

Regional and Local Climate Change Impacts for Durango, CO

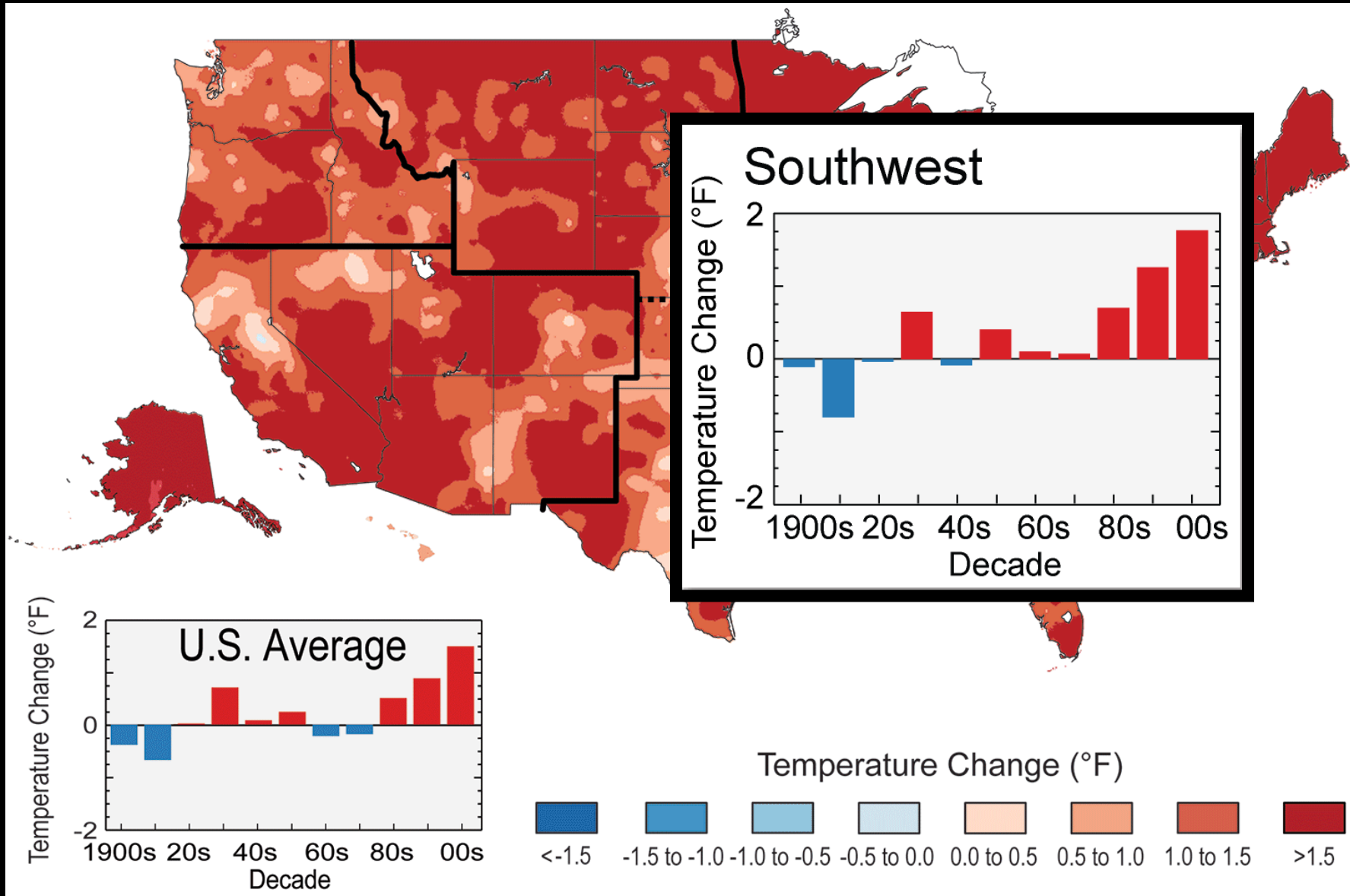


Emile Elias, PhD
Director, USDA Southwest Climate Hub

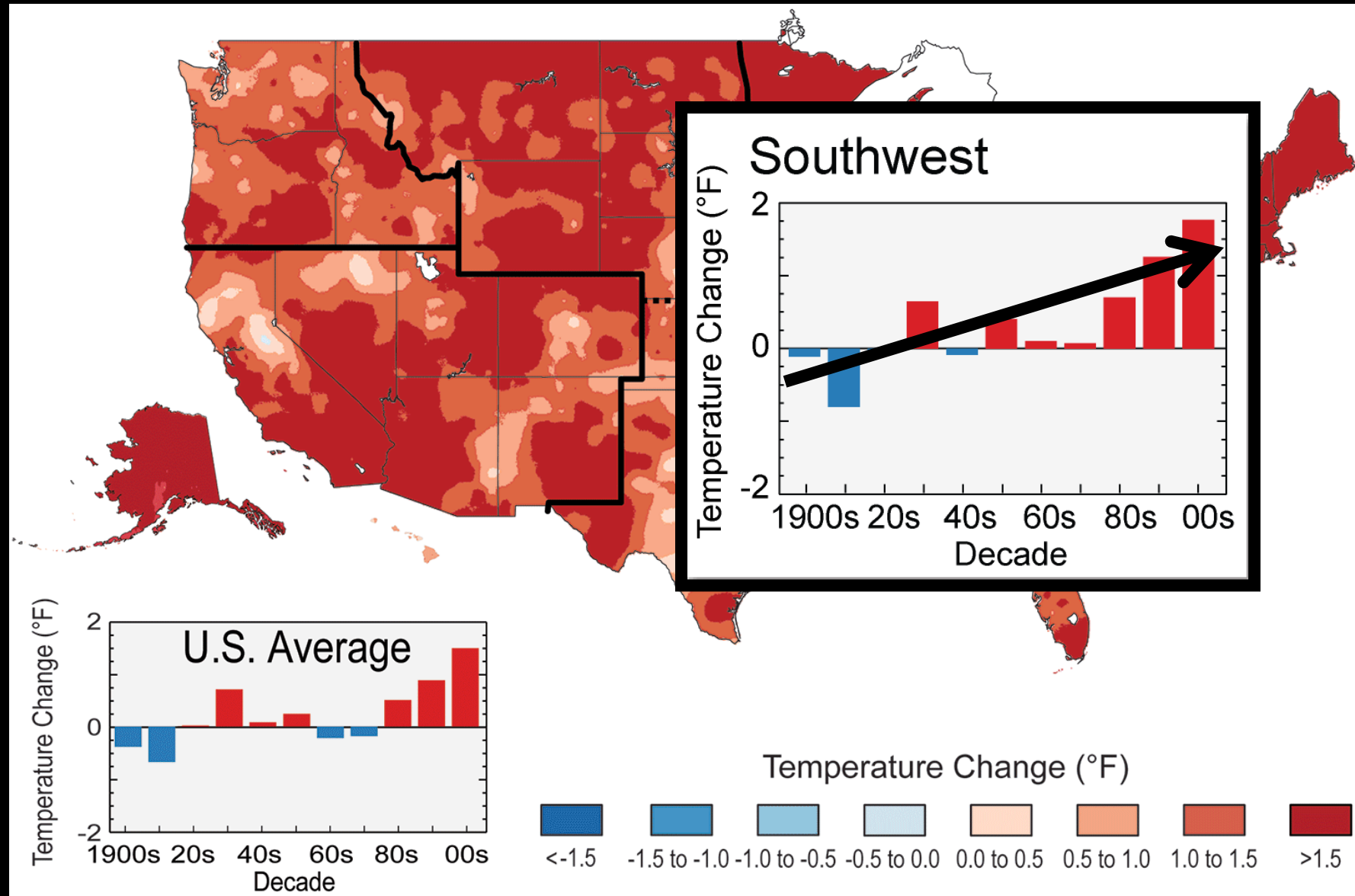


Southwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

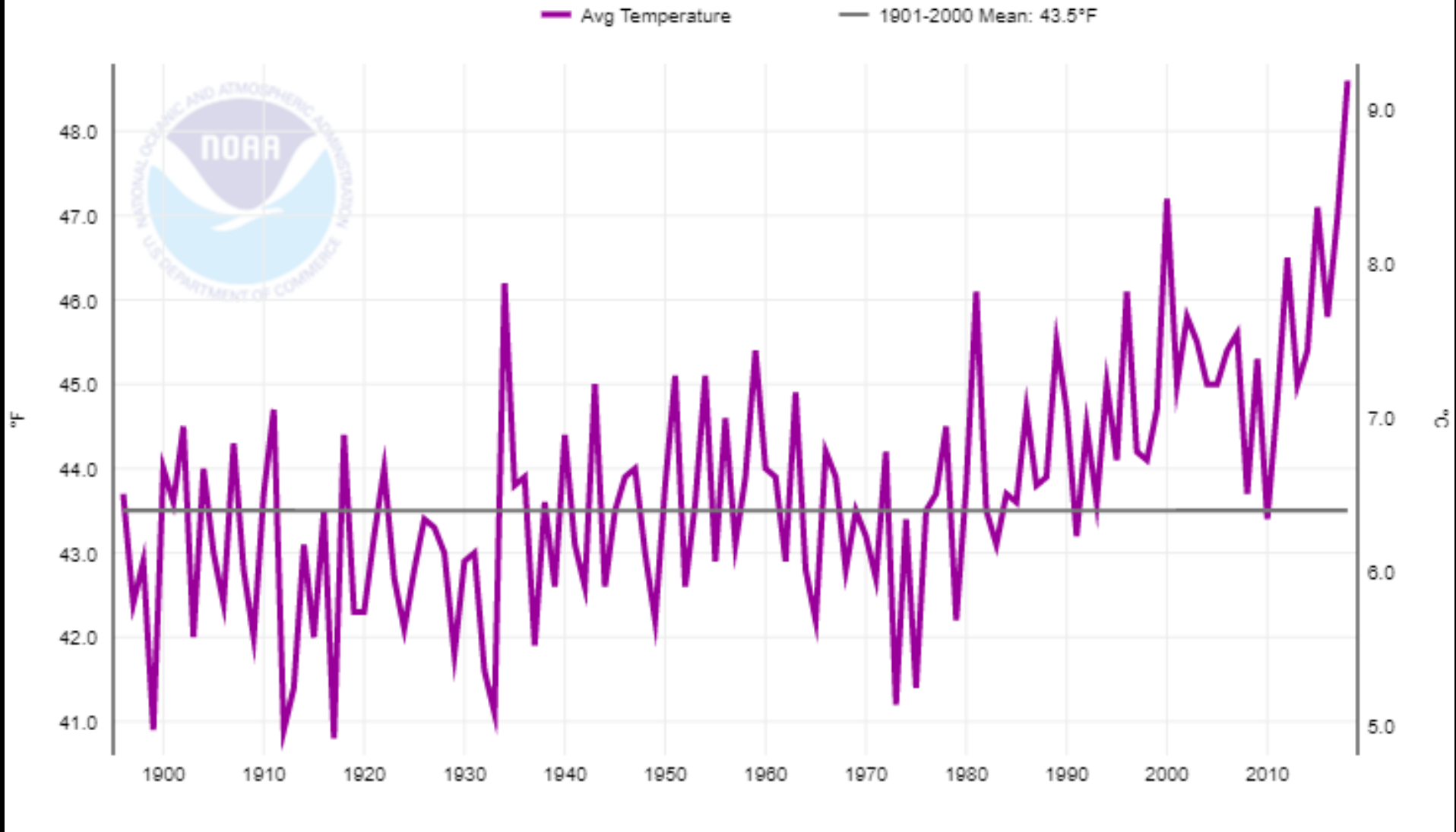
