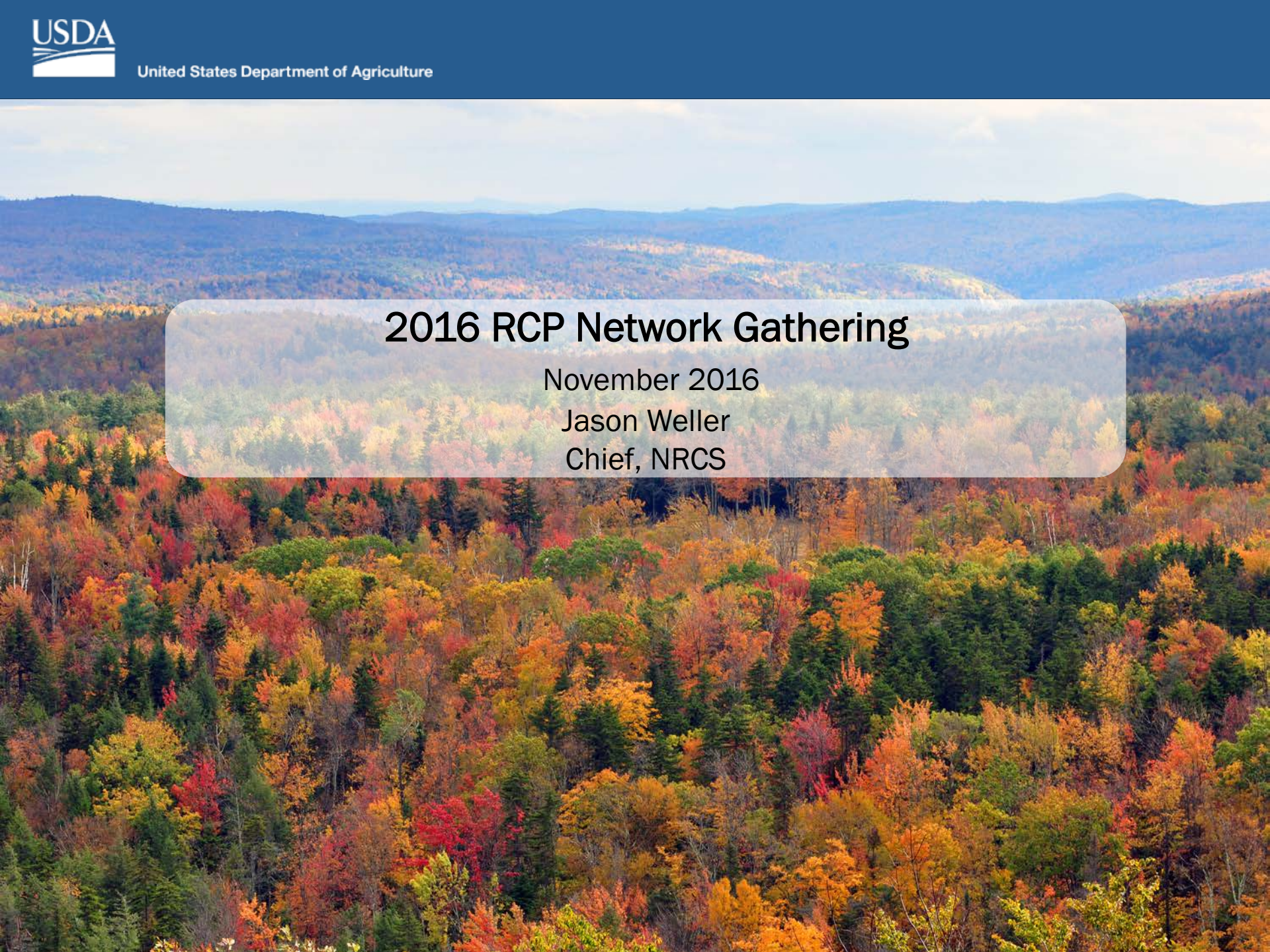

2016 RCP Network Gathering

November 2016

Jason Weller
Chief, NRCS


© JH Design 2004

Global Challenges

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