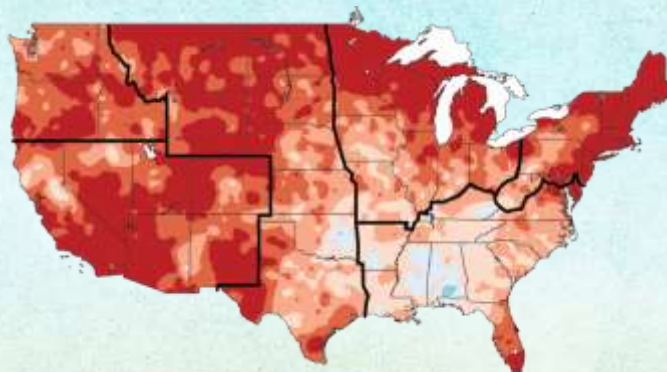


Third National Climate Assessment

Climate Change Impacts in the United States

June 10, 2014
Seattle, WA
International
District
Energy
Association



T.C. Richmond, VAN NESS FELDMAN LLP
National Climate Assessment: Vice-Chair, Federal Advisory Committee and
author Water Resources Chapter

Usefulness for the Public

Web-based and transparent “line of sight” between data and conclusions



Highly understandable language with graphics that help "tell the story"

- of the difference between climate variability and change.
- how we can tell the difference between "normal" variability and long-term trends.
- examples of the kinds of observed changes and adaptations

8 Regions addressed

plus Oceans, Coasts, Urban, Rural, Land use

Sectors

- Water Resources
- Energy Supply and Use
- Transportation
- Agriculture
- Forestry
- Ecosystems and Biodiversity
- Human Health



Cross-Cuts

- Water, Energy, and Land Use
- Water, Energy, Land Use
- Urban Systems, Infrastructure, & Vulnerability
- Tribal, Indigenous, & Native Lands and Resources
- Land Use & Land Cover Change
- Rural Communities
- Biogeochemical Cycles



Human-induced climate change has moved firmly into the present.



© Dave Martin/AP/Corbis

Americans are already feeling the effects of increases in some types of extreme weather and sea level rise.



© Stan Honda/AFP/Getty Images

Impacts Are Already Widespread



©AP Photo/The Virginian-Pilot, Steve Earley

Impacts are apparent in every region and in important sectors including health, water, agriculture, energy, and more.



