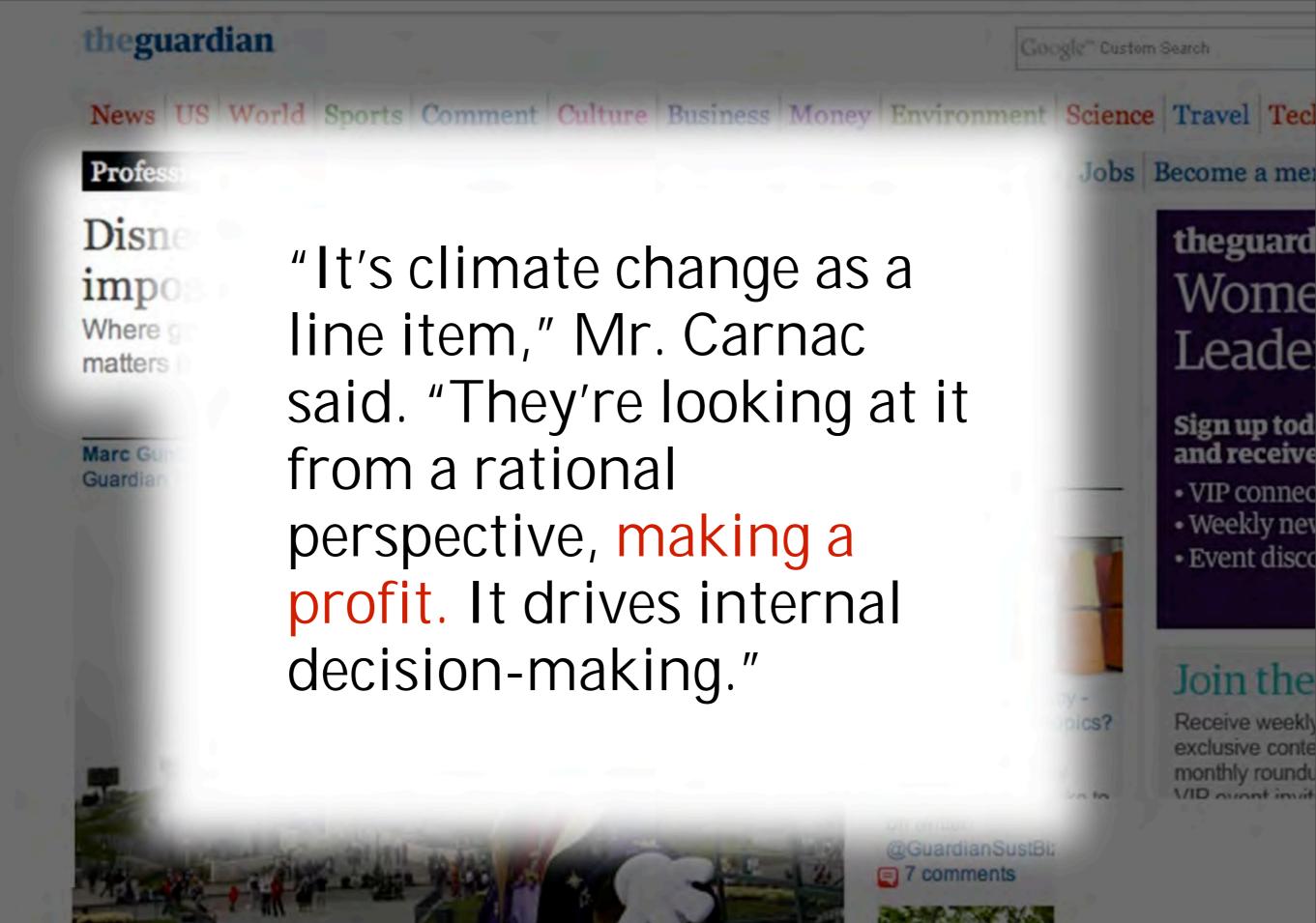
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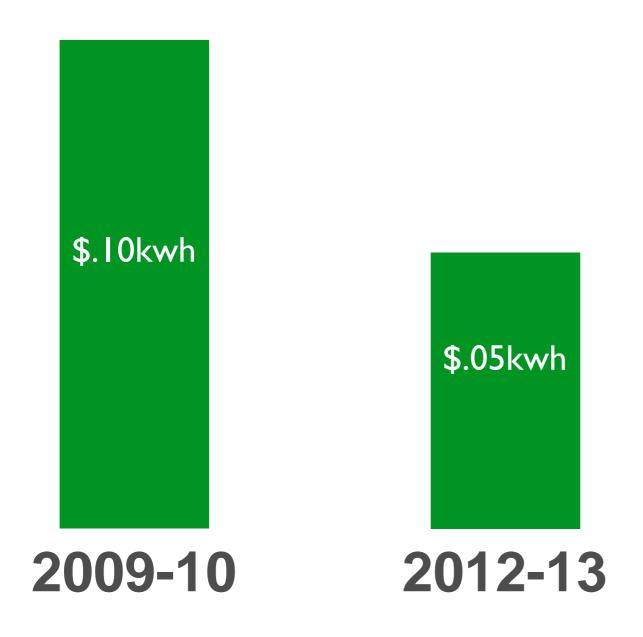
# Wind Energy in Michigan - Costs Plummeting



"The most recent contracts approved by the Commission for new wind capacity have levelized costs in the \$52 per MWh range which is about 10 percent less than the cheapest levelized contract prices from a year ago and half of the levelized cost of the first renewable energy contracts approved in 2009 and 2010."

