

TAHOE:  
**STATE  
OF THE  
LAKE**  
REPORT  
**2020**

**METEOROLOGY**

## Air temperature - smoothed daily maximum and minimum

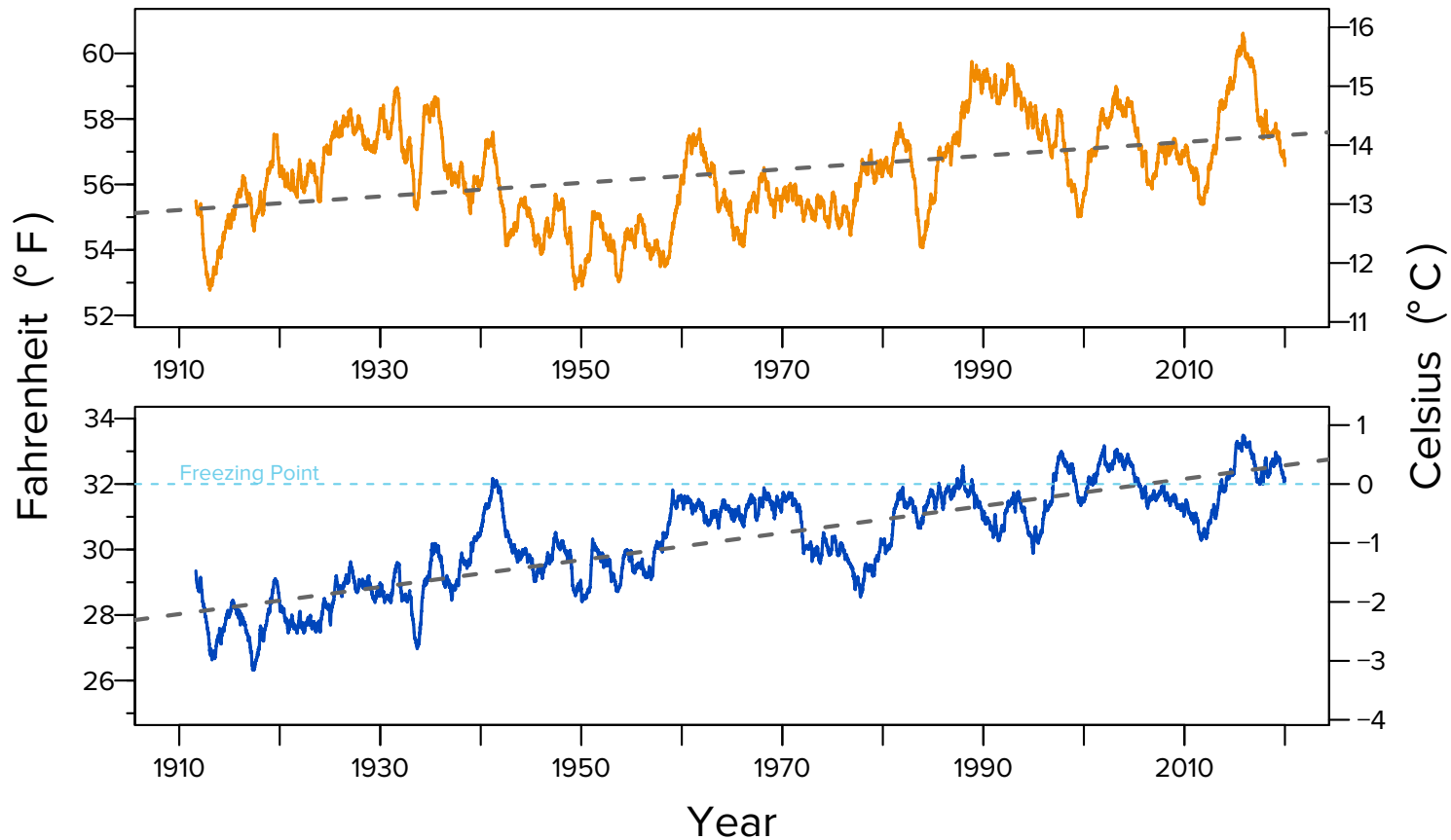
Daily since 1911

Over the last 108 years, daily air temperatures measured at Tahoe City have increased. The long-term trend in average daily minimum temperature (bottom figure) has increased by 4.47 °F (2.48 °C) and the long-term trend in average daily maximum temperature

(upper figure) has risen by 2.25 °F (1.25 °C). The trend line for the minimum air temperature now exceeds the freezing temperature of water, which is leading to more rain and less snow as well as earlier snowmelt at Lake Tahoe. These data are smoothed using a two-year running

average to remove daily and seasonal fluctuations.

