

Climate Projections-Southern U.S.

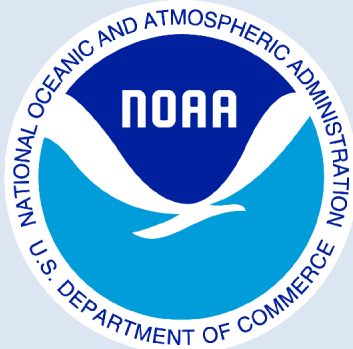
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July 17, 2014

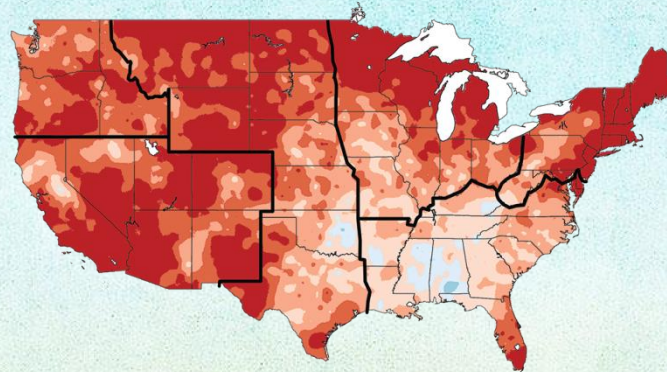


Content

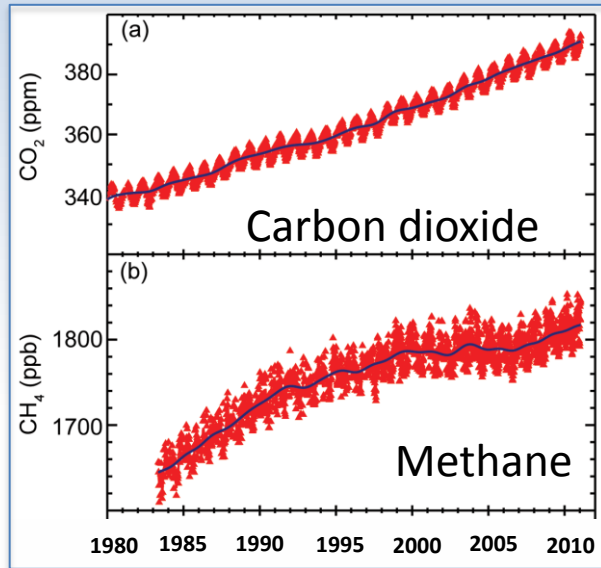
- Key messages from the Third National Climate Assessment, released in May 2014
- Observed trends in important climate variables
- Future projections based on plausible scenarios of greenhouse gas concentration trends, as simulated by global climate models

Third National Climate Assessment

Climate Change Impacts in the United States



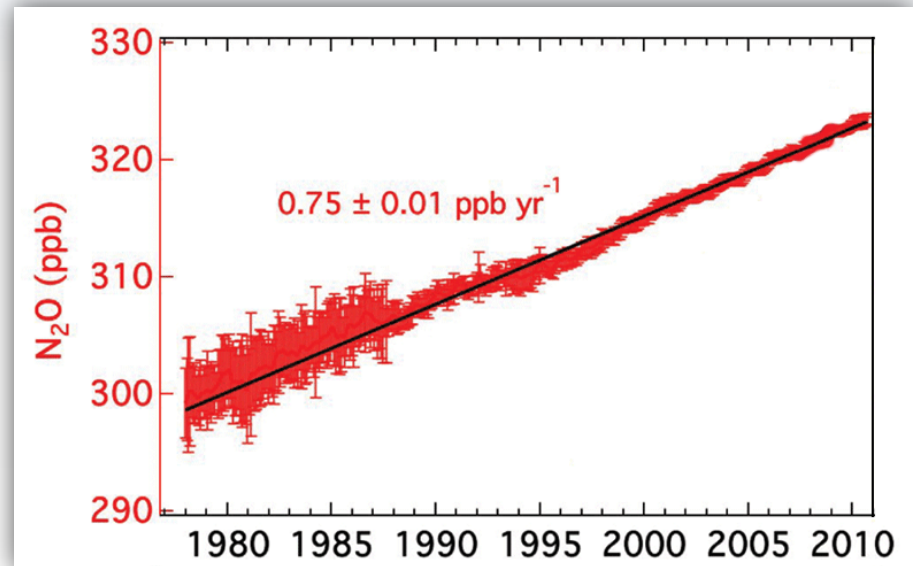
Recent Greenhouse Gas Trends



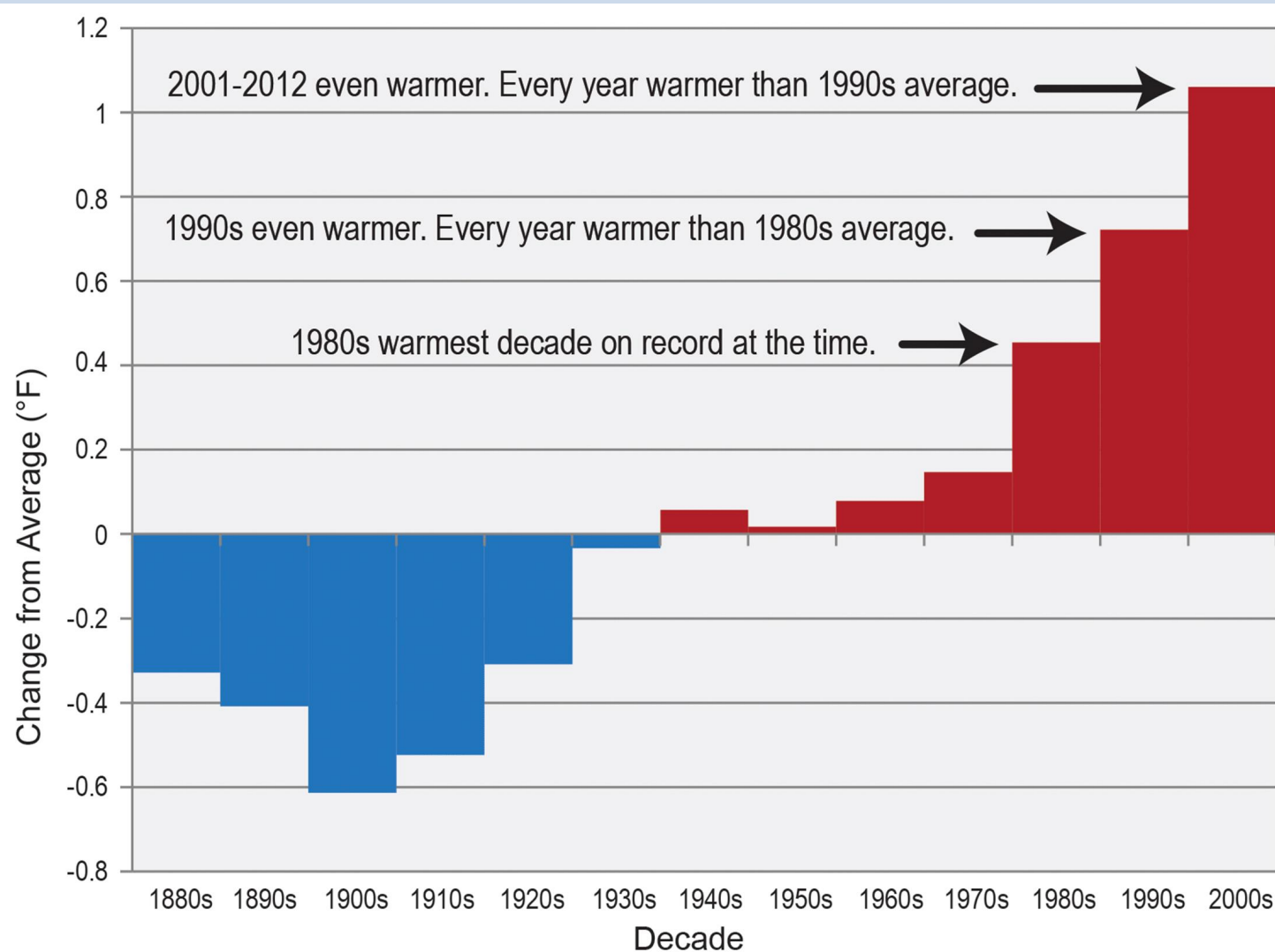
Most major greenhouse
gases are



Carbon dioxide (CO₂)
Methane (CH₄)
Nitrous Oxide (N₂O)