Observed Temperature Change



Observed Temperature Change

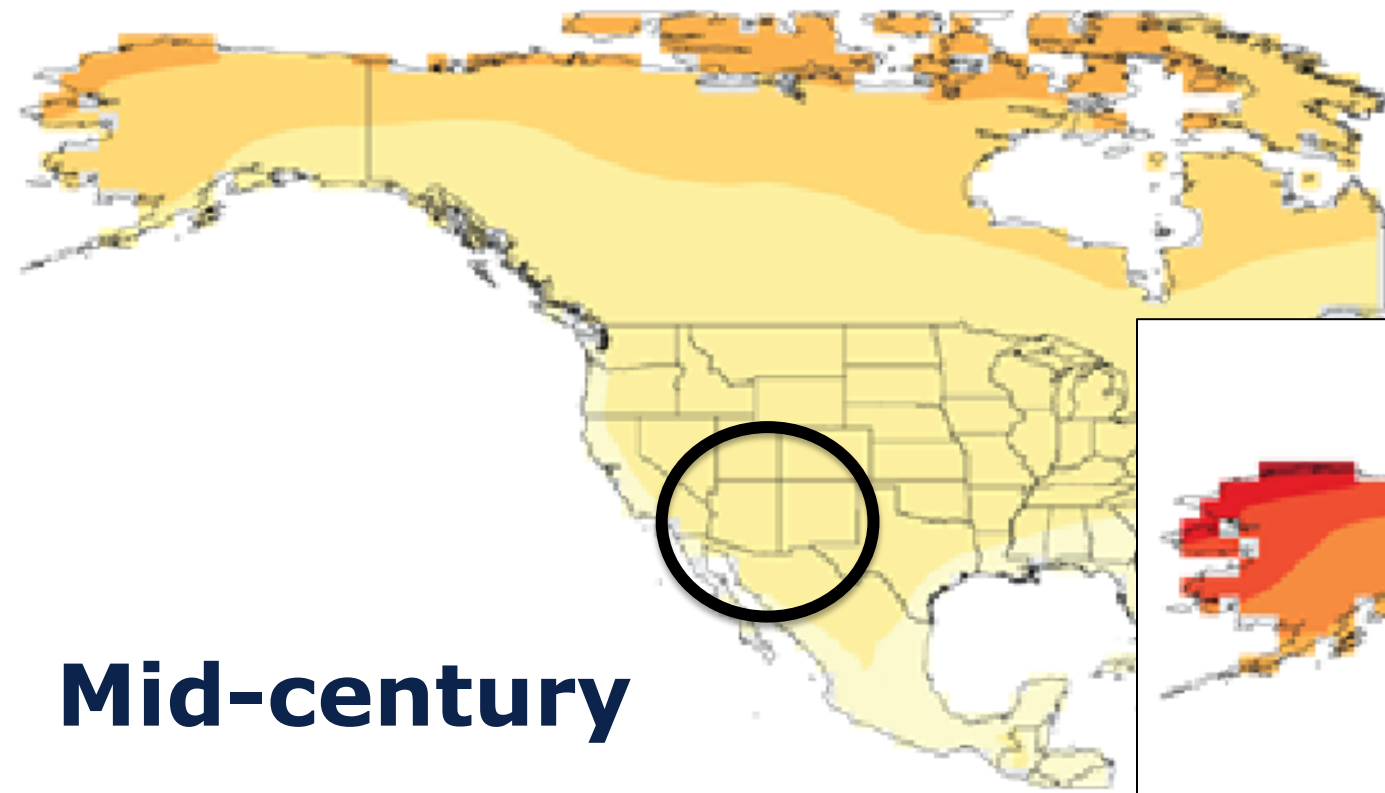


La Plata County, Colorado, Average Temperature, October-September



NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published September 2019, <https://www.ncdc.noaa.gov/cag/>

