

# Hovenweep National Monument

## Water Year 2020 Climate Summary

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This document summarizes current temperature and precipitation anomalies relative to 30-year (1981-2010) averages for Hovenweep National Monument (HOVE) during the 2020 water year (October 2019 through September 2020). The data for these analyses were collected at the Visitor Center Co-op Station by NPS personnel and downloaded from the [Global Historical Climatology Network](#) on 26 October, 2020 using R (ver. 4.0.3, R Core Team, 2020) and the rnoaa package (ver 1.2.0, Chamberlain, et al. 2020). The data used for these analyses include the daily high temperature (TMAX), daily low temperature (TMIN), and daily precipitation accumulation (PRCP). Averages were calculated using the mean for the period of interest.

### Temperature

Water year 2020 was the 7th warmest water year in the 64-year record for HOVE (1957 to 2020); the average annual temperature was 1.43°C above the 30-year average. This summary suggests that temperatures are increasing 0.55°C per decade (figure 1).

The average annual TMAX was 1.43°C above the 30-year average and has been increasing 0.32°C per decade (figure 2A). The average monthly TMAX exceeded the 30-year monthly average 10 times (Nov, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, and Sep; figure 3A).

The annual average TMIN was 1.31°C above average and has been increasing 0.71°C per decade (figure 2B). The monthly average TMIN exceeded the 30-year monthly average 9 times (Dec, Jan, Mar, Apr, May, Jun, Jul, Aug, and Sep; figure 3B).

### Precipitation

Water year 2020 was the 12th driest on record for HOVE. Total precipitation was 68.6 mm less than the 30-year average, measuring 194.4 mm of precipitation. This summary suggests that precipitation is decreasing at a rate of 0.14 mm per decade (figures 4A).

Dec, Mar, and Jun received above average precipitation (figures 4B), but were not enough to compensate for the 9 months that were below average (Oct, Nov, Jan, Feb, Apr, May, Jul, Aug, and Sep; figure 4C).

## Figures

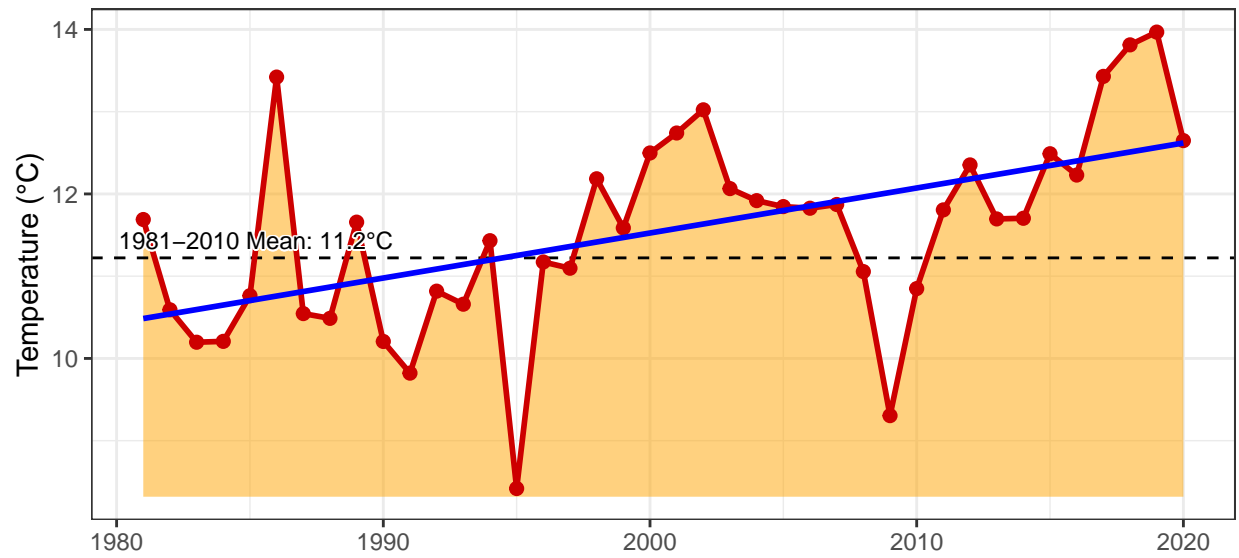


Figure 1: Average annual temperatures.