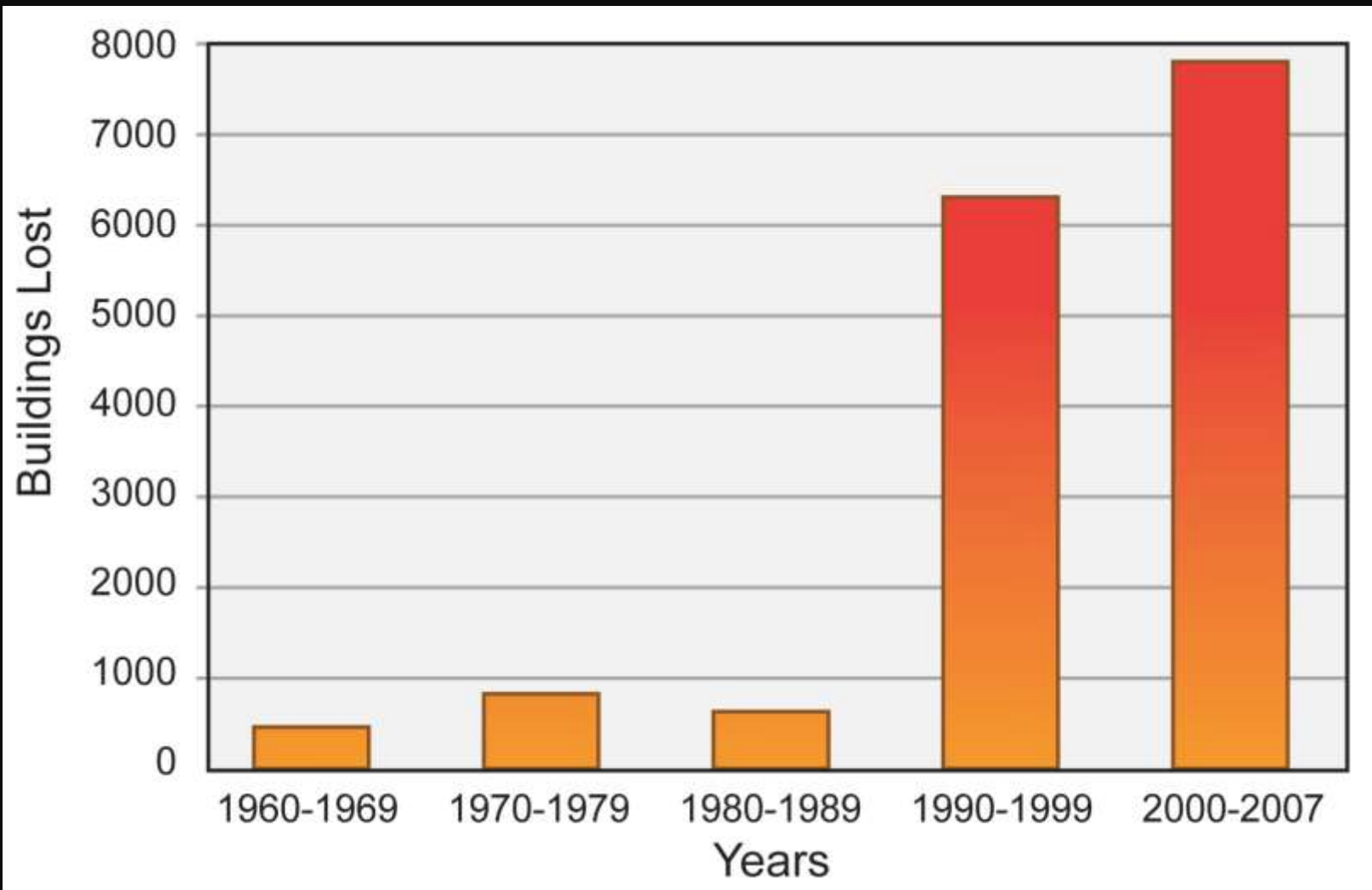
© Scott Olson/Getty Images

U.S. Climate is Changing and Some Extremes are Increasing



© John Wark/AP/Corbis

Building Loss by Fires at California Wildland-Urban Interfaces



Impacts are Projected to Increase



©AP Photo/The Press-Enterprise, Terry Pierson

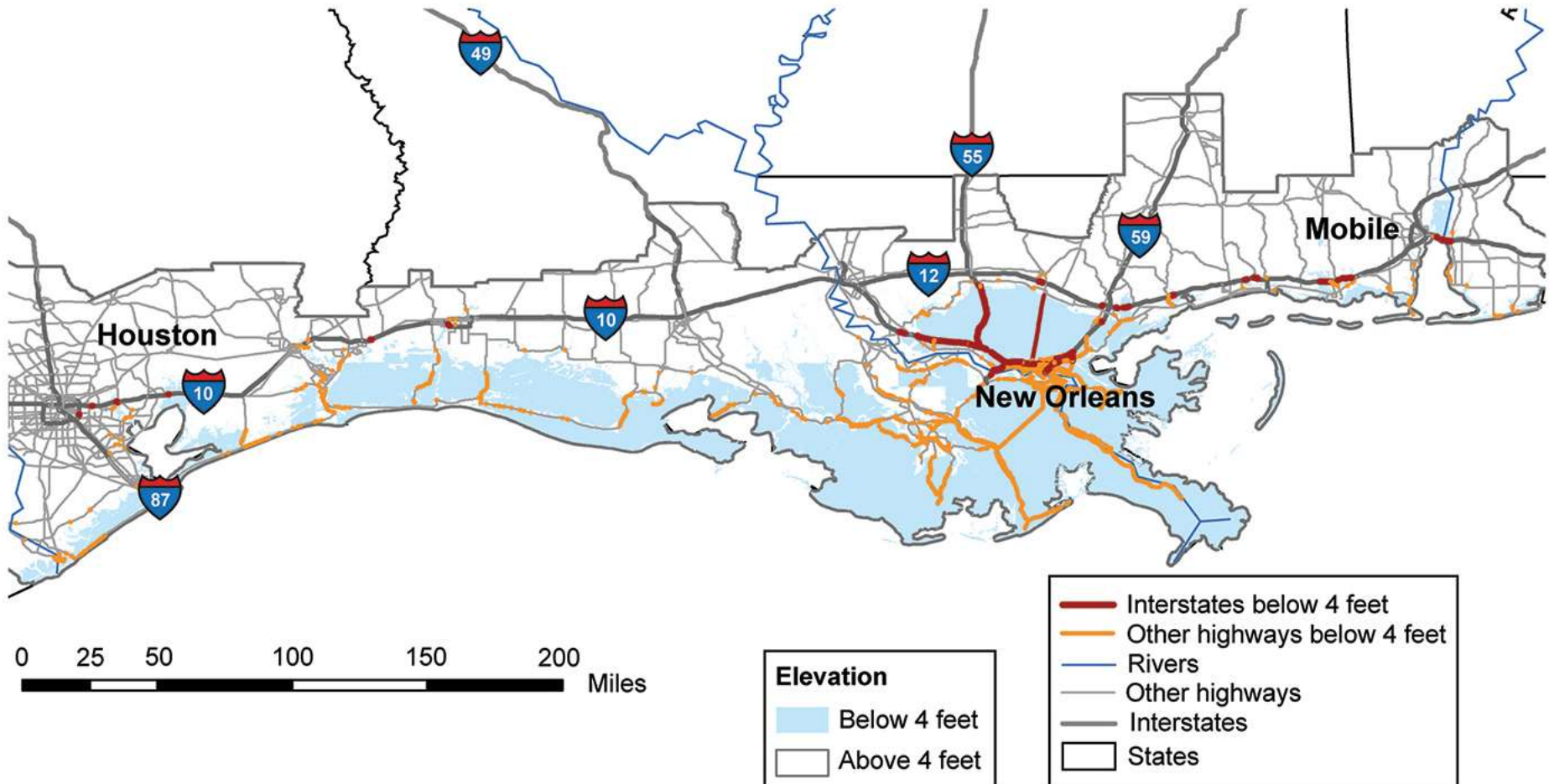


NOAA

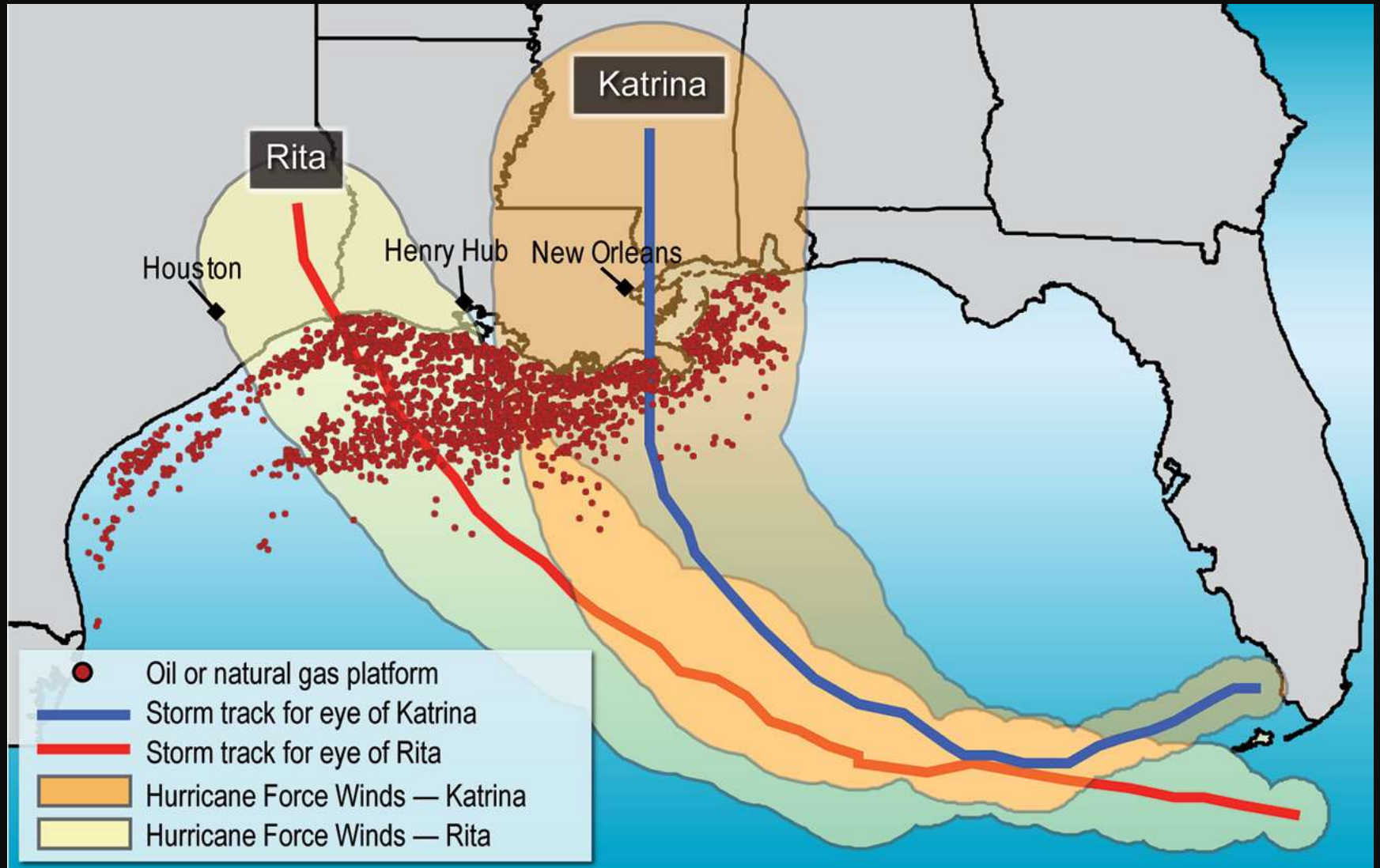
Vulnerability to Sea Level Rise



Gulf Coast Transportation Hubs at Risk



Paths of Hurricanes Katrina and Rita Relative to Oil and Gas Production Facilities