Michigan Public Service Commission Feb. 15, 2013

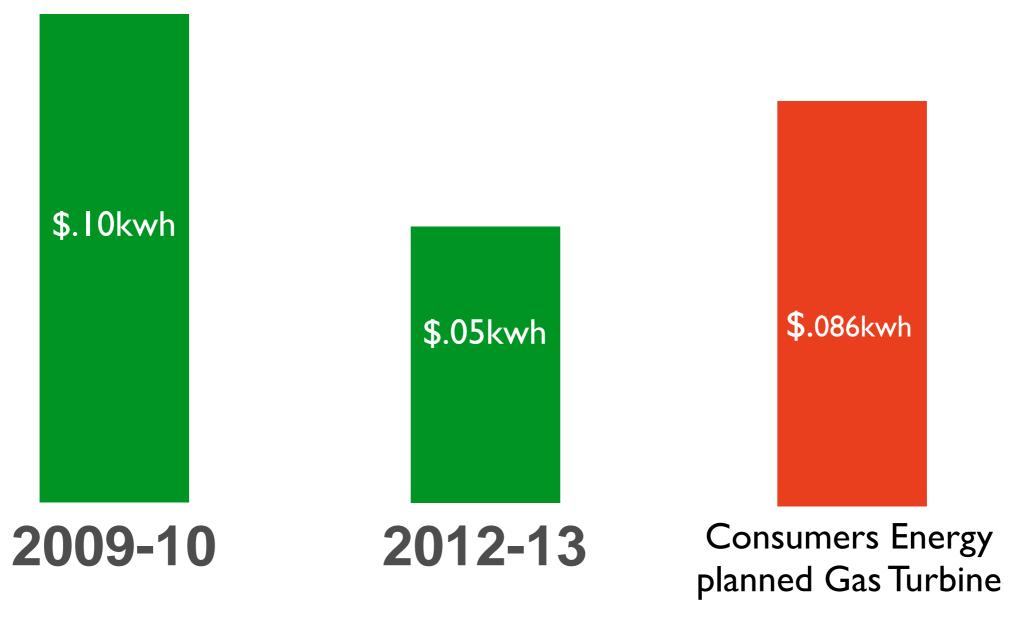
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Michigan Public Service Commission Feb. 15, 2013



70,000

60,000

50,000

40,000

30,000

20,000

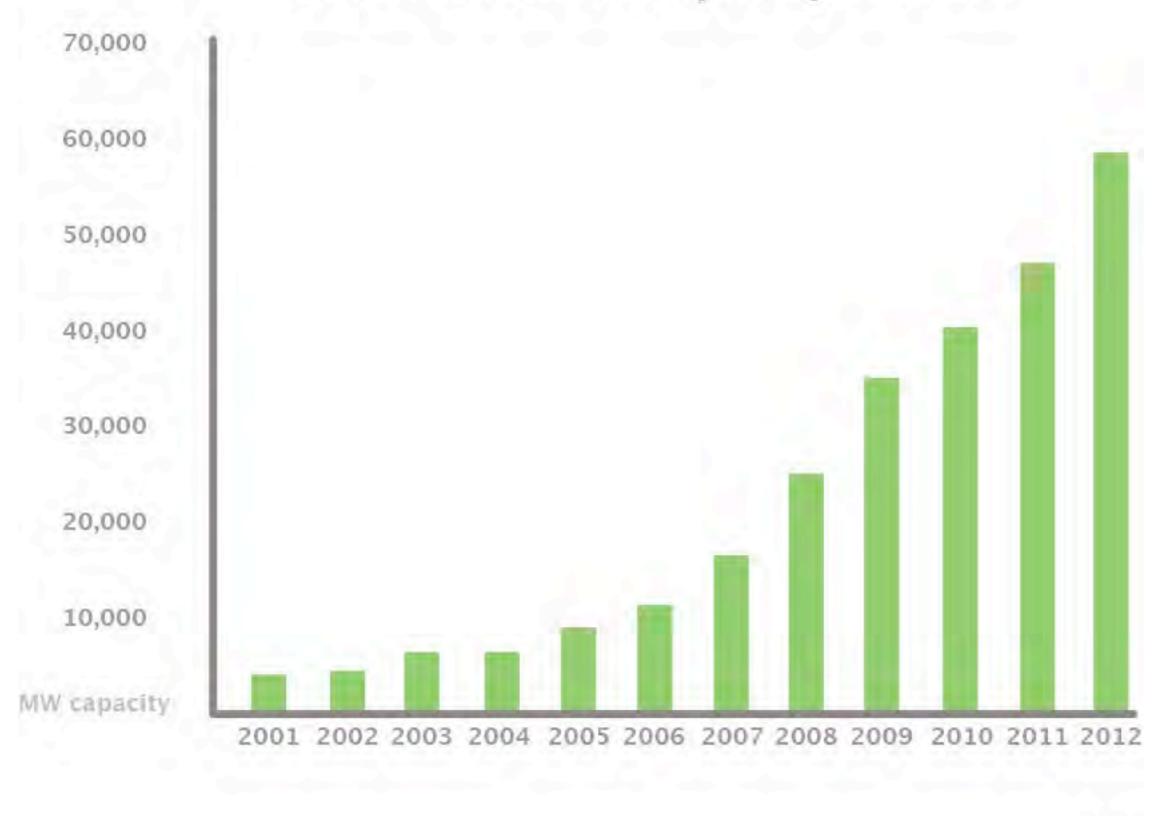
10,000

MW capacity

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

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### **US Wind Power Capacity Growth**



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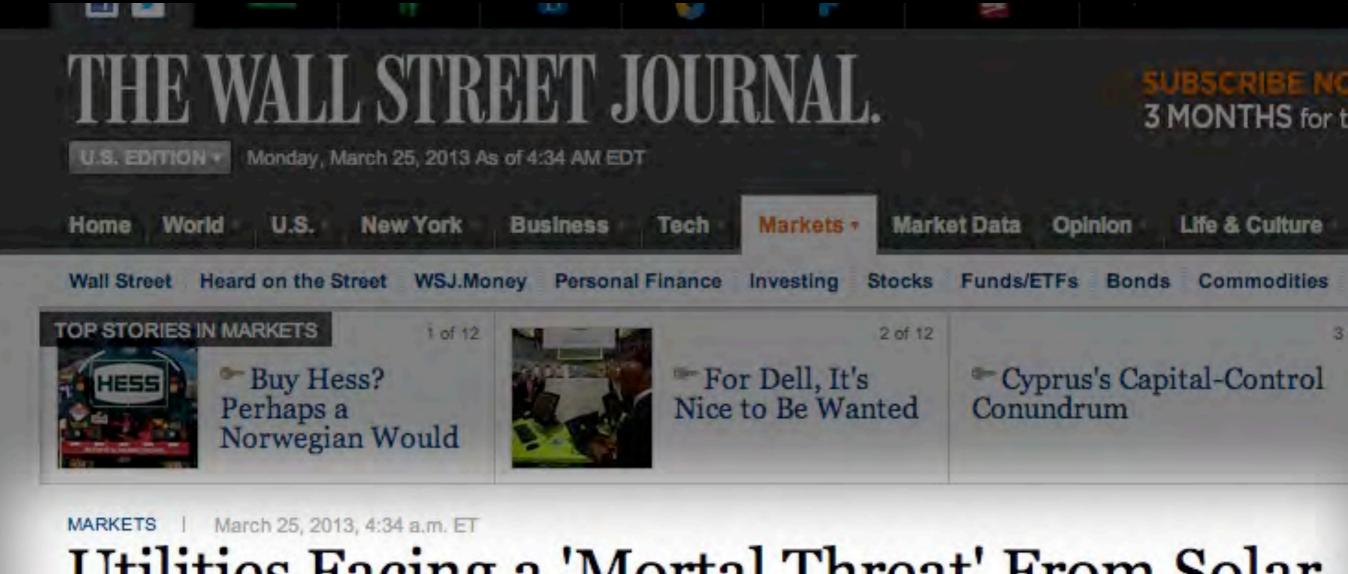


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#### By YULIYA CHERNOVA

Traditional transmission and distribution utilities will have to deal with distributed solar power, and it won't be a pretty fight, according to David Crane, president and chief.