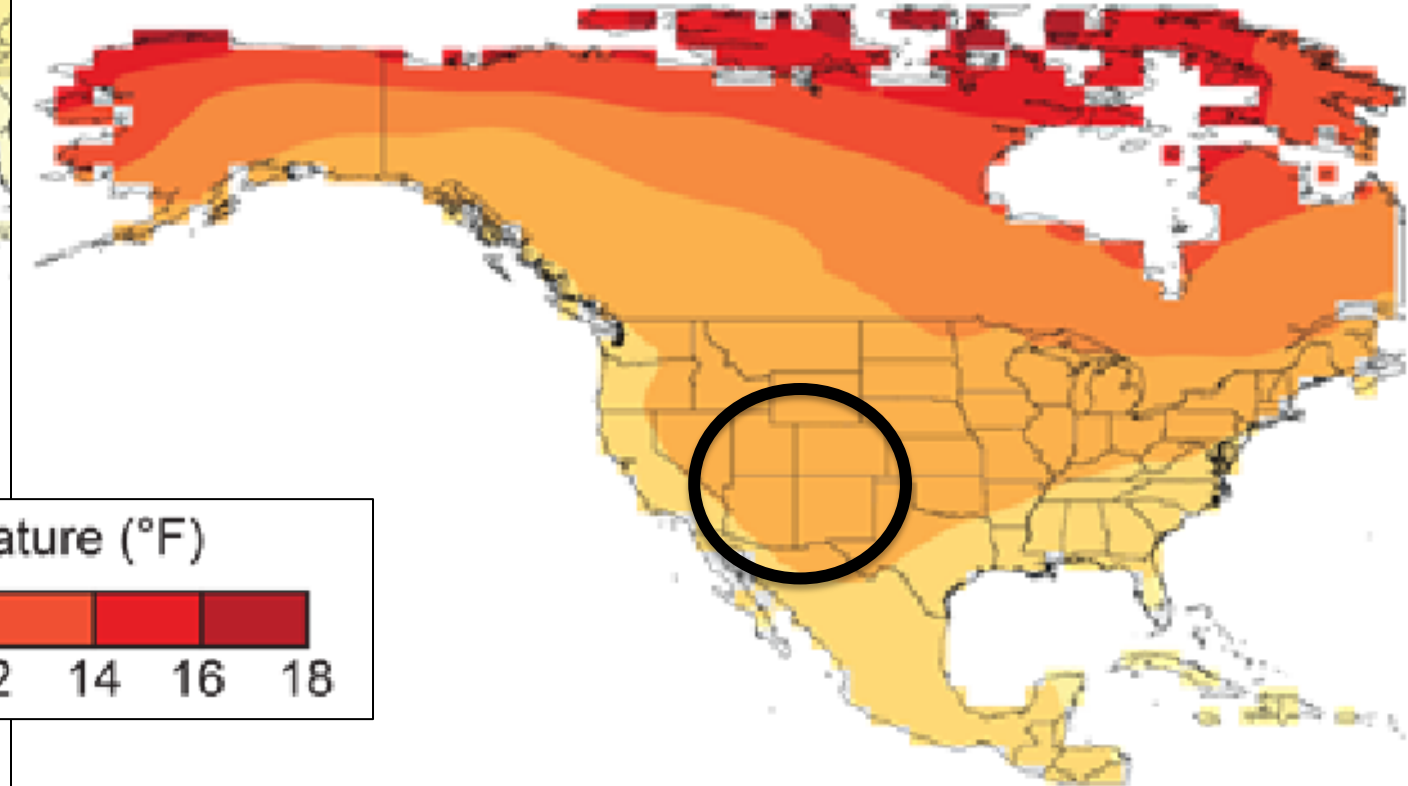
Higher Scenario (RCP8.5)



Mid-century

End of century

Higher Scenario (RCP8.5)

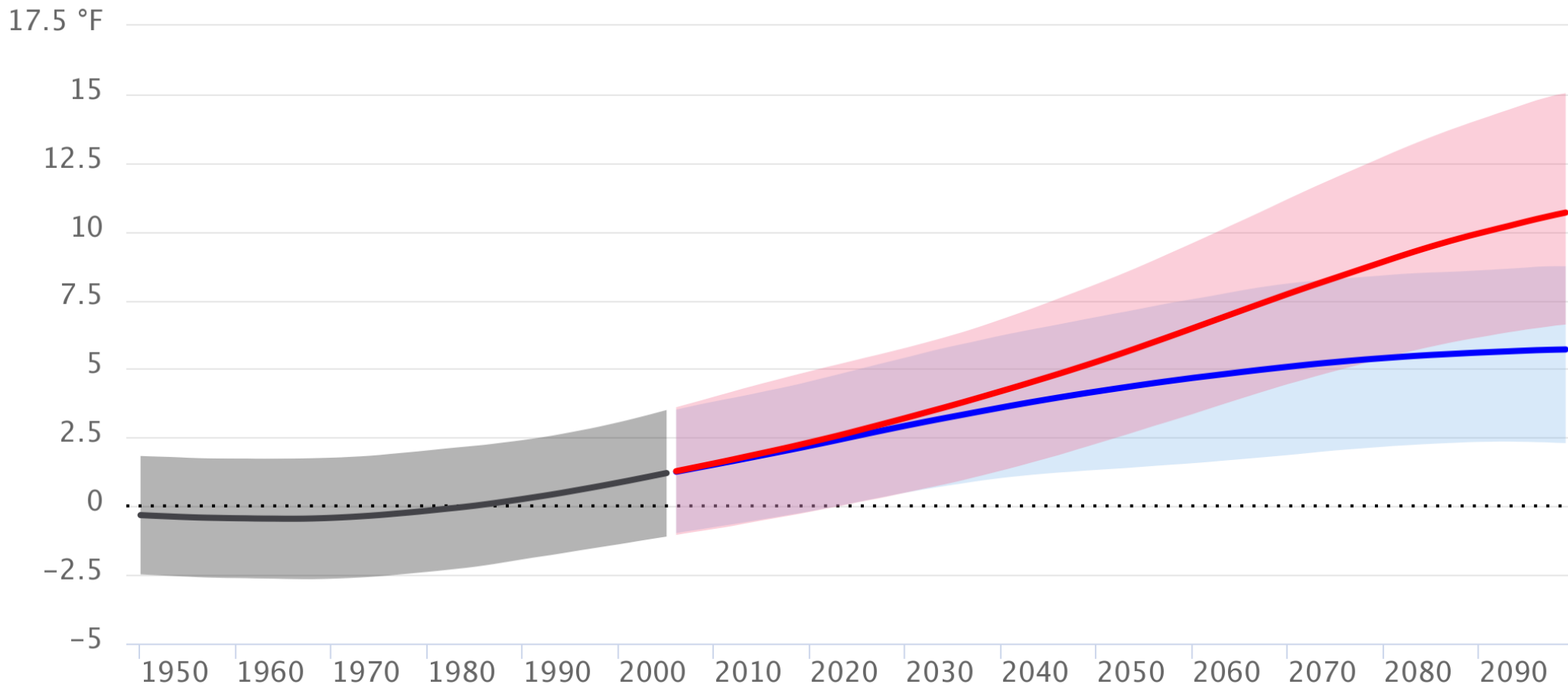


Change in Temperature (°F)



Mean Temperature Difference From Average

Durango, CO (Jan-Dec Average)



Lower Emissions (RCP 4.5) Avg. Lower Emissions (RCP 4.5) Range Higher Emissions (RCP 8.5) Avg. Higher Emissions (RCP 8.5) Range Historic Avg. Historic Range

Summer Temperatures

Local Projections: Summer Temperatures
Higher Emissions (RCP 8.5)

Durango CO (37.2753 ° N, 107.8801 ° W)

1990s

SUMMER (Jun -July -Aug)



AVG HIGH /AVG LOW

82.6°F /49.5°F

HOTTEST /HHZ

91.6°F /4

2025s

SUMMER (Jun -July -Aug)



AVG HIGH /AVG LOW

85.6°F /52.2°F

HOTTEST /HHZ

94.7°F /6

2055s

SUMMER (Jun -July -Aug)



AVG HIGH /AVG LOW

89.1°F /55.3°F

HOTTEST /HHZ

98.3°F /7

2085s

SUMMER (Jun -July -Aug)



AVG HIGH /AVG LOW

93.1°F /58.9°F

HOTTEST /HHZ

103°F /8

Winter Temperatures

Local Projections: Winter Temperatures
Higher Emissions (RCP 8.5)

Durango CO (37.2753 ° N, 107.8801 ° W)

1990s

WINTER (Dec -Jan -Feb)



AVG HIGH /AVG LOW

41.4°F /14.7°F

COLDEST /CHZ

-4.5°F /6b

2025s

WINTER (Dec -Jan -Feb)