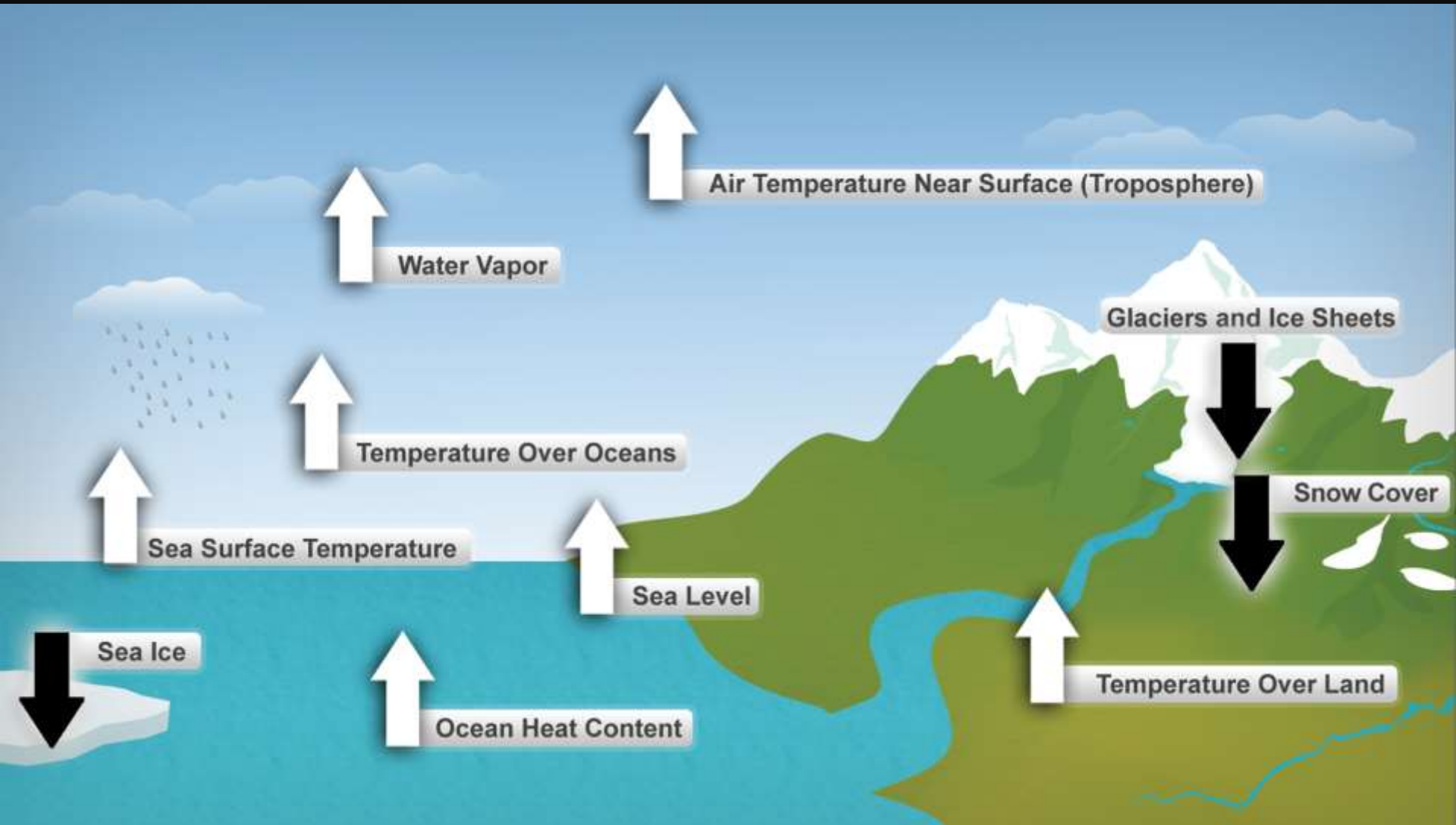


The World is Warming

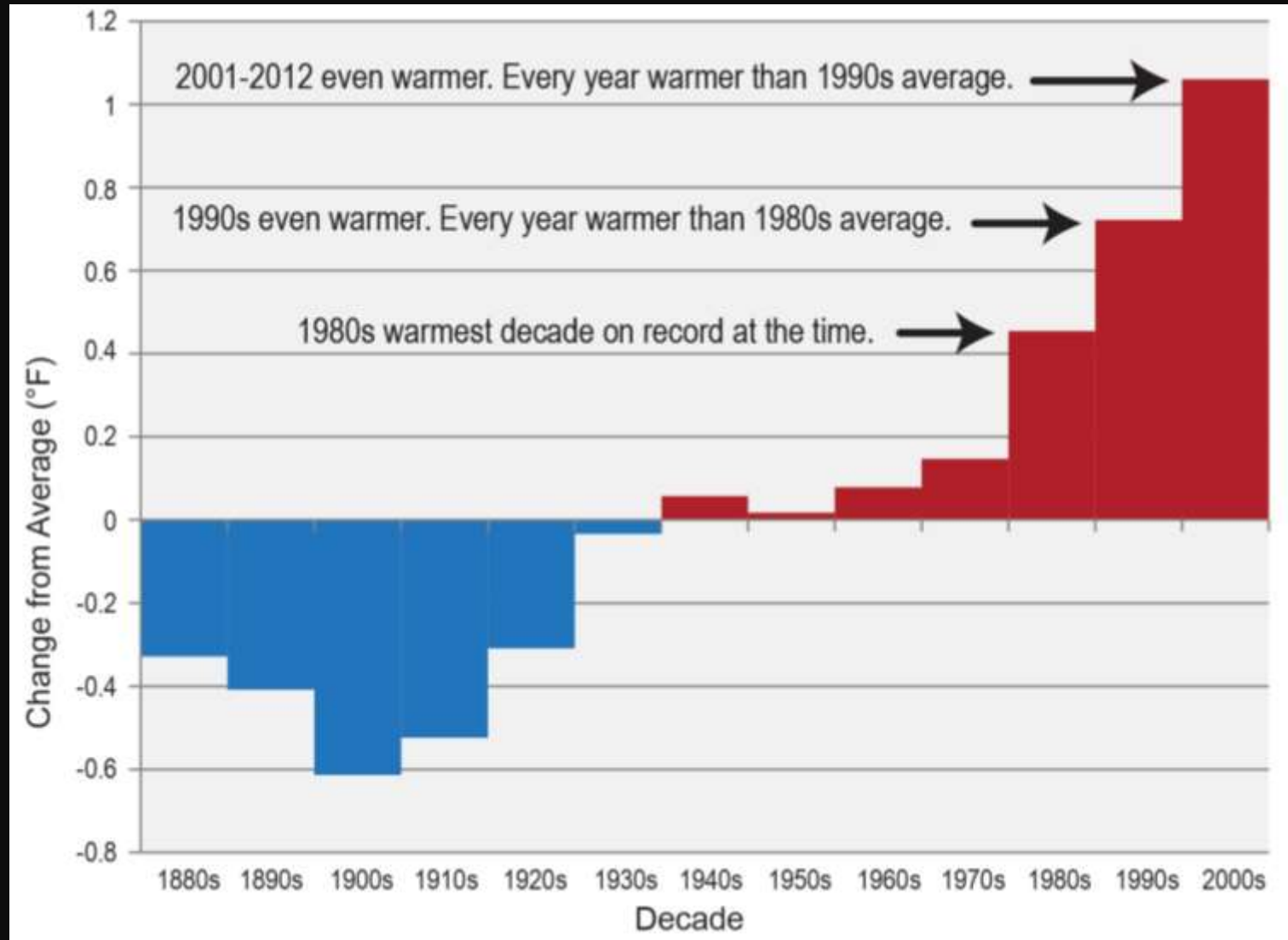
Numerous independent lines of evidence demonstrate that warming has continued.

Because human-induced warming is superimposed on a naturally varying climate, rising temperatures are not evenly distributed across the globe or over time.