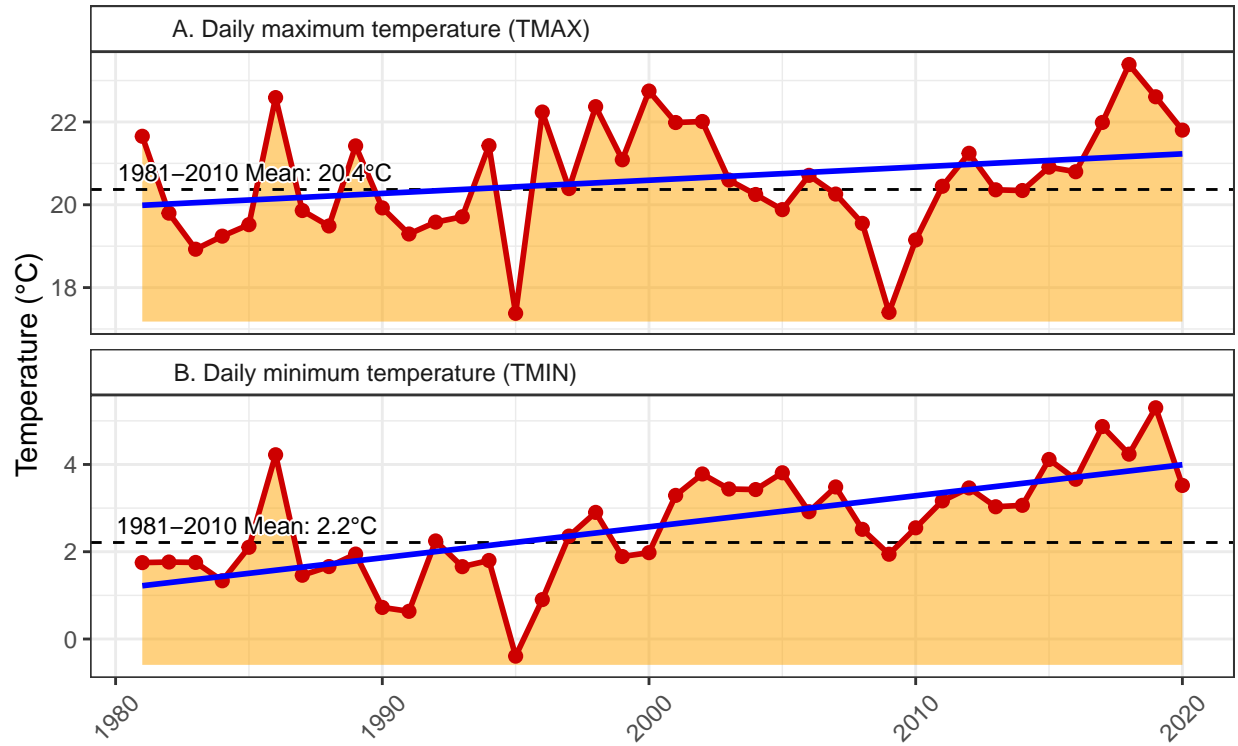


Figure 2: Average annual temperatures (TMAX/TMIN).