AVG HIGH /AVG LOW

44.1°F /18°F

COLDEST /CHZ

-0.2°F /7a

2055s

WINTER (Dec -Jan -Feb)



AVG HIGH /AVG LOW

47.2°F /21.2°F

COLDEST /CHZ

4.4°F /7a

2085s

WINTER (Dec -Jan -Feb)



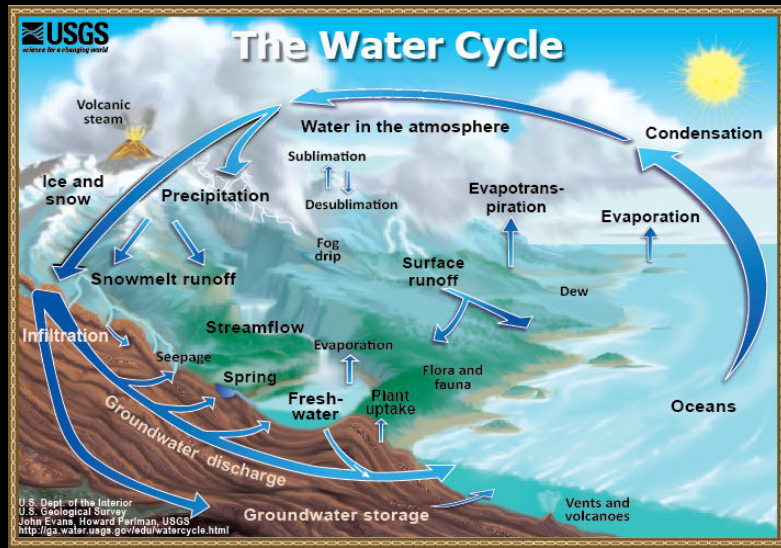
AVG HIGH /AVG LOW

50.8°F /24.8°F

COLDEST /CHZ

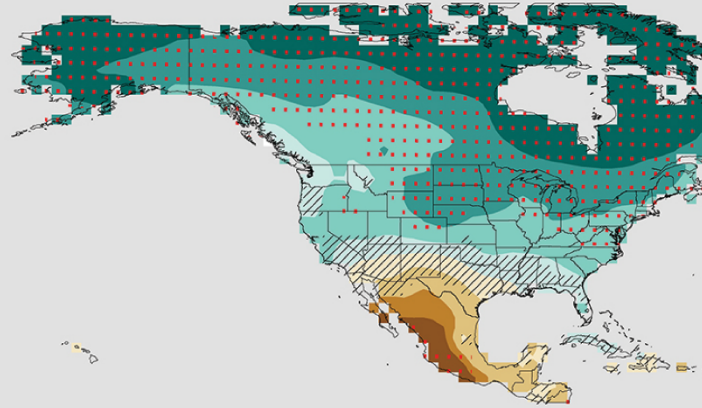
9.1°F /7b

Warmer global climate sends storms to the north

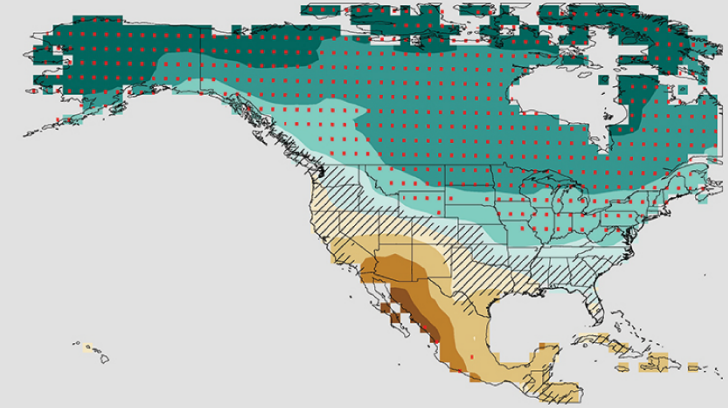


Projected Change (%) in Seasonal Precipitation

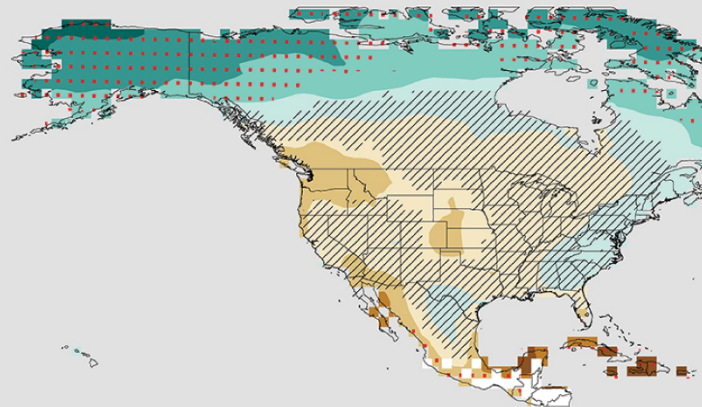
Winter



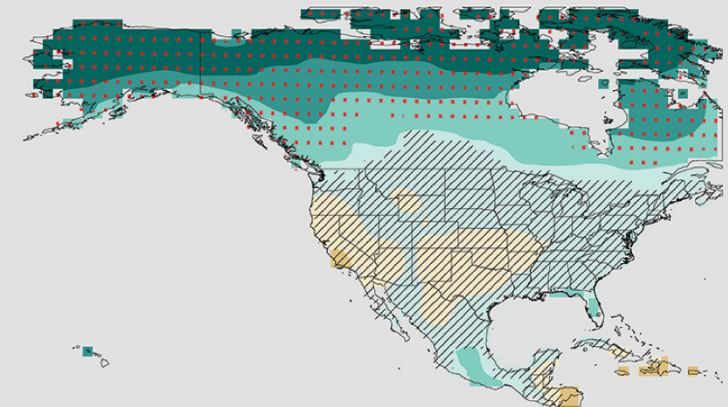
Spring



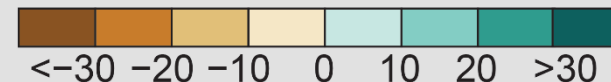
Summer



Fall



Change (%)

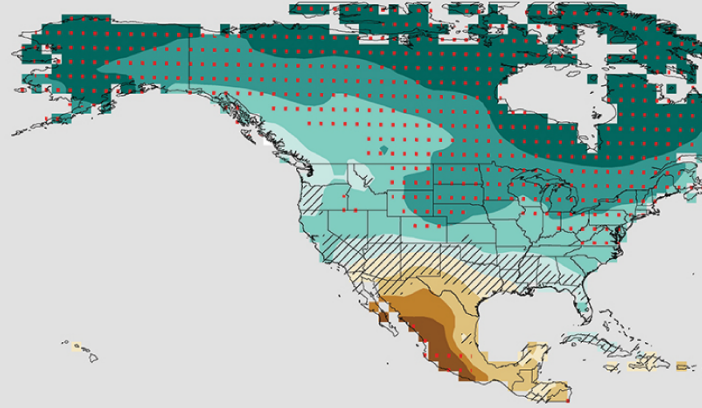


Precipitation

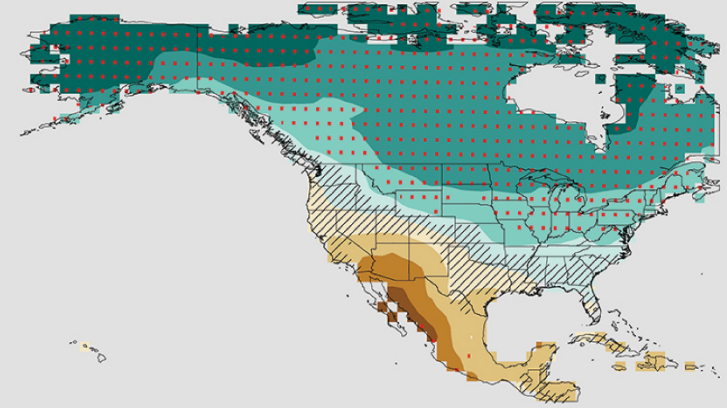
?