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# Why the U.S. Power Grid's Days Are Numbered

By Chris Martin, Mark Chediak, and Ken Wells August 22, 2013













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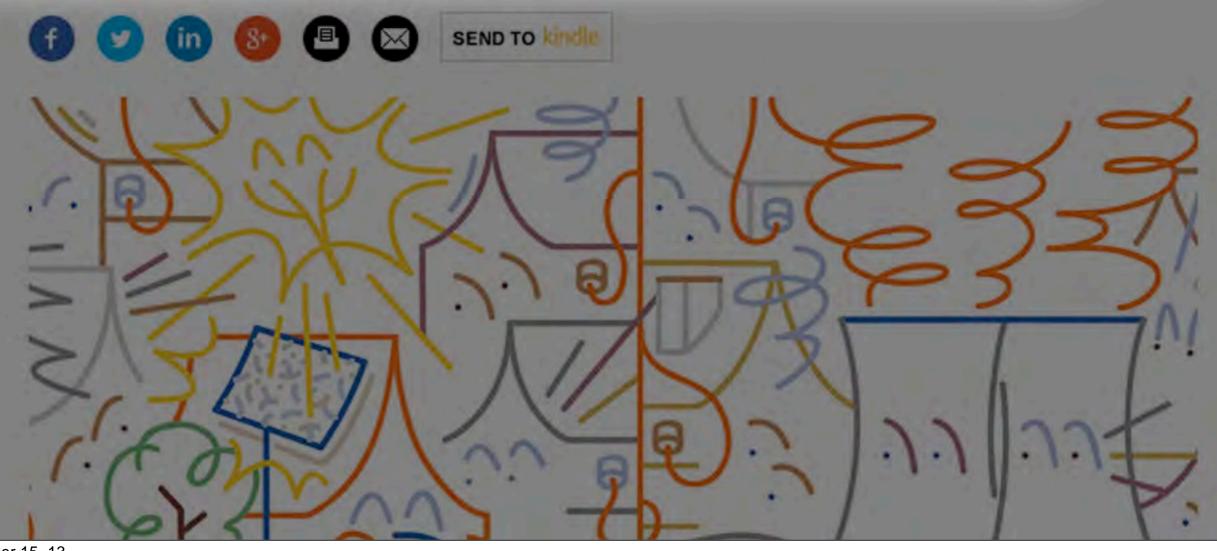