Data source: Long-term NOAA daily maximum and minimum temperature data set.



## Air temperature - annual average maximum and minimum

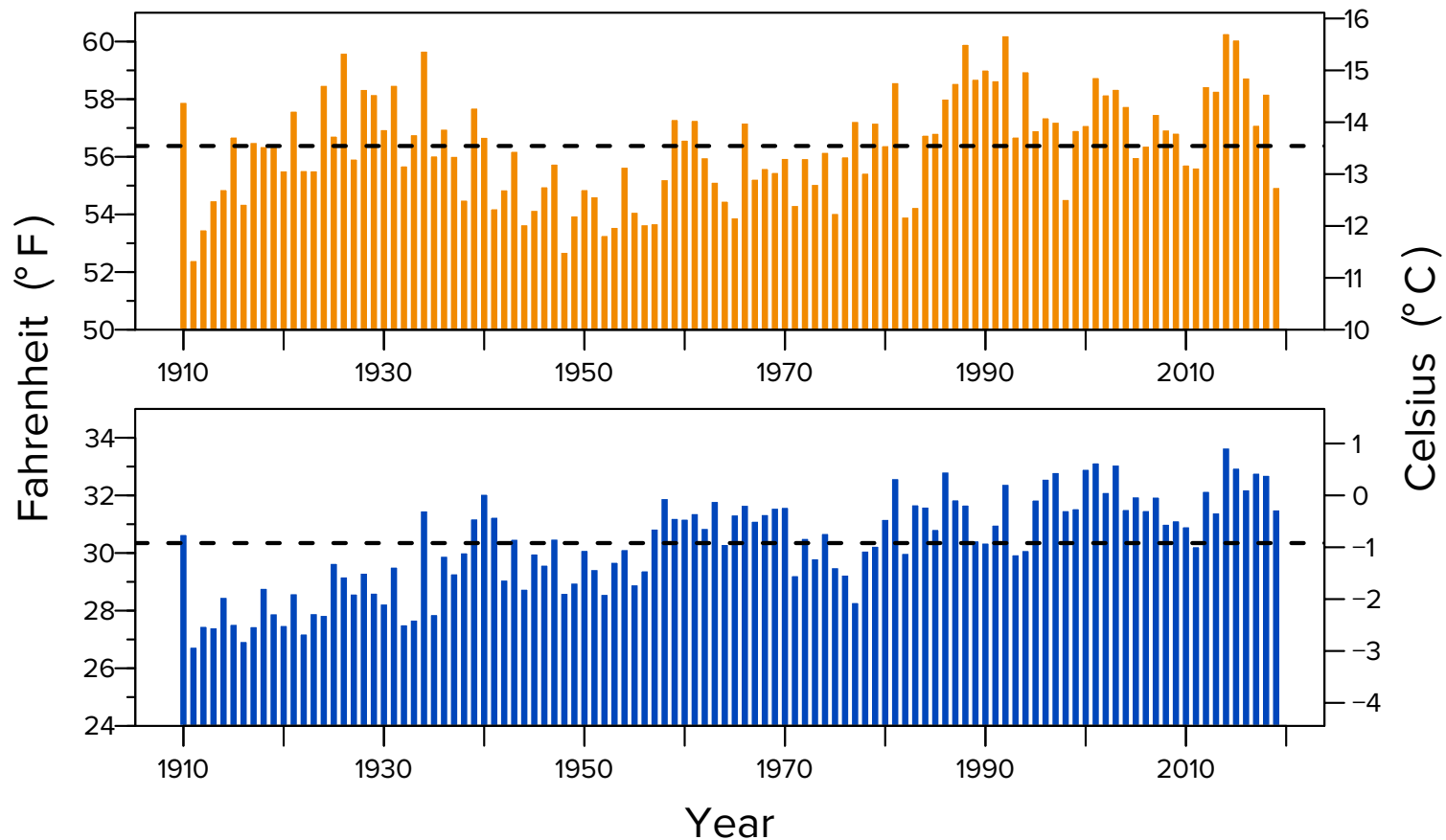
Since 1910

Annual average maximum (upper figure) and minimum (lower figure) air temperatures in 2019 were cooler than the previous year. The 2019 annual average maximum air temperature was below the long-term average (dashed line) temperature. The maximum temperature

was 54.95 °F (12.8°C), a decrease of 3.2 °F from the previous year. The 2019 annual average minimum was 31.5 °F (-0.3 °C), slightly lower than the previous year, but still above the long-term average temperature. The long-term means for the maximum and the minimum are

56.4 °F (13.6 °C) and 30.3 °F (-0.96 °C), respectively.

