

TAHOE:
STATE
OF THE
LAKE
REPORT
2009

METEOROLOGY

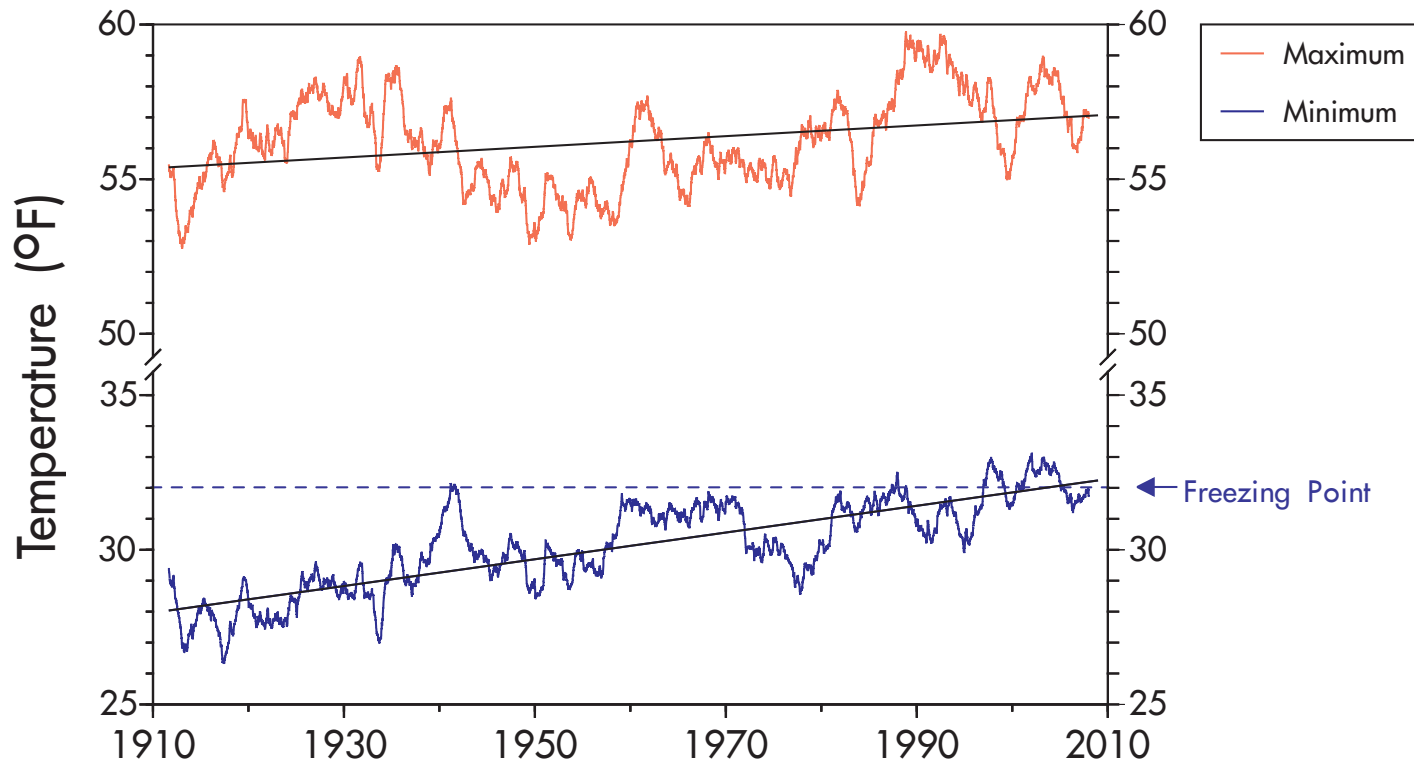
METEOROLOGY

Air temperature

Daily since 1910

Daily air temperatures measured at Tahoe City have increased over the 98 years. 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.