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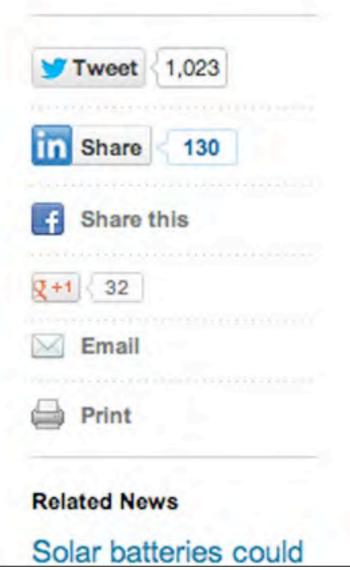
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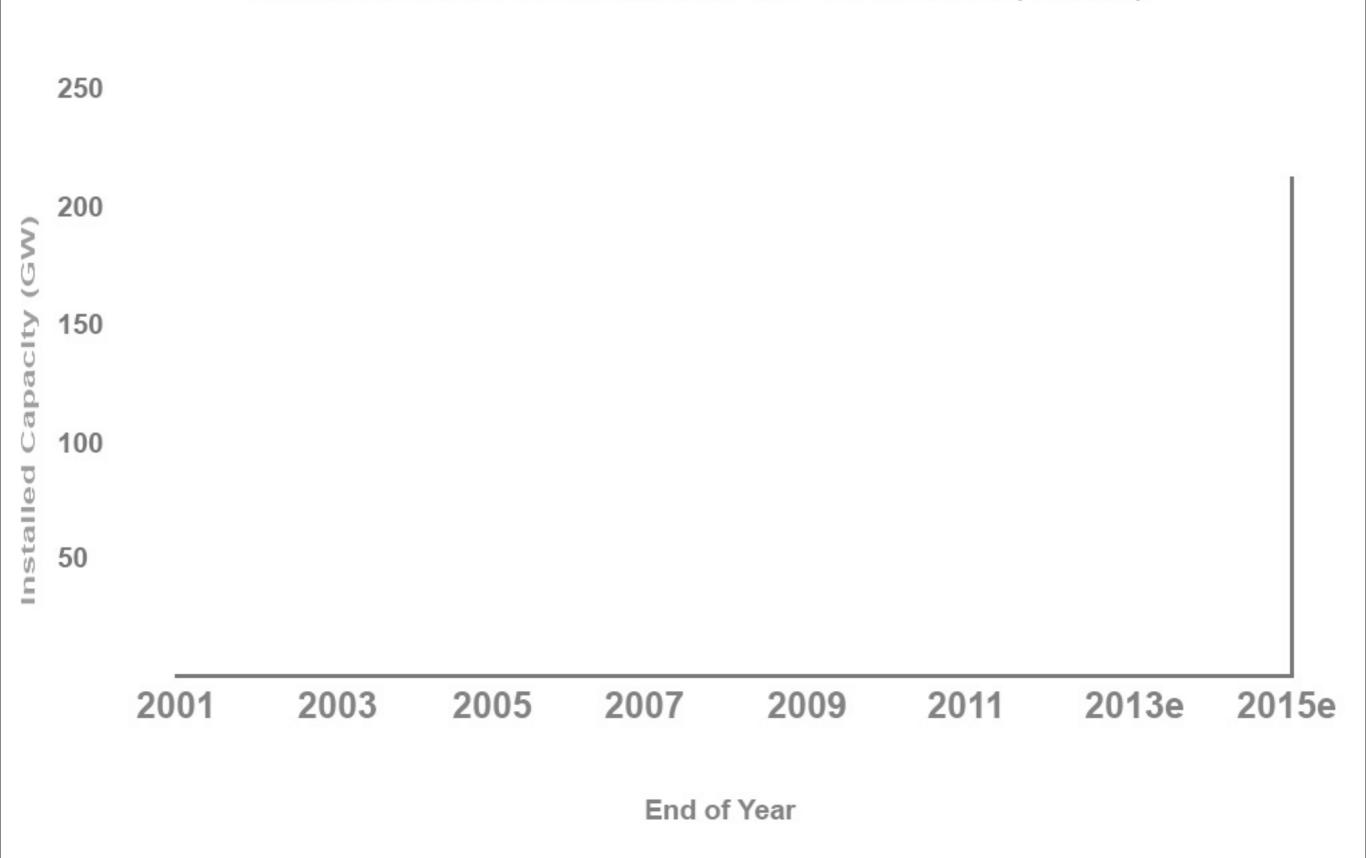
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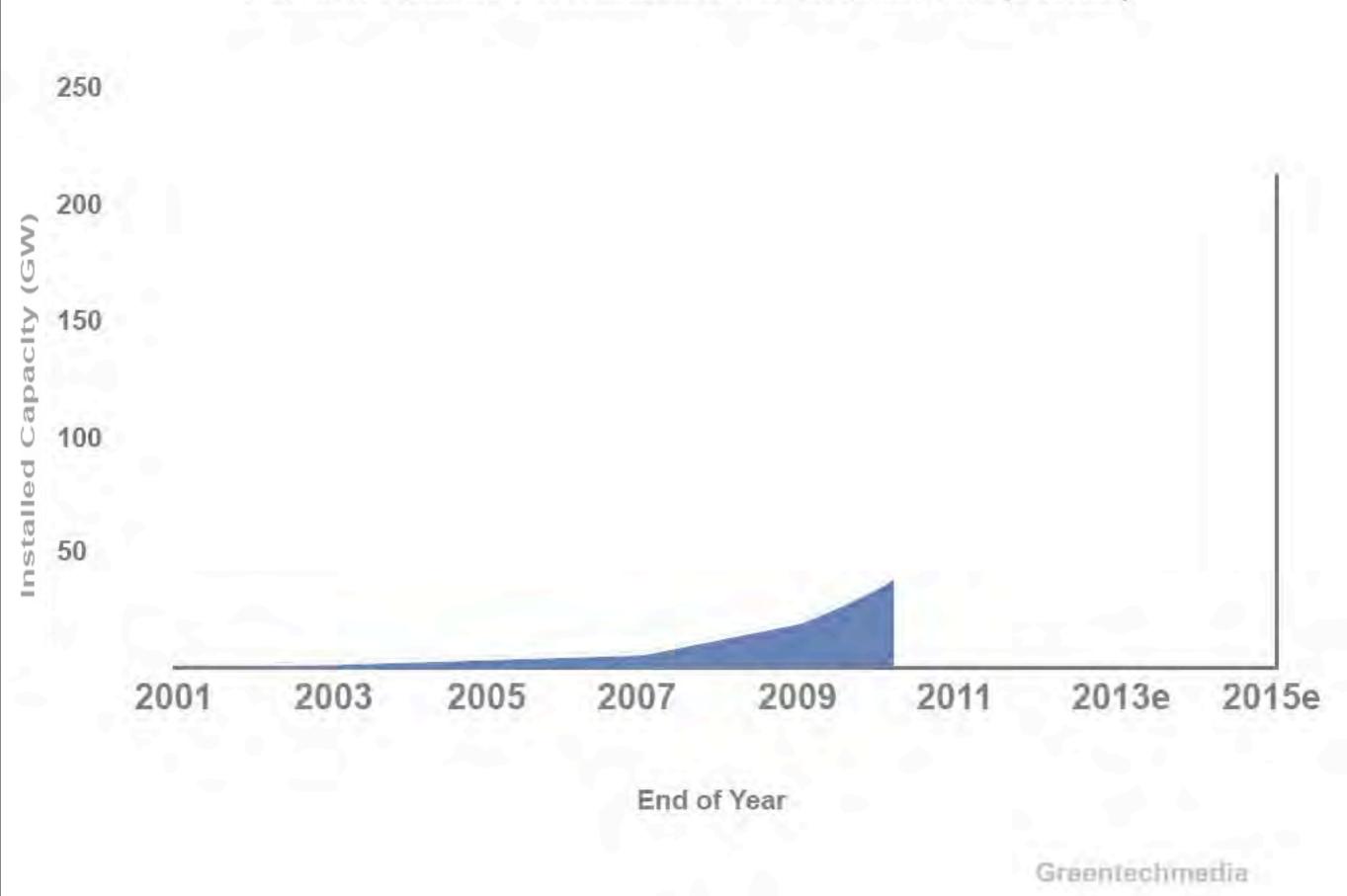