Data source: Long-term NOAA daily maximum and minimum temperature data set measured at Tahoe City.



## Below-freezing air temperatures

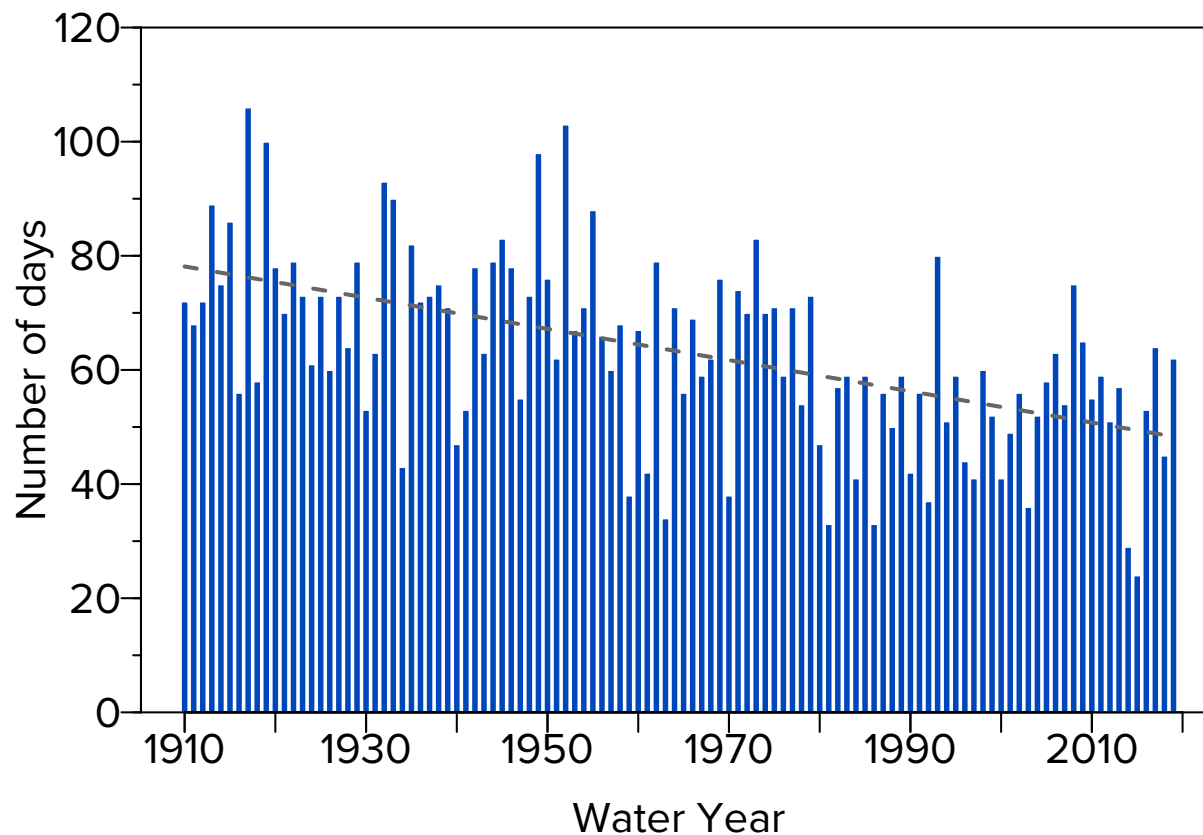
Yearly since 1910

The method used for this analysis sums the number of days with daily average temperatures below freezing between December 1 and March 31 for each water year (WY). Although year-to-year variability is high, the number of days when air temperatures averaged

below-freezing has declined by almost 30 days since 1911. In WY 2019, the number of freezing days was 62, well above the declining long-term trend-line. This is consistent with the lower air temperatures in 2019.

