

Climate Analysis

Key Points

- Temperatures in the Wyoming Basin Rapid Ecoregional Assessment project area have warmed by almost 1.1 °Celsius (°C; 2 °Fahrenheit [°F]) in the past 30 years, which is statistically significant. In contrast, precipitation does not show a statistically significant trend compared to precipitation variability of the recent past. (Lower two map panels following page)
- Based on the climate models evaluated for the REA, the Wyoming Basin is projected to warm by about 1.4 °C (2.5 °F), with a modeled range of 0.8–1.9 °C (1.5–3.5 °F) by 2030. The projected increase in temperature is higher for the period ending in 2060, with an average increase of about 2.7 °C (4.9 °F) and a range from 1.5–2.7 °C (2.7–4.9 °F).
- Projections indicate an increase in the minimum temperatures of the coldest days, and an increase in the frequency and temperature of the hottest days. Projected temperatures for 2060 indicate that summers may be as warm as or warmer than the hottest summers in the recent climate.
- Climate projections do not show a dramatic change in annual average precipitation. Historical variability in precipitation is high.
- Snow water equivalent on April 1 is projected to decrease by at least 20 percent or more by 2030 in many areas, although not in the higher mountains. Based on projections of earlier snowmelt and runoff, soil moisture has the potential to increase earlier in the spring and dry out earlier in the growing season.
- Paleoclimate reconstructions of streamflow show considerable variability in records within the last 500 years, including years-to-decades of wetter or drier conditions in reconstructed streamflows.
- The projected changes in temperature and shifts in precipitation and streamflow variables have implications for the Wyoming Basins ecosystems. These could include changes in elevation of climate zones, shifts in timing of peak streamflow, shifts in the seasonal pattern of soil moisture, and a longer growing season. Projected changes in the distribution of bioclimatic conditions conducive for ecological communities indicates the potential for a decrease in the area of sagebrush steppe, montane and subalpine forests, and alpine zones for climate scenario I (see Chapter 2). (Map below and top map panel following page)



