

# Northern Great Plains

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## Key Message 25.1

### Climate Change Is Compounding the Impacts of Extreme Events

The Northern Great Plains region is experiencing unprecedented extremes related to changes in climate, including severe droughts (*likely, high confidence*), increases in hail frequency and size (*medium confidence*), floods (*very likely, high confidence*), and wildfire (*likely, high confidence*). Rising temperatures across the region are expected to lead to increased evapotranspiration (*very likely, very high confidence*), as well as greater variability in precipitation (*very likely, high confidence*).

## Key Message 25.2

### Human and Ecological Health Face Rising Threats from Climate-Related Hazards

Climate-related hazards, such as drought, wildfire, and flooding, are already harming the physical, mental, and spiritual health of Northern Great Plains region residents (*virtually certain, high confidence*), as well as the ecology of the region (*very likely, medium confidence*). As the climate continues to change, it is expected to have increasing and cascading negative effects on human health and on the lands, waters, and species on which people depend (*very likely, medium confidence*).

## Key Message 25.3

### Resource- and Land-Based Livelihoods Are at Risk

The Northern Great Plains region is heavily reliant on agriculture and resource-based economies, placing livelihoods at risk from the impacts of climate change and related policy. Agriculture and recreation will see some positive effects but primarily negative effects related to changing temperature and precipitation regimes (*likely, medium confidence*). Energy-sector livelihoods will be affected as emissions-reductions policies drive shifts away from fossil fuel sources (*likely, high confidence*). Climate change is expected to test the adaptive resilience of the region's residents, in particular rural, Indigenous, and low-income immigrant populations (*likely, medium confidence*).

## Key Message 25.4

### Climate Response Involves Navigating Complex Trade-Offs and Tensions

Climate change is creating new, and exacerbating existing, tensions and trade-offs between land use, water availability, ecosystem services, and other considerations in the region, leading to decisions that are expected to benefit some and set back others (*very high confidence*). Decision-makers are navigating a complicated landscape of shifting demographics, policy and regulatory tensions, and barriers to action (*high confidence*). Changes in temperature and precipitation averages, extremes, and seasonality will alter the productivity of working lands, resulting in land-use shifts to alternative crops or conversion to grasslands (*likely, medium confidence*). Shifts in energy demand, production, and policy will change land-use needs for energy infrastructure (*likely, medium confidence*).

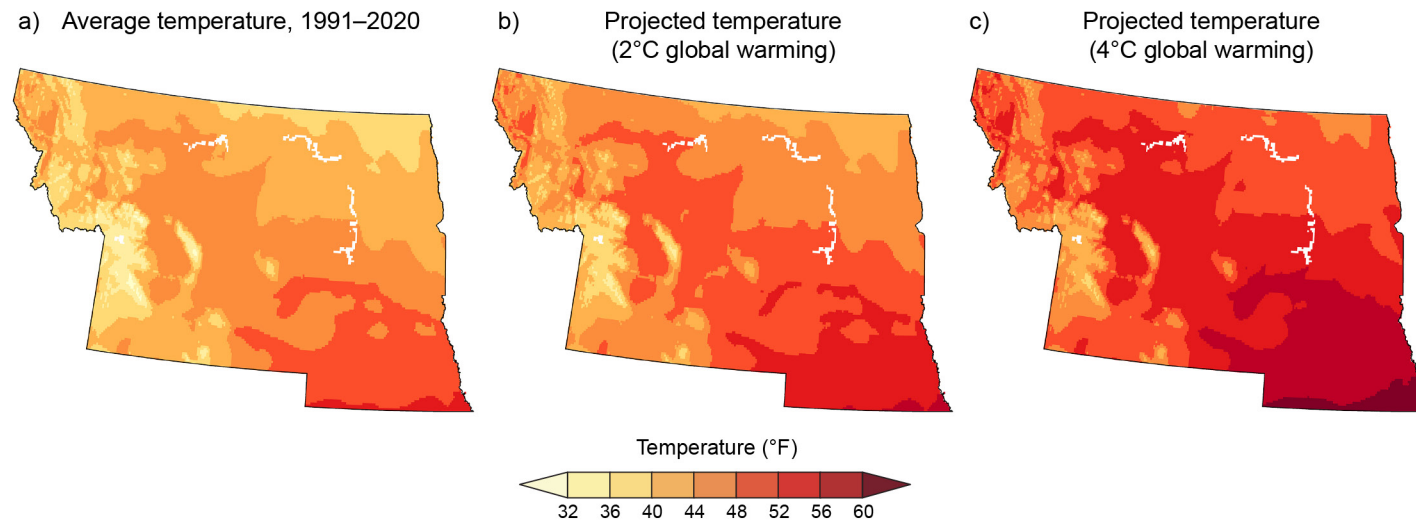
## Key Message 25.5

### Communities Are Building the Capacity to Adapt and Transform

Adaptation is underway in the Northern Great Plains to address the effects of climate change. Agricultural communities are shifting toward climate adaptation measures such as innovative soil practices, new drought-management tools, and water-use partnerships (*medium confidence*). Several Tribal Nations are leading efforts to incorporate Traditional Knowledge and governance into their adaptation plans (*high confidence*). Resource managers are increasingly relying on tools such as scenario planning to improve the adaptive capacity of natural ecosystems (*medium confidence*).



## Temperature for the Northern Great Plains



### Distinctive gradients of temperature will hold with projected warming.

**Figure 25.3.** The maps show temperature averages for 1991–2020 (a) and projected temperature for global warming of 2°C (3.6°F; b) and 4°C (7.2°F; c) above preindustrial levels for the Northern Great Plains region. Current and projected values demonstrate distinctive gradients of temperature from southeast to northwest, with implications for climate impacts and effective adaptation. White areas are large water bodies. Figure credit: USGS, NOAA NCEI, CISS NC, and University of Wyoming. See figure metadata for additional contributors.

### Recommended Citation

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