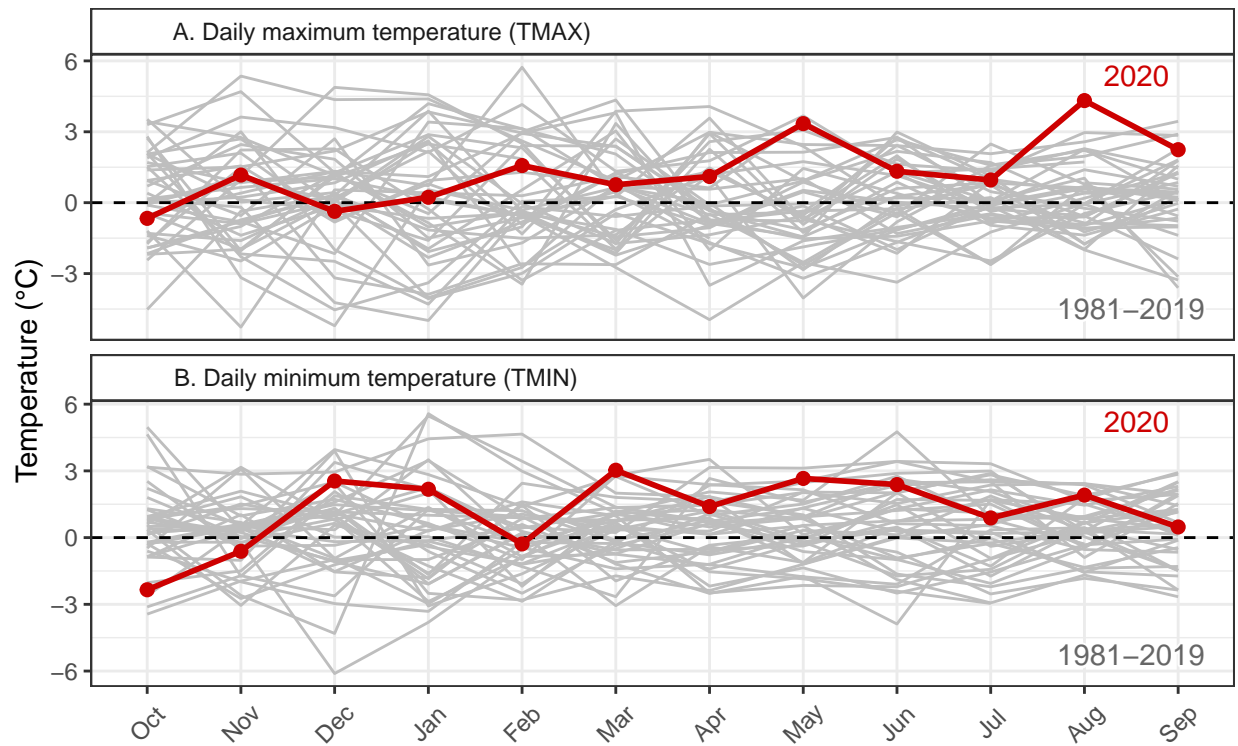
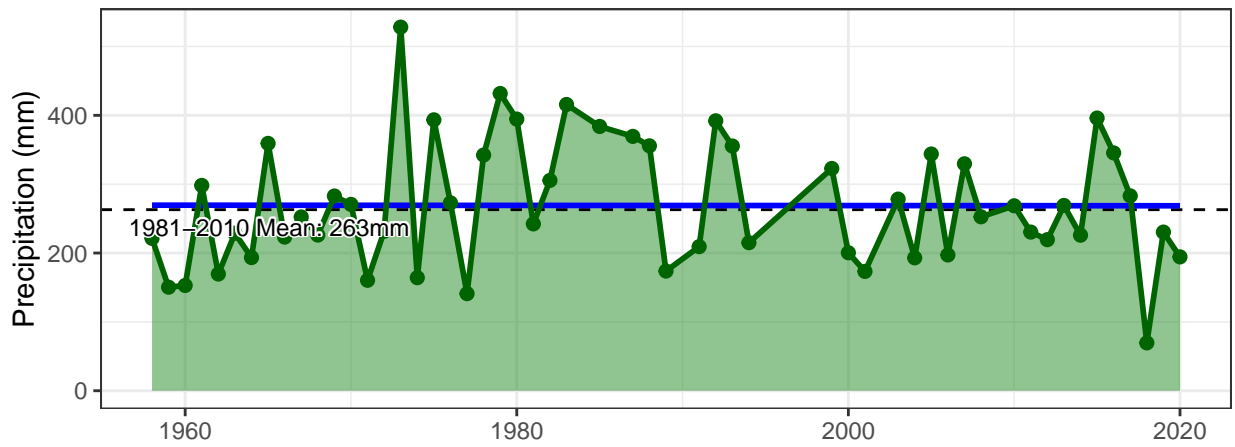
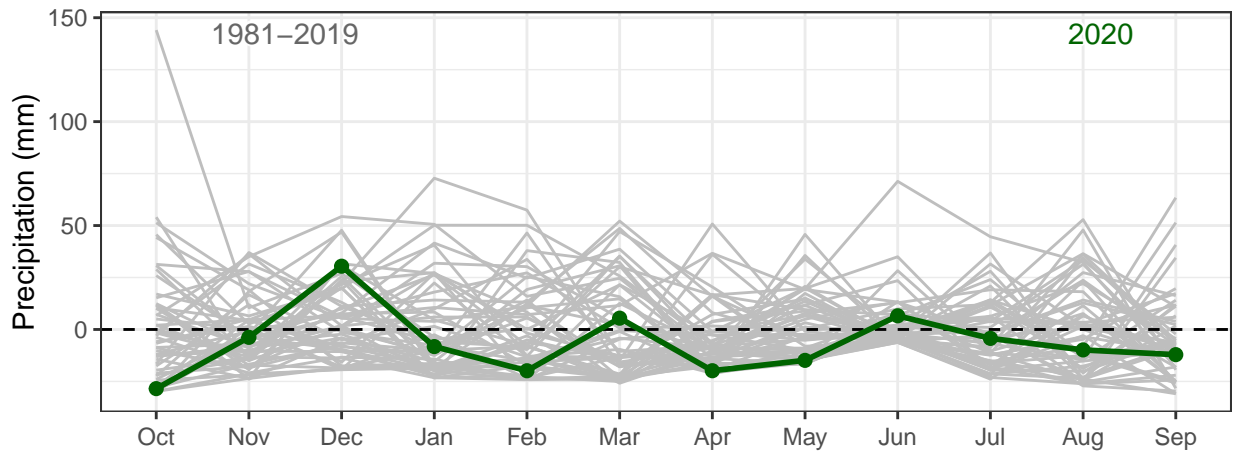


