Climate Change and Impacts in Minnesota

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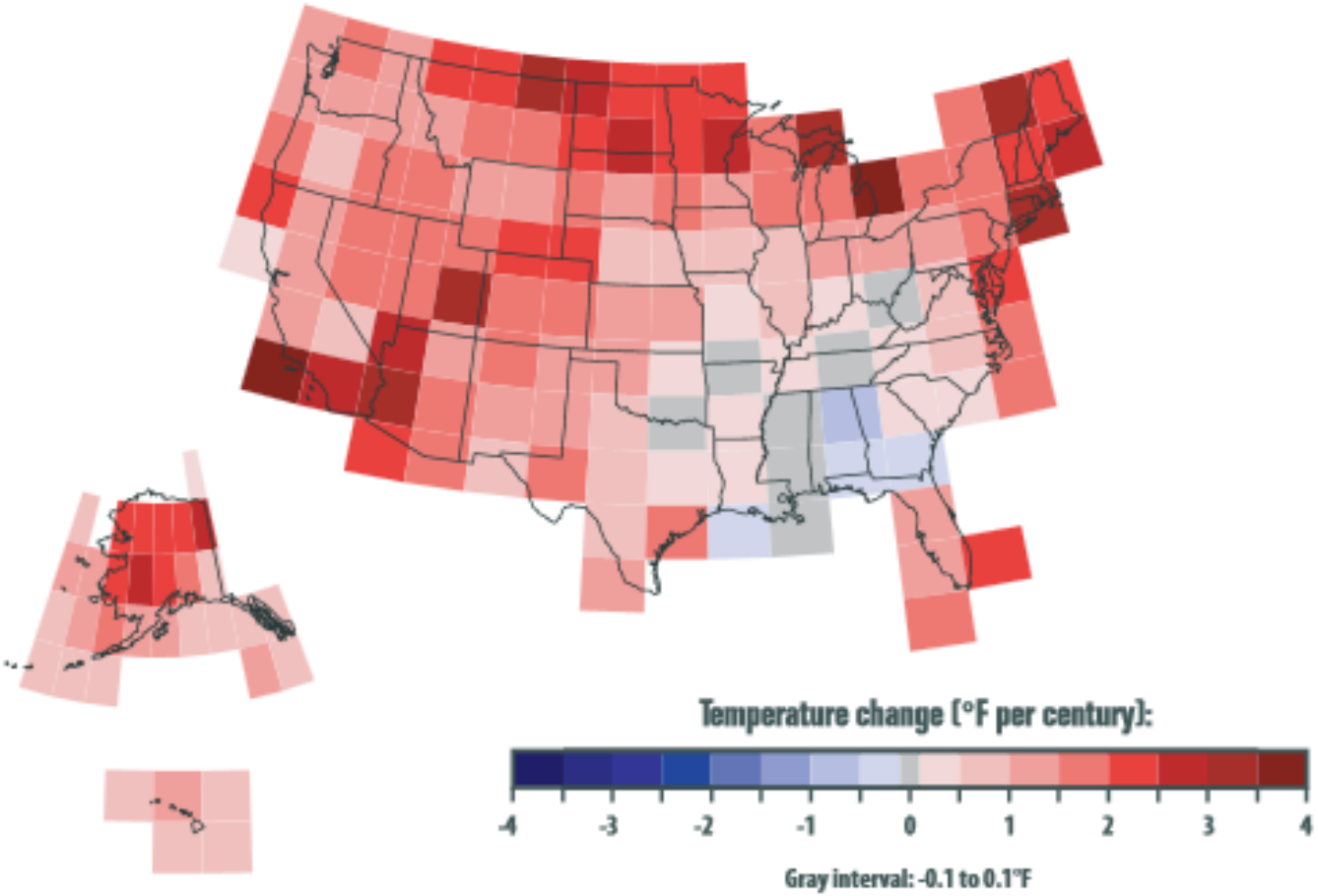
UNIVERSITY OF MINNESOTA
EXTENSION