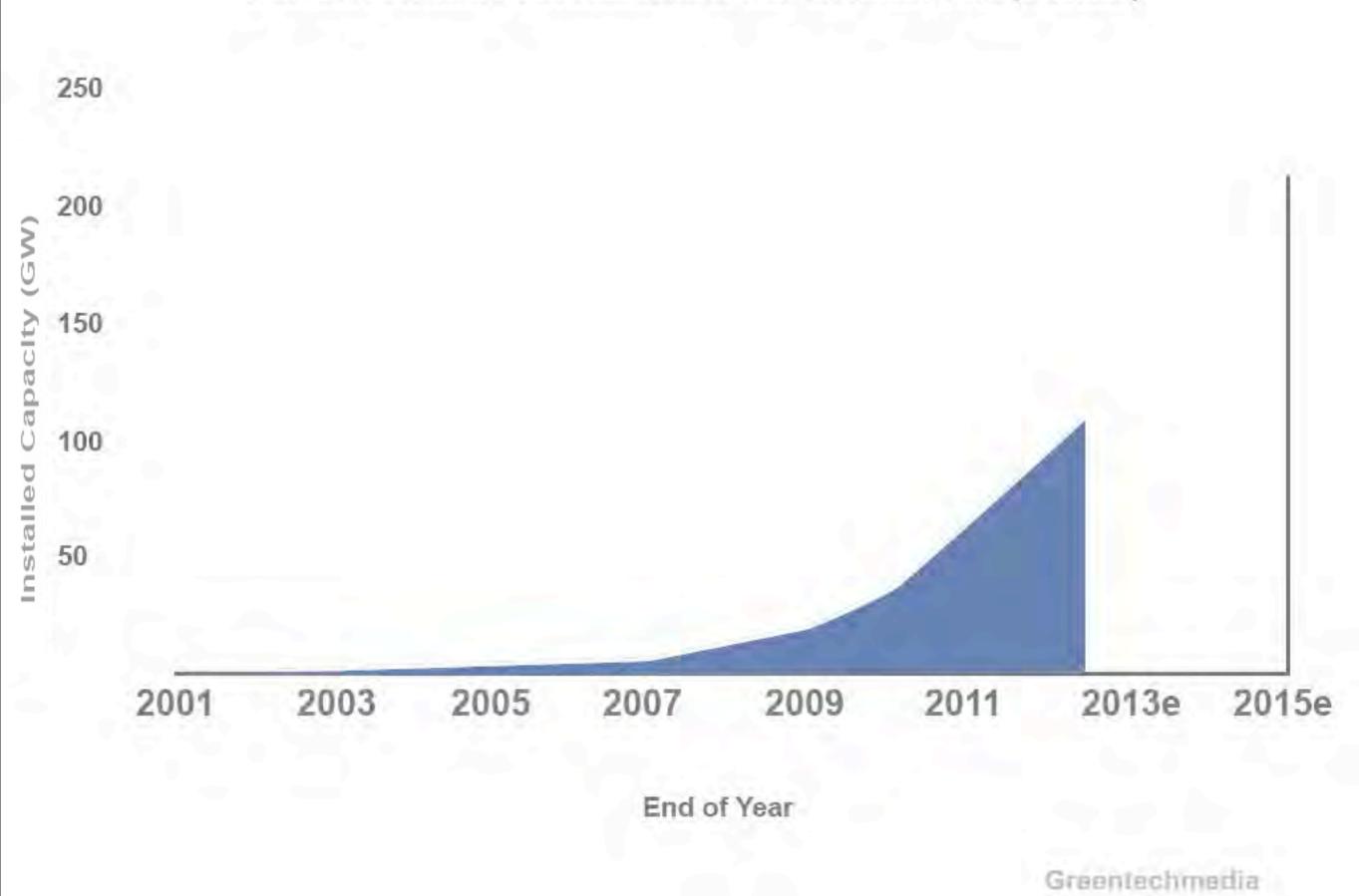


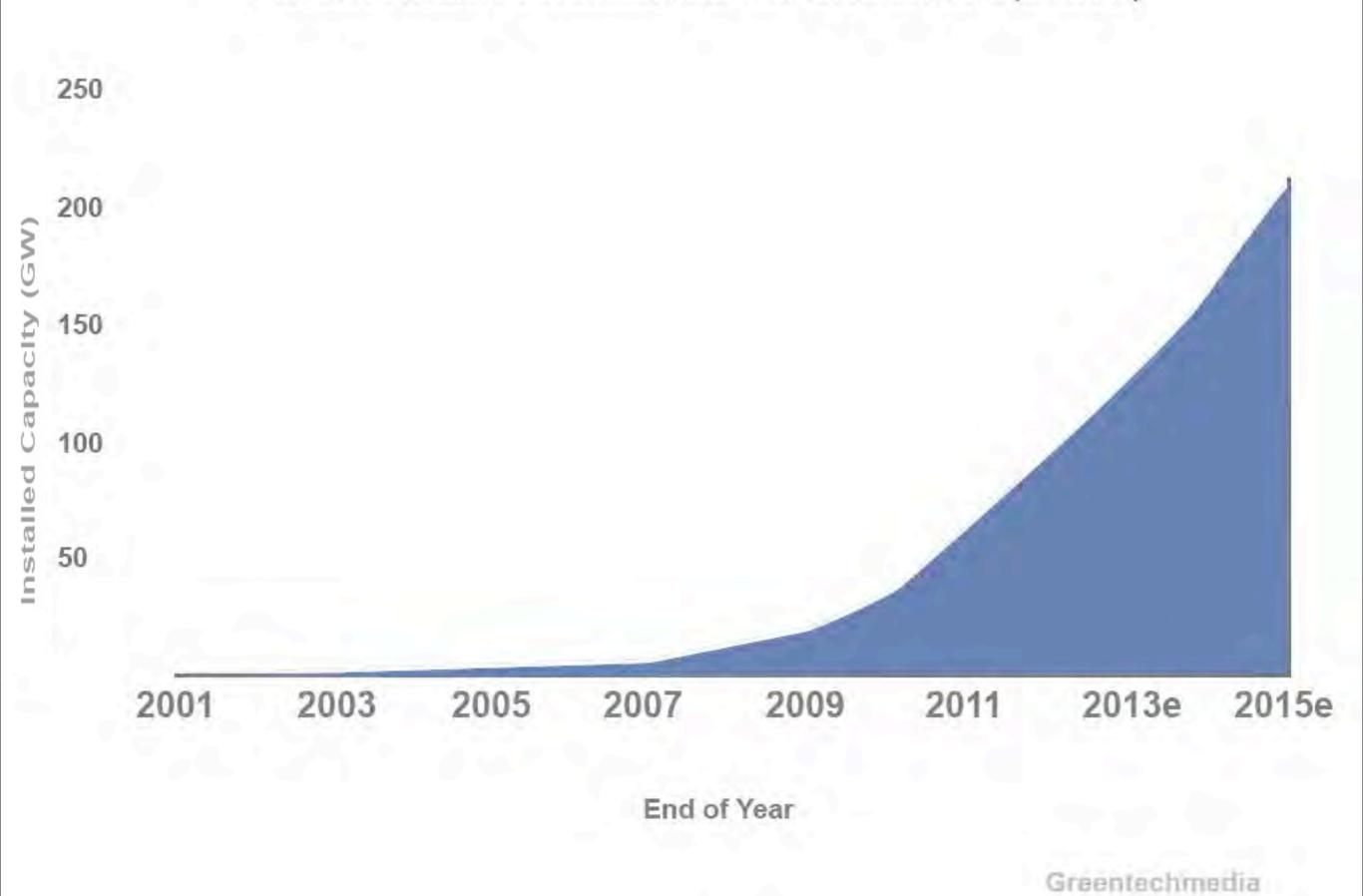


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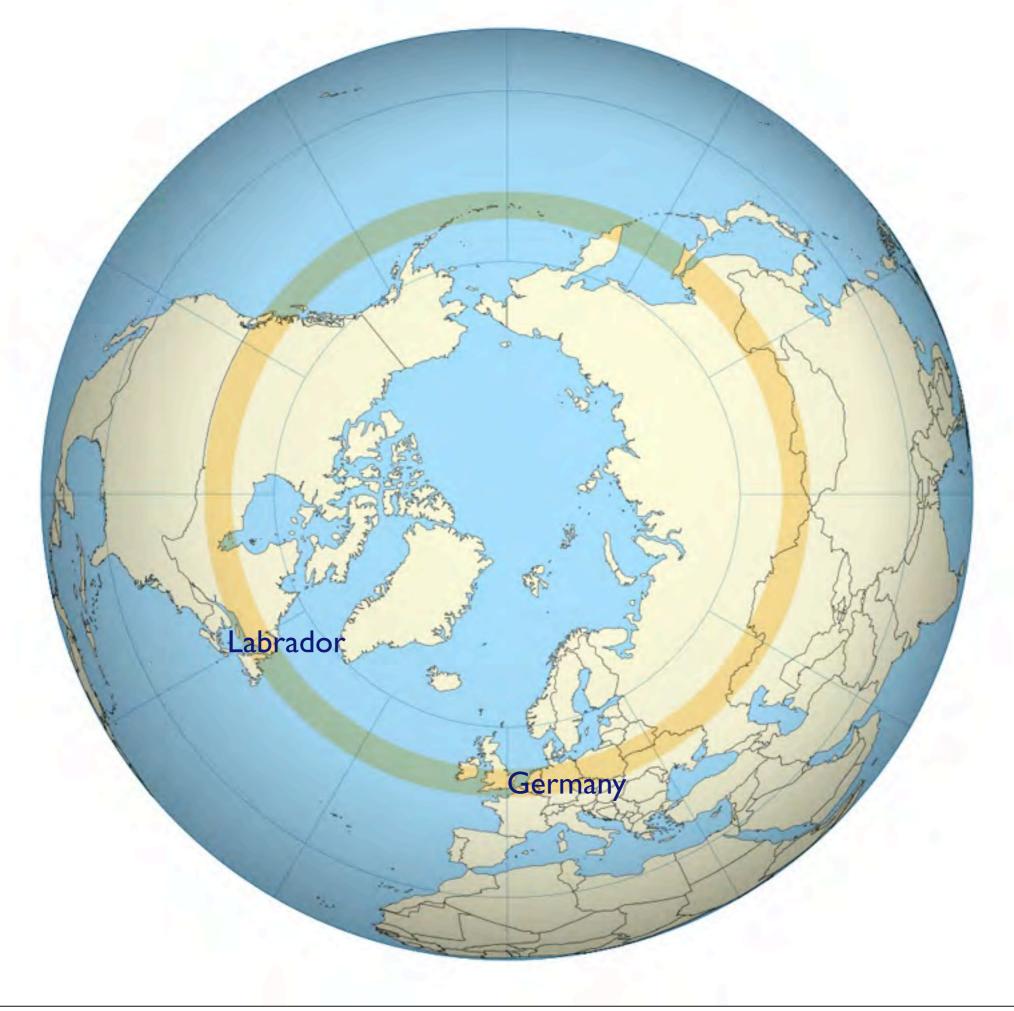


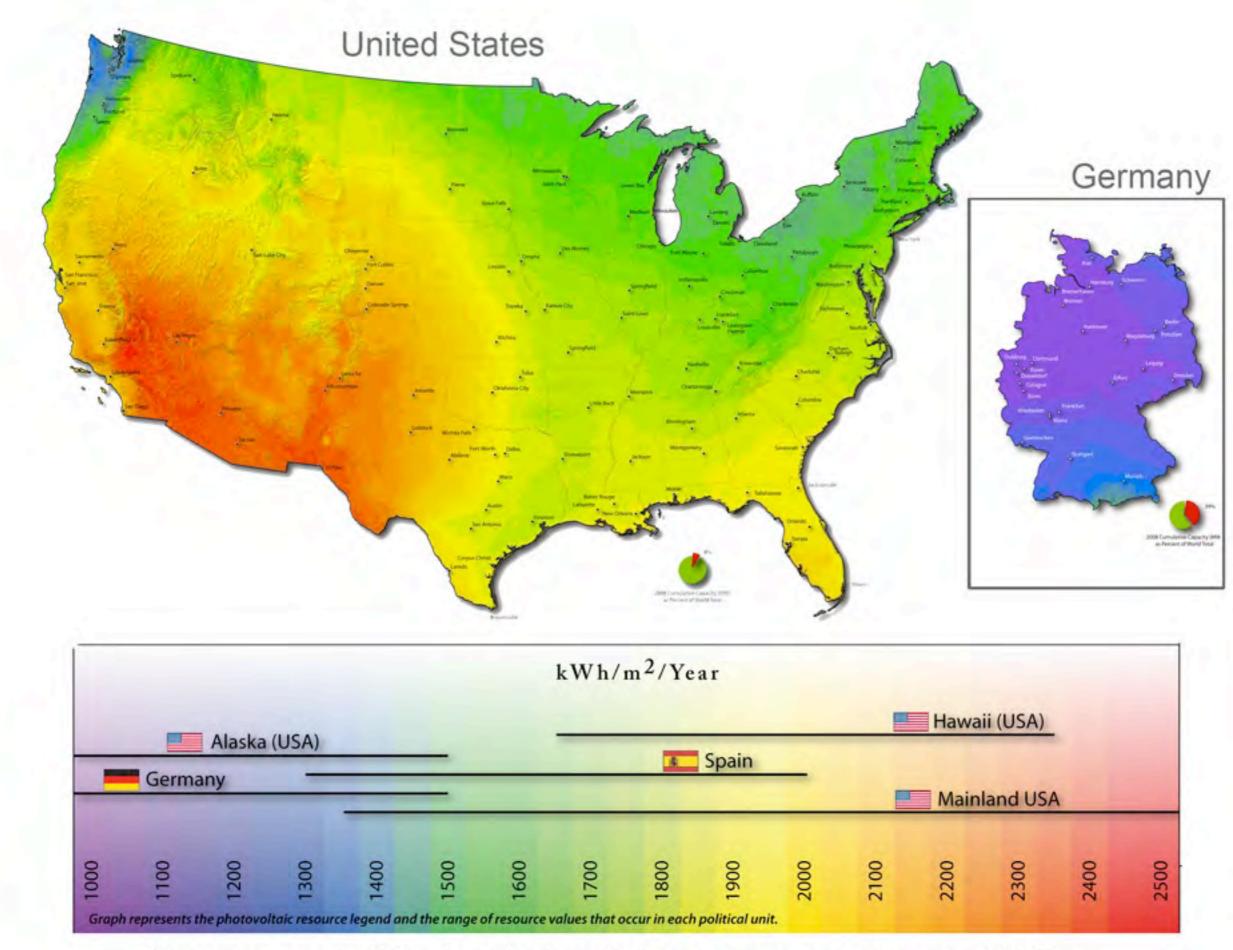












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# While US argues, Germany faces budget surplus

By By David Mc Hugh October 17, 2013













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FRANKFURT, Germany (AP) — While politicians in the United States argue about spending cuts, deficits and the debt ceiling, Germany faces a different discussion: What to do with a looming budget surplus.

