



Climate in Yellowstone and Grand Teton National Parks

Climate is the set of long-term, average meteorological conditions that occur over decades and centuries. Unlike weather, which fluctuates greatly in the short term and is difficult to predict, climate is relatively stable, and many organisms have adapted to its predictable rhythms. As a result, climate is a driving force behind many ecological processes. For example, average temperature and moisture determine which species can live in an area, the rate at which they grow, and the frequency and severity of wildfires. Temperature and precipitation patterns also strongly influence the intensity and timing of stream flows, which are important factors in both agricultural and natural ecosystems.

2012 Climate at a Glance

The Greater Yellowstone Network annual climate report for 2012 (Jean et al. 2013) summarizes climate data from multiple climate stations in the Greater Yellowstone Area (Figure 1). The report summarized in this brief, describes precipitation, temperature, snowpack, and streamflow compared mainly to a standard 30-year climatological reference or “normal” period, 1981-2010.

Precipitation

Annual precipitation was lower than average at Cooke City 2, Alta 1NNW, Ashton 1N, and Cody COOP stations; near normal at Yellowstone Park Mammoth, Lake Yellowstone, and Snake River stations; and above normal at Northeast Entrance, Fisher Creek, Parker Peak, and Old Faithful. Seasonally, precipitation during the months of February and March, and in some places April and May, tended to be above average, however by summer, precipitation declined, and June, August, and September were far below average.

Drought conditions developed early in the summer and by the close of the year the U.S. Drought Monitor had classified the Yellowstone region as having extreme drought conditions.

Temperature

The year 2012 featured above-average temperatures throughout Yellowstone and Grand Teton national parks and the western United States as a whole. Average annual daily temperatures were especially warm, ranking as the warmest on record for the past 50 years at Yellowstone Park Mammoth and Lake



NPS/RACHEL SIMONS

High country in the Greater Yellowstone Area.

Yellowstone, and the second warmest at Snake River and Moose COOP stations. Temperatures climbed above freezing earlier than average in the spring and continued later in the fall. Consequently, the number of Accumulated Growing Degree Days were higher than average.

Snowpack

Maximum snowpack in the mountains tended to be at or above the 1981-2010 average, yet below average when compared to the 1971-2000 time period. Snowmelt began earlier in most places and melt-off occurred several days to weeks earlier than either average period.

Streamflow

The timing of peak streamflow was the same or slightly earlier than average. Total annual run-off in 2012 was 103% of average at Corwin Springs on the Yellowstone River, and 98% to 103% of average on the Snake River at Moose and above Jackson Lake at Flagg Ranch, respectively.

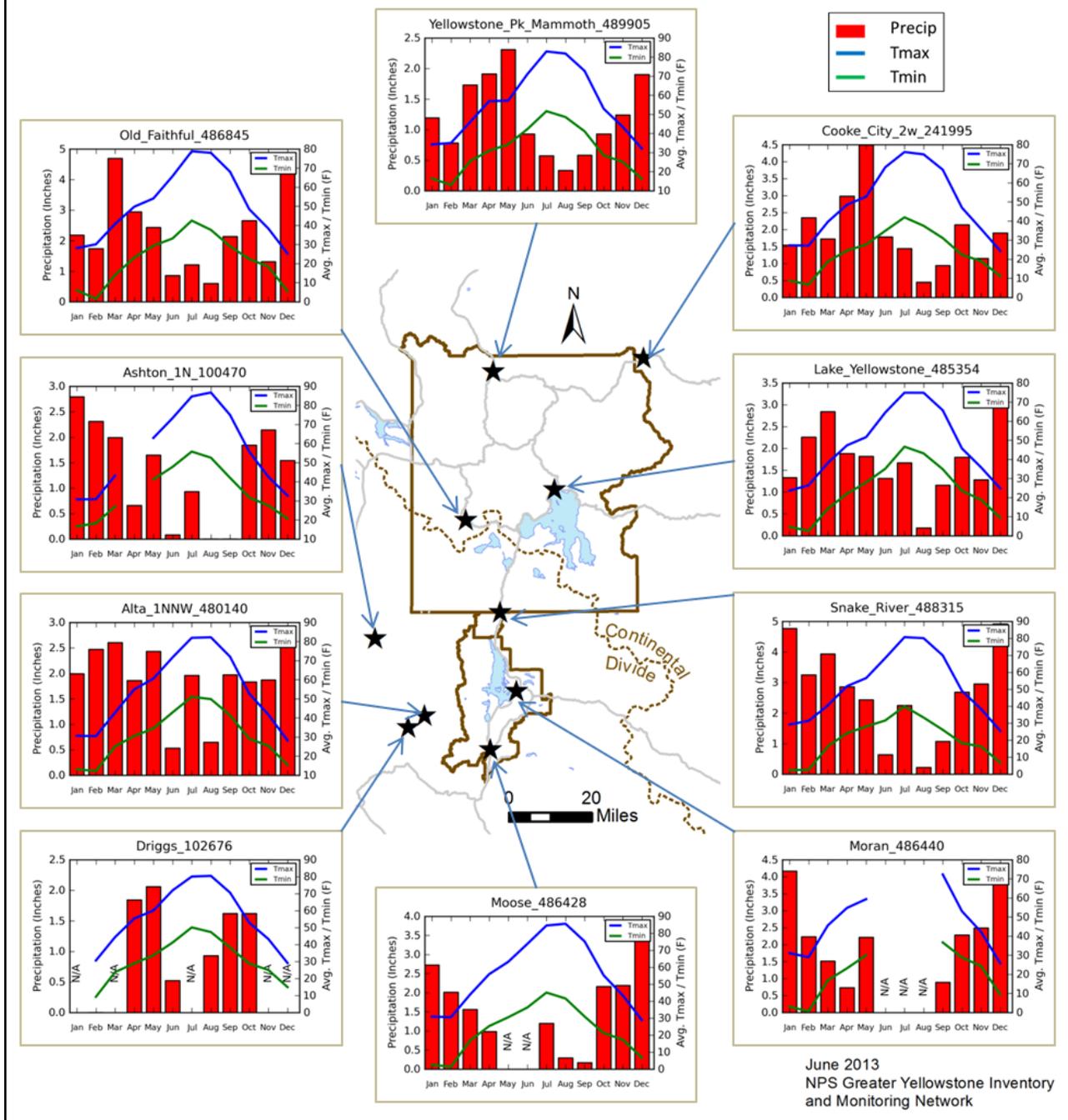


Figure 1. Monthly precipitation and average daily maximum temperature (Tmax) and average daily minimum temperatures (Tmin) during 2012 at key stations in and near Yellowstone and Grand Teton national parks, and the John D. Rockefeller, Jr. Memorial Parkway.