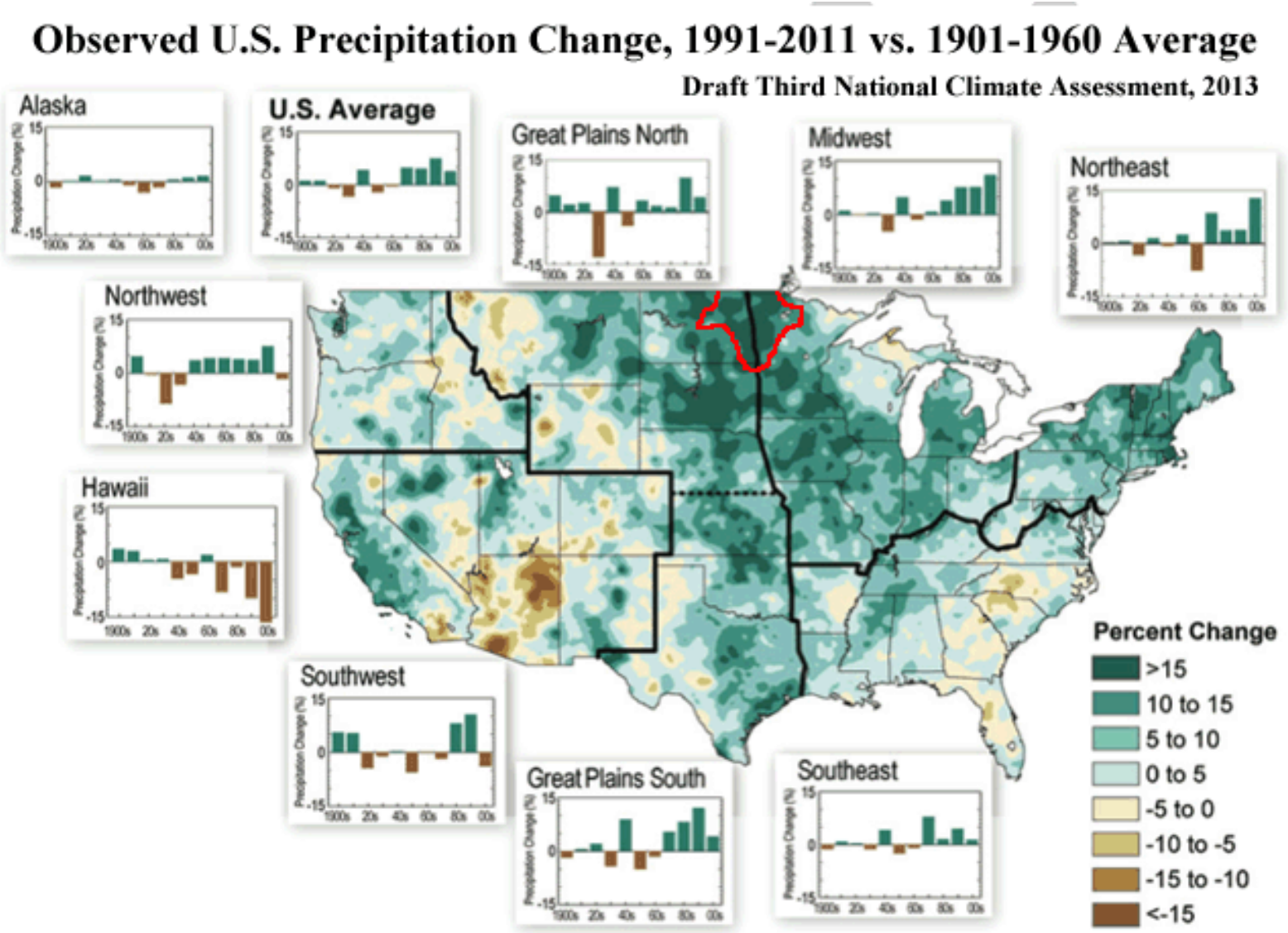
Figure 3. Rate of Temperature Change in the United States, 1901–2008

This figure shows how average air temperatures have changed in different parts of the United States since the early 20th century (since 1901 for the lower 48 states, 1905 for Hawaii, and 1918 for Alaska).