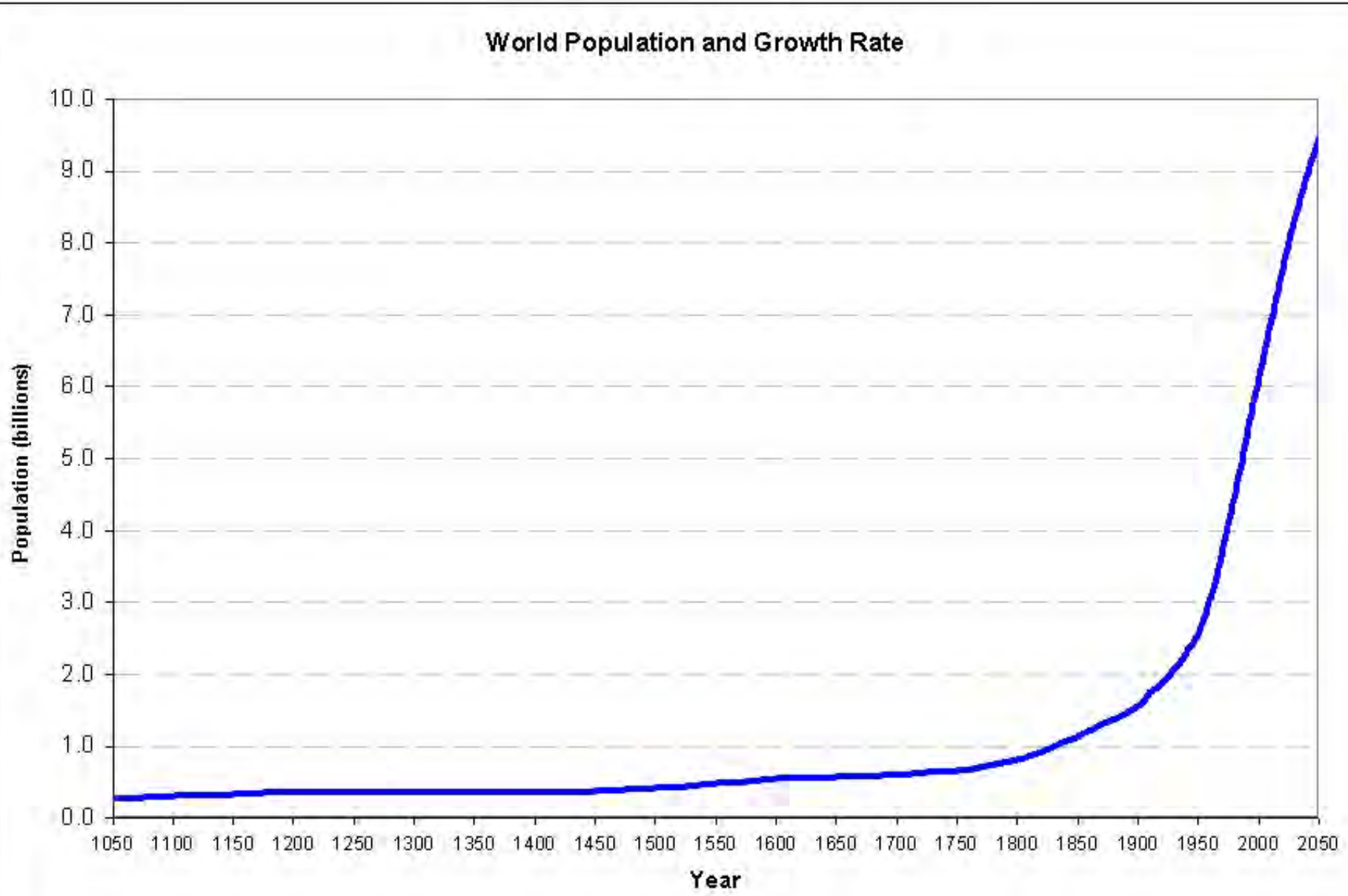
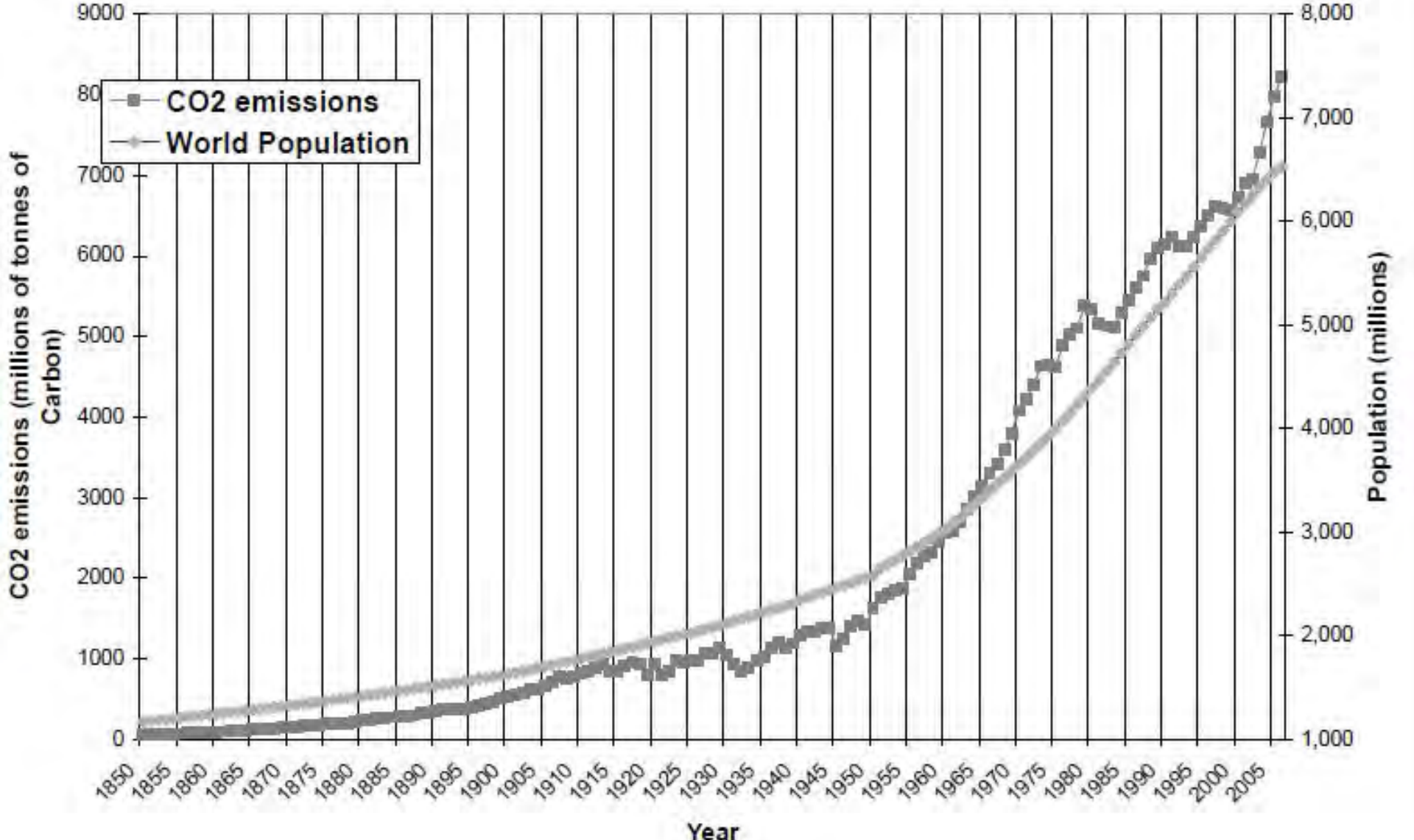
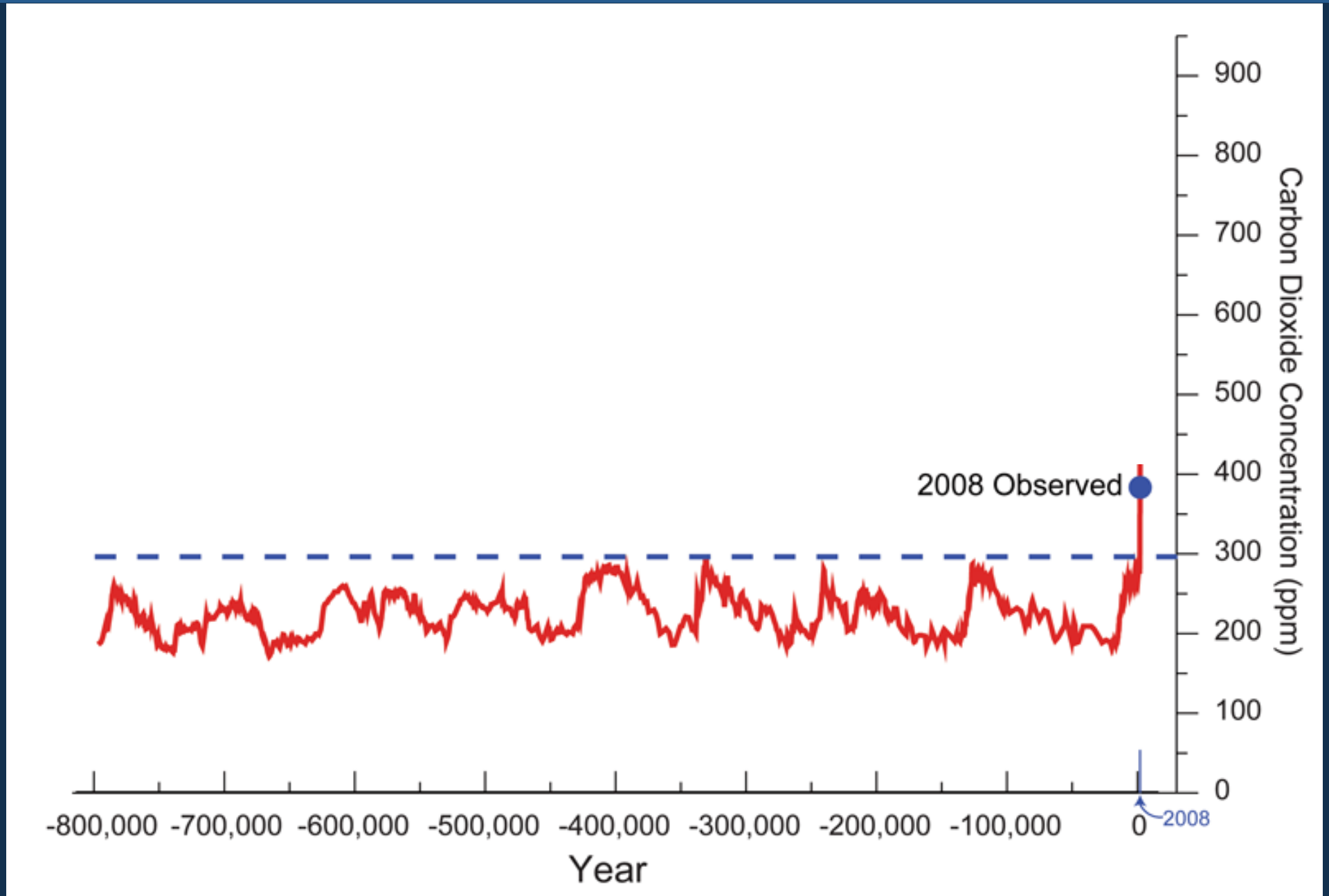
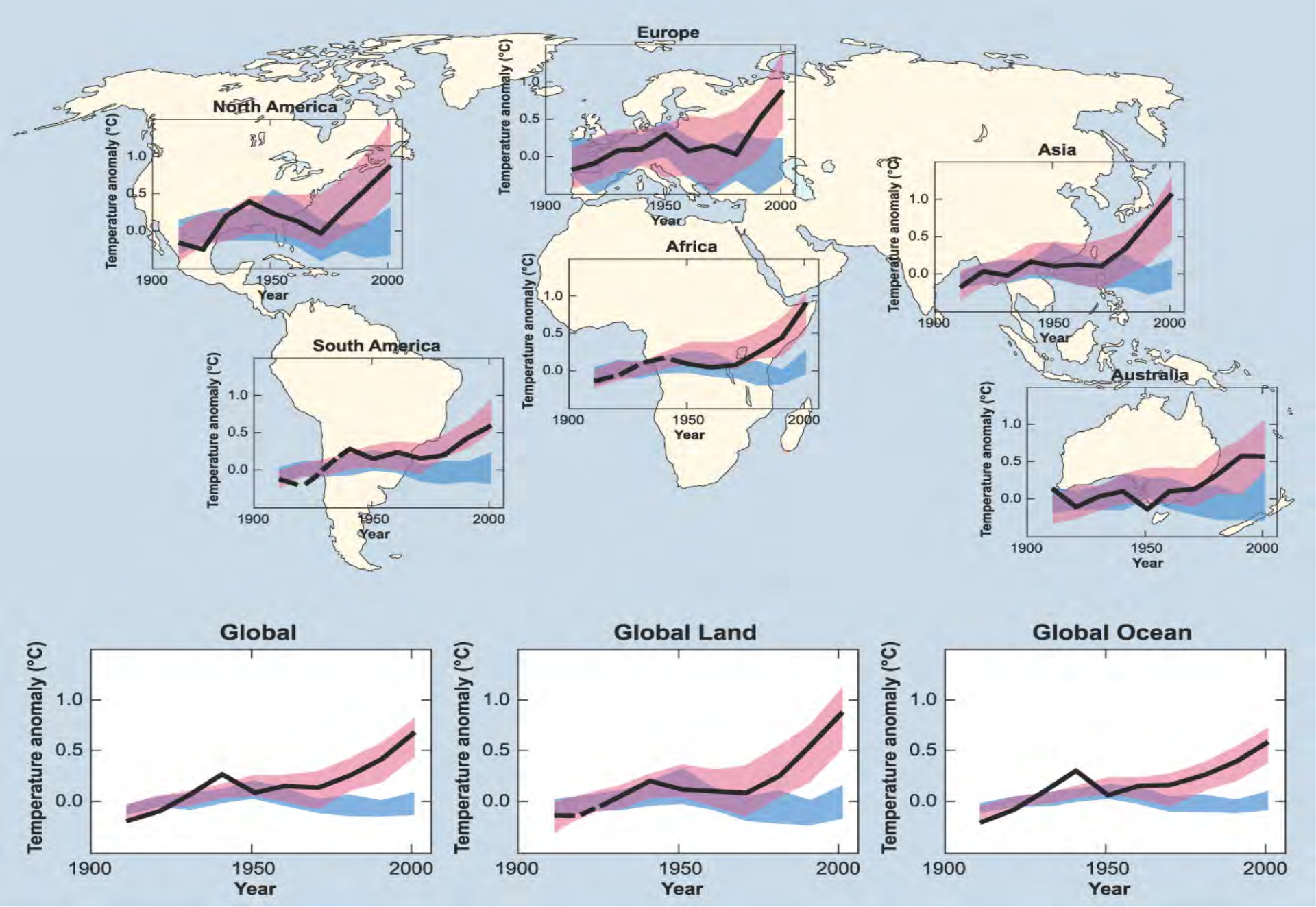