Global Temperature Change by Decade



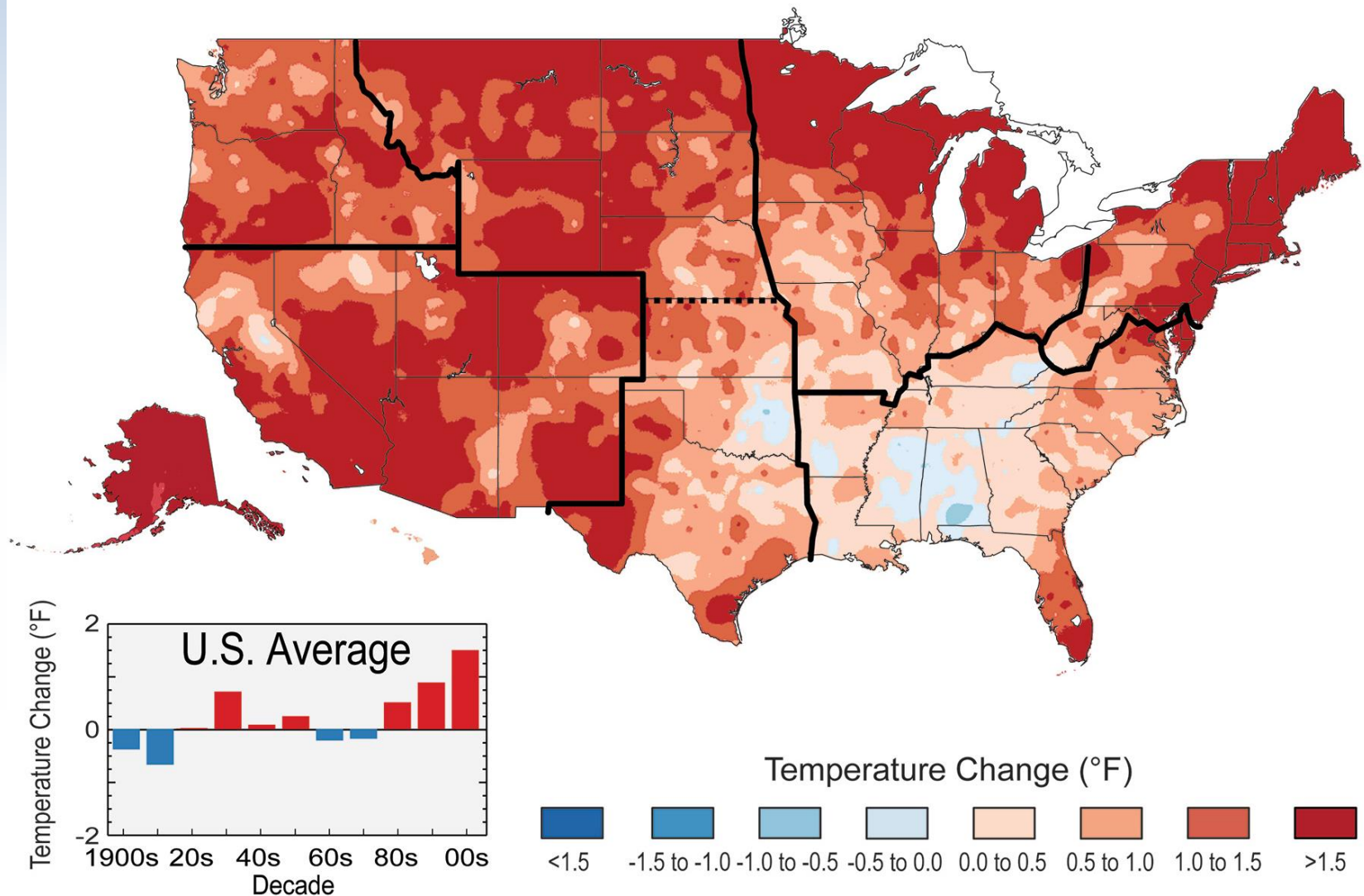
REPORT FINDING 1

Global climate is changing and this is apparent across the US in a wide range of observations.

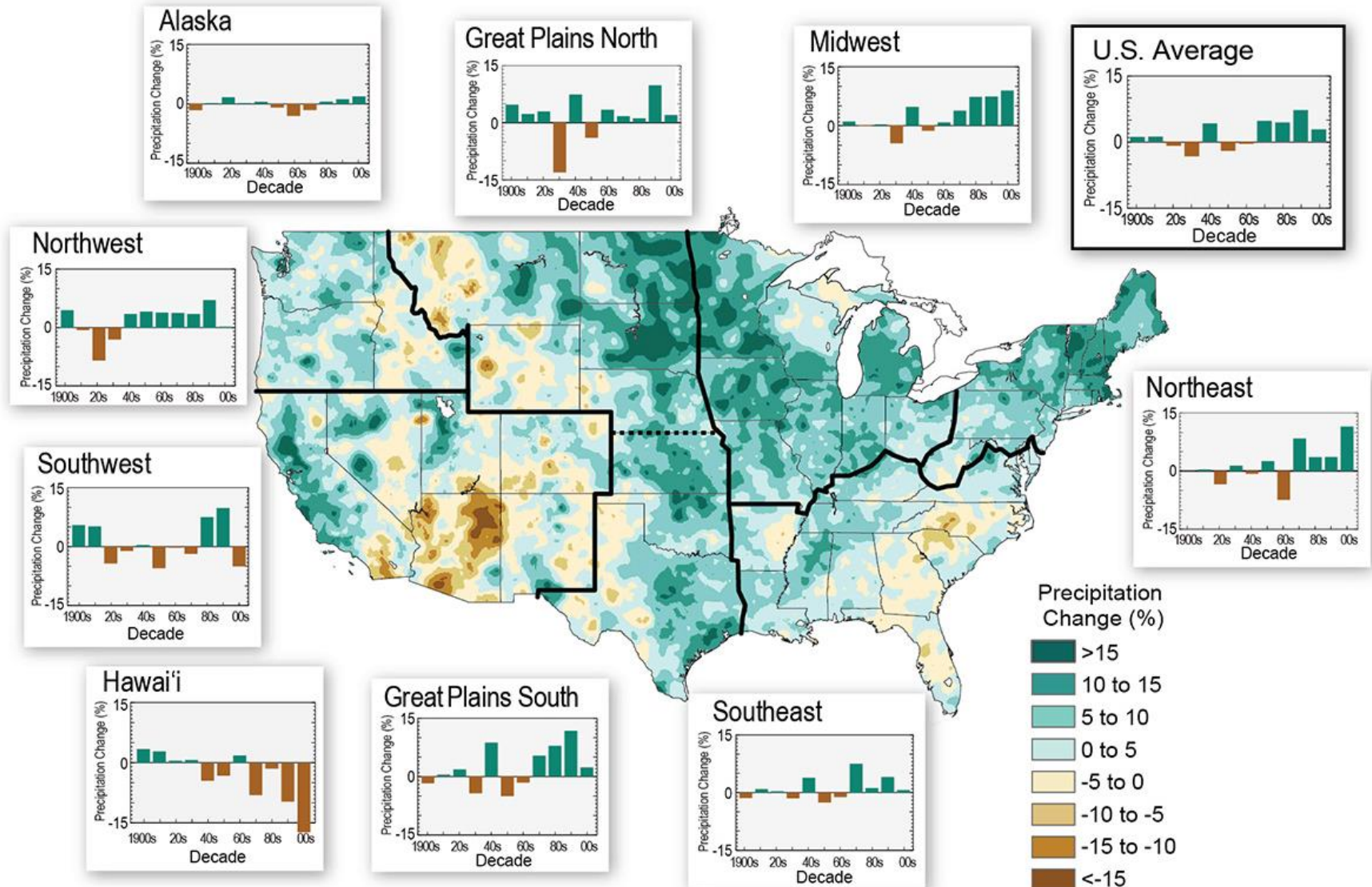
The global warming of the past 50 years is primarily due to human activities, predominantly the burning of fossil fuels.