Data source: NOAA, 2009*

Disparity in the pace of climate change and the response to it

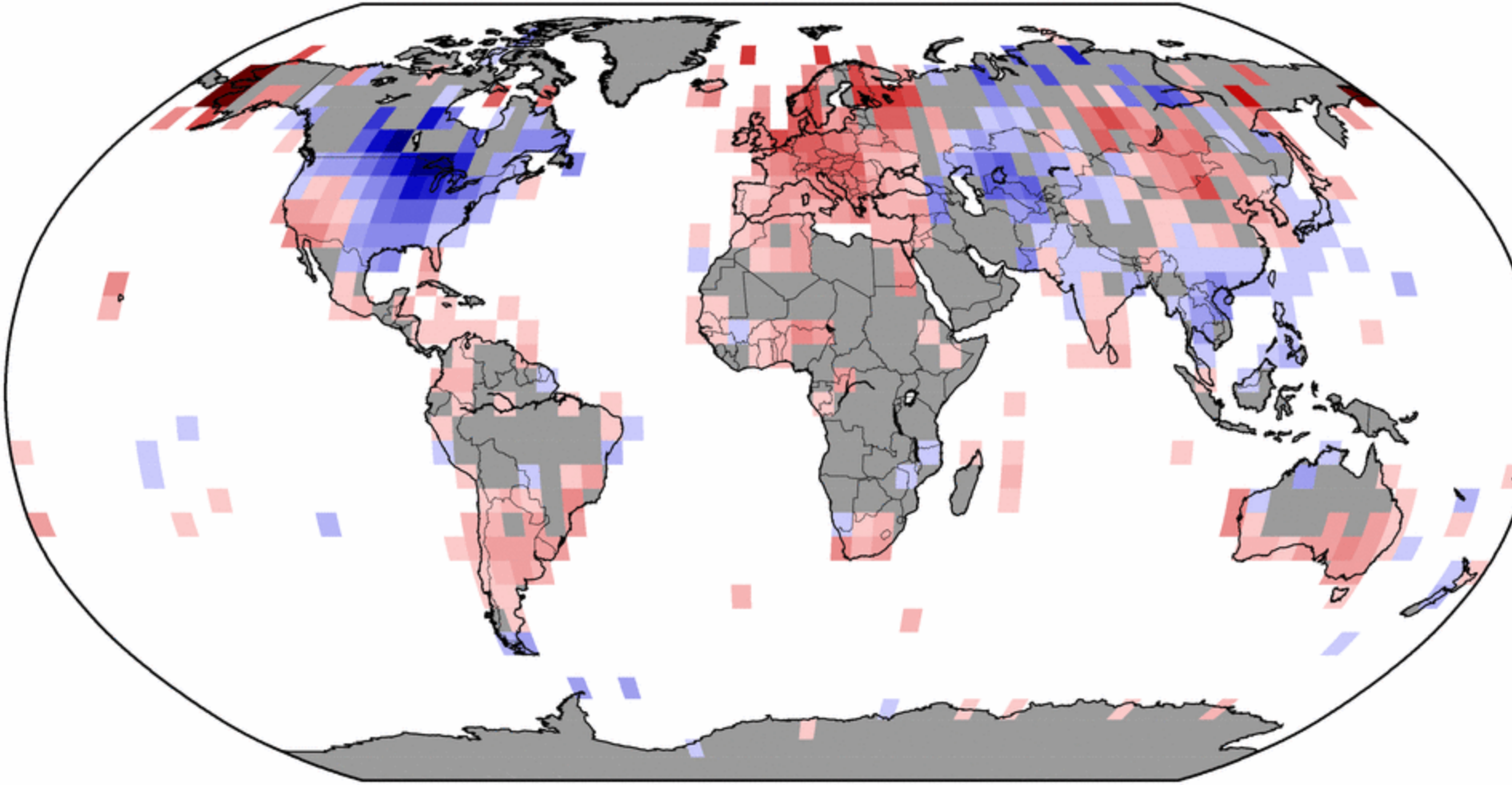


Geographic Disparity in Precipitation Change-IPCC 2013

Land–Only Temperature Anomalies Dec 2013–Feb 2014

(with respect to a 1981–2010 base period)