Projected Change (%) in Seasonal Precipitation

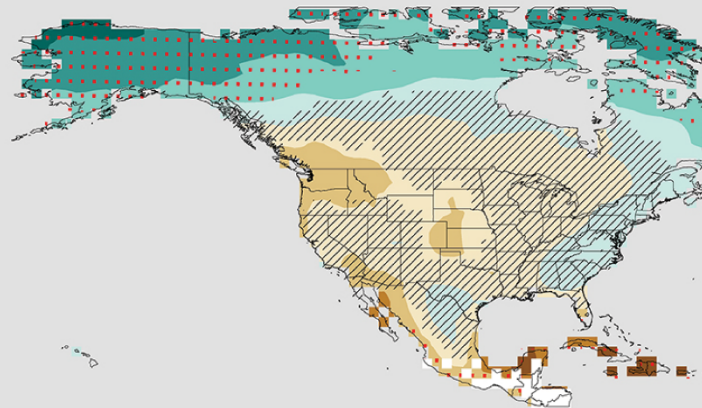
Winter



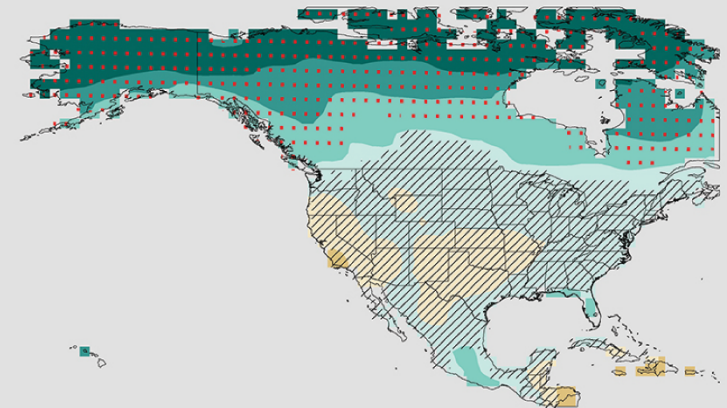
Spring



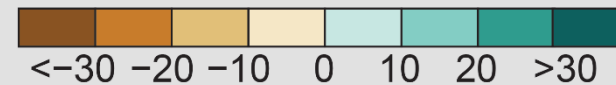
Summer



Fall

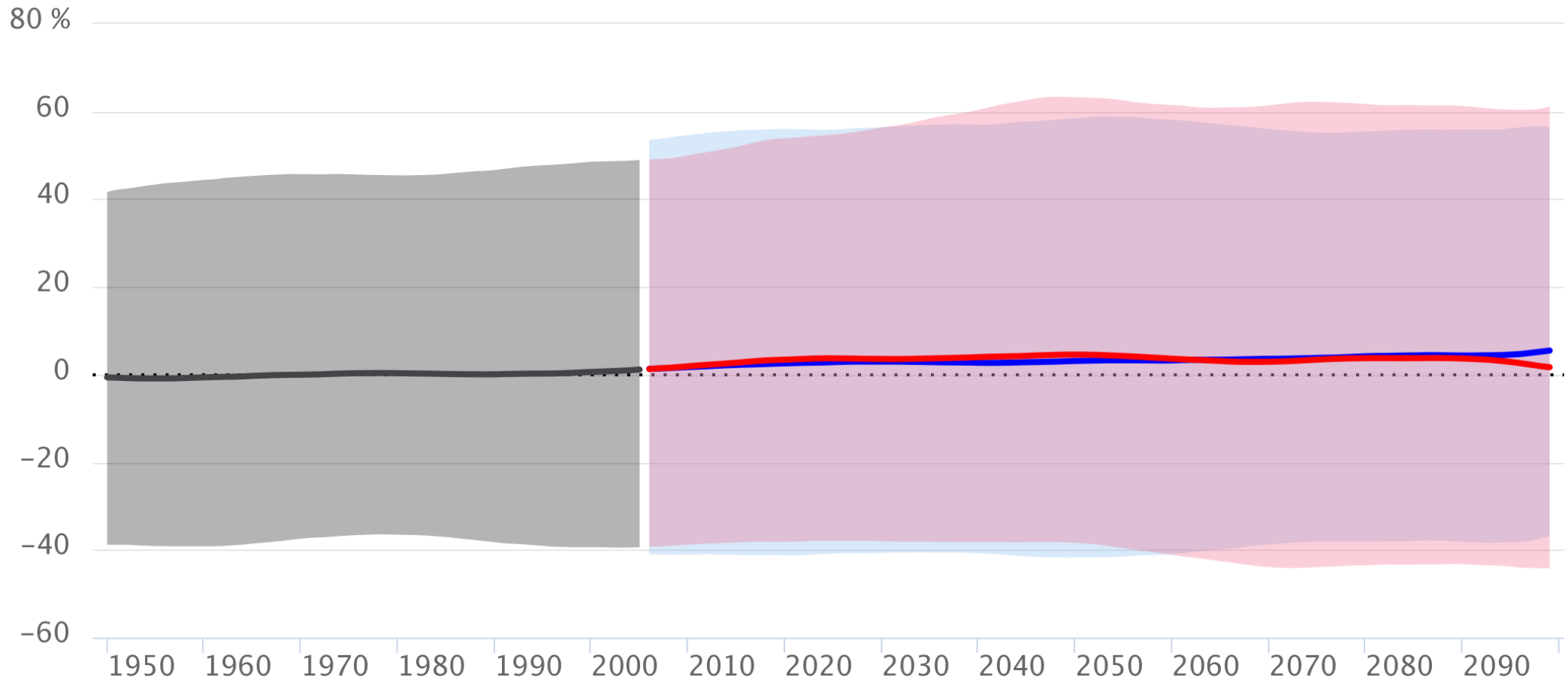


Change (%)



Precipitation Percent Difference From Average

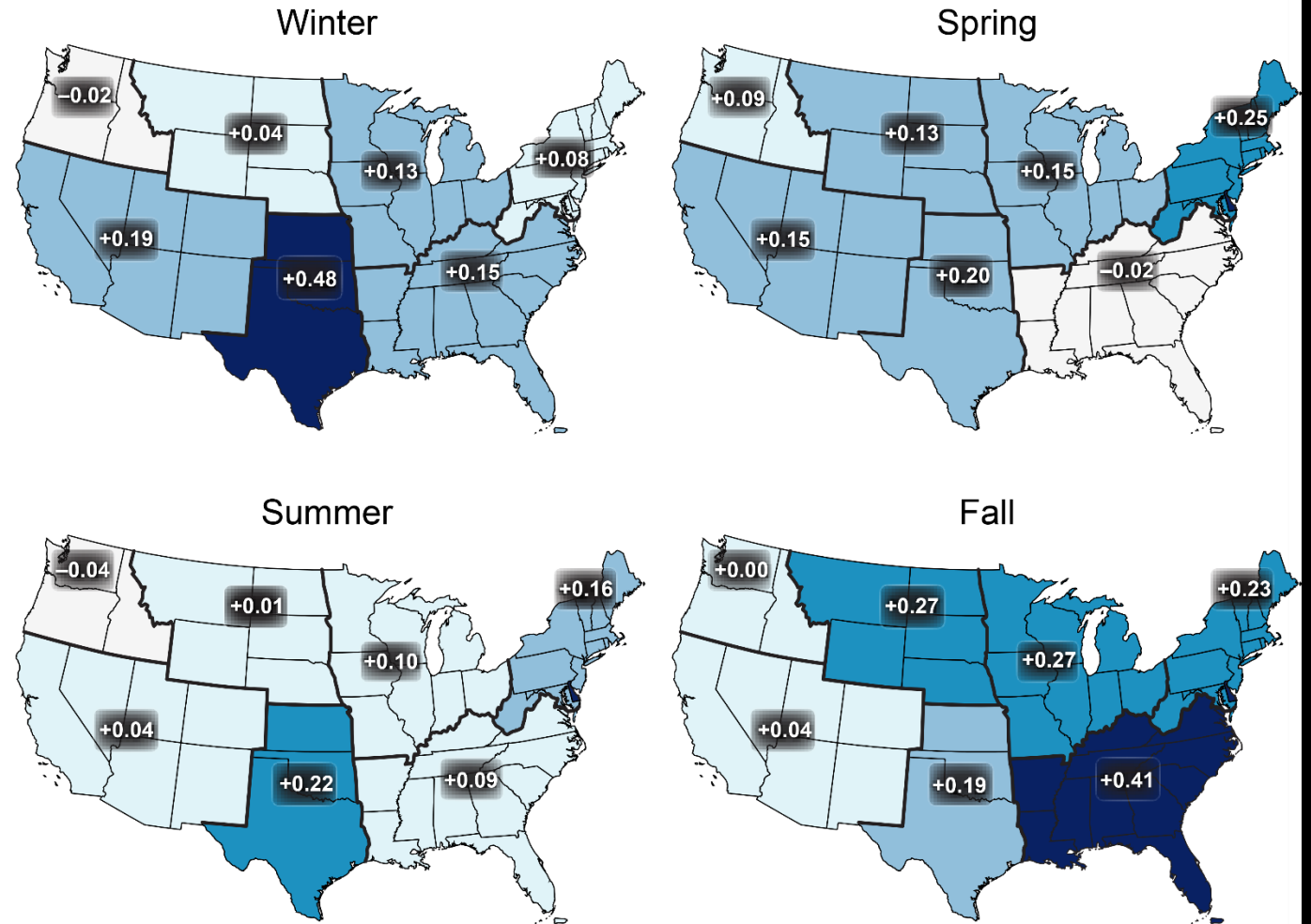
Durango, CO (Jan-Dec Average)