Observed U.S. Temperature Change



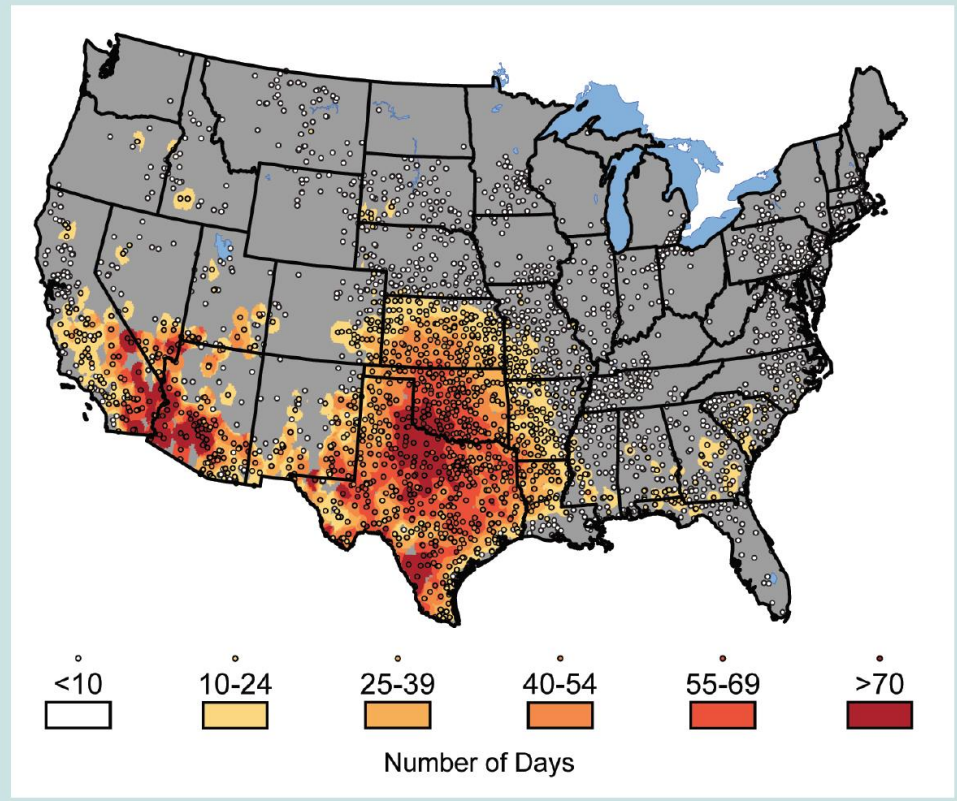
Observed US Precipitation Change



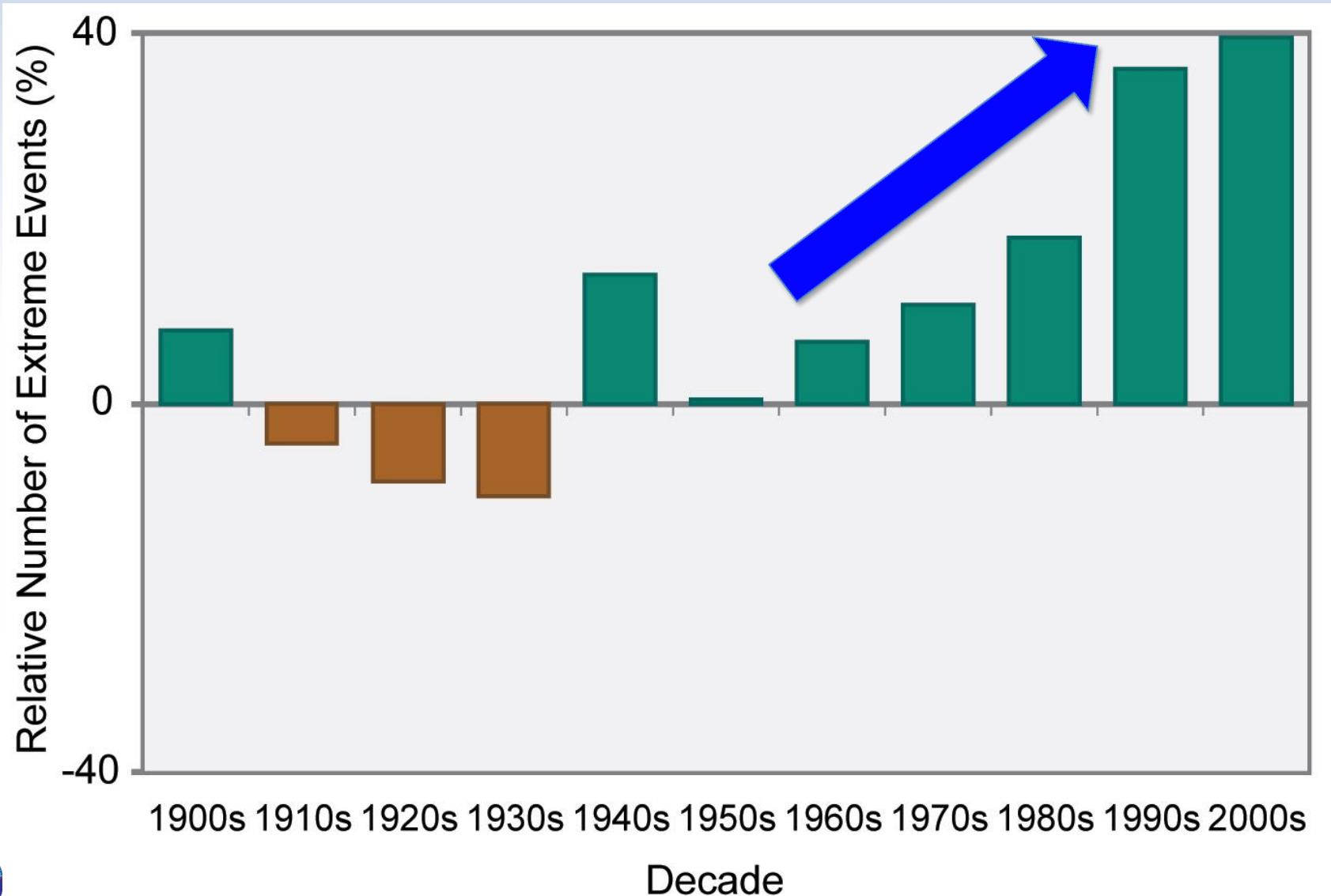
2: EXTREME WEATHER

Some extreme weather and climate events have increased in recent decades, and new and stronger evidence confirms that some of these increases are related to human activities.