Data source: Long-term NOAA daily maximum and minimum temperatures data set measured at Tahoe City.

Note: The water year extends from October 1 through September 30.



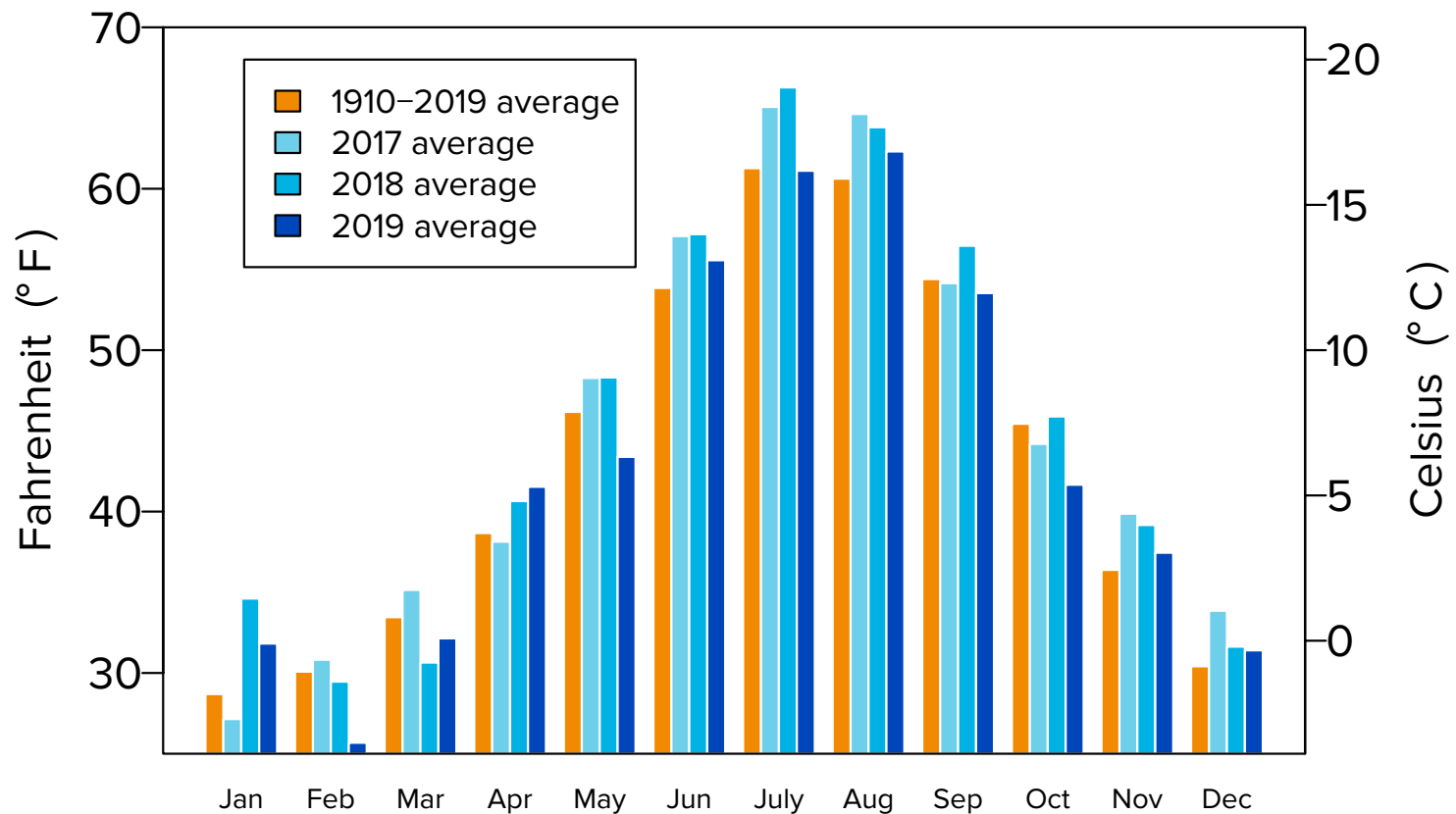
## Monthly air temperature

2017, 2018, 2019, and 1910 to 2019

In 2019, monthly air temperatures were colder in every month of the year except April compared to 2017 and 2018. February was particularly cold with the

2019 monthly air temperature being 4.4 °F below the long term average. This was the coldest February since 1956, and the eighth coldest on record.

