TAHOE: STATE OF THE LAKE REPORT 2008

METEOROLOGY

UCDAVIS
TAHOE ENVIRONMENTAL
RESEARCH CENTER

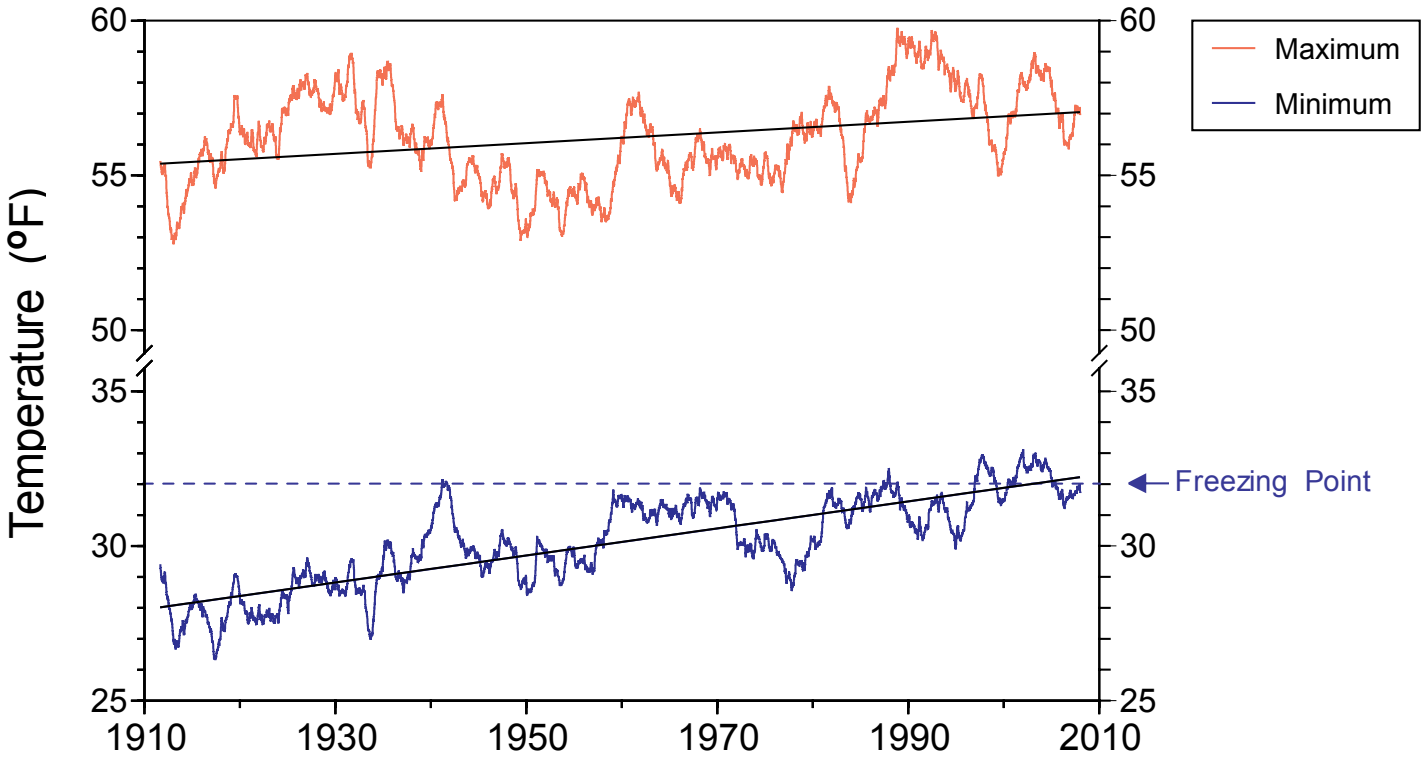
TERC.UCDAVIS.EDU

METEOROLOGY

Air temperature

Daily since 1910

Daily air temperatures have increased over the 97 years measured at Tahoe City. Daily minimum temperature has increased by more than 4 degrees F., and daily maximum temperature has risen by less than 2 degrees F. The average minimum air temperature now exceeds the freezing temperature of water, which points to more rain and less snow, as well as earlier snowmelt. These data have been smoothed by using a two-year running average to remove daily and seasonal fluctuations.