World Population and Growth Rate
Population (billions)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050
Year

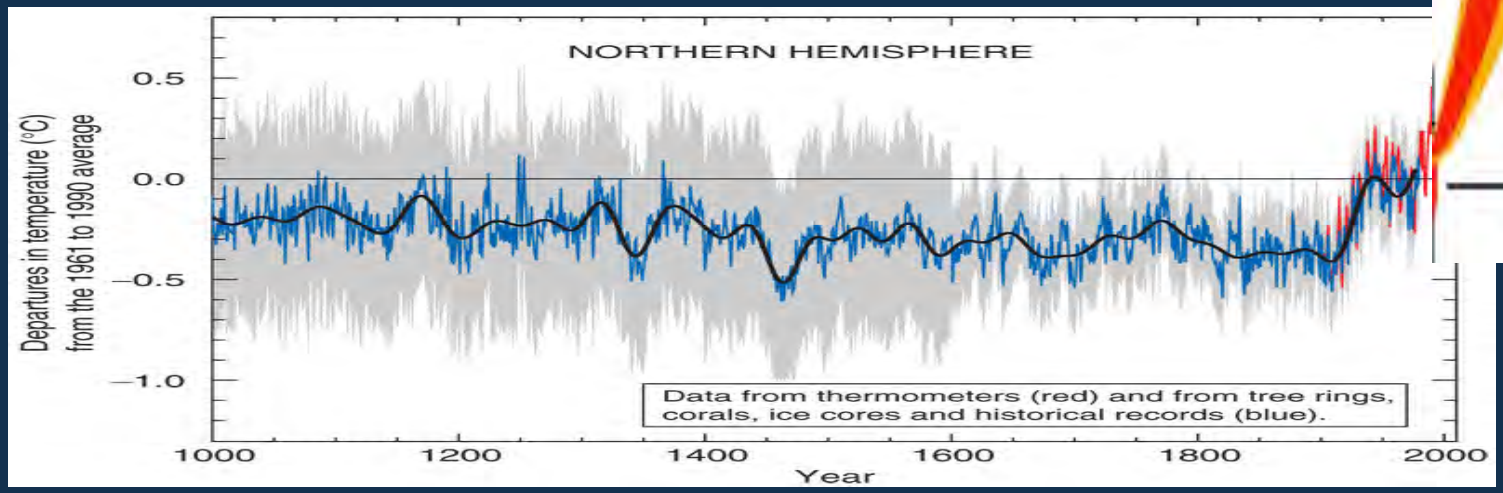
World Population vs. Global Anthropogenic CO2 Emissions



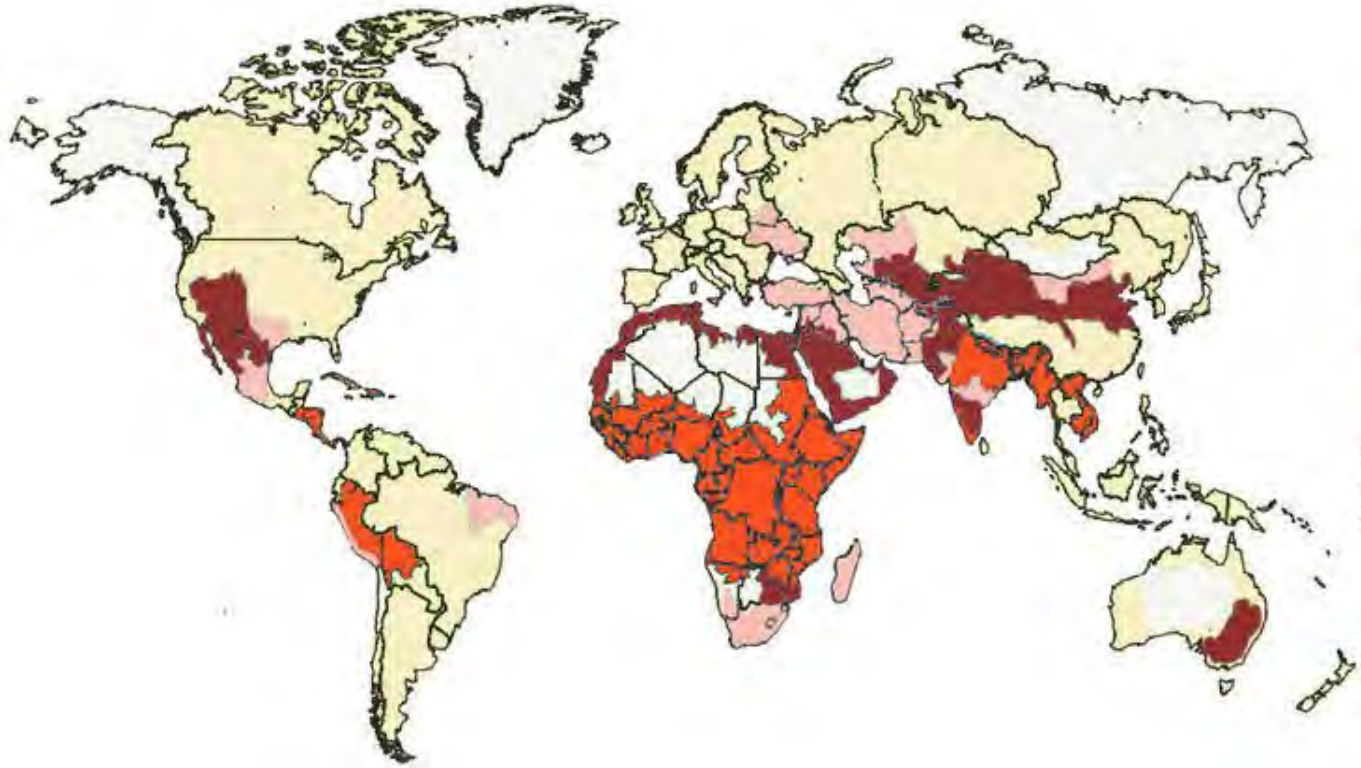

900
800
700
600
500
400
300
200
100
0
Carbon Dioxide Concentration (ppm)
2008 Observed
-800,000
-700,000
-600,000
-500,000
-400,000
-300,000
-200,000
-100,000
0
2008
Year