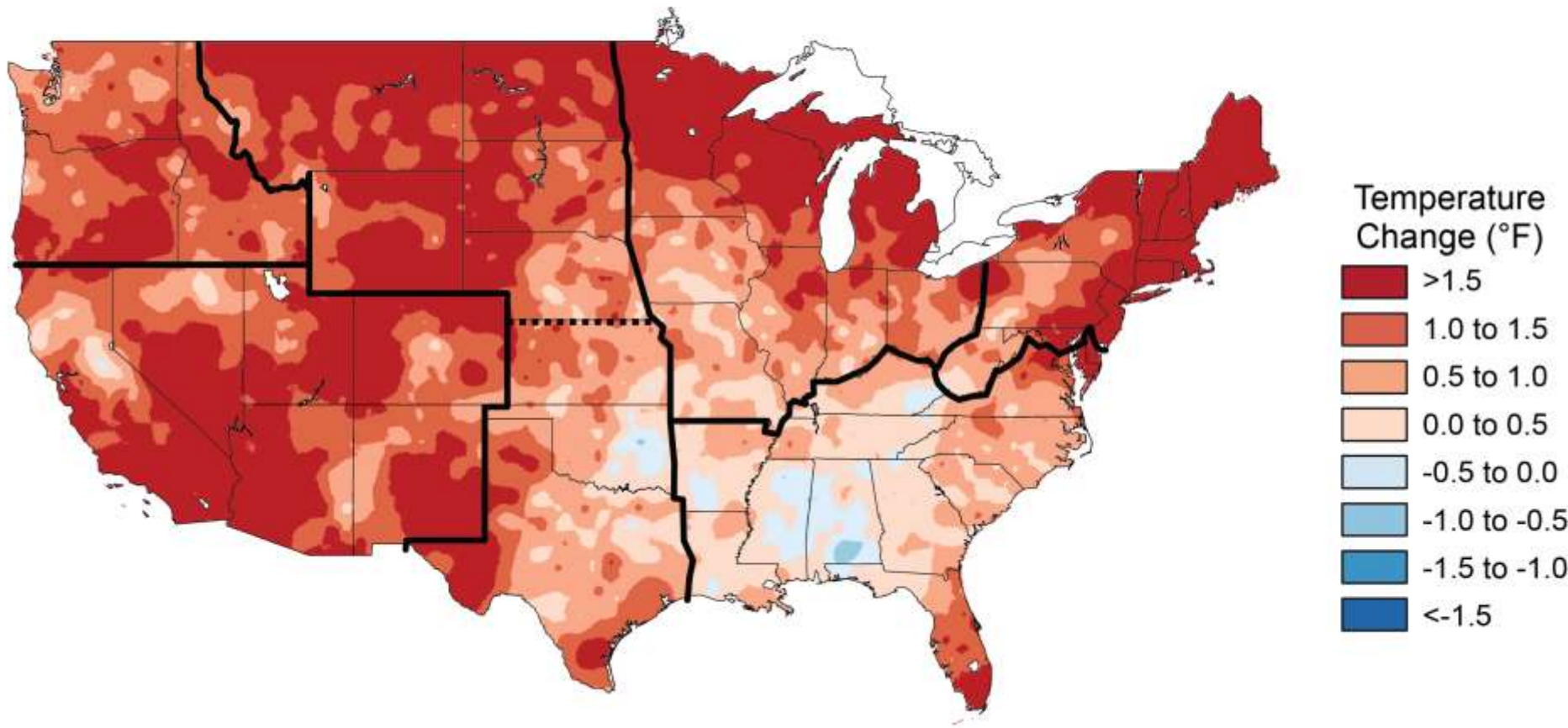
Ten Indicators of A Warming World



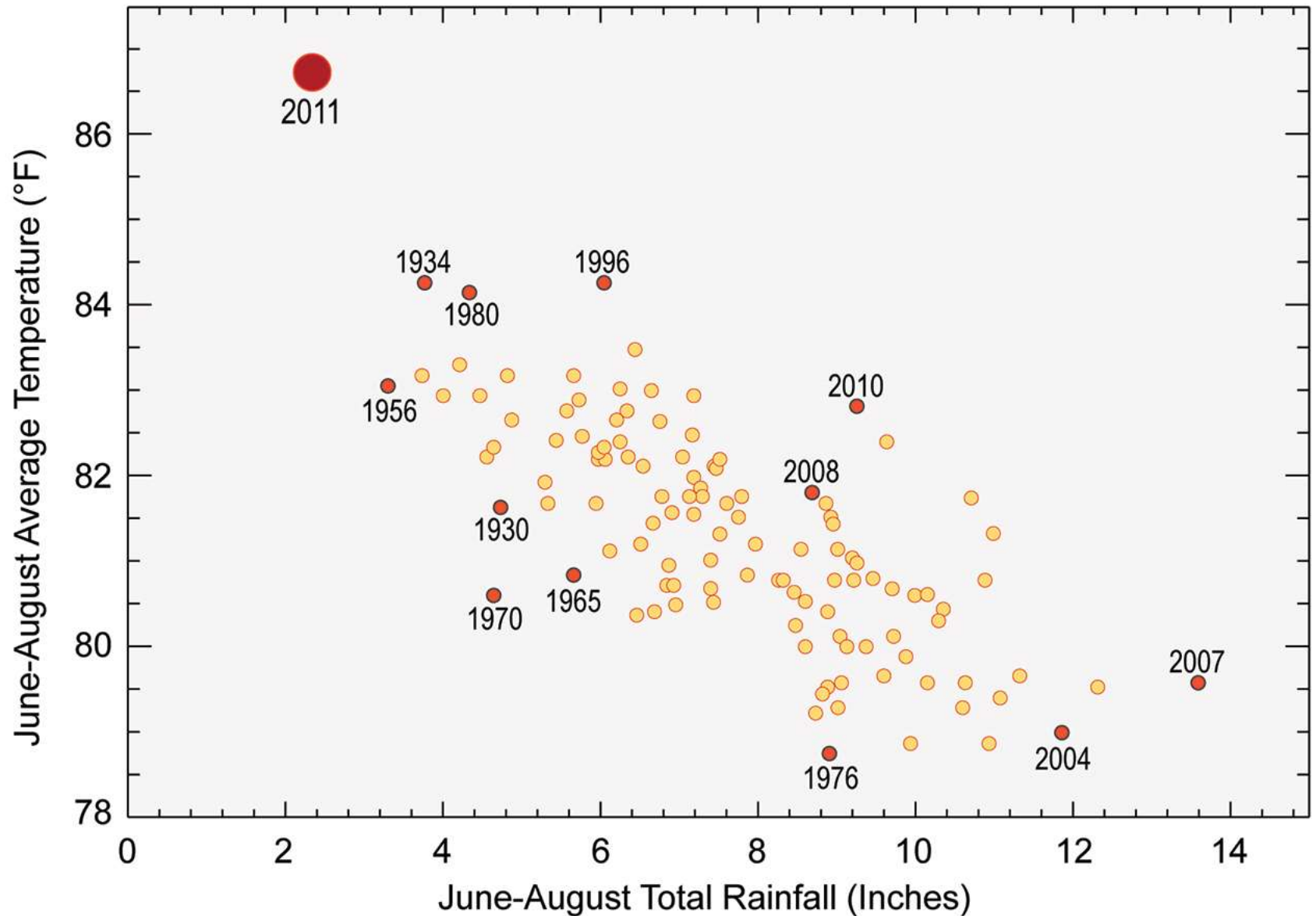
Temperature Change by Decade



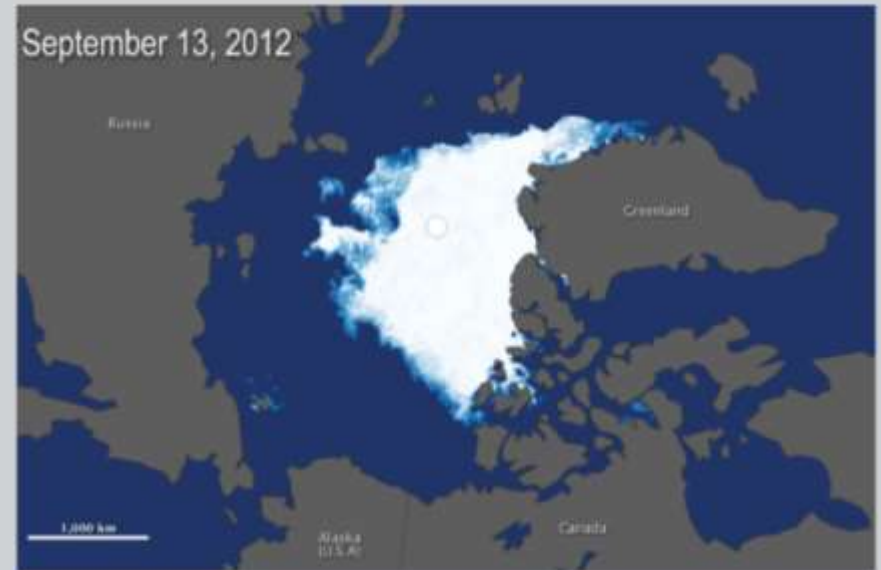
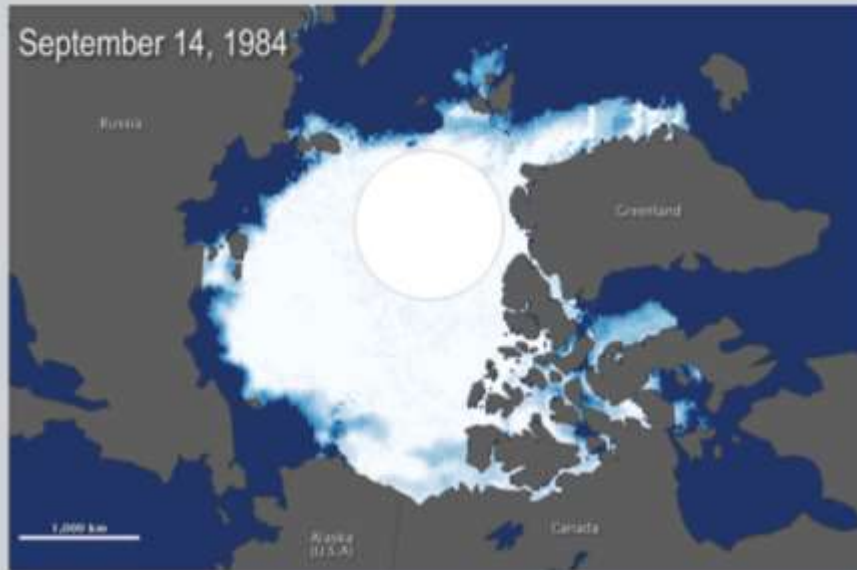
Observed Temperature Change



Texas Summer 2011: Record Heat and Drought



Arctic Sea Ice Decline



Sea Ice Concentration (percent)