Figure 3: Average monthly temperatures (TMAX/TMIN).

**A.** Water year precipitation totals



**B.** Monthly departure relative to other water years



**C.** Accumulating departure through the water year

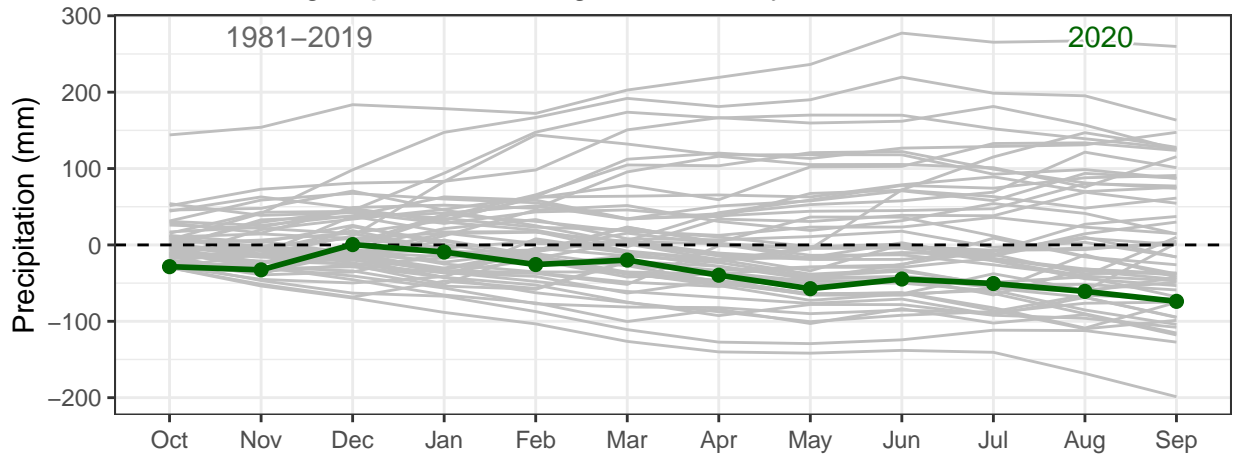


Figure 4: Annual precipitation totals and departures.