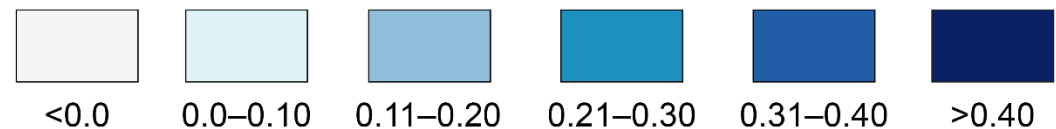
- Lower Emissions (RCP 4.5) Avg.
- Lower Emissions (RCP 4.5) Range
- Higher Emissions (RCP 8.5) Avg.
- Higher Emissions (RCP 8.5) Range
- Historic Avg.
- Historic Range

Heavy Precipitation is Increasing

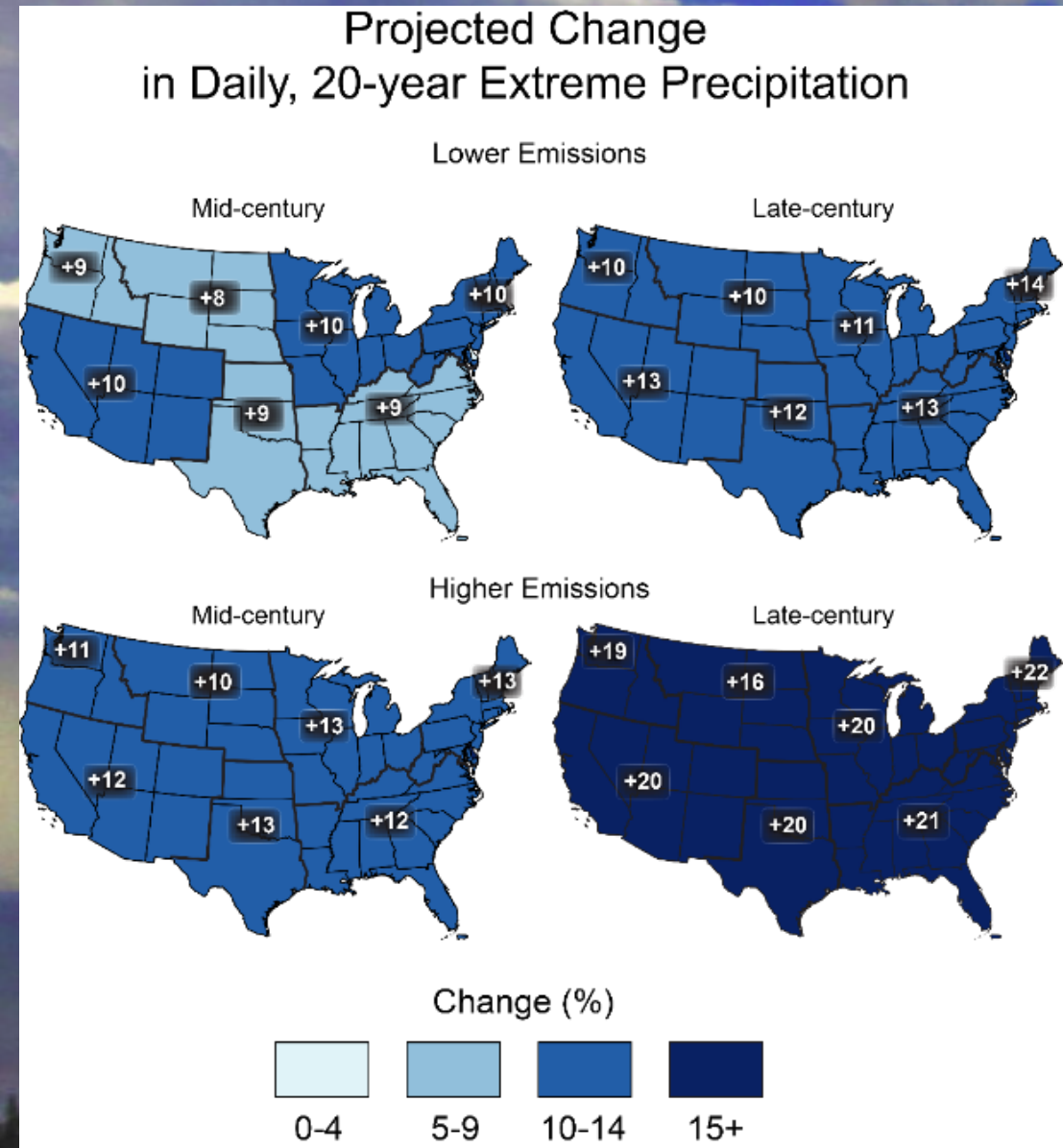
Observed Change in Daily, 20-year Return Level Precipitation



Change (inches)