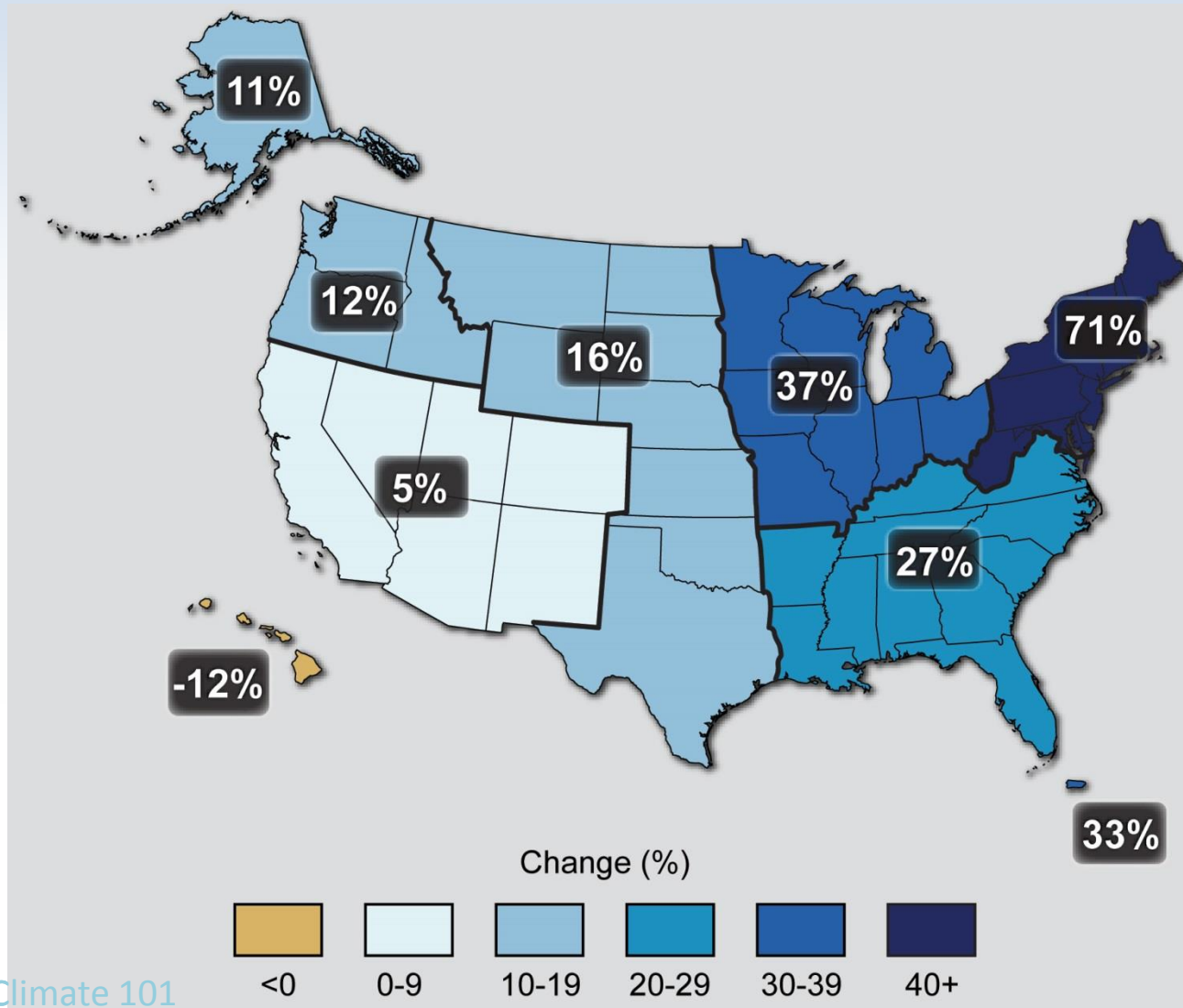
Coast-to-Coast
100-degree Days in 2011



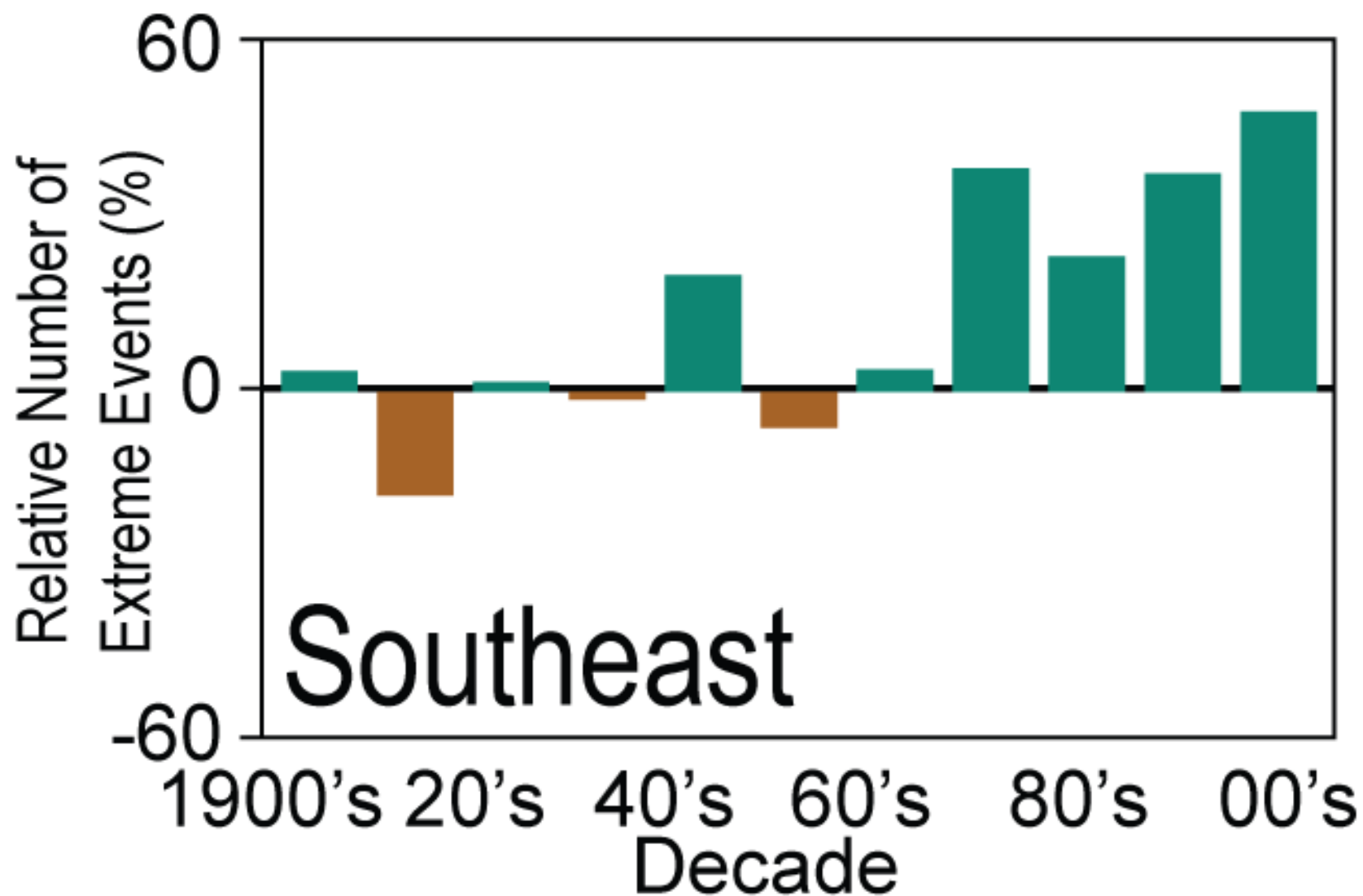
Observed U.S. Trends in Heavy Precipitation