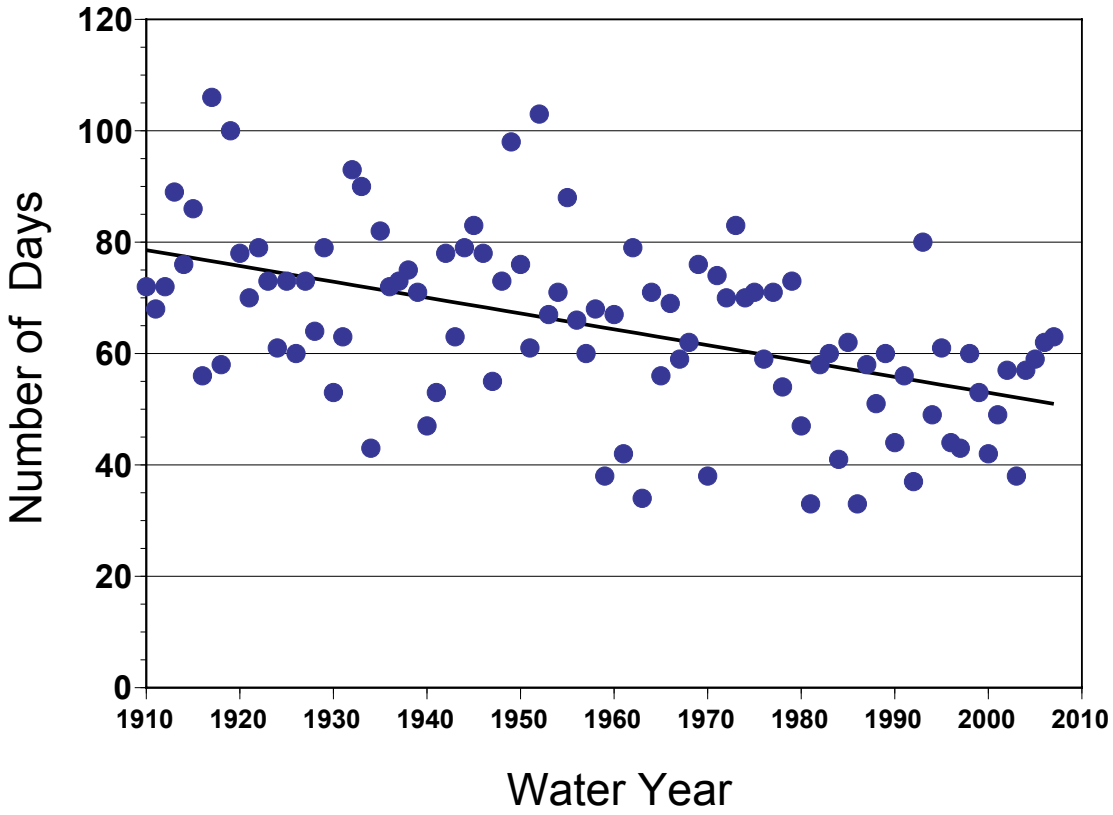


METEOROLOGY

Below-freezing air temperatures

Yearly since 1910

Although year-to-year variability is high, the number of days when temperatures averaged below freezing has declined by about 30 days since 1910. In 2007, the number of freezing days was 63.