Data source: Long-term NOAA daily maximum and minimum temperatures data set.



## Annual precipitation

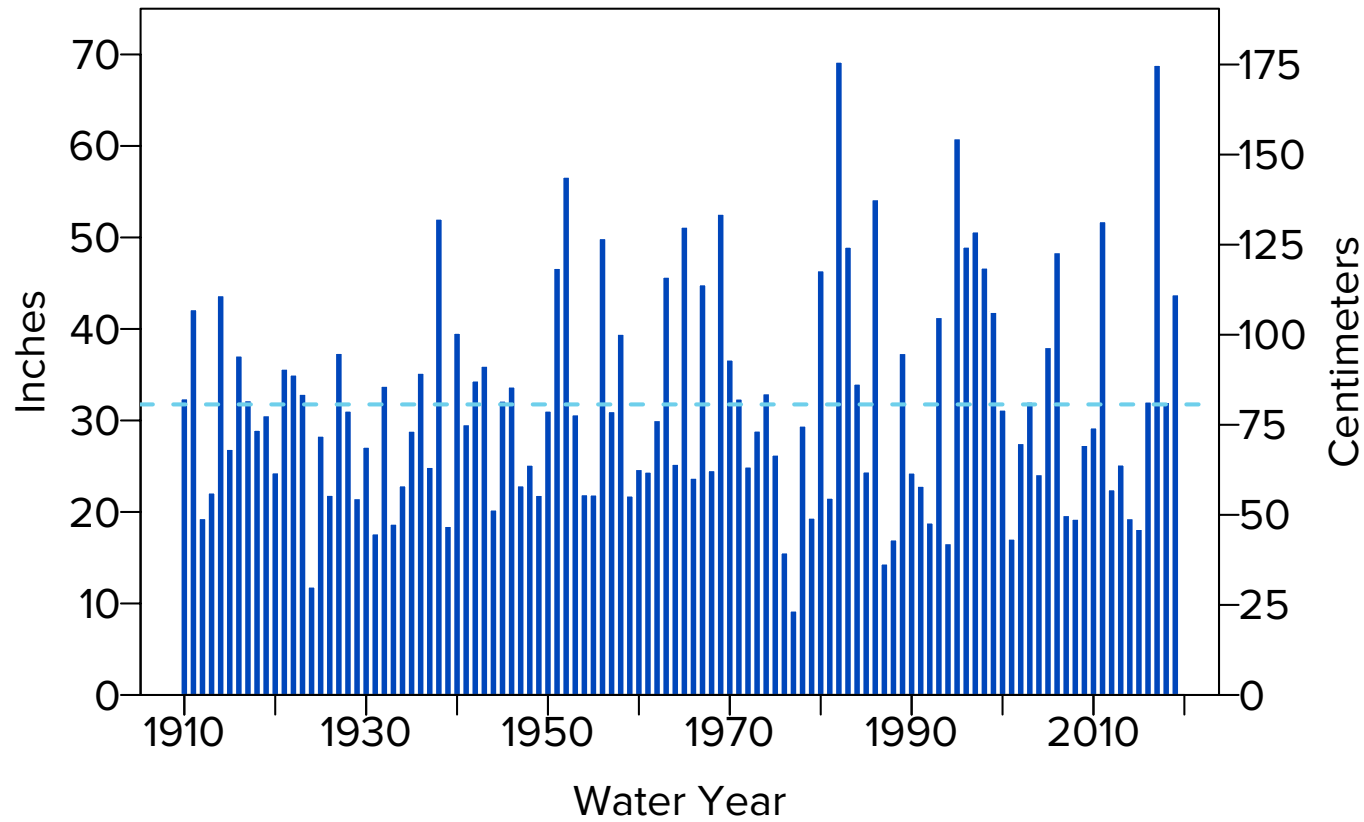
Yearly since 1910

From 1910 to 2019, average annual precipitation (water equivalent of rain and snow) at Tahoe City was 31.8 inches. The maximum recorded was 69.2 inches in 1982. The minimum recorded was 9.2 inches in 1977. At 43.8 inches, 2019 was

above the long-term average. The long-term average is shown by the dashed line. Generally, there is a gradient in precipitation from west to east across Lake Tahoe, with almost twice as much precipitation falling on the west side of

the lake. Precipitation is summed over the water year, which extends from October 1 through September 30.