Observed Change in Very Heavy Precipitation



Number of 5-yr Storms

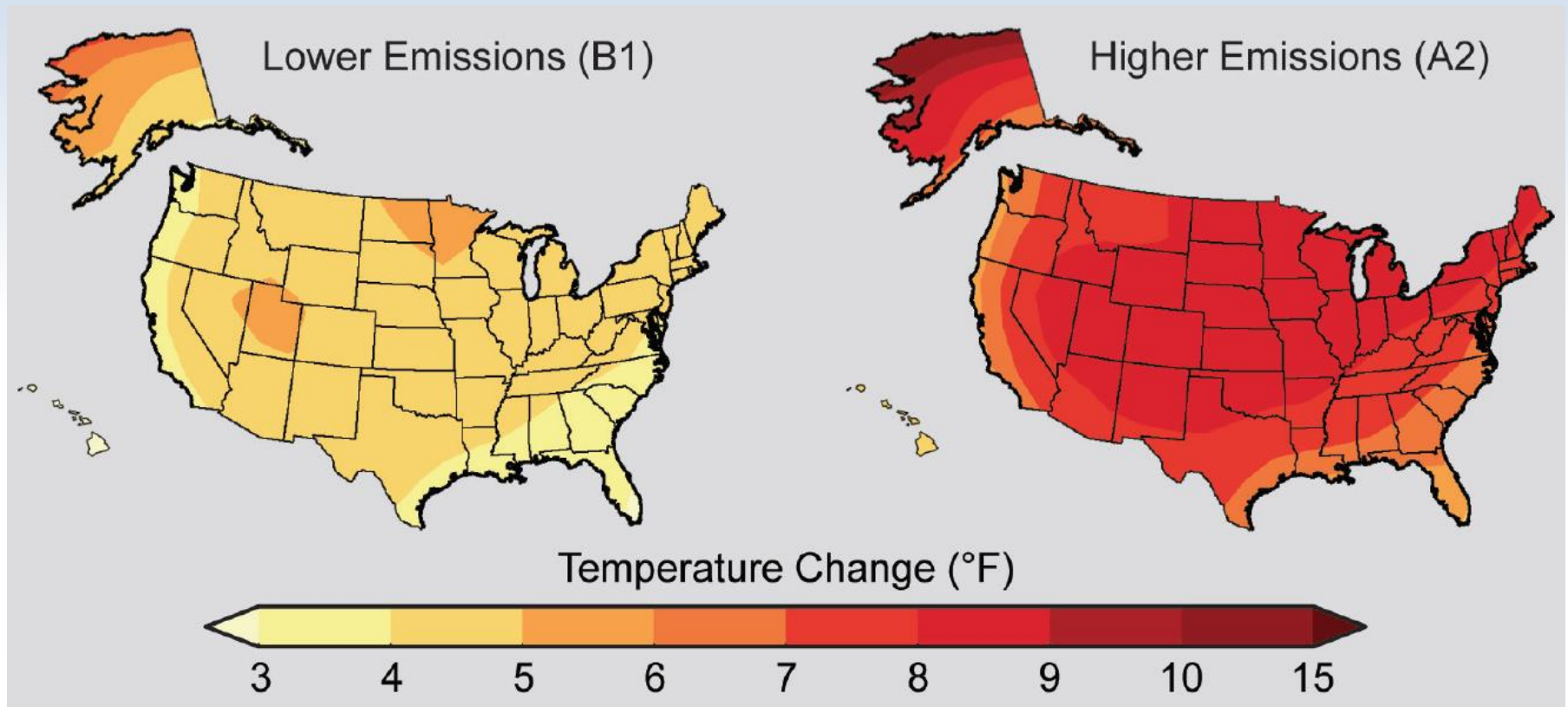


3: FUTURE CLIMATE

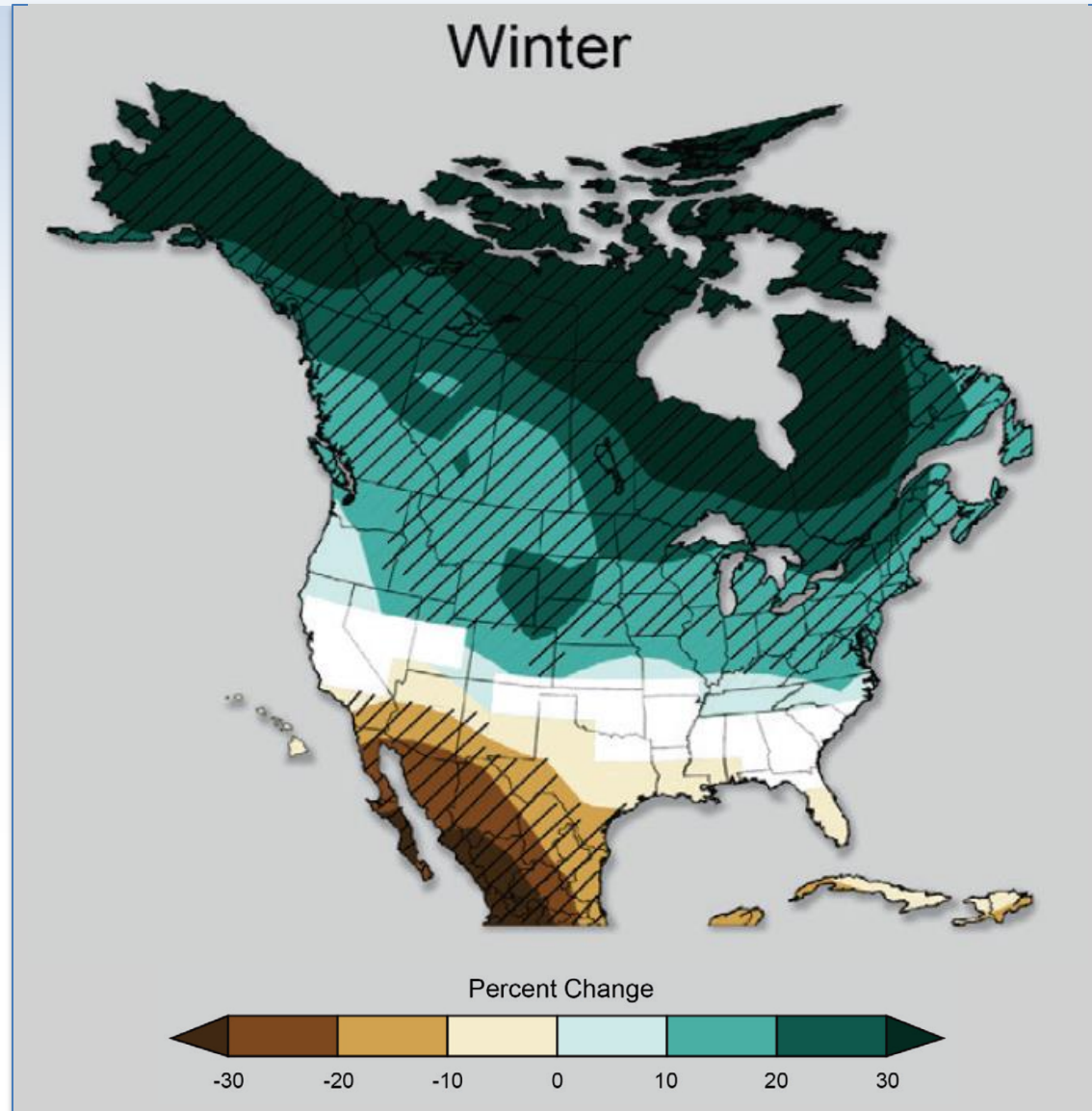


Human-induced climate change is projected to continue, and it will accelerate significantly if emissions of heat-trapping gases continue to increase.