Increasing Temperature



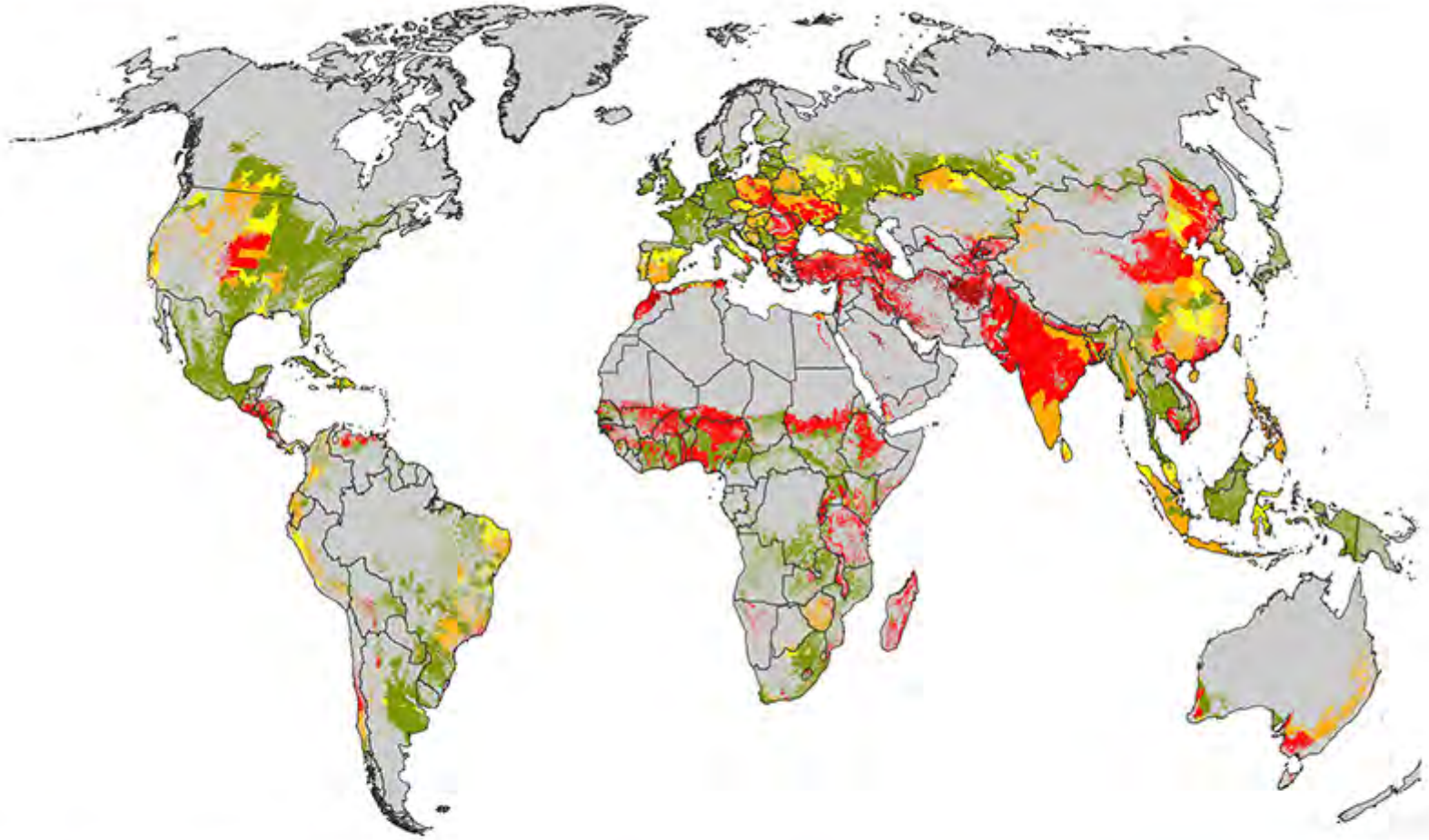
Water Security, 2012



Little or no water scarcity.
Physical water scarcity.
Imminent physical water scarcity.
Economic water scarcity.
Not estimated.

Source: 4th edition of the UN World Water Development Report (WWDR4), Volume 1 (2012).

Water stress will increase in many agricultural areas by 2025 due to growing water use and higher temperatures (based on IPCC scenario A1B)



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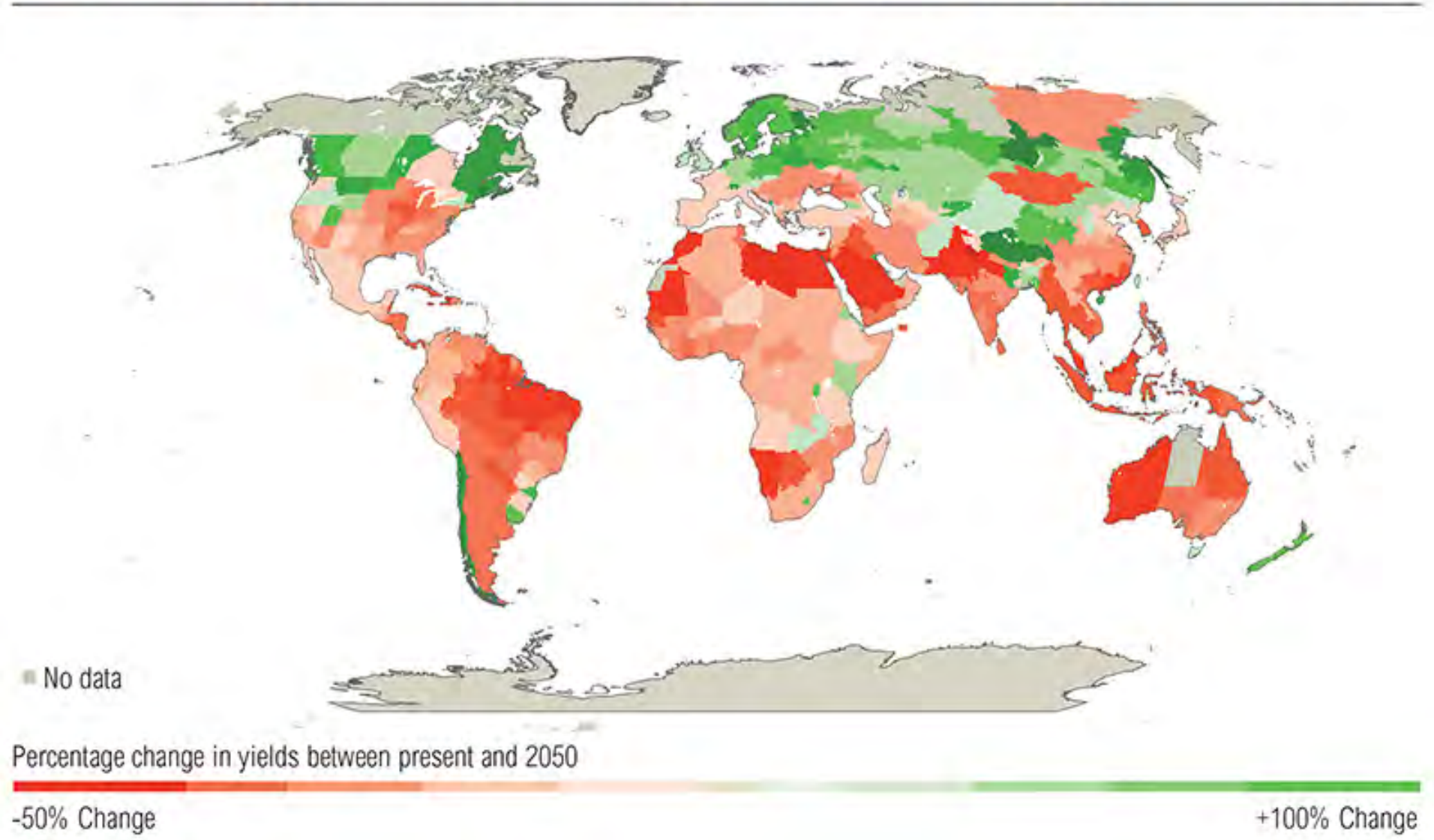
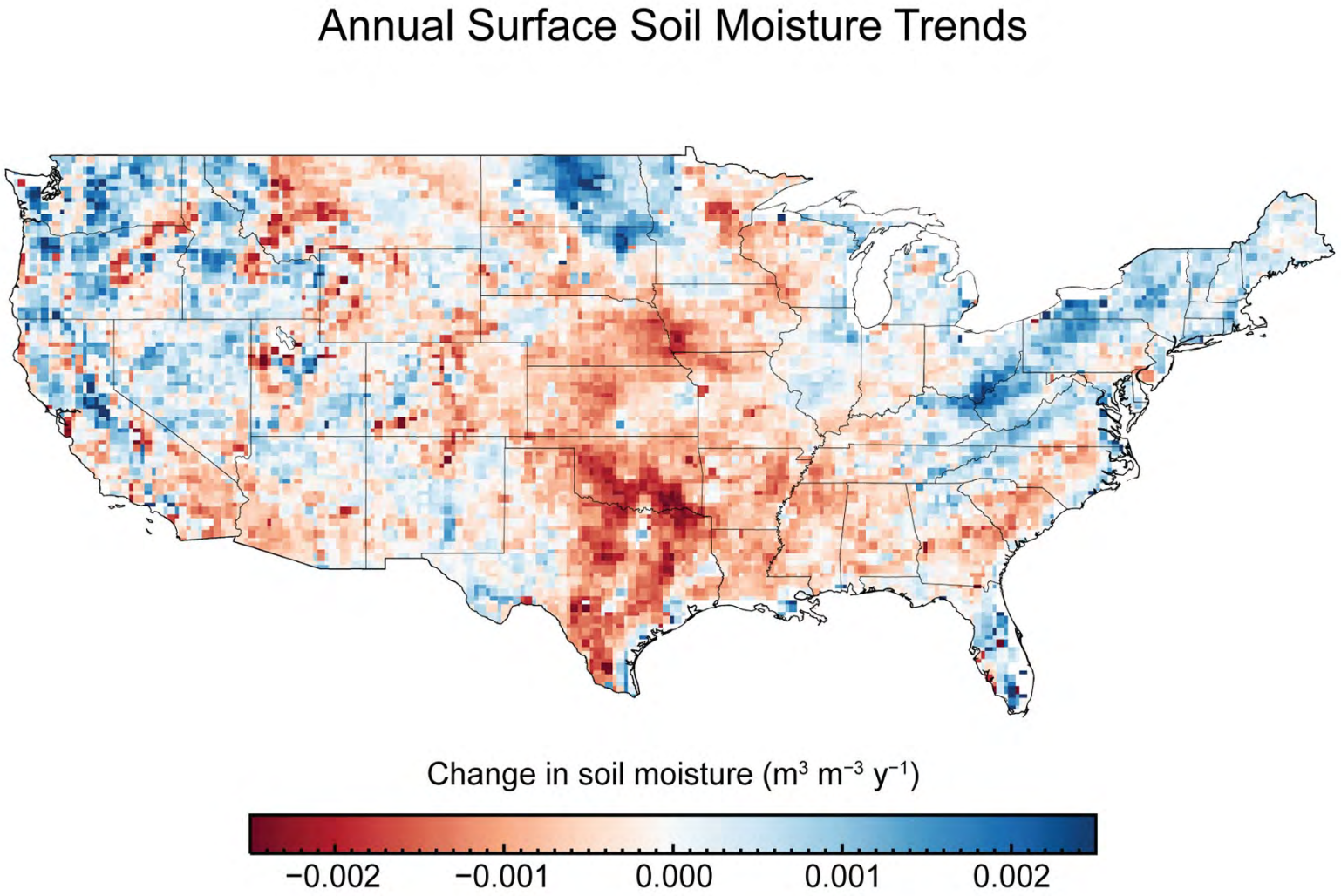
Most studies now project adverse impacts on crop yields due to climate change (3°C warmer world)