Data source: Long-term NOAA daily precipitation data set.



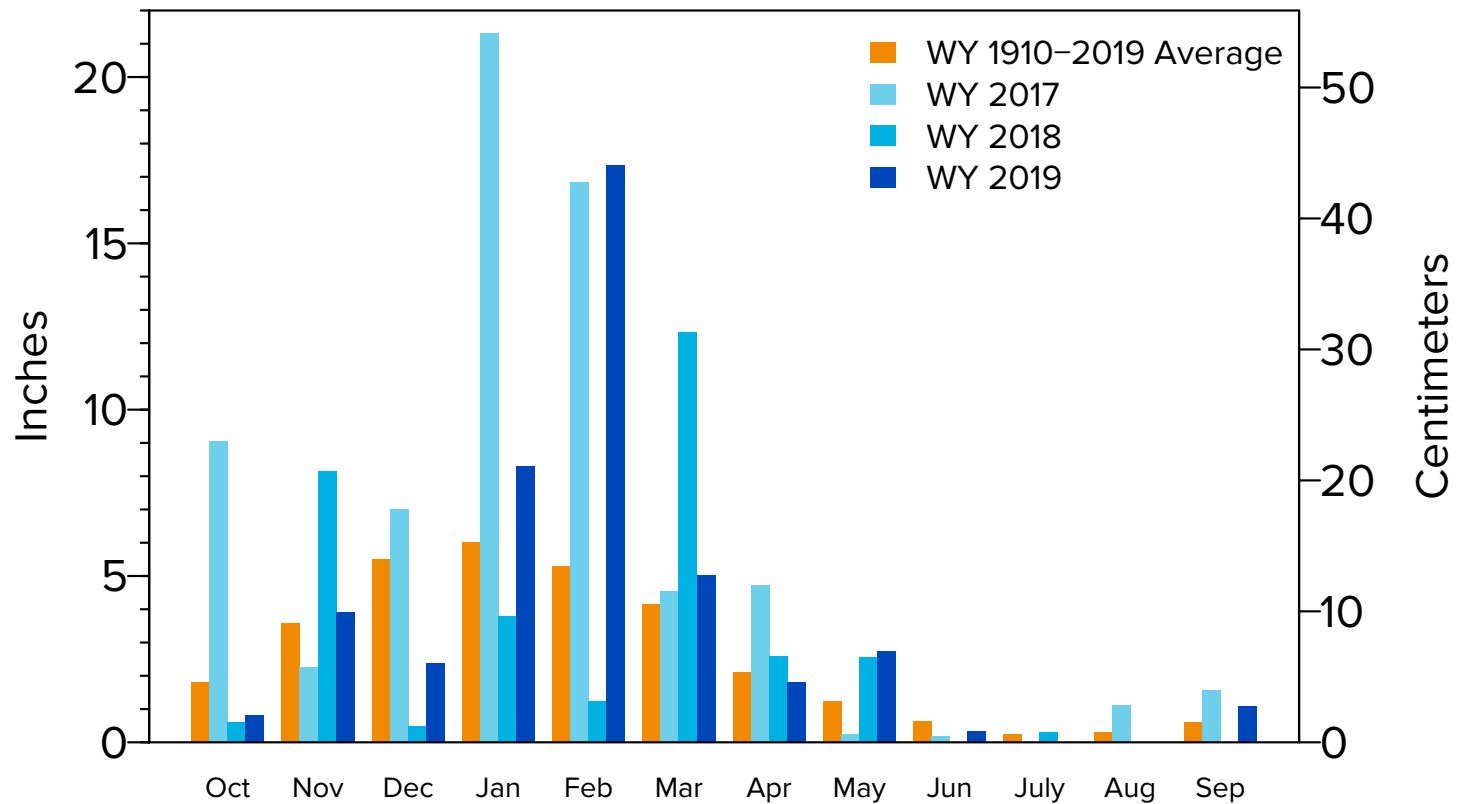
## Monthly precipitation

2017, 2018, 2019 and 1910 to 2019

The 2019 water year was well above the long-term average in total precipitation at 43.8 inches compared with the long-term average of 31.5 inches. Precipitation

in the month of February, at 17.4 inches, represented 40 percent of the annual total. The 2019 water year extended from October 1 through September 30.

Data source: Long-term NOAA daily precipitation data set.