Human activity is the primary cause

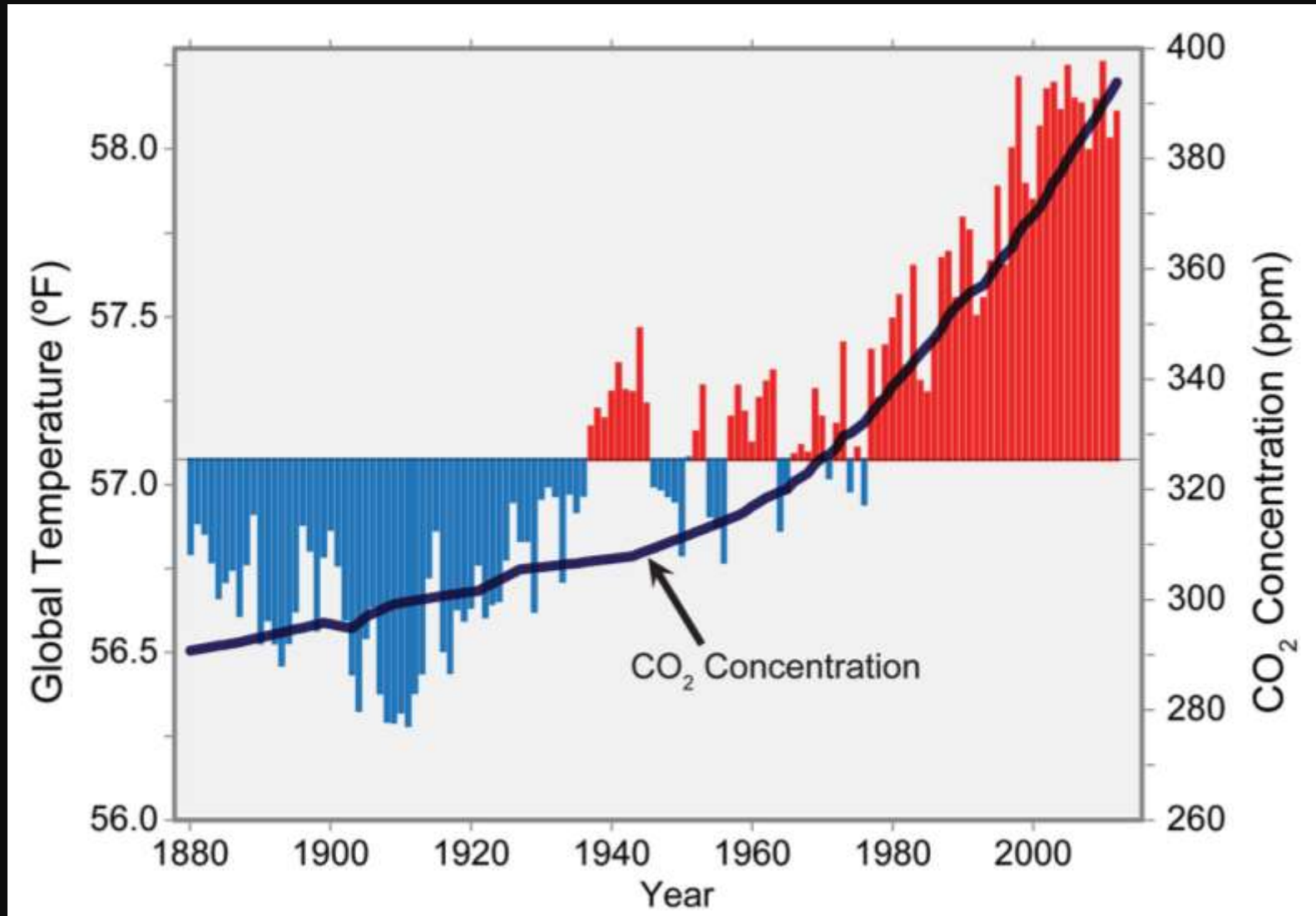


©Tom Mihalek/Reuters/Corbis

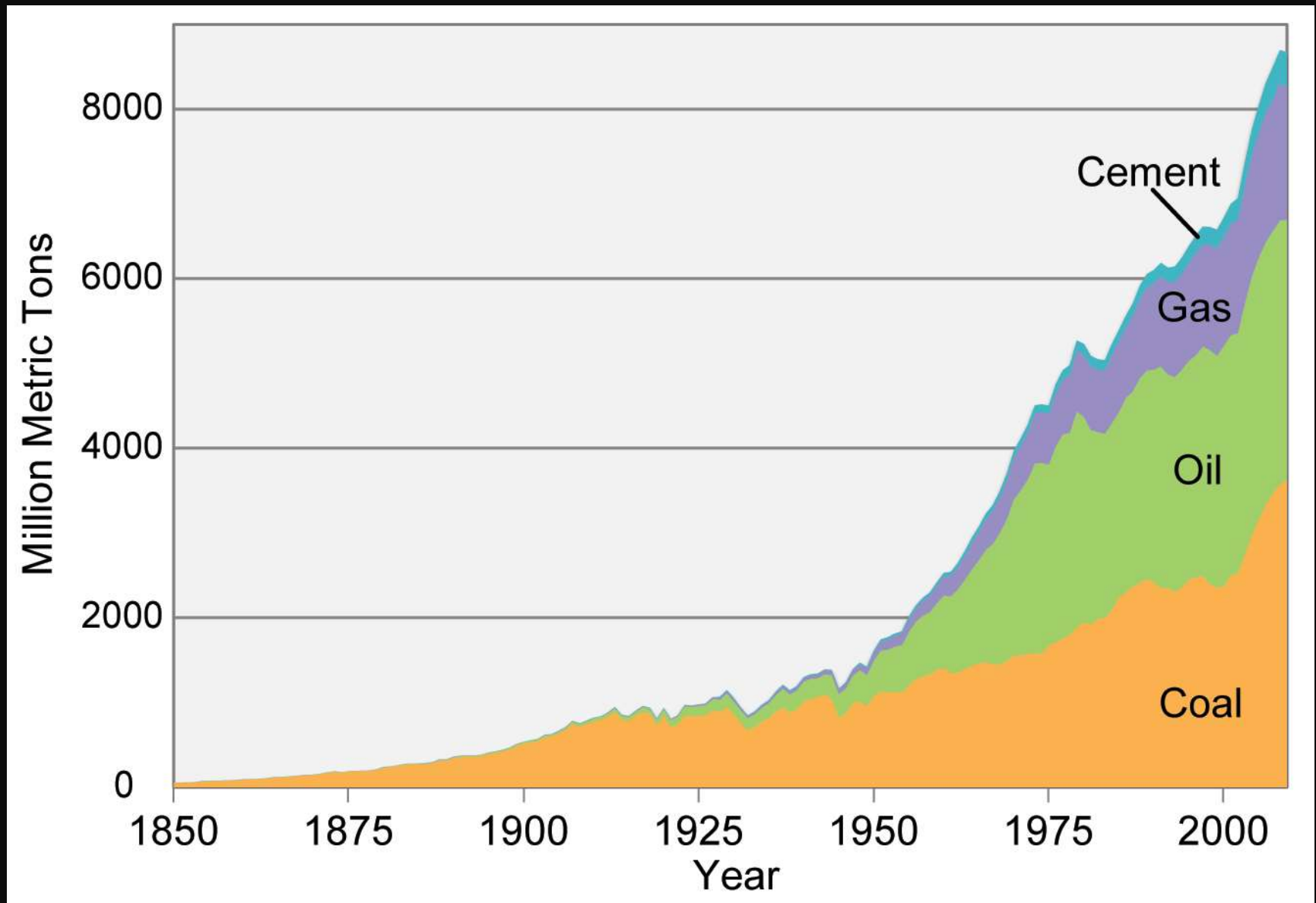


© Phillip J. Redman, U.S. Geological Survey

Global Temperature and Carbon Dioxide



Carbon Emissions in the Industrial Age