The country's strong economy means it will take in more in tax revenue than it will spend next year for a third straight year, a group of top economic institutes said in a twice-annual report Thursday.

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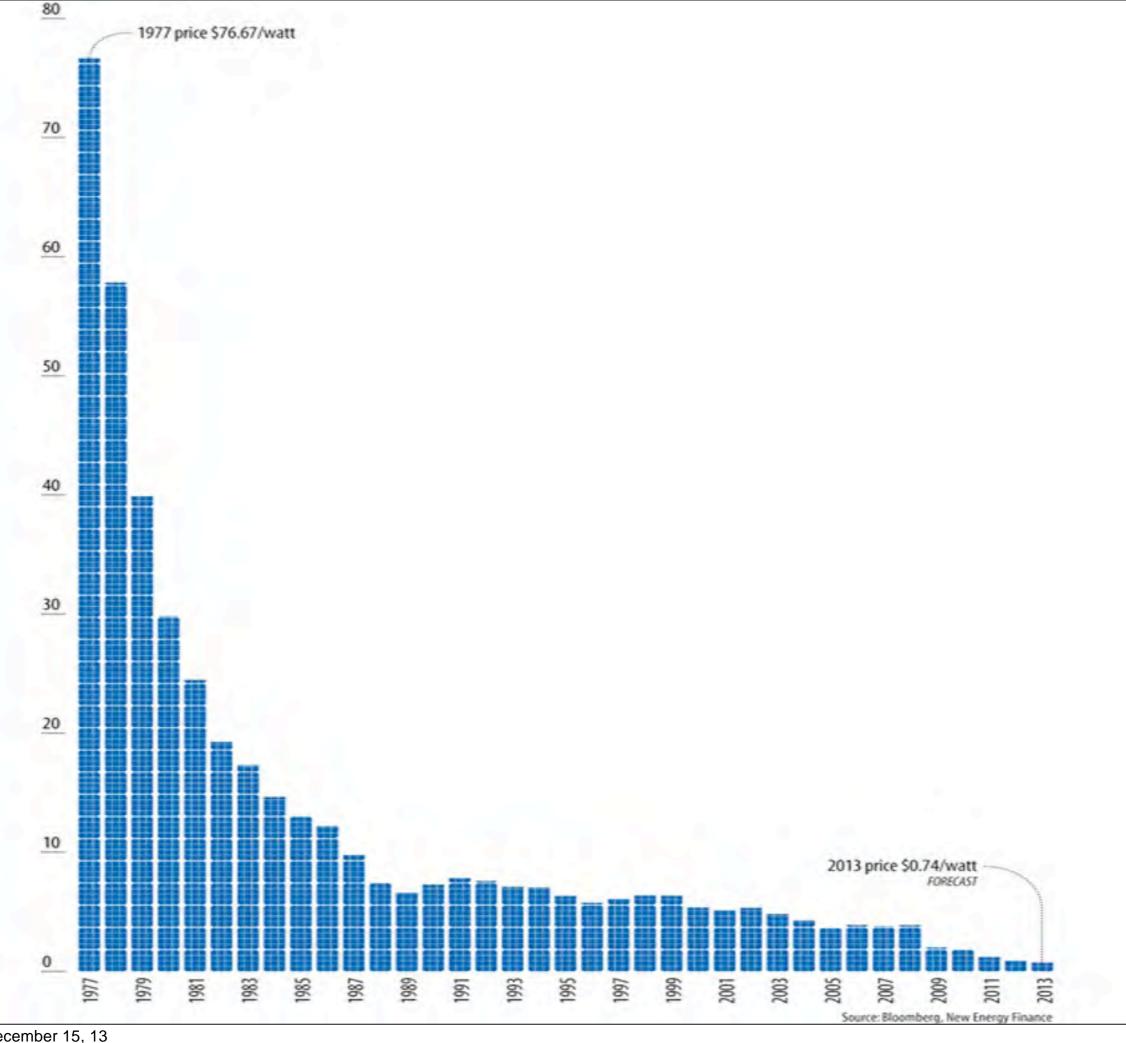