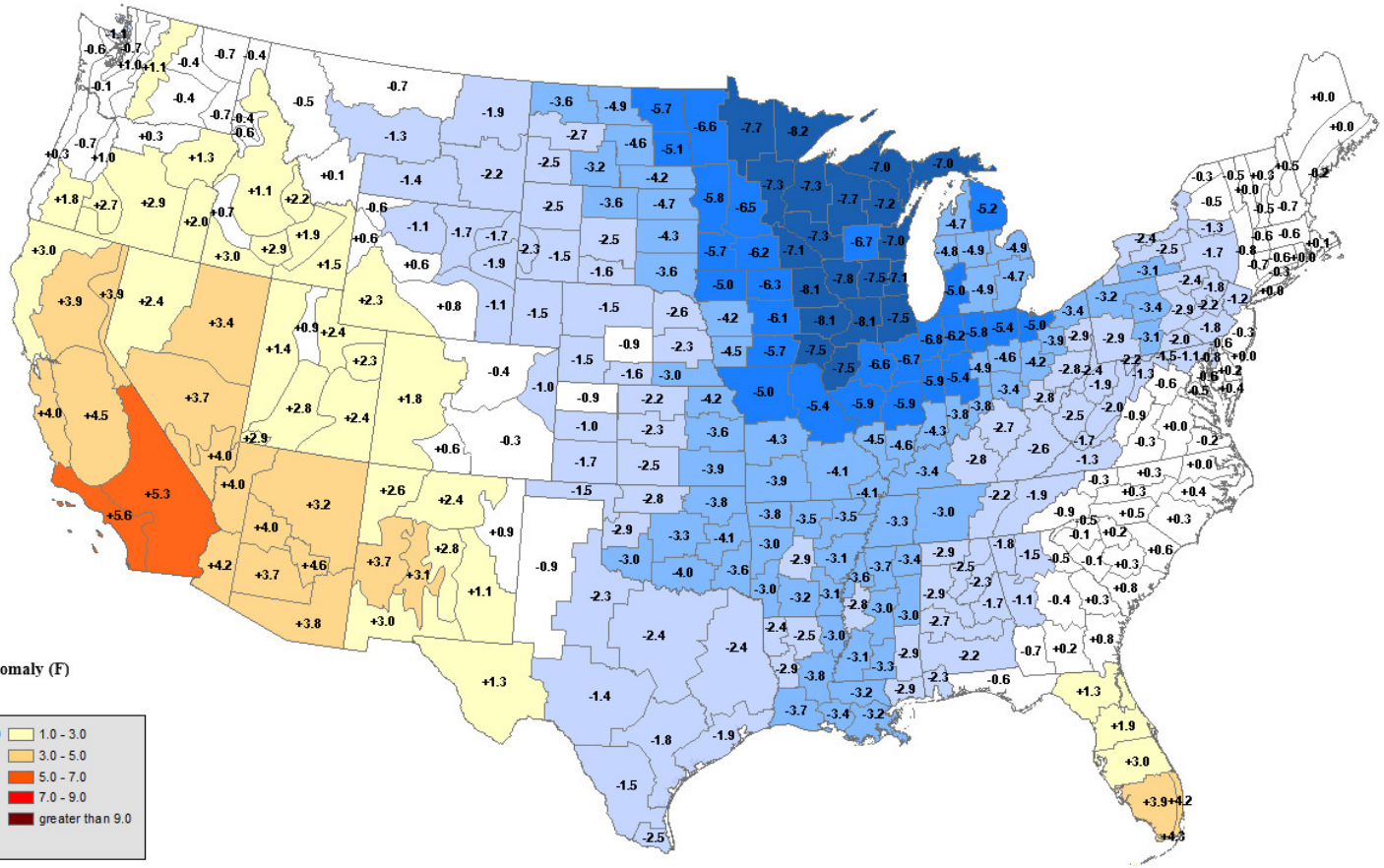
Data Source: GHCN–M version 3.2.2



−5 −4 −3 −2 −1 0 1 2 3 4 5

Degrees Celsius

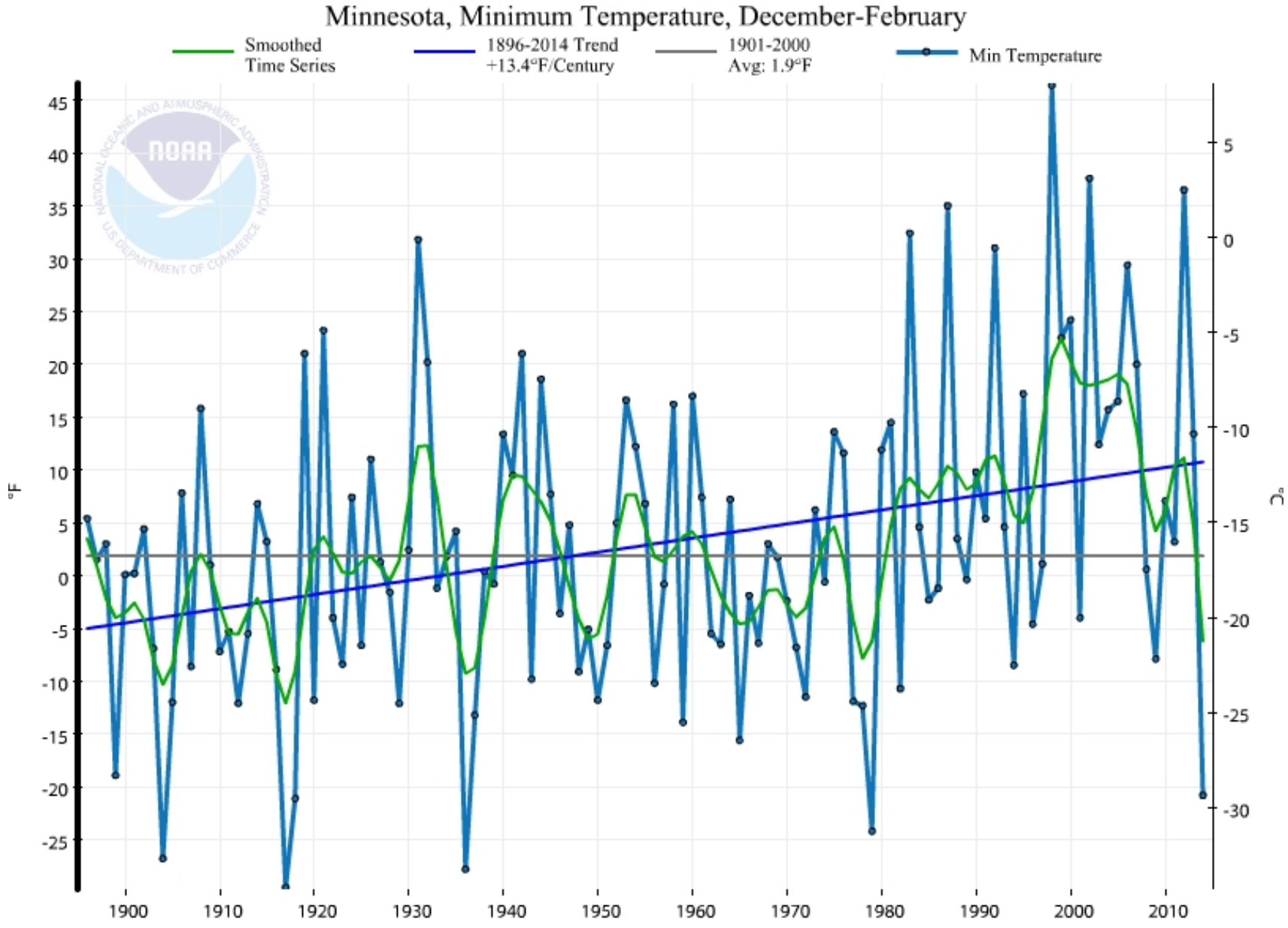
Divisional Average Temperature Anomalies
December 2013 - February 2014



Temperature Anomaly (F)

less than - 9.0	1.0 - 3.0
-9.0 - -7.0	3.0 - 5.0
-7.0 - -5.0	5.0 - 7.0
-5.0 - -3.0	7.0 - 9.0
-3.0 - -1.0	greater than 9.0
-1.0 - 1.0	

NOAA / NCDC


Minnesota, Minimum Temperature, December-February
Smoothed Time Series
1896-2014 Trend +13.4°F/Century
1901-2000 Avg: 1.9°F
Min Temperature
°F
°C
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
5
0
-5
-10
-15
-20
-25
-30
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010