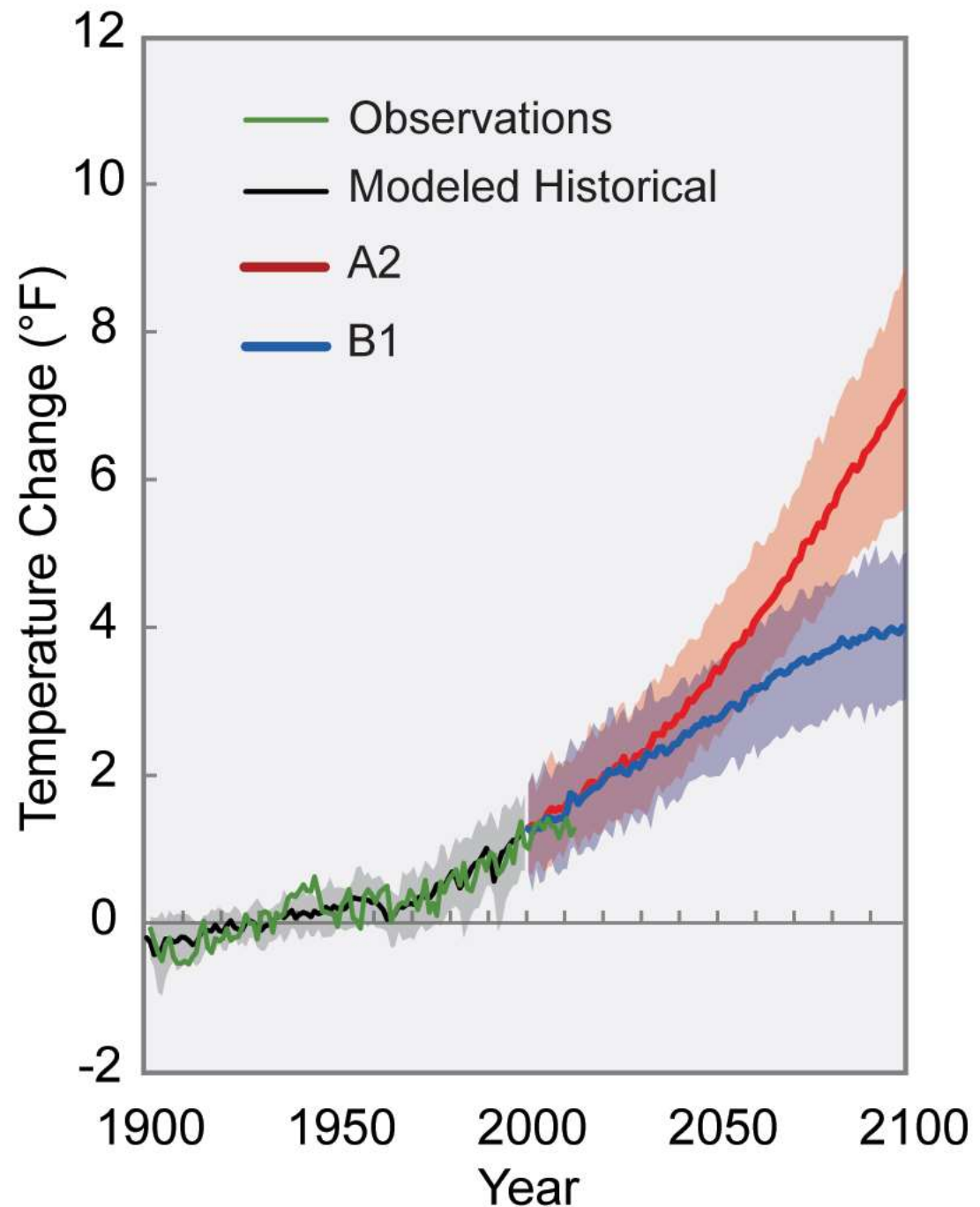


Future Climate Change Depends Primarily on Emissions Levels

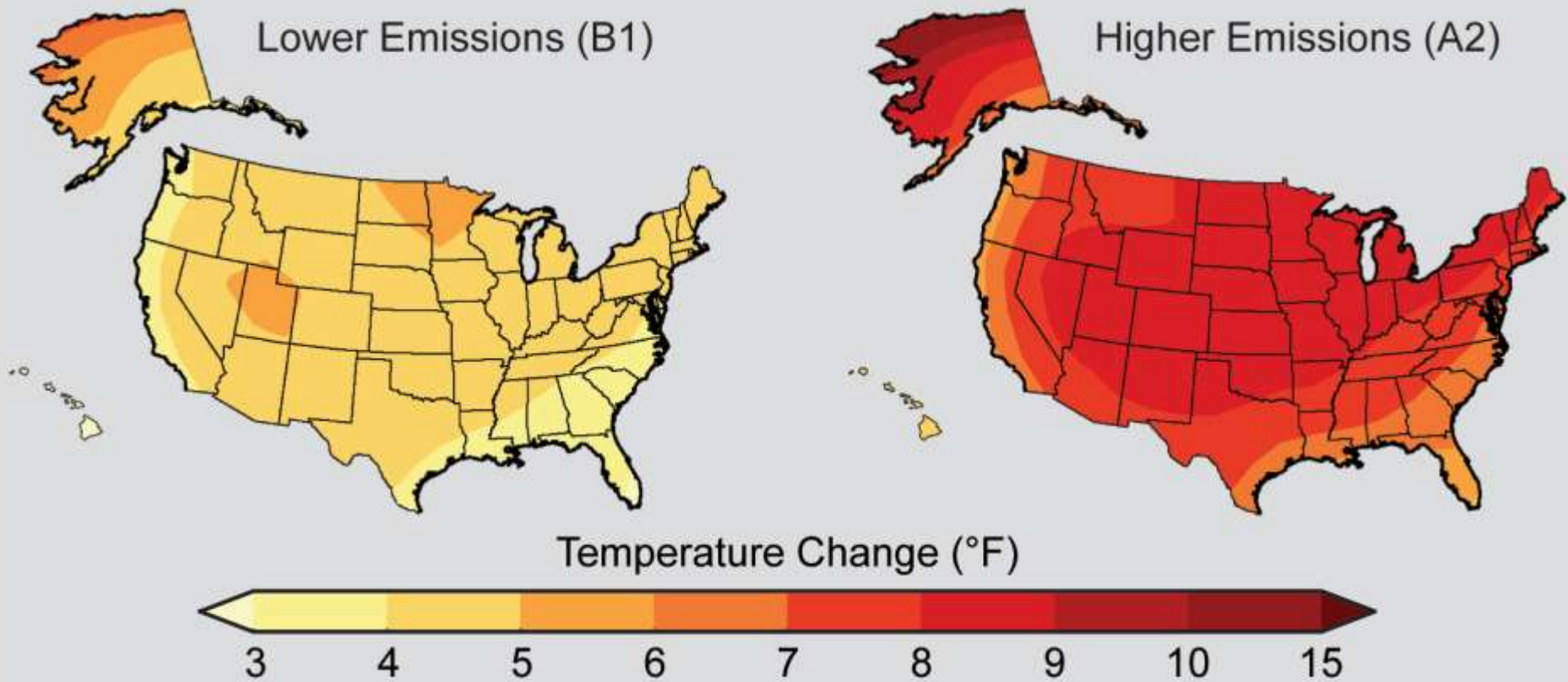


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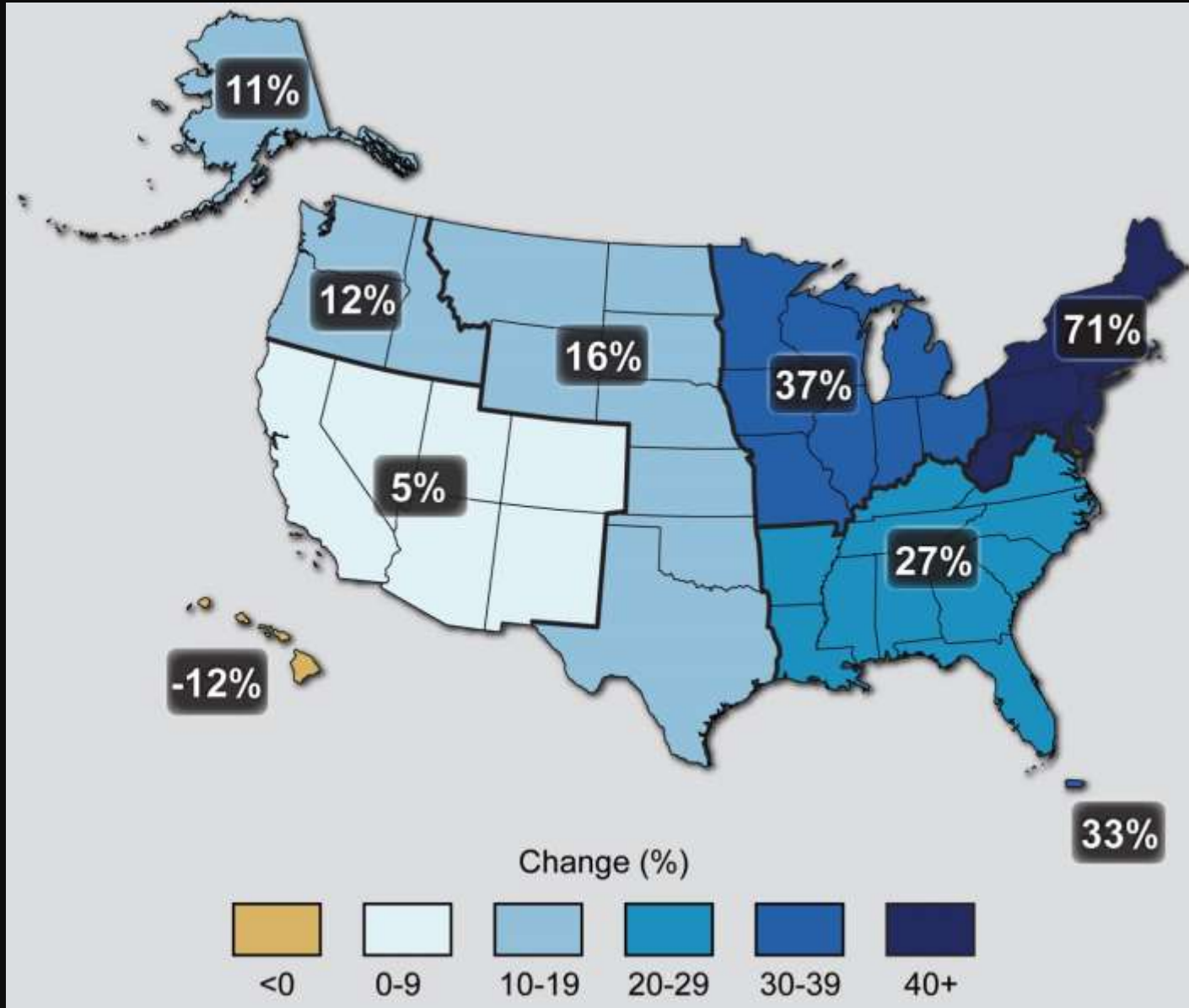
Projected Global Temperature Change