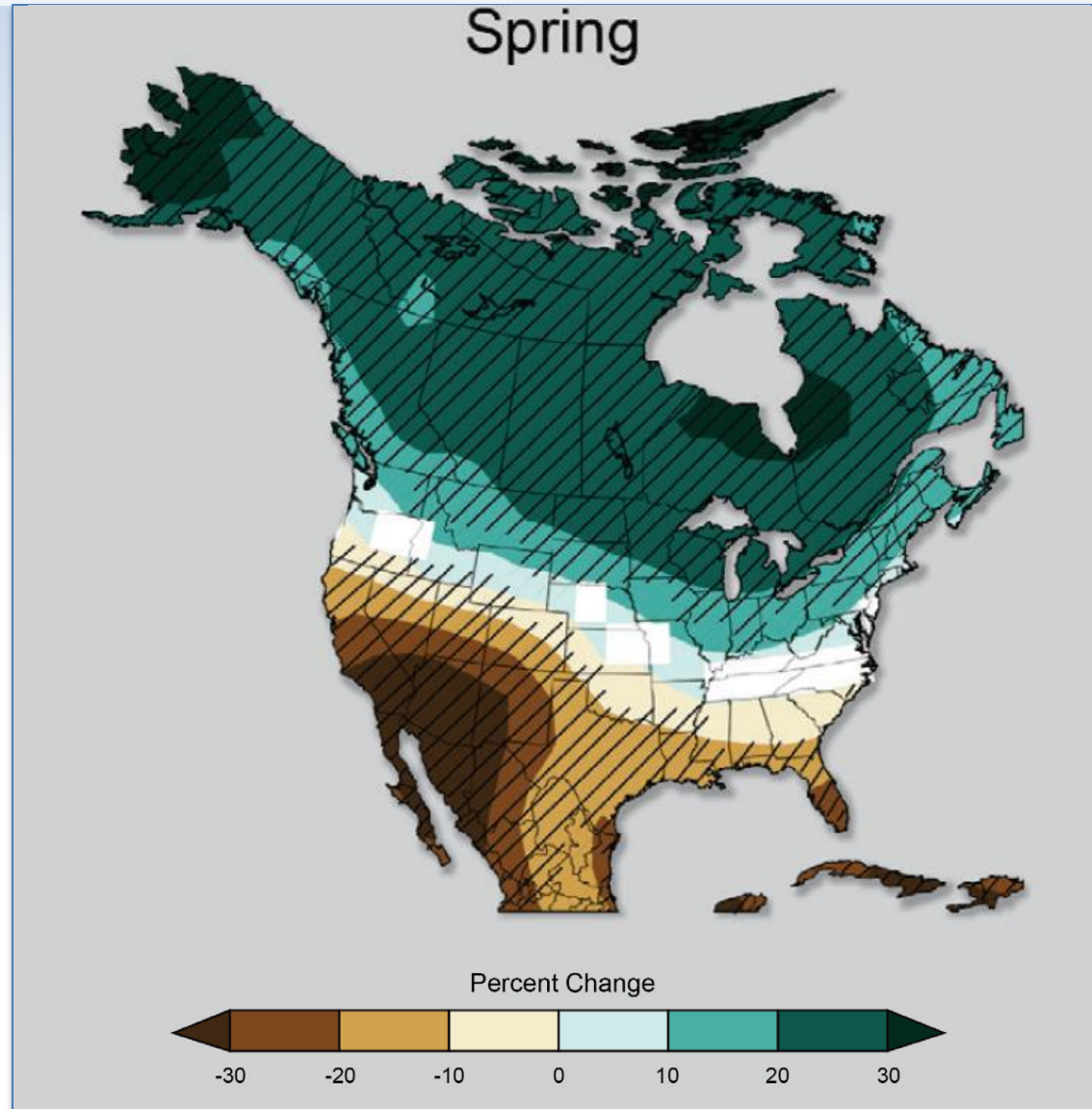
Projected Temperature Change



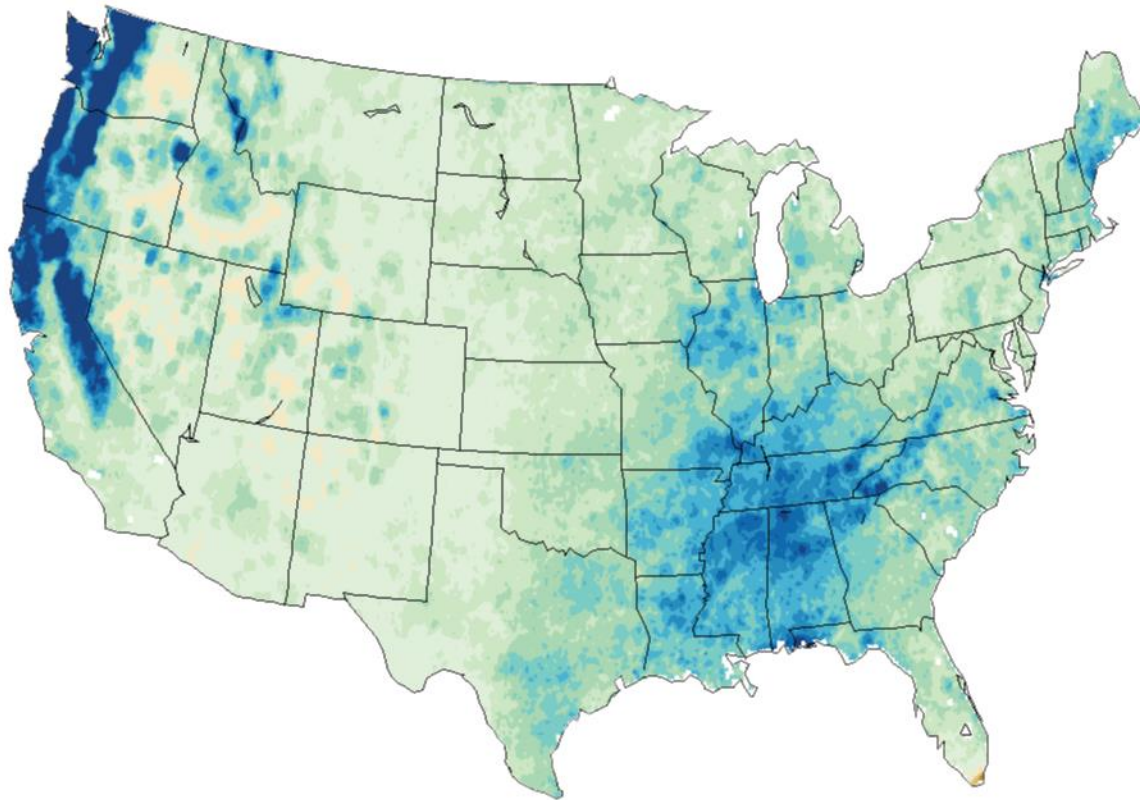
Projected Precipitation Change Higher Emissions (A2)



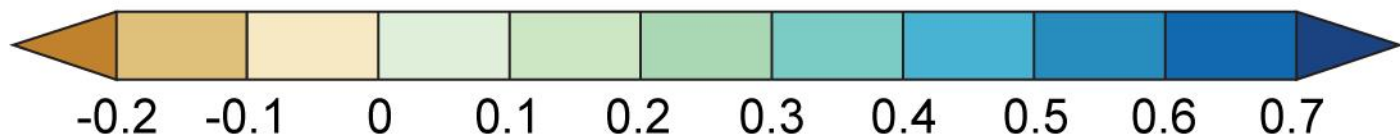
Projected Precipitation Change Higher Emissions (A2)



Change in Number of Wet Days (Precip >3 inches)