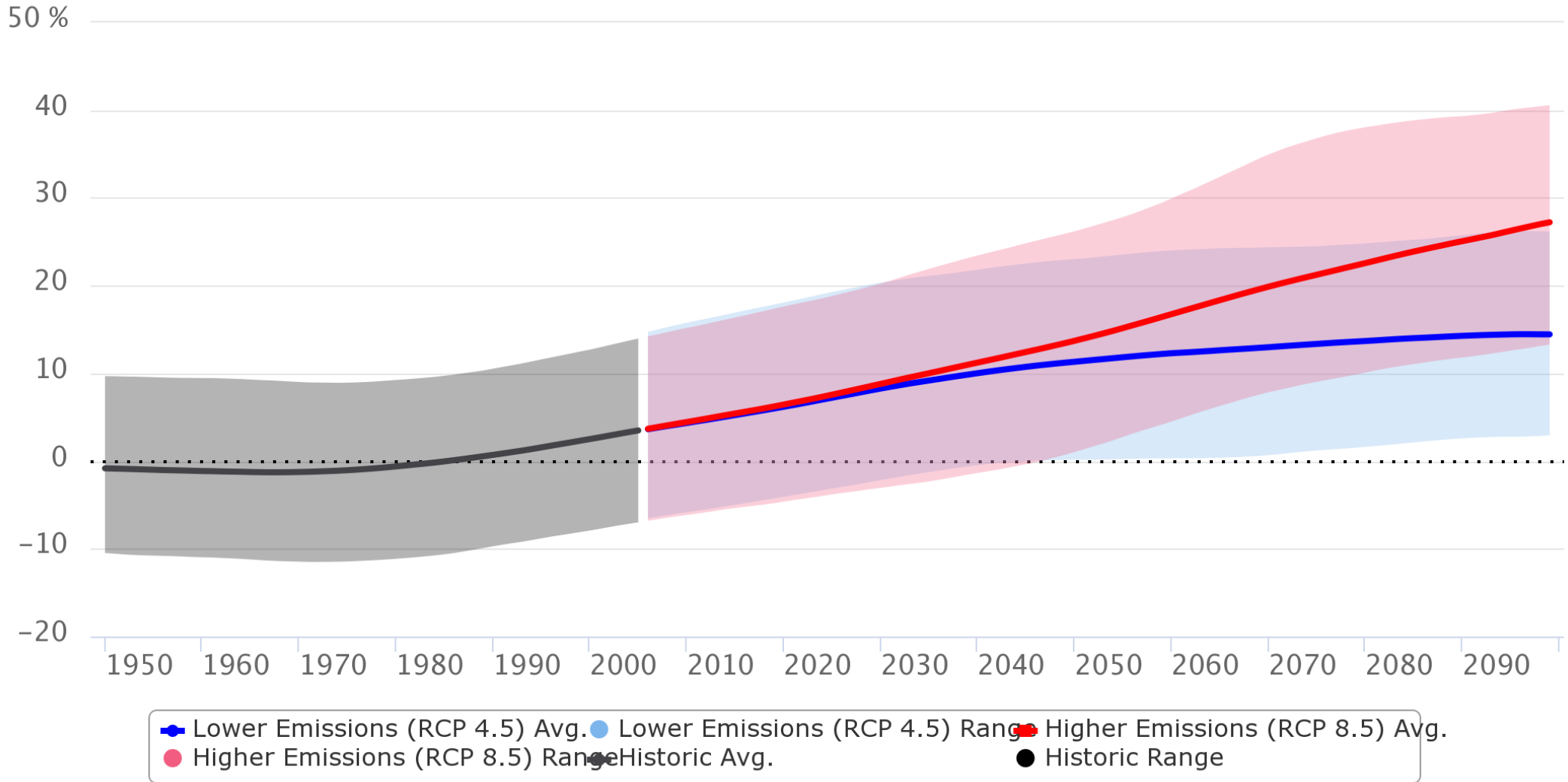


Heavy Precipitation is Projected to Increase by 10-20%

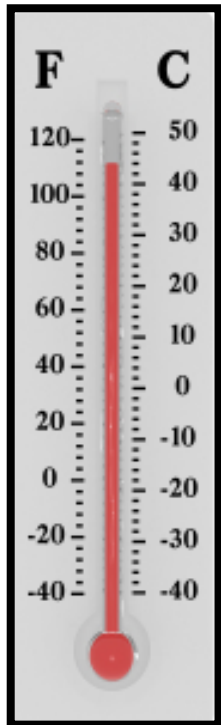


Potential Evapotranspiration Percent Difference From Average

Durango, CO (Jan-Dec Average)