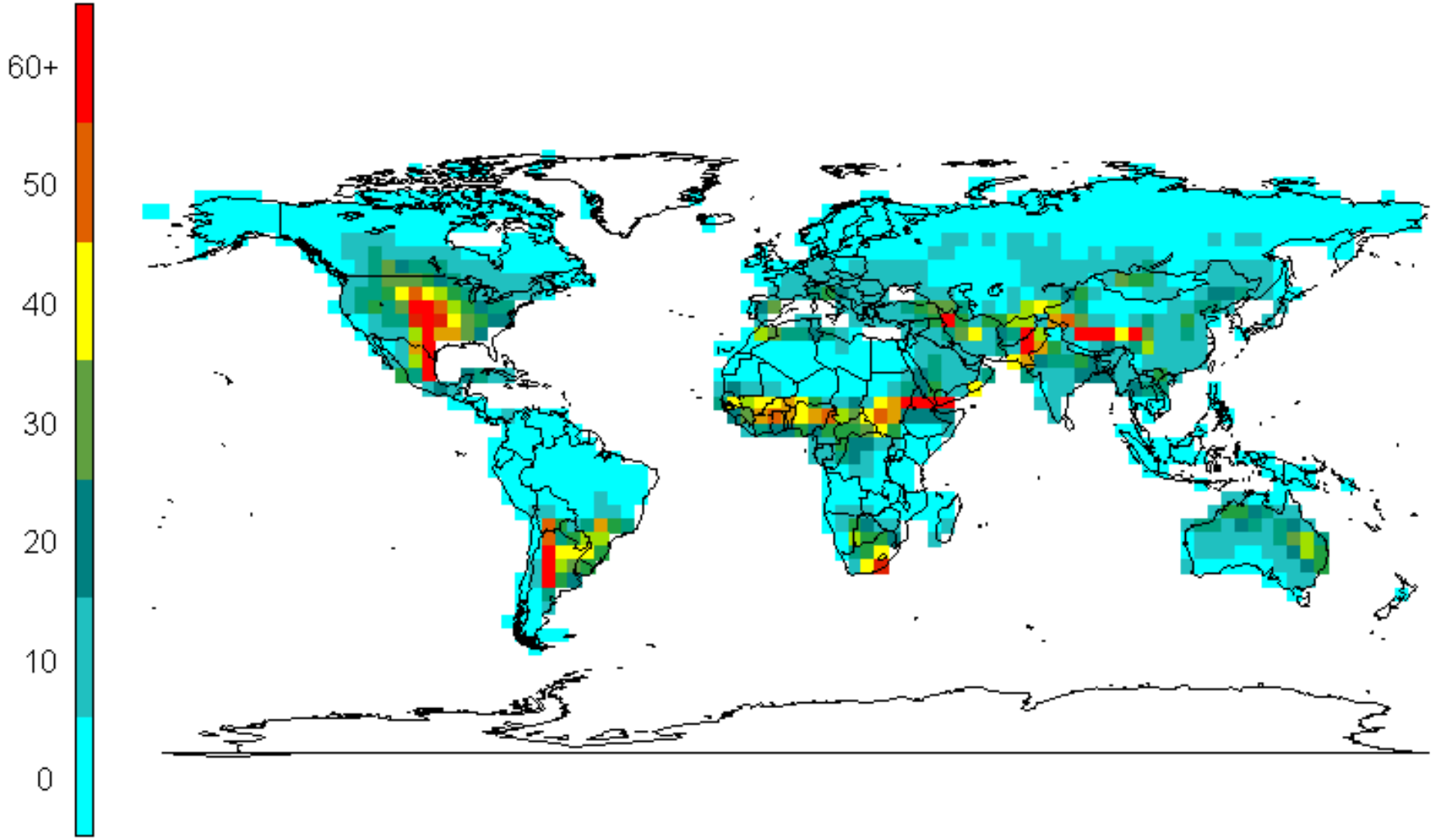
RECENT SIGNIFICANT CLIMATE TRENDS IN MINNESOTA AND THE WESTERN GREAT LAKES

- *TEMPERATURE*: WARM WINTERS AND HIGHER MINIMUM TEMPERATURES

- *DEWPOINTS*: GREATER FREQUENCY OF TROPICAL-LIKE ATMOSPHERIC WATER VAPOR

- *MOISTURE*: AMPLIFIED PRECIPITATION SIGNAL, THUNDERSTORM CONTRIBUTION

Days per Year with Favorable Severe Parameters



from Brooks et al, NOAA-SSL, 2012

Consequences Associated with Climate Change in Minnesota

- Impacts on state infrastructure (roads, power grid, water supplies, insurance, public health, agriculture, recreation and tourism)
- Impacts on state natural resources (forests, soils, lakes, watersheds, aquatic and terrestrial ecosystems)