## Snow as a fraction of annual precipitation

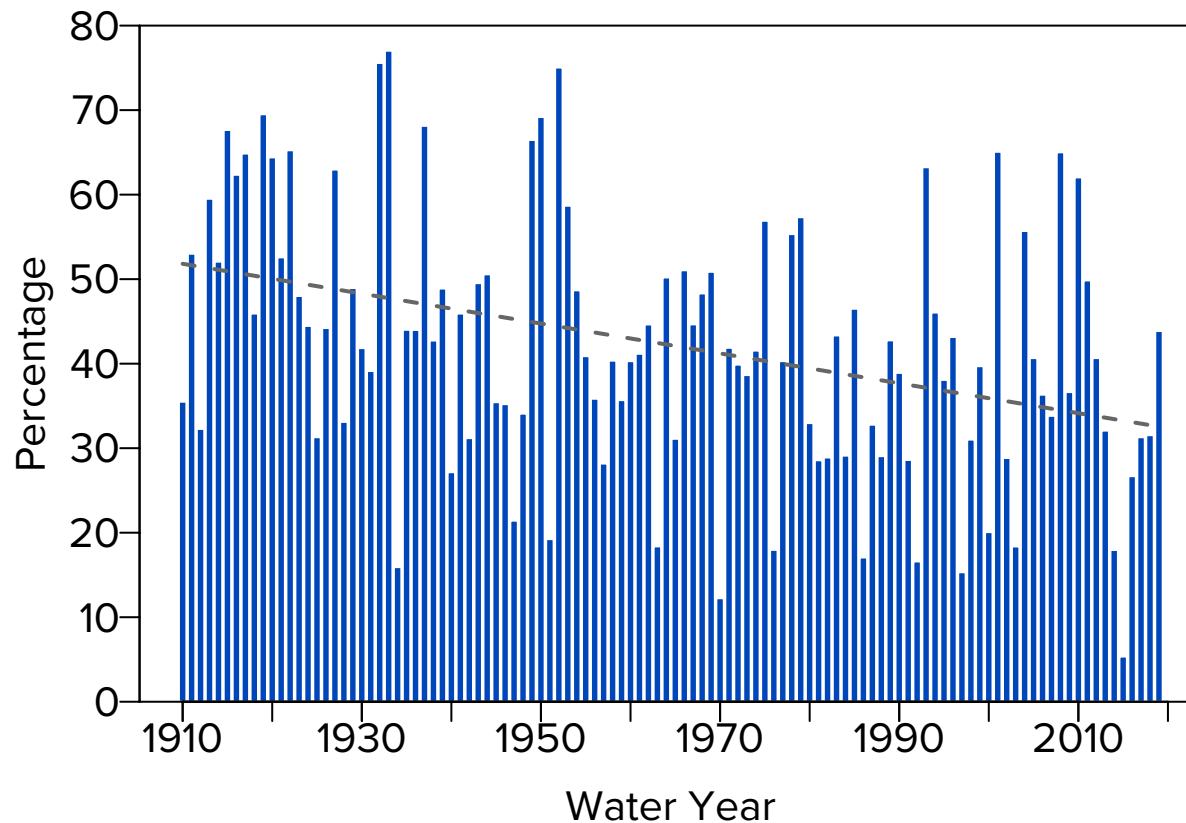
Yearly since 1910

Snow has declined as a fraction of total precipitation, from an average of 52 percent in 1910 to 32.6 percent, according to the line of best fit. In Tahoe City, snow represented 43.9 percent of the 2019 total precipitation. These data are calculated

based on the assumption that precipitation falls as snow whenever the average daily temperature (the average of the daily maximum and minimum temperatures) is below freezing.

Precipitation is summed over the water year, which extends from October 1 through September 30.

Data source: Long-term NOAA daily air temperature and precipitation data sets.