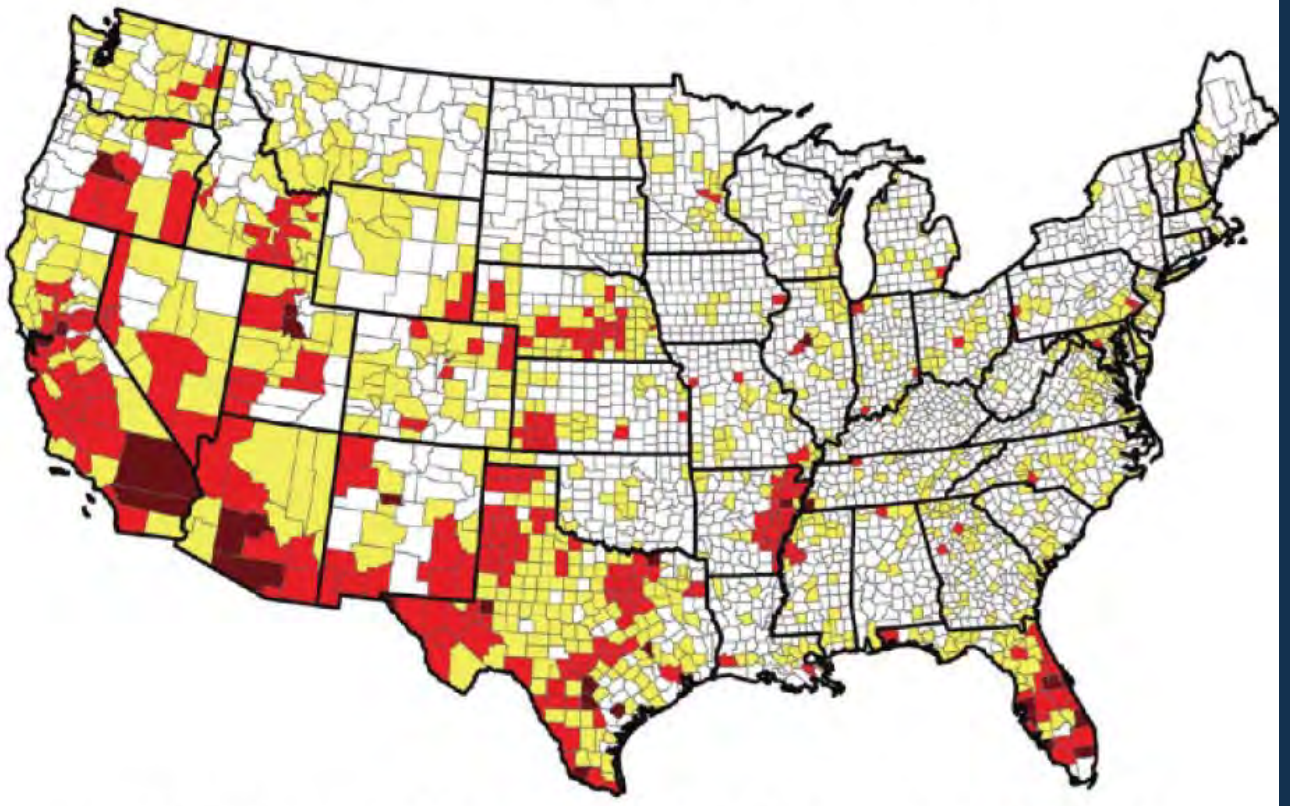


U.S. Challenges

Changes Annual Soil Moisture, 1988-2010



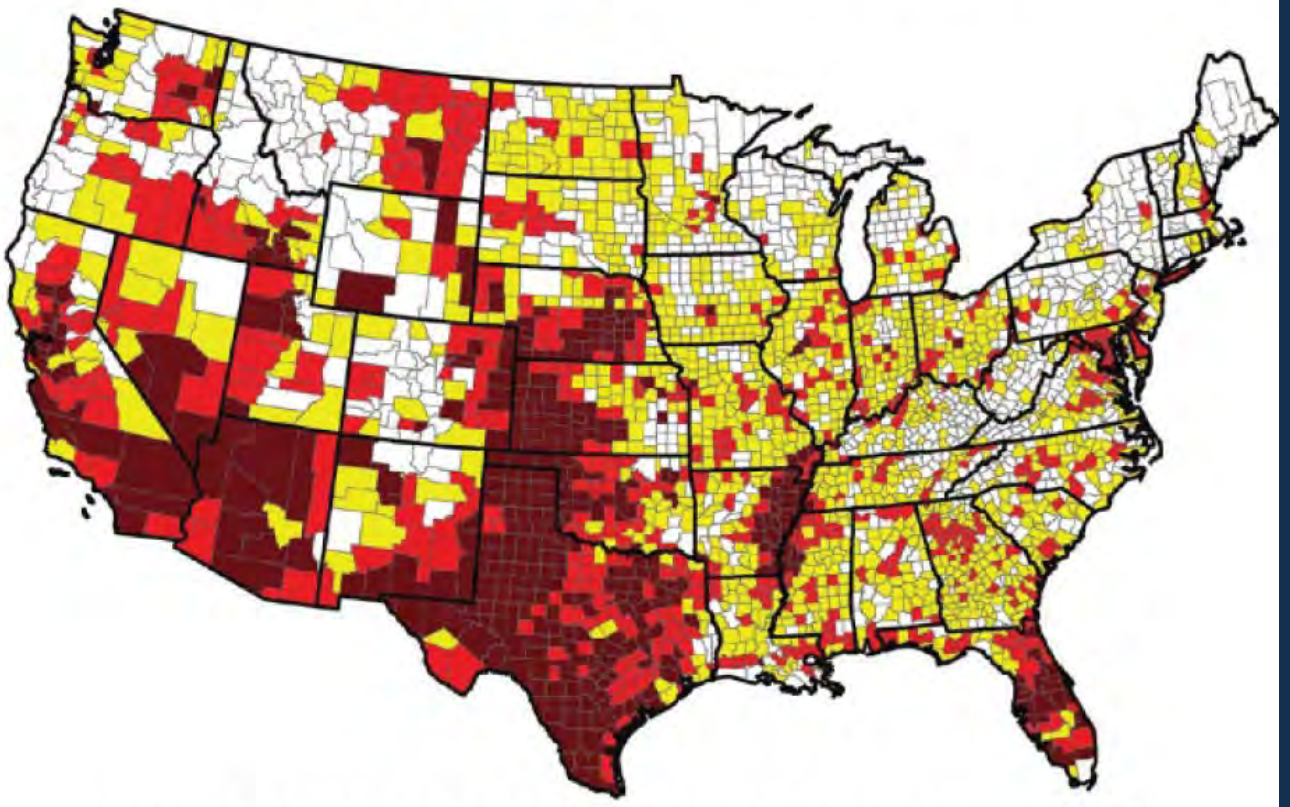
(a) No Climate Change Effects



Water Supply Sustainability Risk Index (2050)