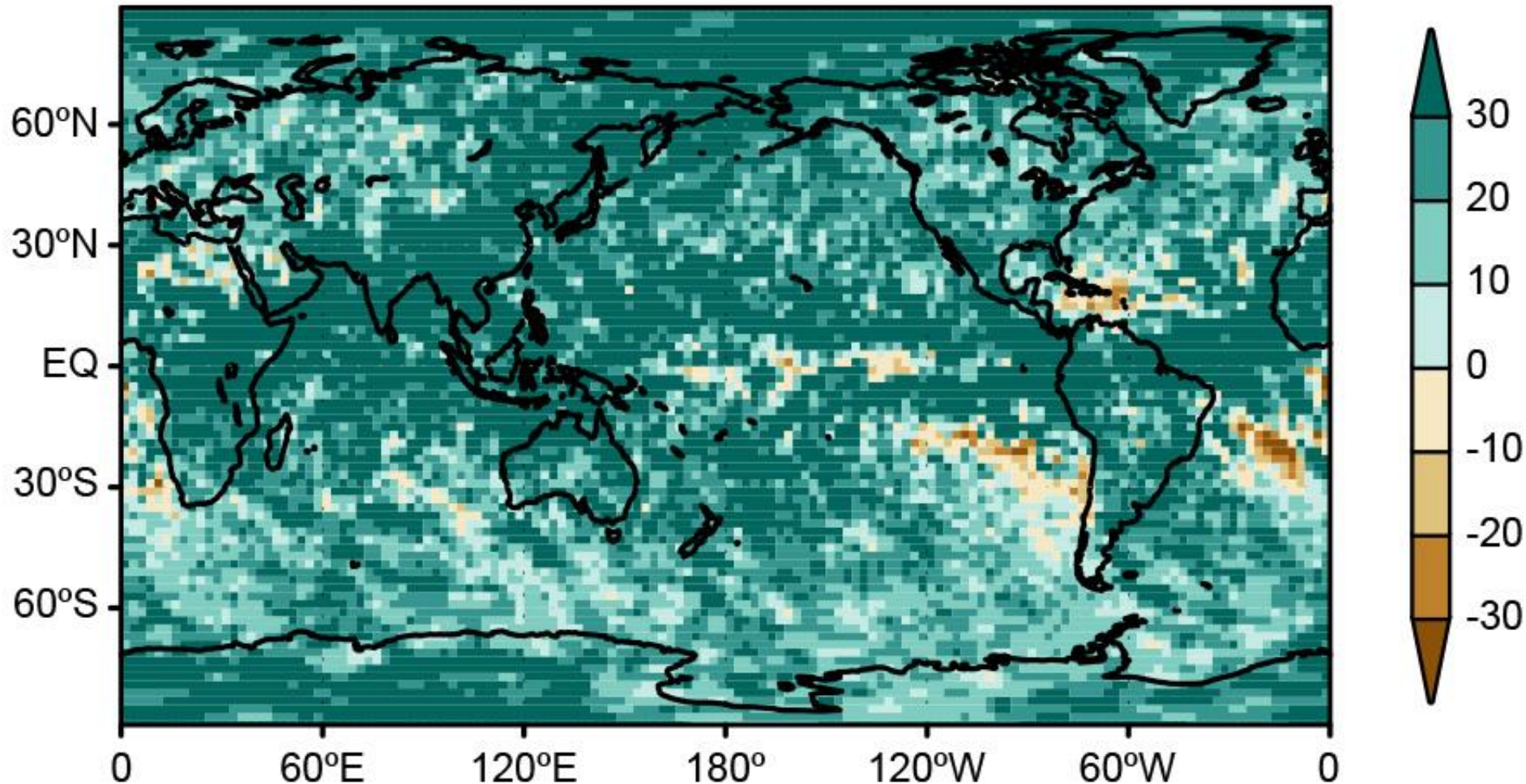


Change in Number of Wet Days

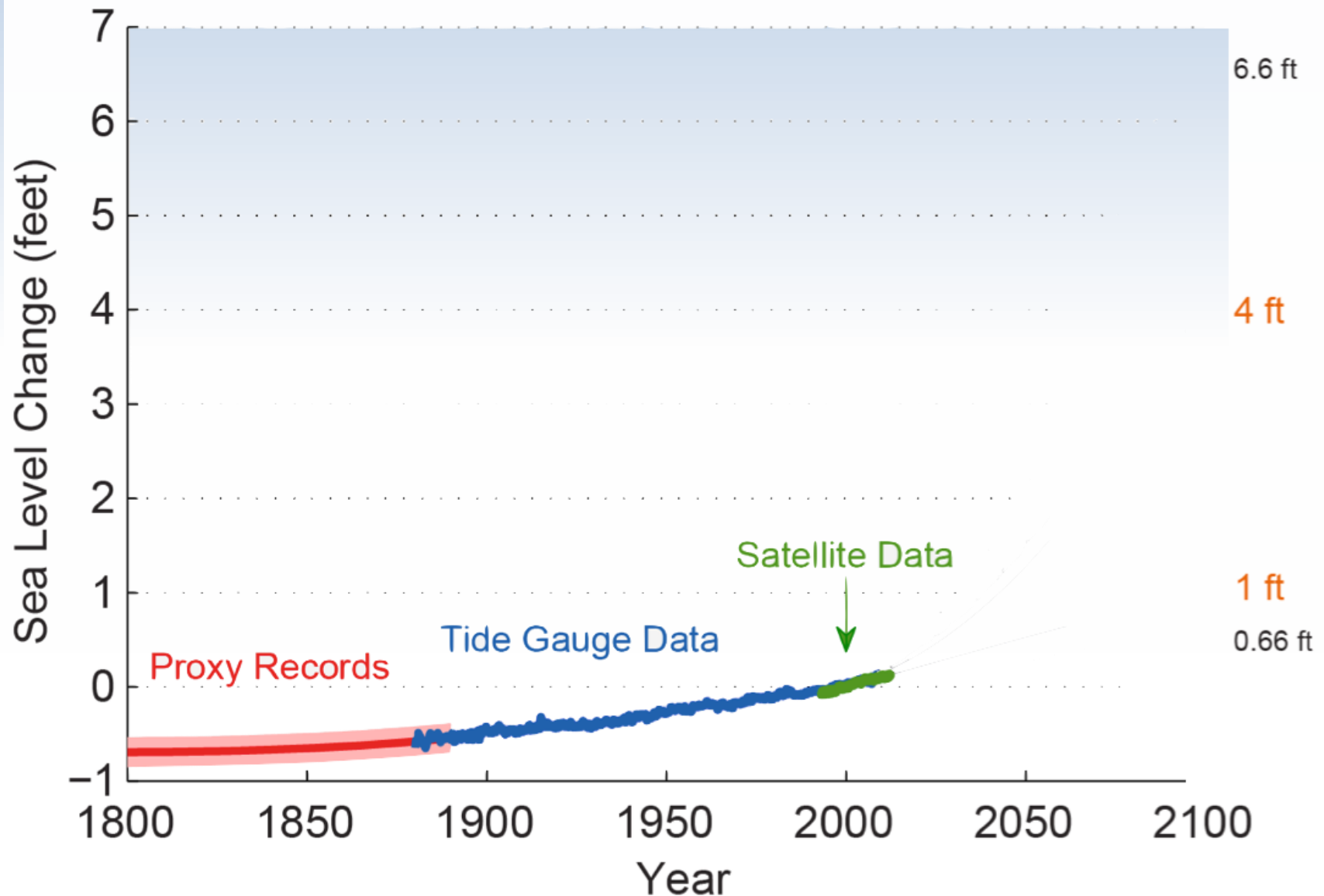


30-yr Maximum Daily Precipitation

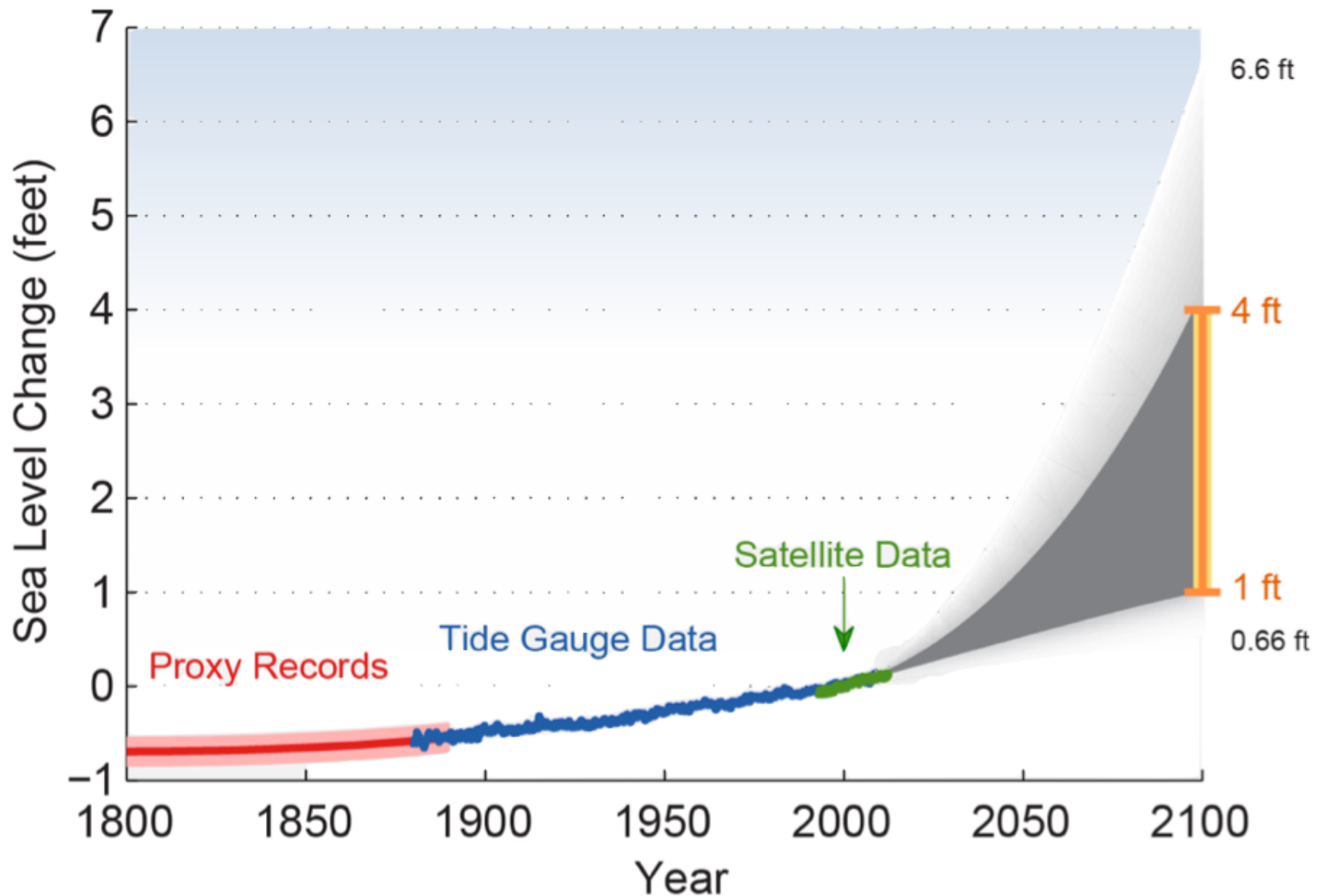
Maximum Daily Precipitation Difference (%): (2071-2100) - (1971-2000), RCP8.5