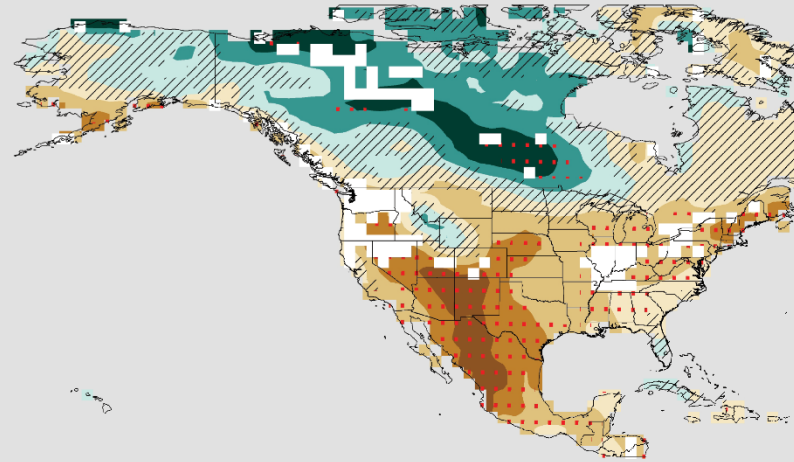


Soil Moisture is Projected to Decrease

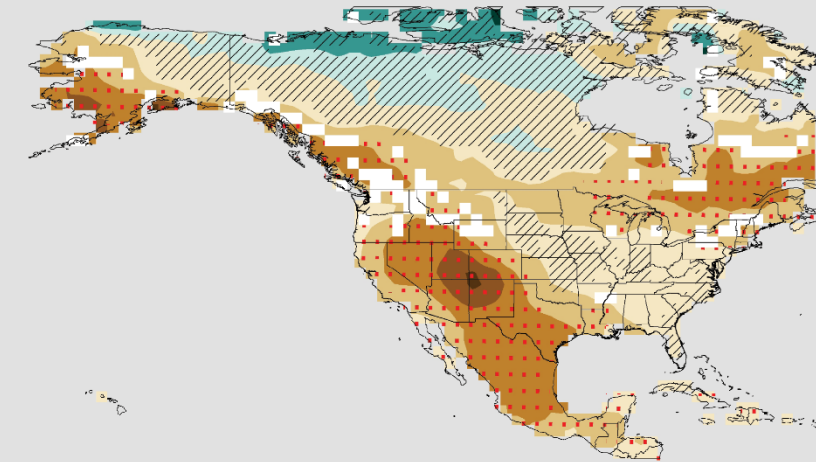


Projected Change (mm) in Soil Moisture, End of Century, Higher Emissions

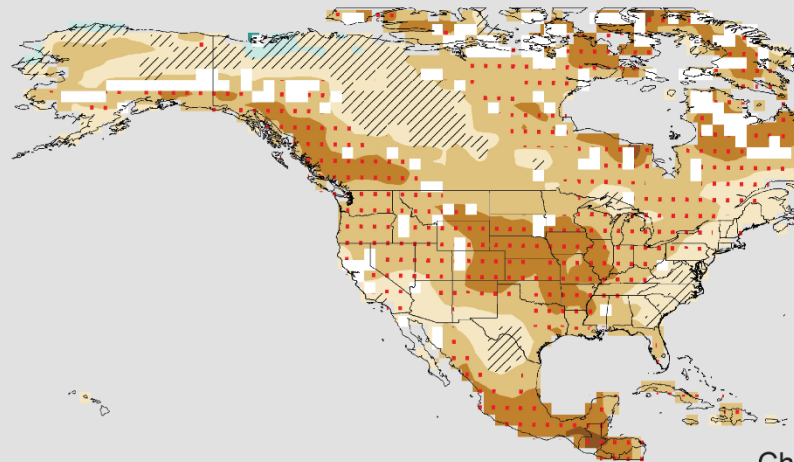
Winter



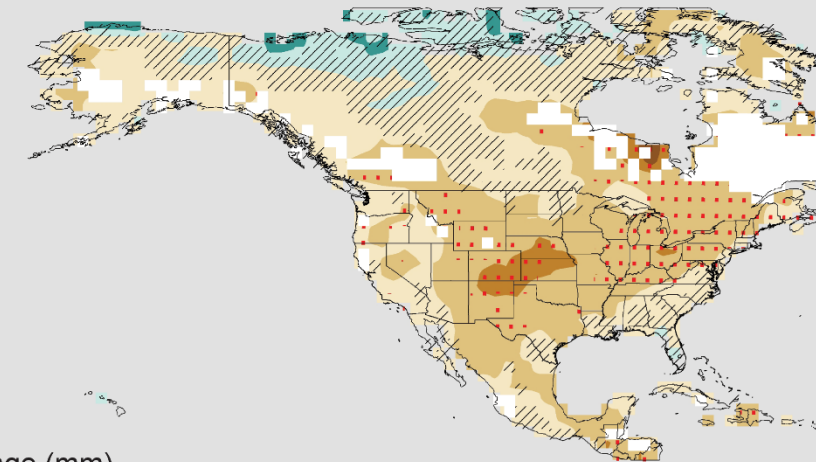
Spring



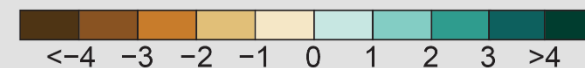
Summer



Fall

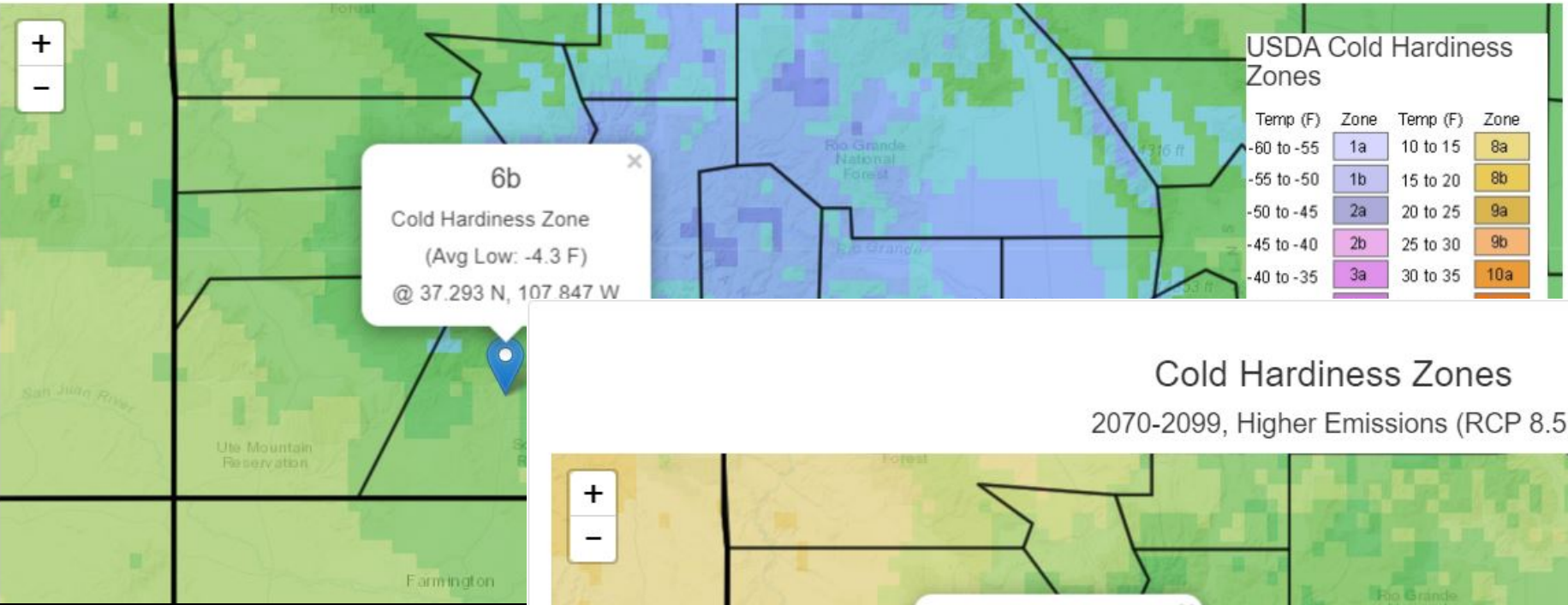


Change (mm)



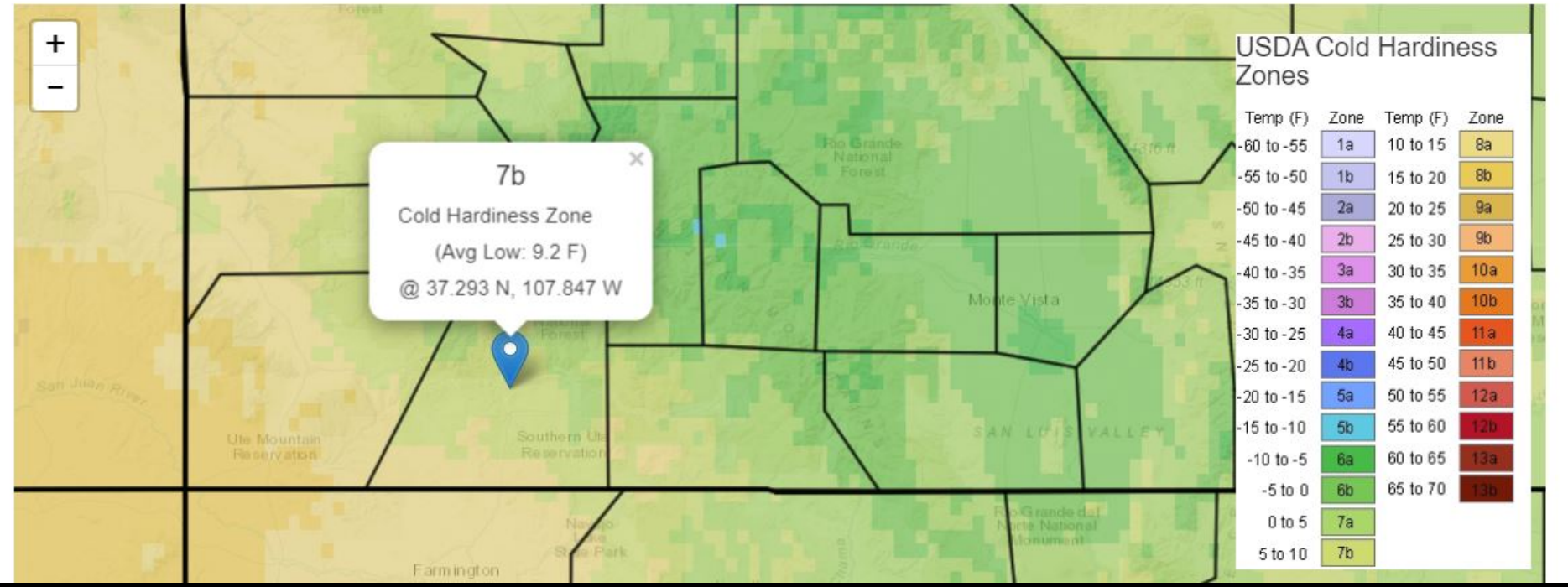
Cold Hardiness Zones

1971-2000, Historical Emissions



Cold Hardiness Zones

2070-2099, Higher Emissions (RCP 8.5)



Growing Season

Local Projections: Growing Season
Higher Emissions (RCP 8.5)

Durango CO (37.2753 ° N, 107.8801 ° W)

1990s

ANNUAL (Jan -Dec)



LAST FREEZE / FIRST FREEZE

May 22 / Oct 1

LENGTH

132 days

2025s

ANNUAL (Jan -Dec)



LAST FREEZE / FIRST FREEZE

May 12 / Oct 8

LENGTH

148 days

2055s

ANNUAL (Jan -Dec)



LAST FREEZE / FIRST FREEZE

May 4 / Oct 16

LENGTH

166 days

2085s

ANNUAL (Jan -Dec)



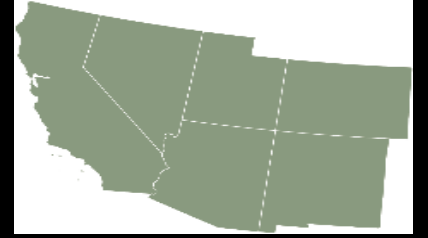
LAST FREEZE / FIRST FREEZE

Apr 22 / Oct 14

LENGTH

174 days

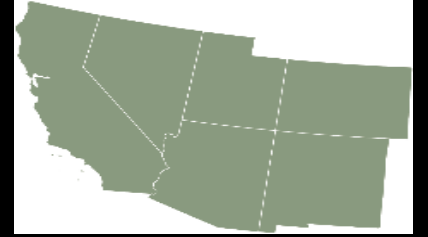
25 Key Message #1



Water Resources

Water for people and nature in the Southwest has declined during droughts, due in part to human-caused climate change. Intensifying droughts and occasional large floods, combined with critical water demands from a growing population, deteriorating infrastructure, and groundwater depletion, suggest the need for flexible water management techniques that address changing risks over time, balancing declining supplies with greater demands.

25 Key Message #2



Ecosystems and Ecosystem Services

The integrity of Southwest forests and other ecosystems and their ability to provide natural habitat, clean water, and economic livelihoods have declined as a result of recent droughts and wildfire due in part to human-caused climate change. Greenhouse gas emissions reductions, fire management, and other actions can help reduce future vulnerabilities of ecosystems and human well-being.

Actions Responding to Climate Change