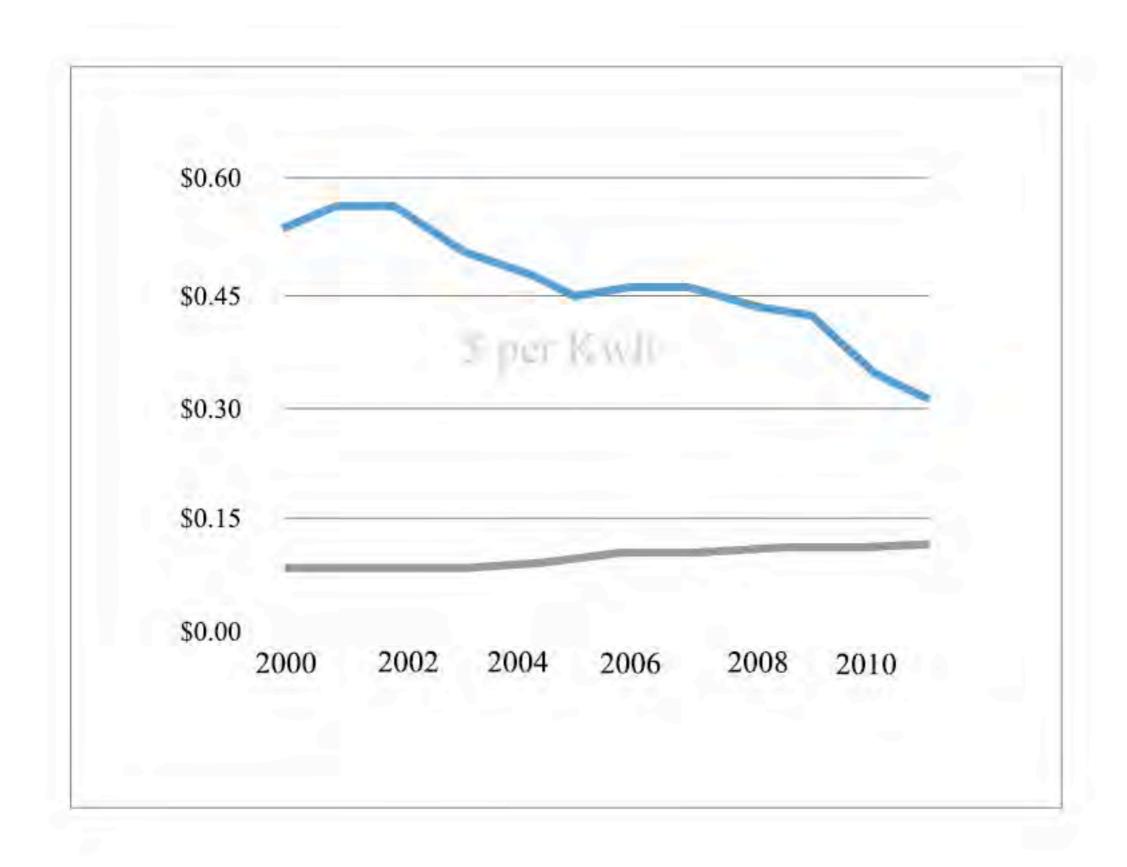
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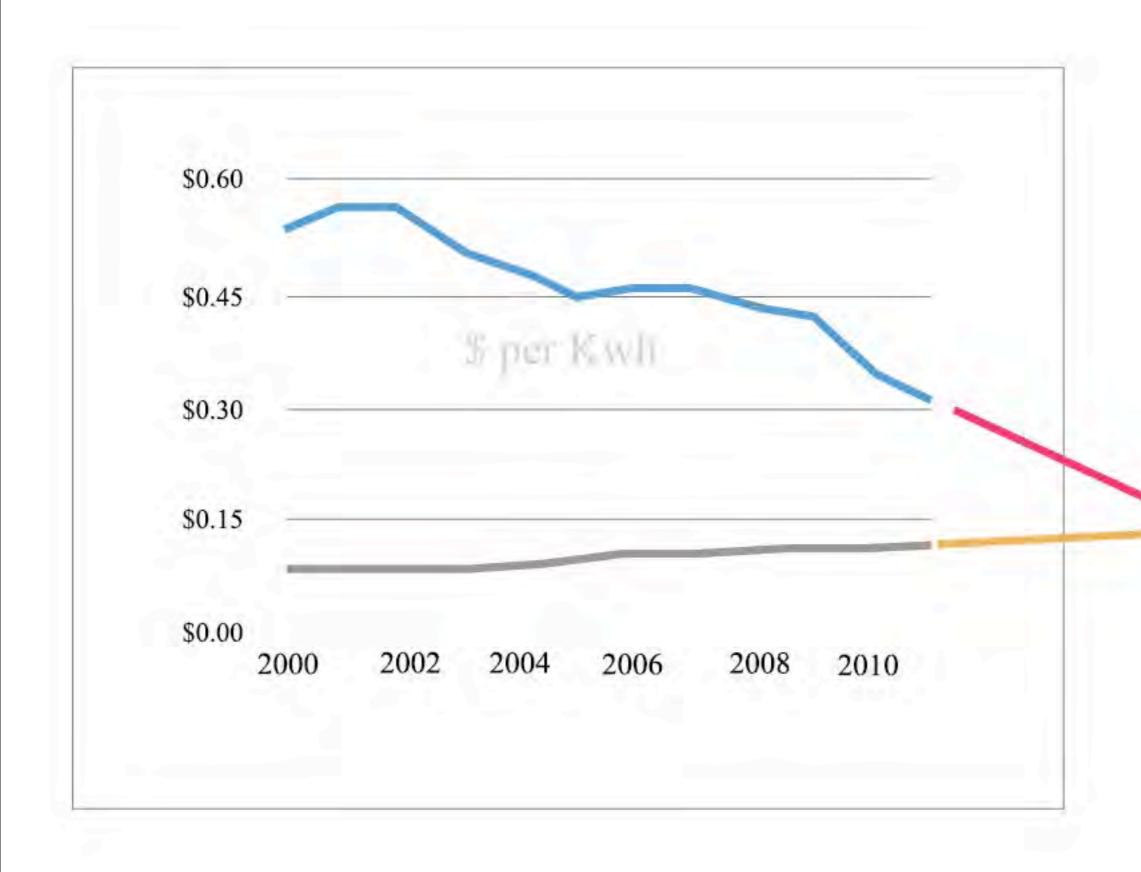
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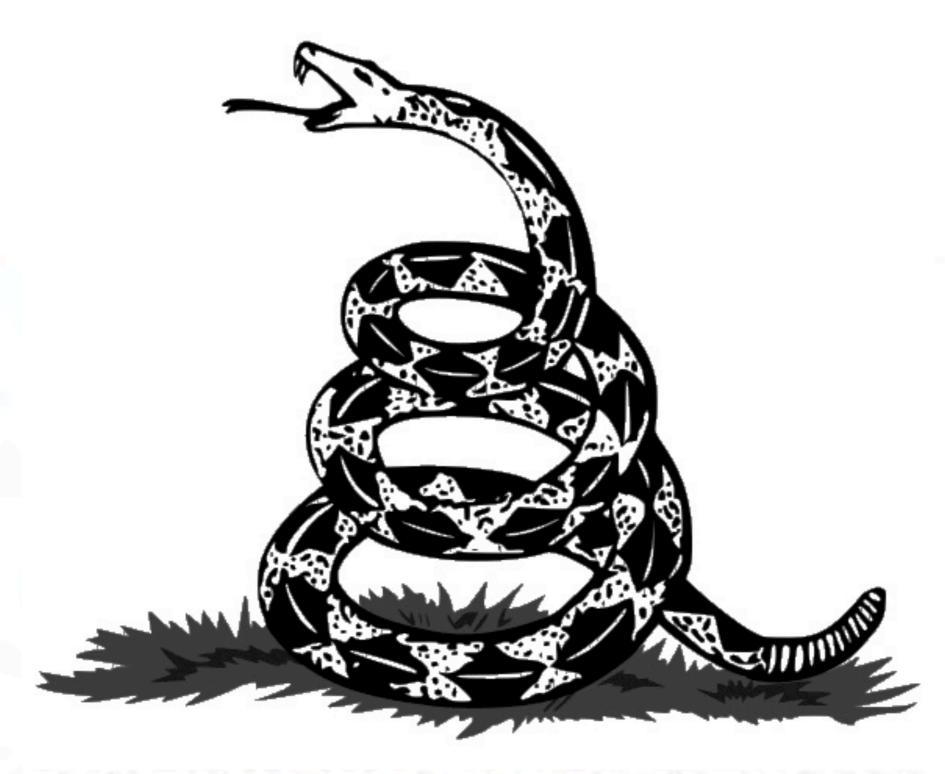
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