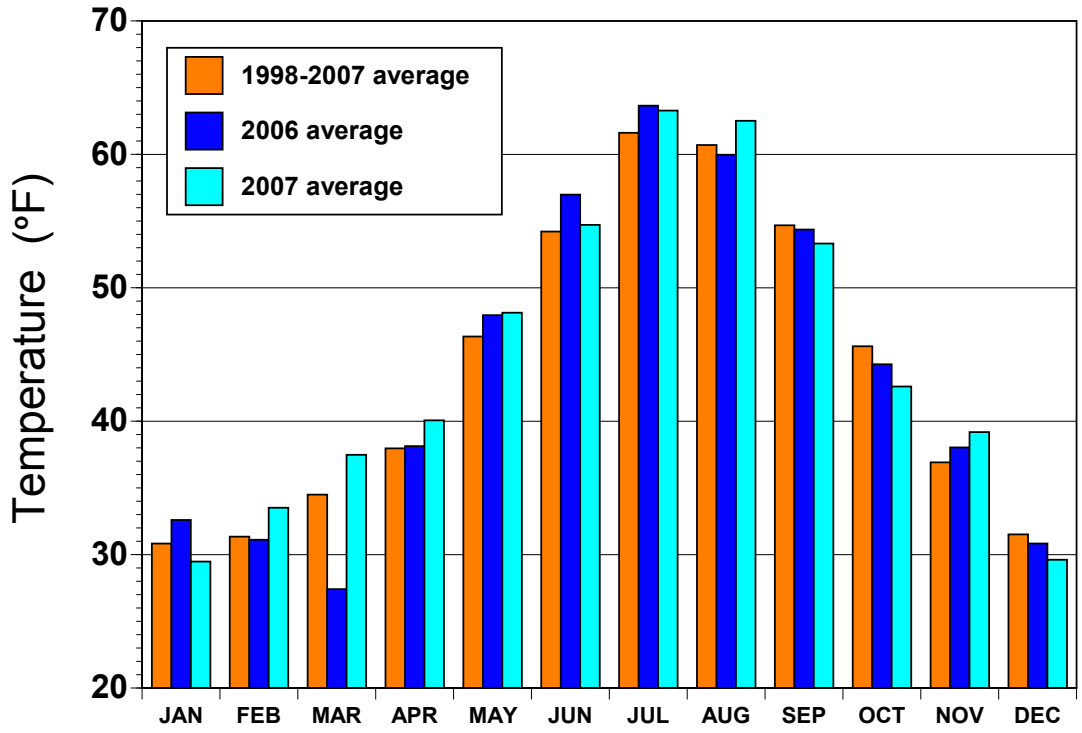


METEOROLOGY

Monthly air temperature

Since 1998

In 2007, February through May were warmer than either the previous year or the ten-year average. The months of January, September, October and December were cooler than the ten-year average.