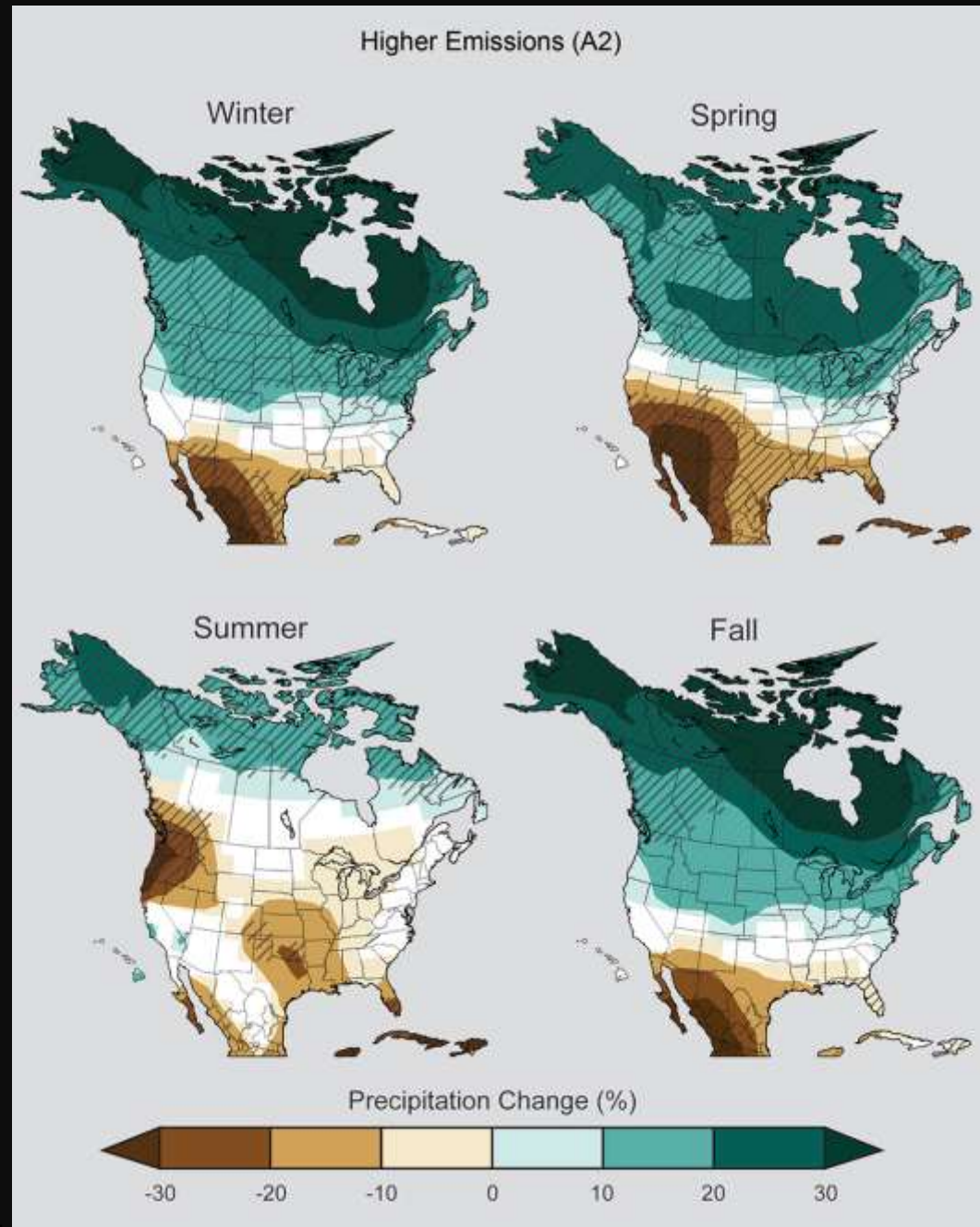
Projected Temperature Change



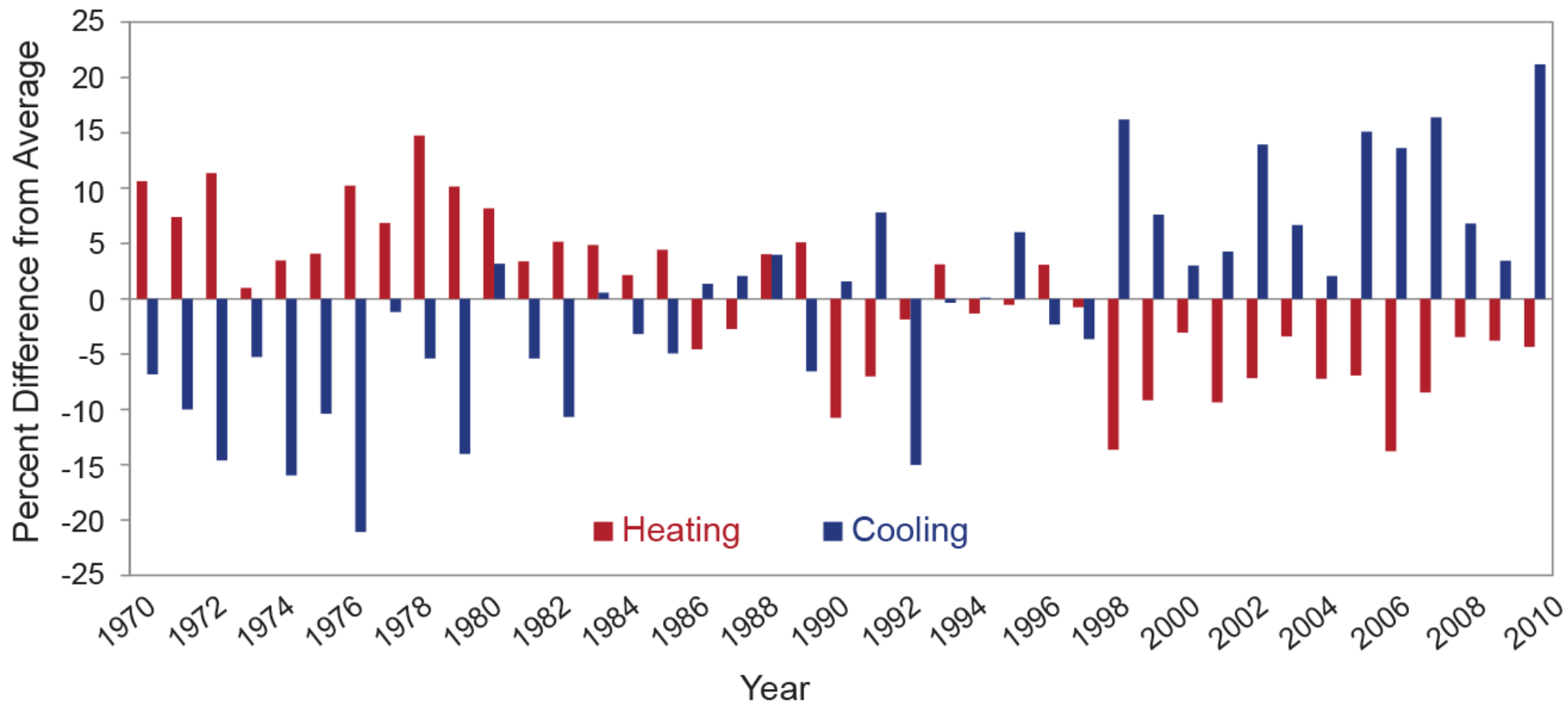
Observed Change in Very Heavy Precipitation