- Extreme (29)
- High (271)
- Moderate (821)
- Low (2020)

(b) Climate Change Effects



Water Supply Sustainability Risk Index (2050)

- Extreme (412)
- High (608)
- Moderate (1192)
- Low (929)

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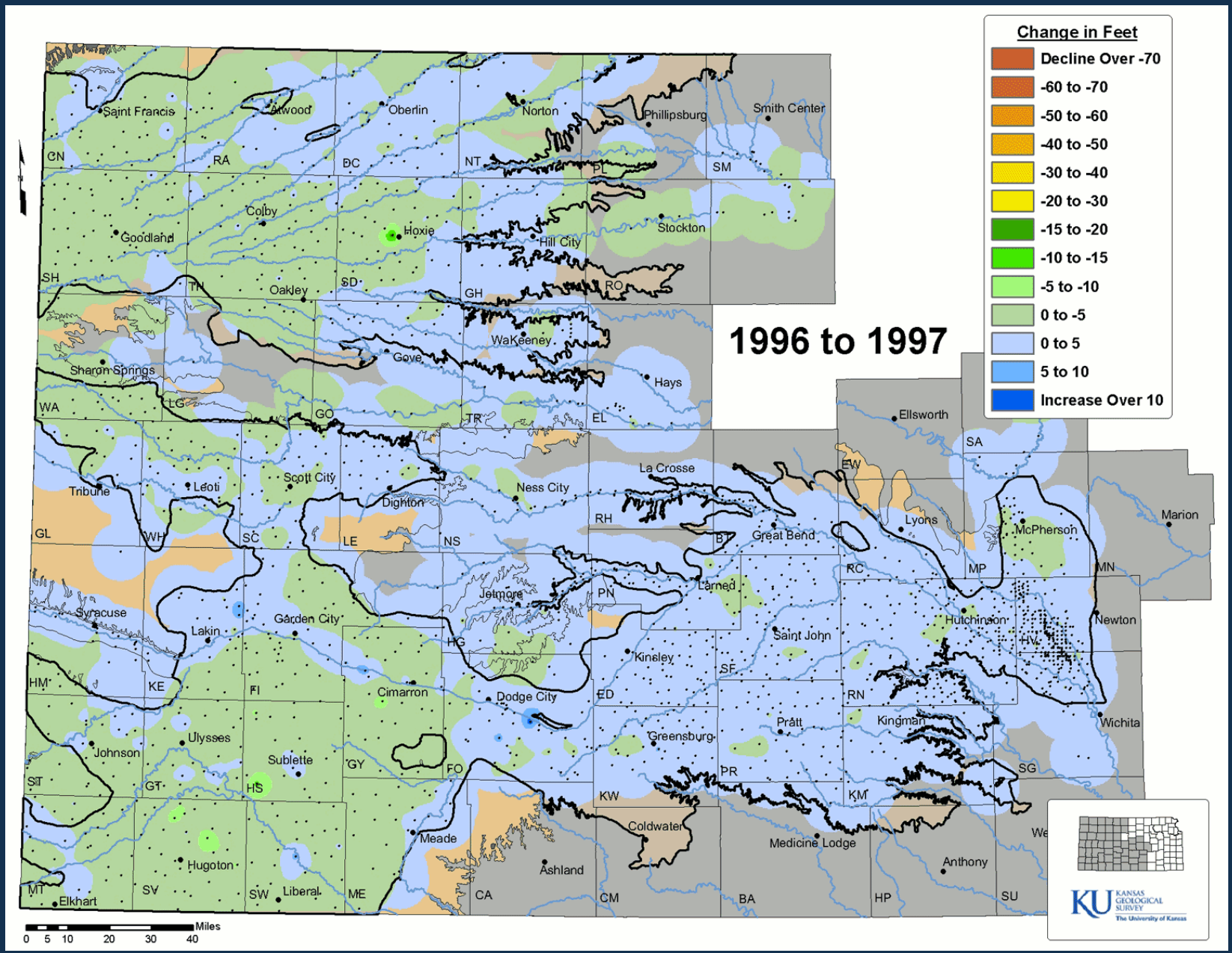
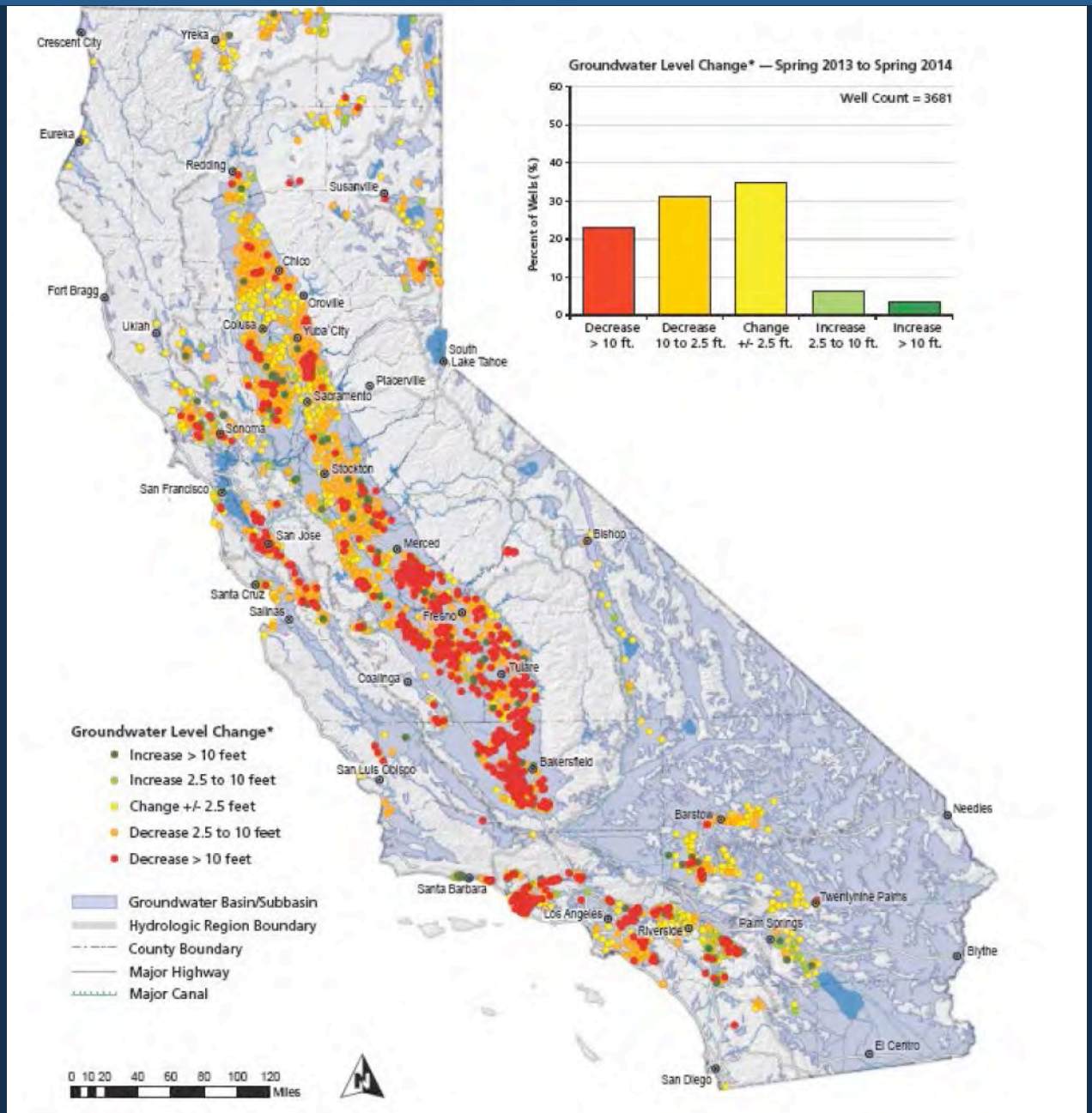
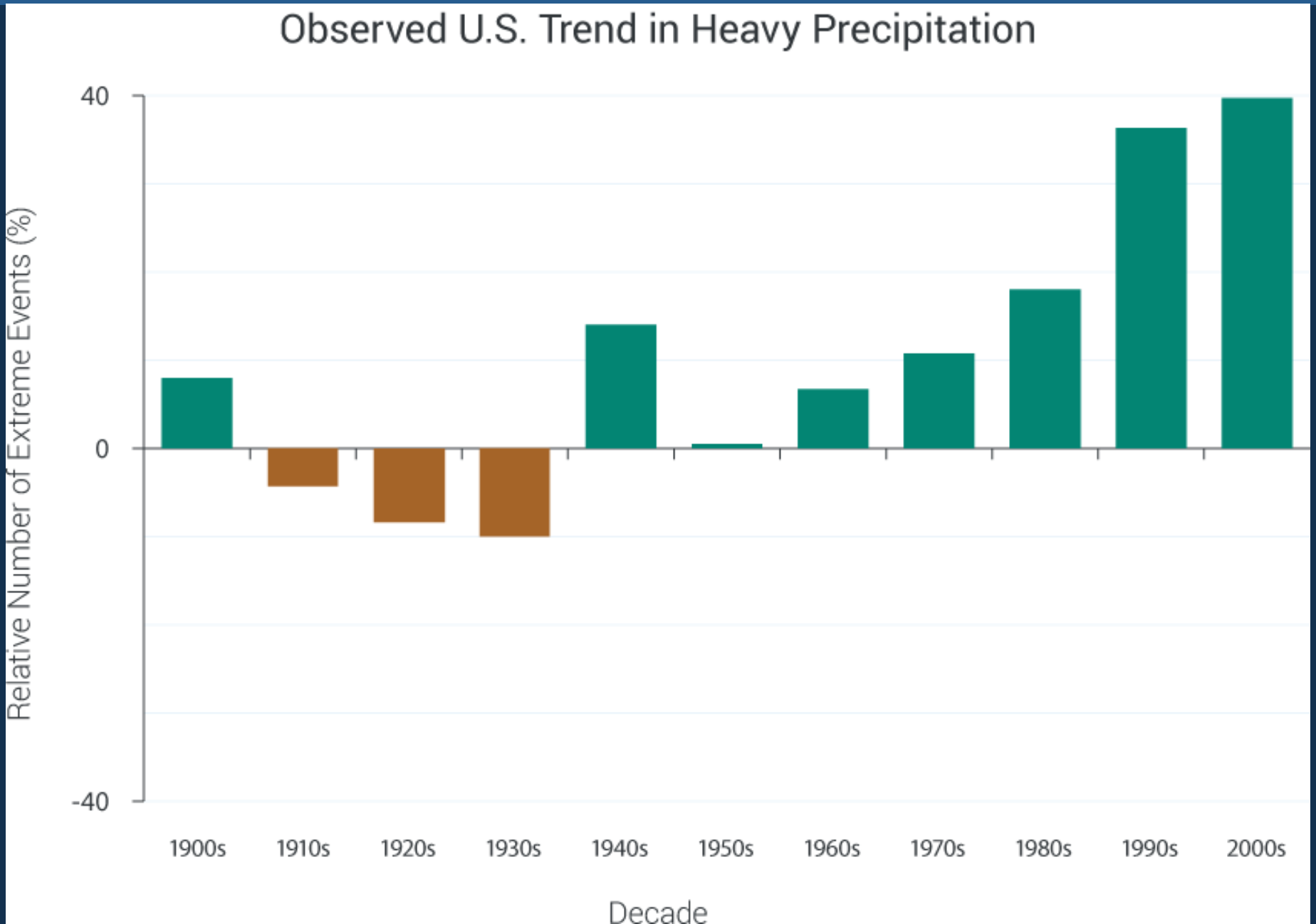