Past Changes Global Sea Level



Projected Changes Global Sea Level

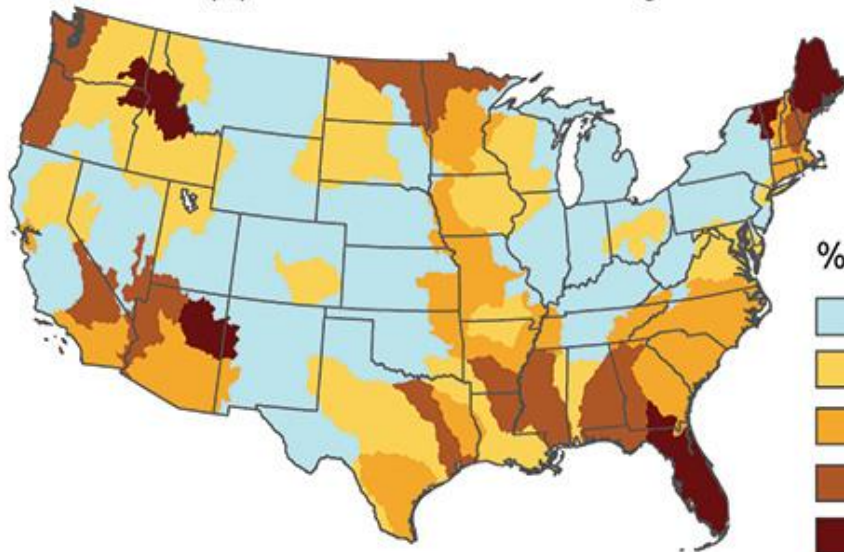


7: WATER

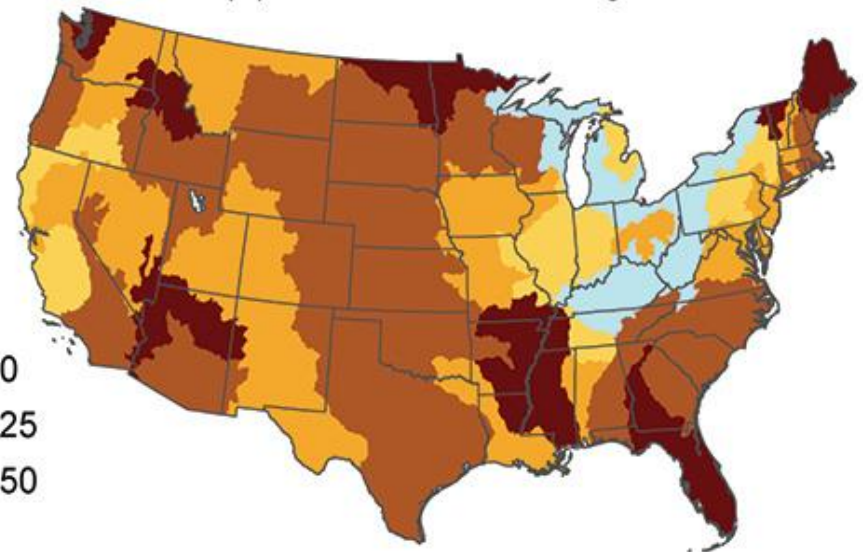
Water quality and water supply are jeopardized by climate change in a variety of ways that affect ecosystems and livelihoods.

Projected Changes in Water Withdrawal

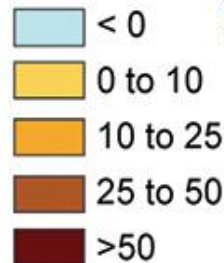
(a) Without Climate Change



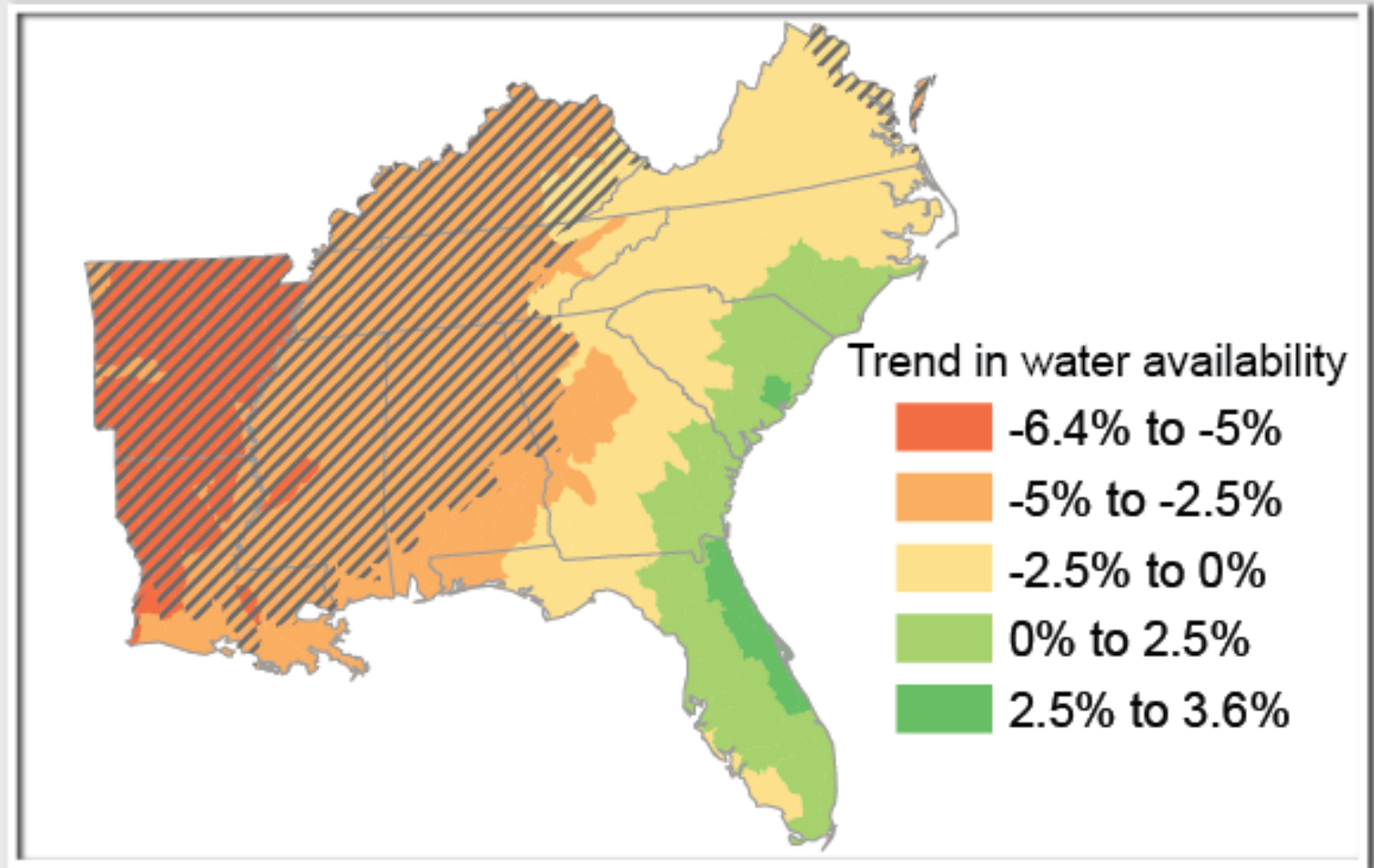
(b) With Climate Change



% change



Projected Trends in Water Availability



Vulnerability to Sea Level Rise



Impacts

- There are both positive and negative impacts to global warming
- Ecosystems have evolved and human systems have adapted to the past climate
- Overall, the net impacts are likely to be negative

Conclusions

- High confidence in continued rapid warming and in other climate changes directly related to temperature
 - Increase in heat waves
 - Decrease in cold waves
 - Increase in extreme rainfall
- Medium confidence in increased drought (in most areas) and increased intensity of strong hurricanes
- Uncertainty about changes in severe thunderstorms (hailstorms, tornadoes)

Statewide Average Temperature Ranks

January-May 2014
Period 1950-2014

Legend:

- Colder Average (Rank 1-7)
- Colder Average (Rank 8-15)
- Near Average (Rank 16-25)
- Near Average (Rank 26-35)
- Warmer Average (Rank 36-45)
- Warm Average (Rank 46-50)

Source: National Climate Data Center
Data as of 1/24/2014

Significant Events for May

May 2014

Significant Events for May 2014:

- CA** had its warmest Jan-May on record with a temperature **5.0°F** above average. Large wildfires in Colorado during May.
- W** the contiguous U.S. drought footprint shrank by about 1 percent during May. Drought improved in IL, IN, and TX, but worsened in KS and OK. Drought remained entrenched in the Southwest.
- S** the northern portion of FL had a wet spring, while southern FL had wet with drought conditions developing.

Source: NOAA's National Centers for Environmental Prediction
Data as of 5/24/2014

nca2014.globalchange.gov