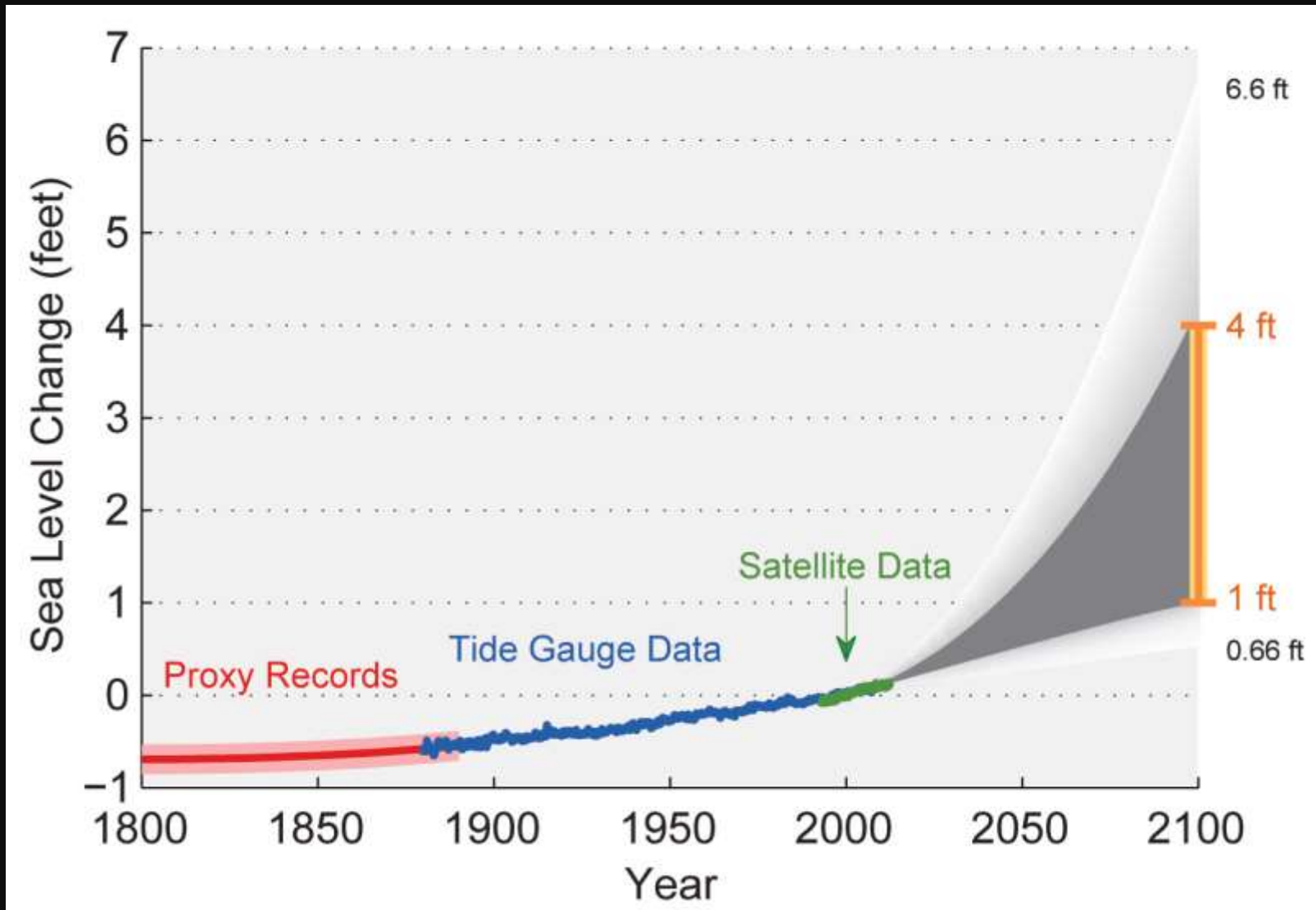
Projected Precipitation Change by Season



Increase in Cooling Demand and Decrease in Heating Demand



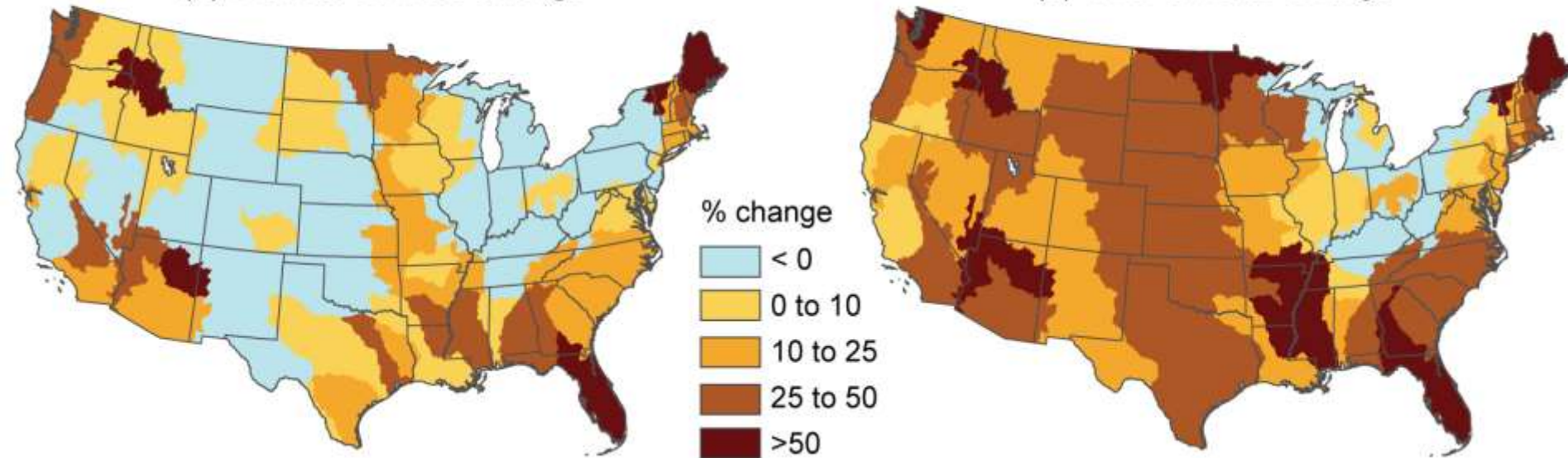
Past and Projected Changes in Global Sea Level



Projected Changes in Water Withdrawals

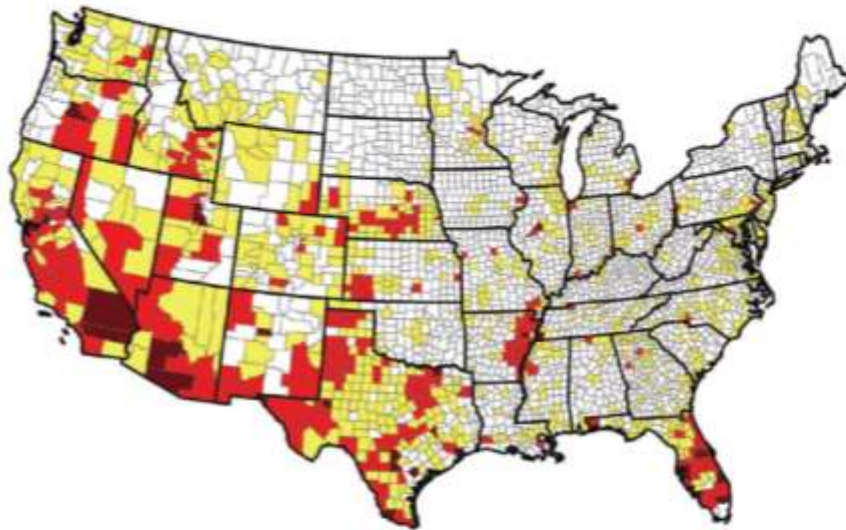
(a) Without Climate Change

(b) With Climate Change



Water Supplies Projected to Decline

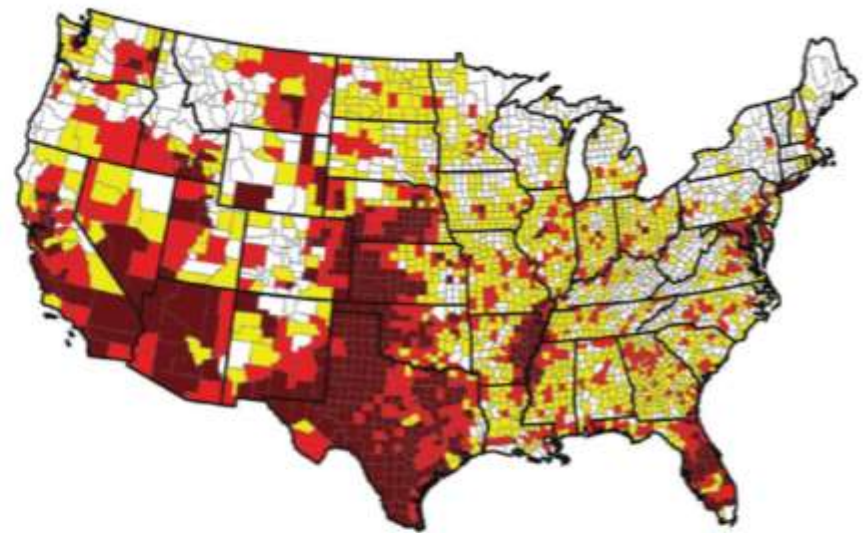
(a) No Climate Change Effects



Water Supply Sustainability Risk Index (2050)



(b) Climate Change Effects



Water Supply Sustainability Risk Index (2050)



There are many actions we can take to reduce future climate change and its impacts and to prepare for the impacts we can't avoid.



©Dennis Schroeder, NREL



©Esperanza Stancioff, UMaine Extension and Maine Sea Grant

Responses to Climate Change

Decision-making support in a “risk-based” framework

Assesses progress in response activities

- adaptation (preparedness)
- mitigation (managing emissions of heat-trapping gases)



Mitigation



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Adaptation



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FEMA photo by Wendell A. Davis Jr.

Questions

Climate Change Impacts in the United States

Thank you

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ter@vnf.com

NCA: <http://nca2014.globalchange.gov/>

NCAnet: <http://ncanet.usgcrp.gov/home>

Indicators: <http://www.globalchange.gov/what-we-do/assessment/indicators>