Groundwater Level Change* — Spring 2013 to Spring 2014
Well Count = 3681
Percent of Wells (%)
60
50
40
30
20
10
0
Decrease > 10 ft.
Decrease 10 to 2.5 ft.
Change +/- 2.5 ft.
Increase 2.5 to 10 ft.
Increase > 10 ft.
Crescent City
Yreka
Eureka
Redding
Susanville
Chico
Fort Bragg
Oroville
Ukiah
Colusa
Yuba City
South Lake Tahoe
Placerville
Sacramento
Sonoma
Stockton
San Francisco
San Jose
Merced
Bishop
Santa Cruz
Salinas
Fresno
Tulare
Coalinga
San Luis Obispo
Bakersfield
Needles
Barstow
Santa Barbara
Twentynine Palms
Los Angeles
Riverside
Palm Springs
Blythe
El Centro
San Diego
Groundwater Level Change*
Increase > 10 feet
Increase 2.5 to 10 feet
Change +/- 2.5 feet
Decrease 2.5 to 10 feet
Decrease > 10 feet
Groundwater Basin/Subbasin
Hydrologic Region Boundary
County Boundary
Major Highway
Major Canal
0 10 20 40 60 80 100 120
Miles
N


Observed U.S. Trend in Heavy Precipitation
40
0
-40
Relative Number of Extreme Events (%)
1900s
1910s
1920s
1930s
1940s
1950s
1960s
1970s
1980s
1990s
2000s
Decade