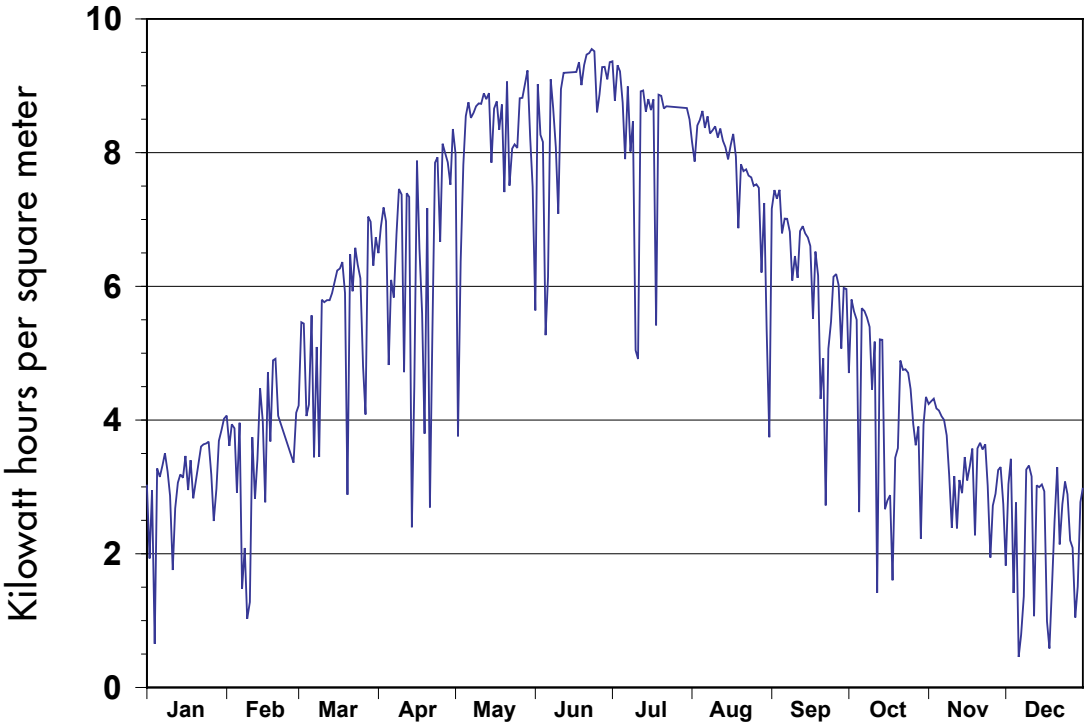


METEOROLOGY

Solar Radiation

Daily in 2007

Solar radiation showed the typical annual pattern of increasing then decreasing, peaking at the summer solstice on June 21 or 22. Dips in daily solar radiation are due to clouds, smoke and other atmospheric constituents. The smoke generated by the Angora Fire in the last week of June greatly affected solar radiation at the south shore, but did not have much effect on solar radiation at the north shore, where this sensor is located.