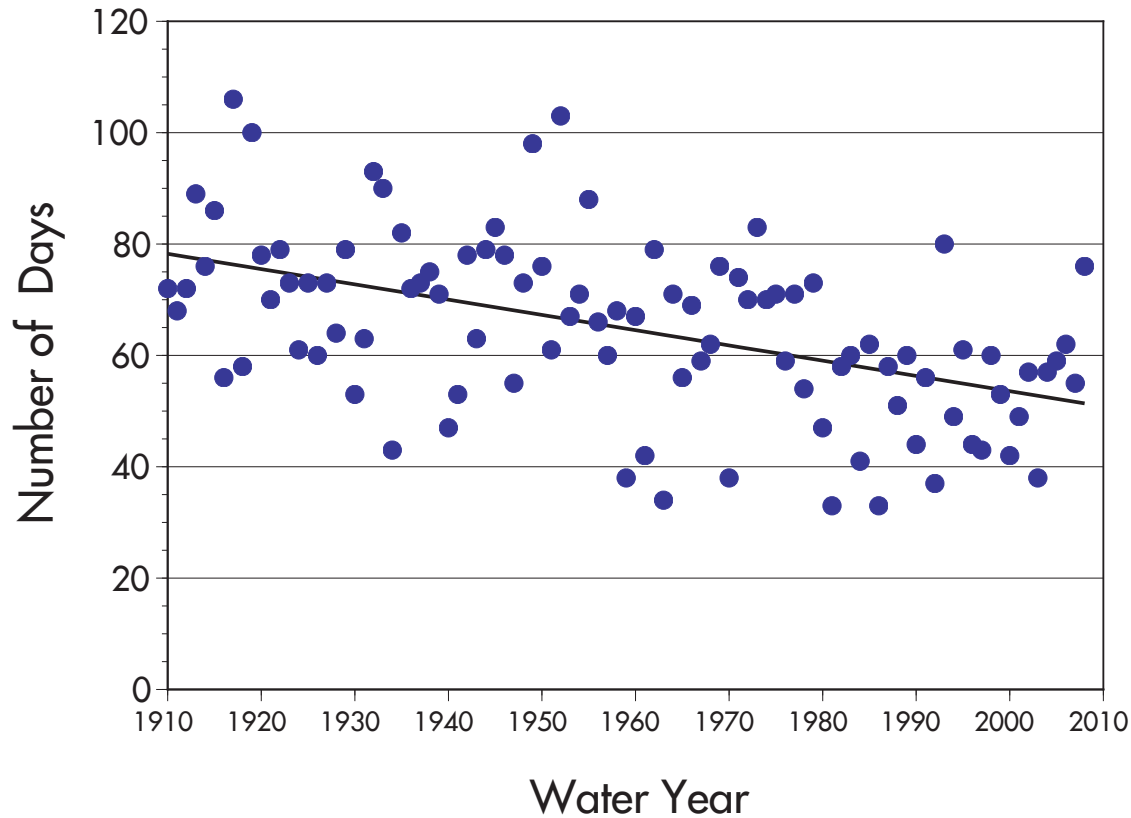
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Below-freezing air temperatures

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 2008, the number of freezing days was unusually high at 77. This is close to the average number of freezing days 100 years ago.