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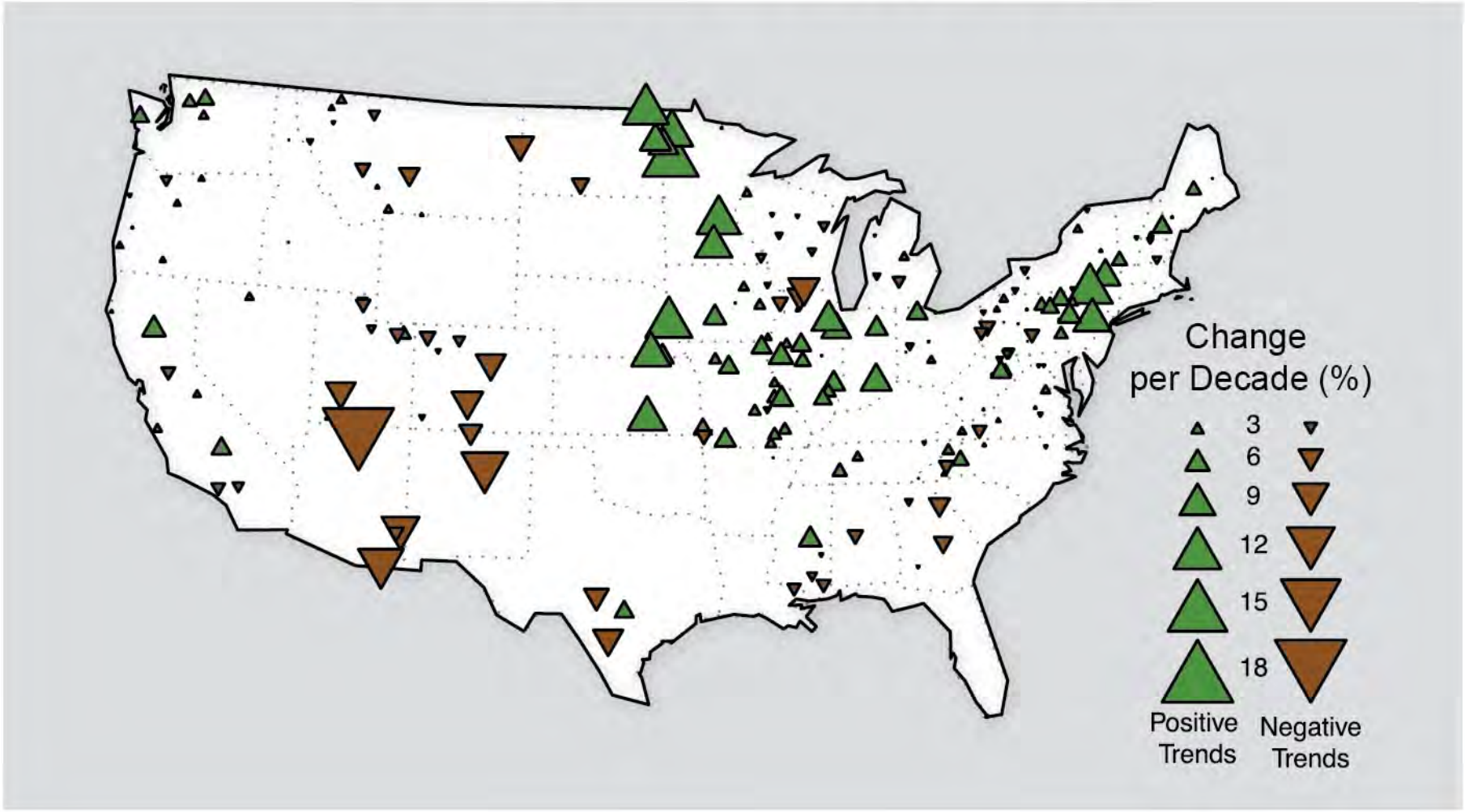
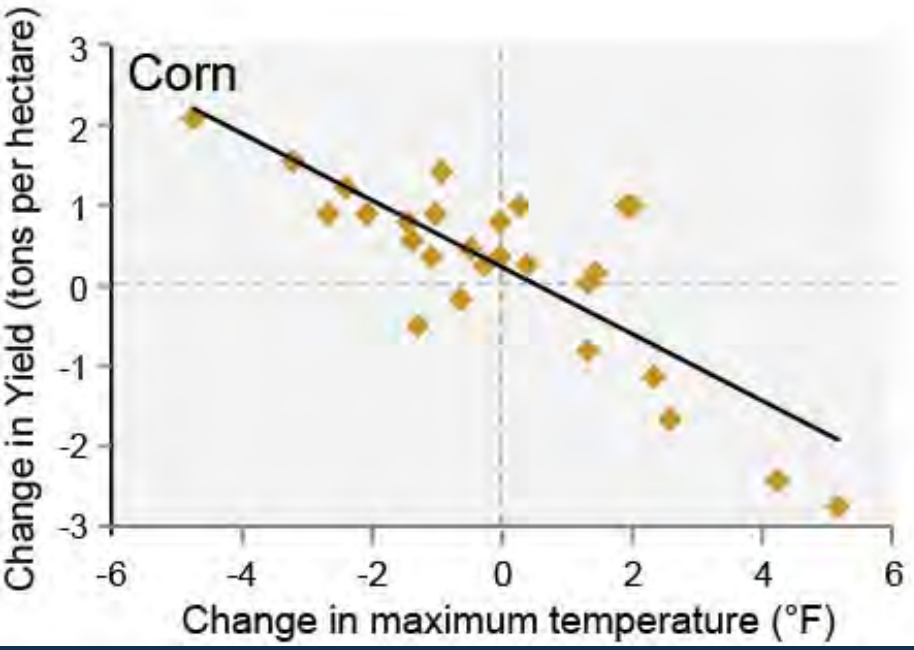
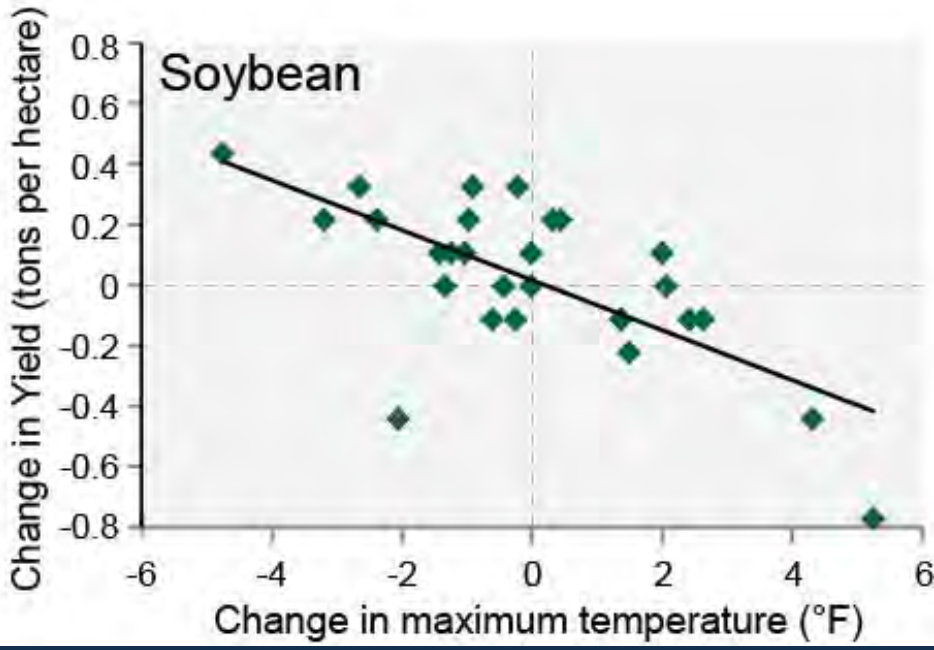
1920s - 2008

Trends in Flood Magnitude

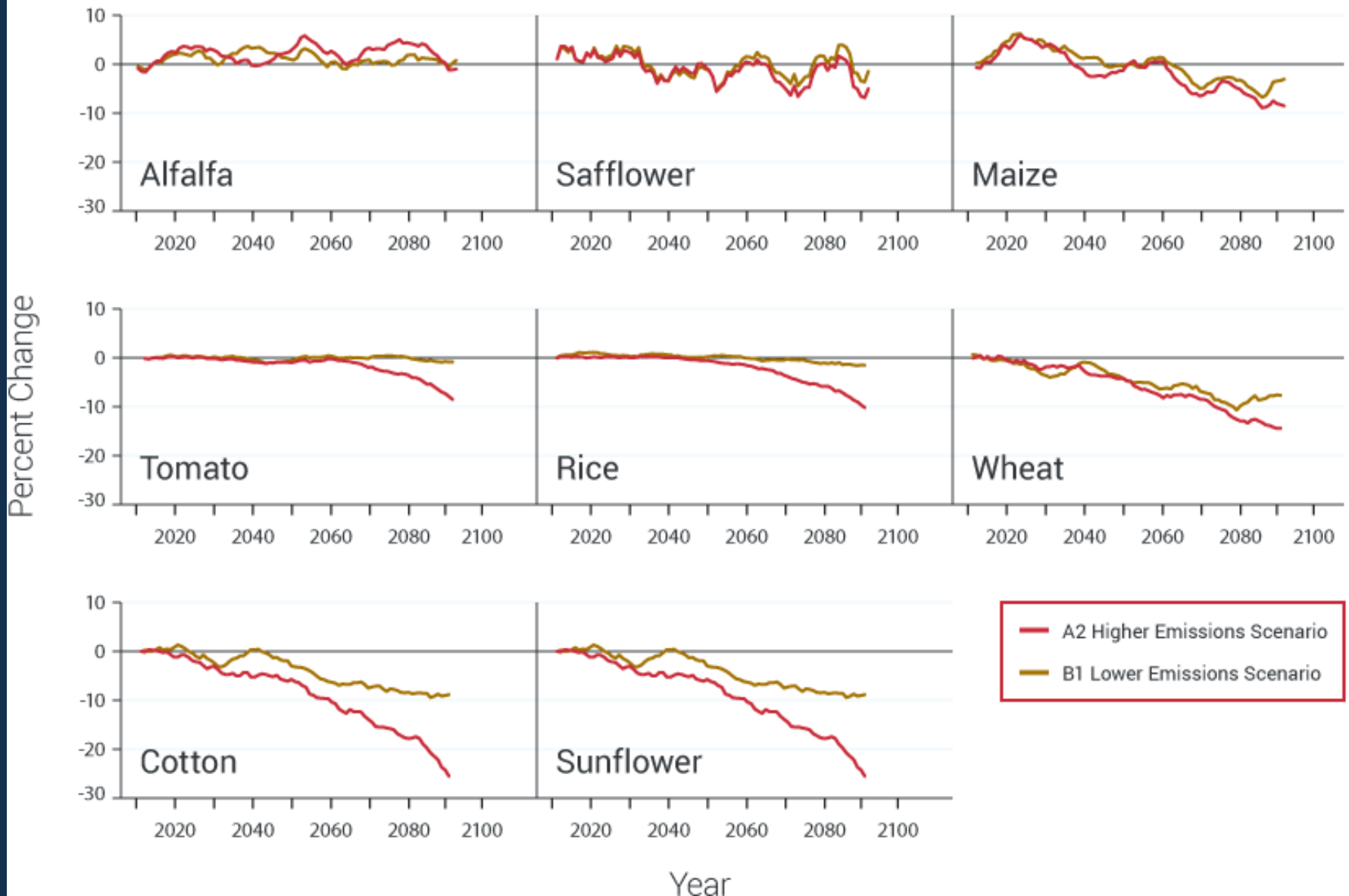


Crop Yields Decline under Higher Temperatures





Crop Yield Response to Warming in California's Central Valley



Conservation of Resources

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