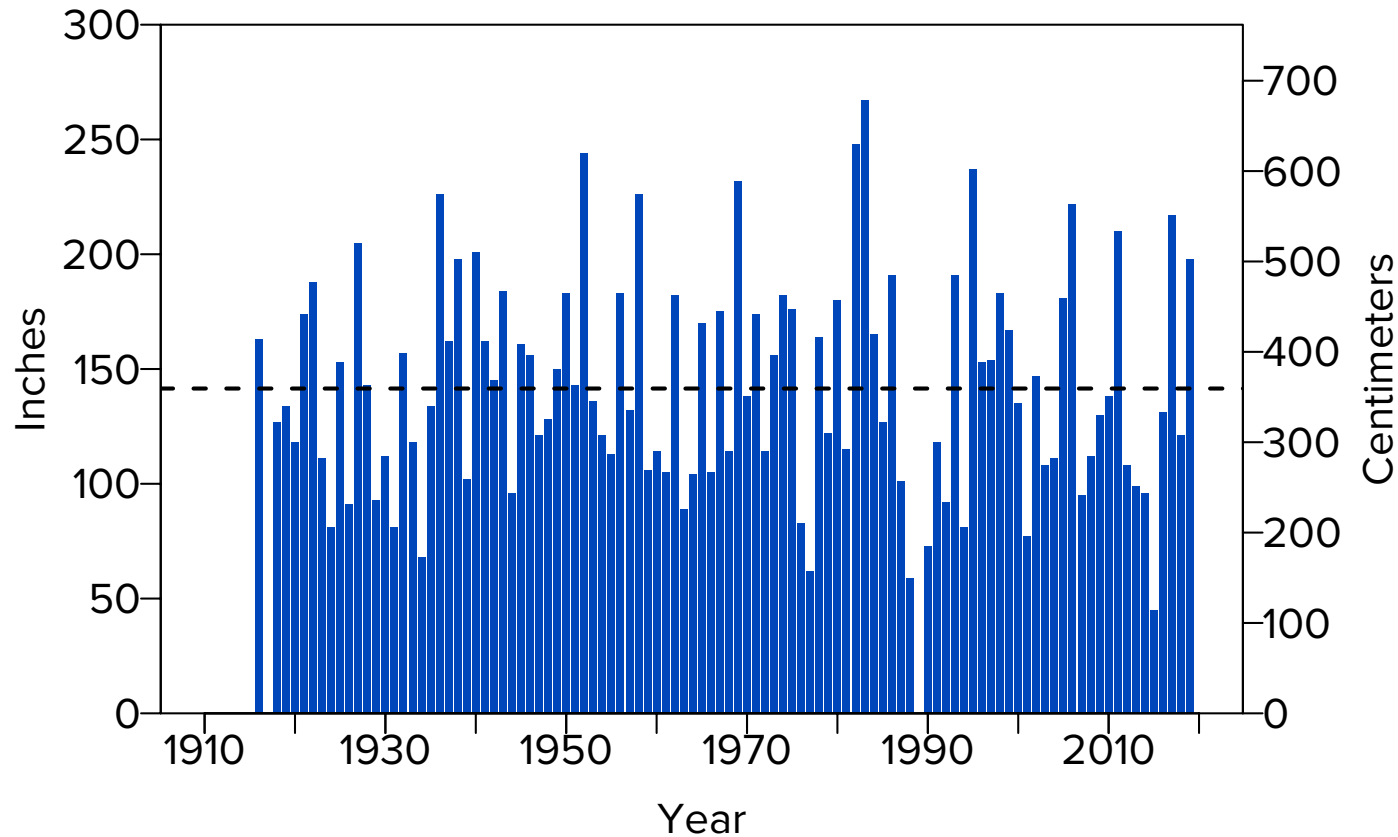
## April snowpack

Since 1916

The depth of the snowpack is measured at multiple locations throughout the Sierra over the year. Shown here are the readings taken on approximately April 1 since 1916 at the Lake Lucille Snow Course Station (located in Desolation Wilderness, elevation 8,188 feet (Lat. 38.86 deg. Long. -120.11 deg.).

Note: April snow depth data are not available for 1917 and 1989. The snow depth on March 29, 2019 was 198 inches, indicative of a wet and cold winter. The largest amount on record was 267 inches on April 5, 1983. The average snow depth over the period 1916-2019 was 142.9 inches.

Data source: USDA Natural Resources Conservation Service, California Monthly Snow Data.



## Daily solar radiation

In 2019

Solar radiation showed the typical annual pattern of increasing and decreasing sunlight, peaking at the summer solstice on June 21 or 22. Dips in daily solar radiation are primarily due to cloud

cover. Smoke and other atmospheric constituents play a smaller role. It is noteworthy that solar radiation on a clear day in mid-winter can exceed that of a cloudy day in mid-summer. The TERC

meteorological station where these data are collected is located on the U.S. Coast Guard dock at Tahoe City.