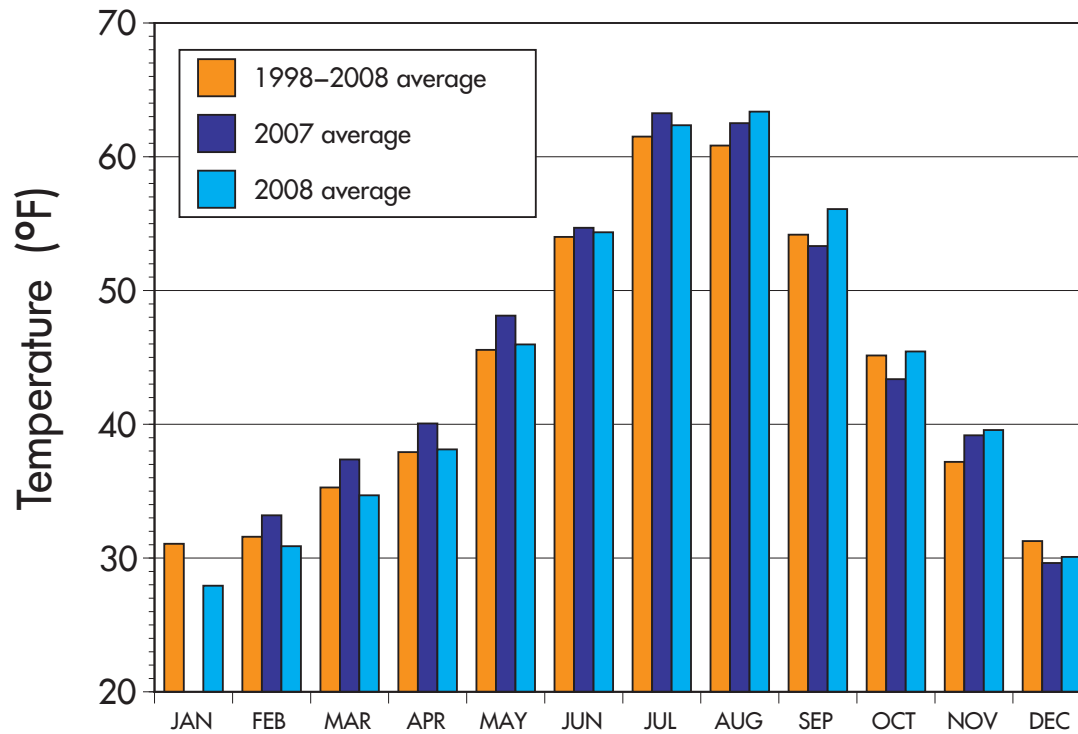
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Monthly air temperature

Since 1998

In 2008, January, February and March were colder than either the previous year or the eleven-year average. Late summer and fall, incorporating the

months of August through November, were significantly warmer than the previous year and the eleven-year average.



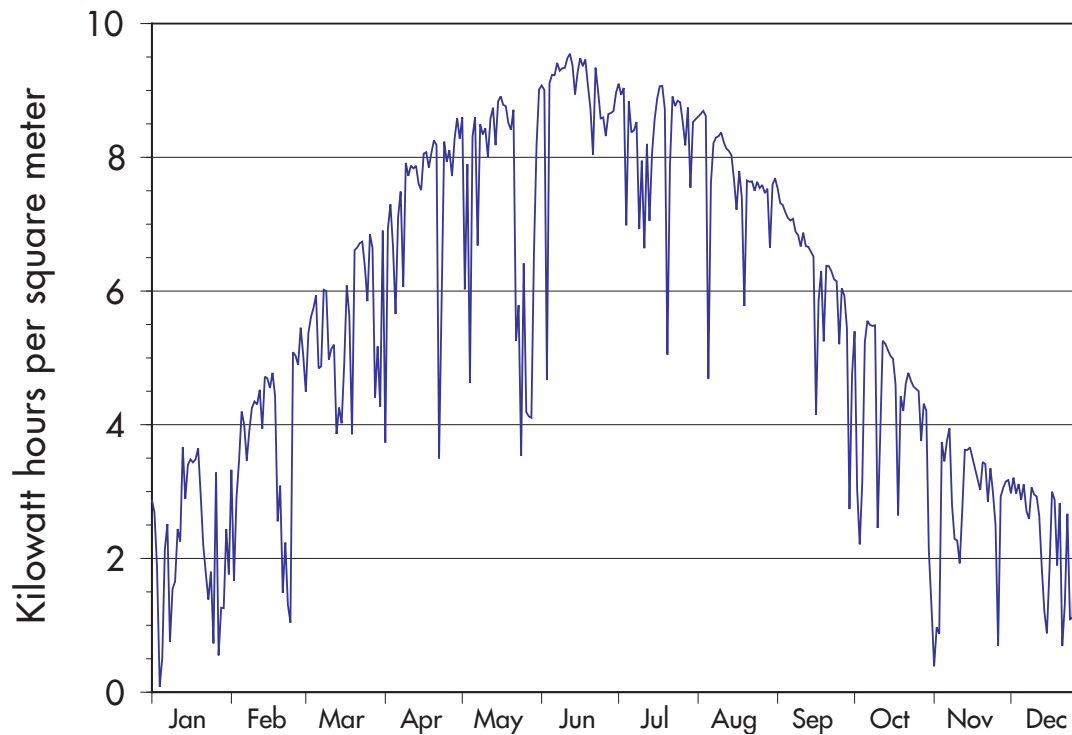
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Solar Radiation

Daily in 2008

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 California wildfires that

extended from June 6 to August 29, 2008 had their largest impact on the Tahoe basin for about 1 week commencing on July 9, 2008. An approximate 20% reduction in solar radiation can be seen during that period.