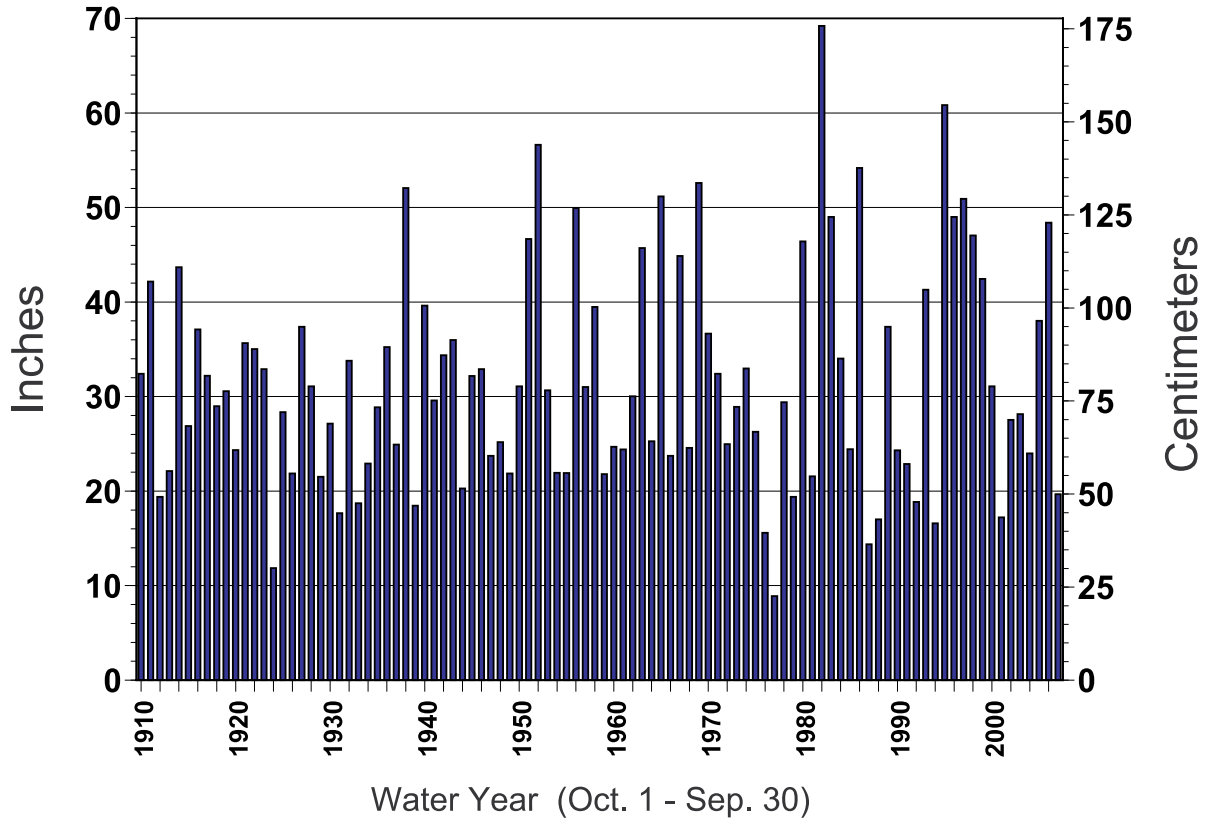


METEOROLOGY

Annual precipitation

Yearly since 1910

From 1910 to 2007, average annual precipitation (water equivalent of rain and snow) was 31.6 inches. The maximum was 69.2 inches in 1982. The minimum was 8.9 inches in 1977. 2007 was the 14th driest year on record, with only 19.7 inches of precipitation. (Precipitation is summed over the Water Year, which extends from October 1 through September 30.)

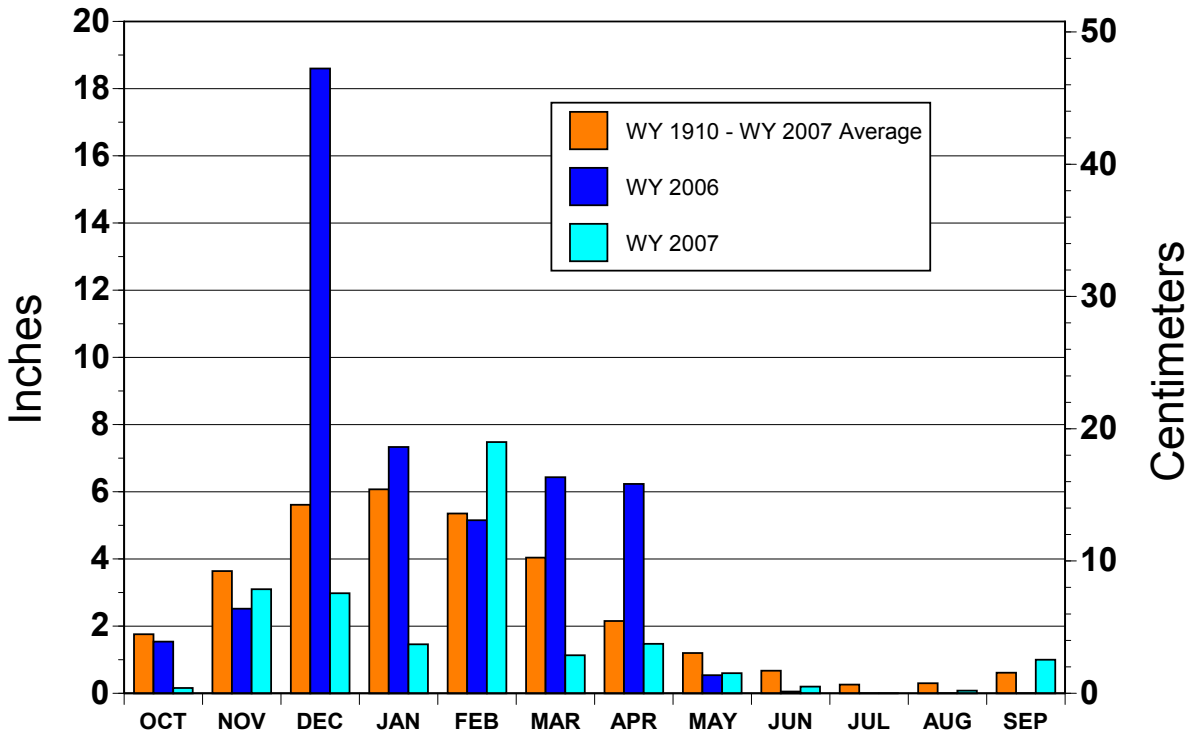


METEOROLOGY

Monthly precipitation

2006, 2007 and 1910 to 2007 Average

2007 was notable as the 14th driest year on record. Annual precipitation barely exceeded the amount received in the month of December 2006. Ten months were drier than the 97-year historical average and February was by far the wettest month. The 2007 Water Year extended from Oct. 1, 2006, through Sept. 30, 2007.

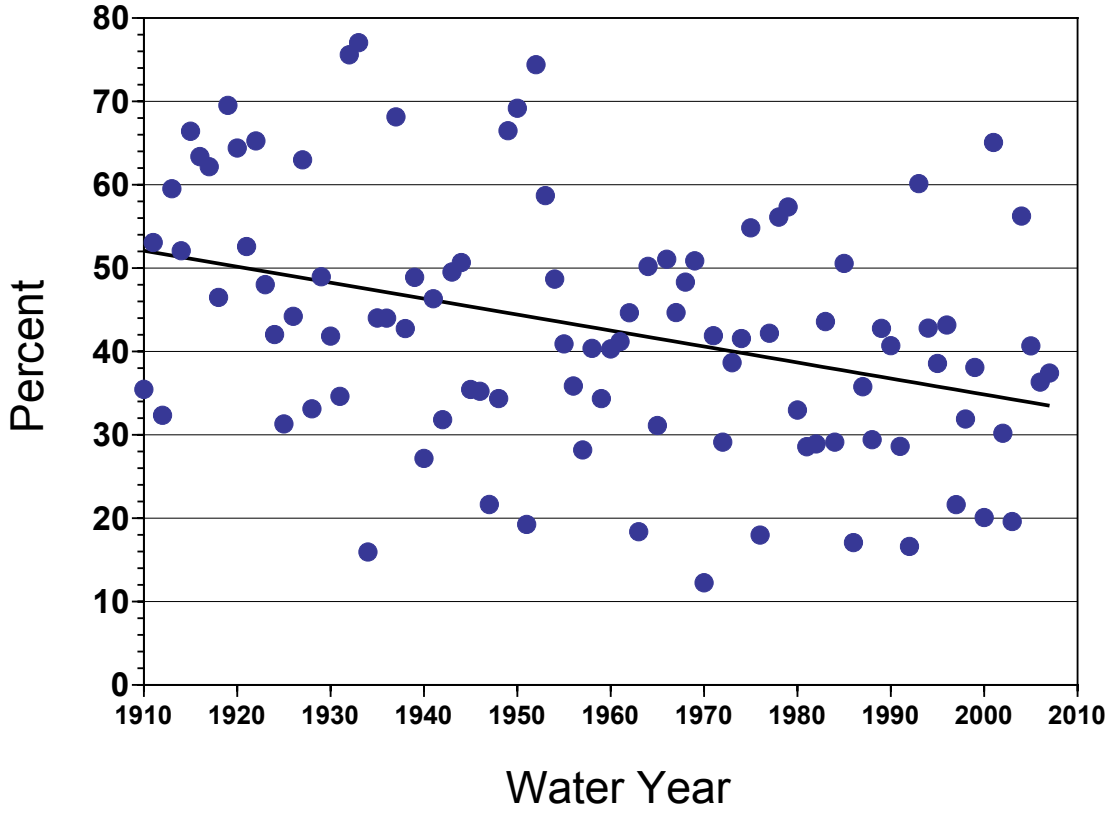


METEOROLOGY

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 34 percent in present times. In Tahoe City, snow represented 37.6 percent of 2007 total precipitation. These data assume precipitation falls as snow whenever the average daily air temperature is below freezing. (Precipitation is summed over the Water Year, which extends from October 1 through September 30.)



METEOROLOGY

Shift in snowmelt timing

Yearly since 1961

Although the date on which peak snowmelt occurs varies from year to year, since 1961 it has shifted earlier an average of 2 ½ weeks. This shift is statistically significant and is one effect of climate change on Lake Tahoe. Peak snowmelt is defined as the date when daily river flows reach their yearly maximum. Daily river flows increase throughout spring as the snow melts because of rising air temperatures, increasing solar radiation and longer days. The data here are for the Upper Truckee River.