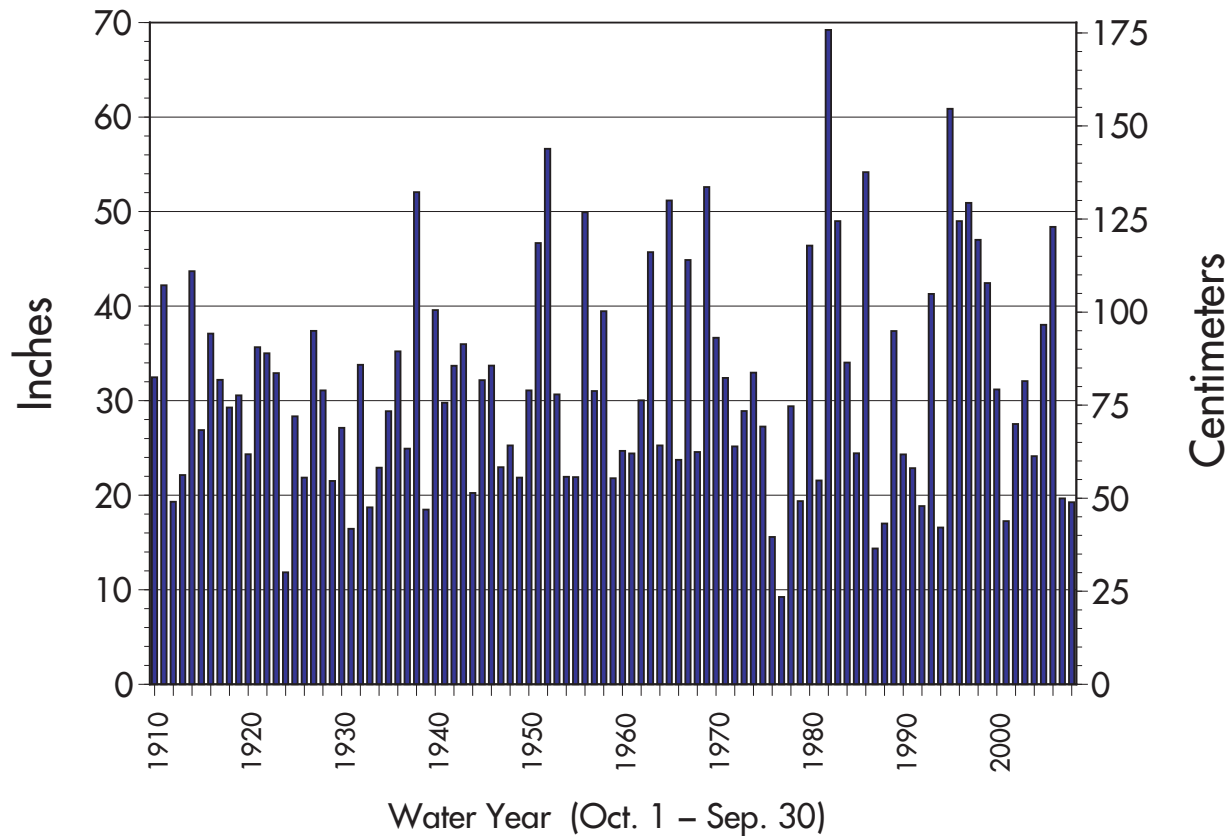
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Annual precipitation

Yearly since 1910

From 1910 to 2008, average annual precipitation (water equivalent of rain and snow) was 31.6 inches. The maximum was 69.2 inches in 1982. The minimum was 9.2 inches in 1977. 2008 was the

12th driest year on record, with only 19.3 inches of precipitation. (Precipitation is summed over the Water Year, which extends from October 1 through September 30.)



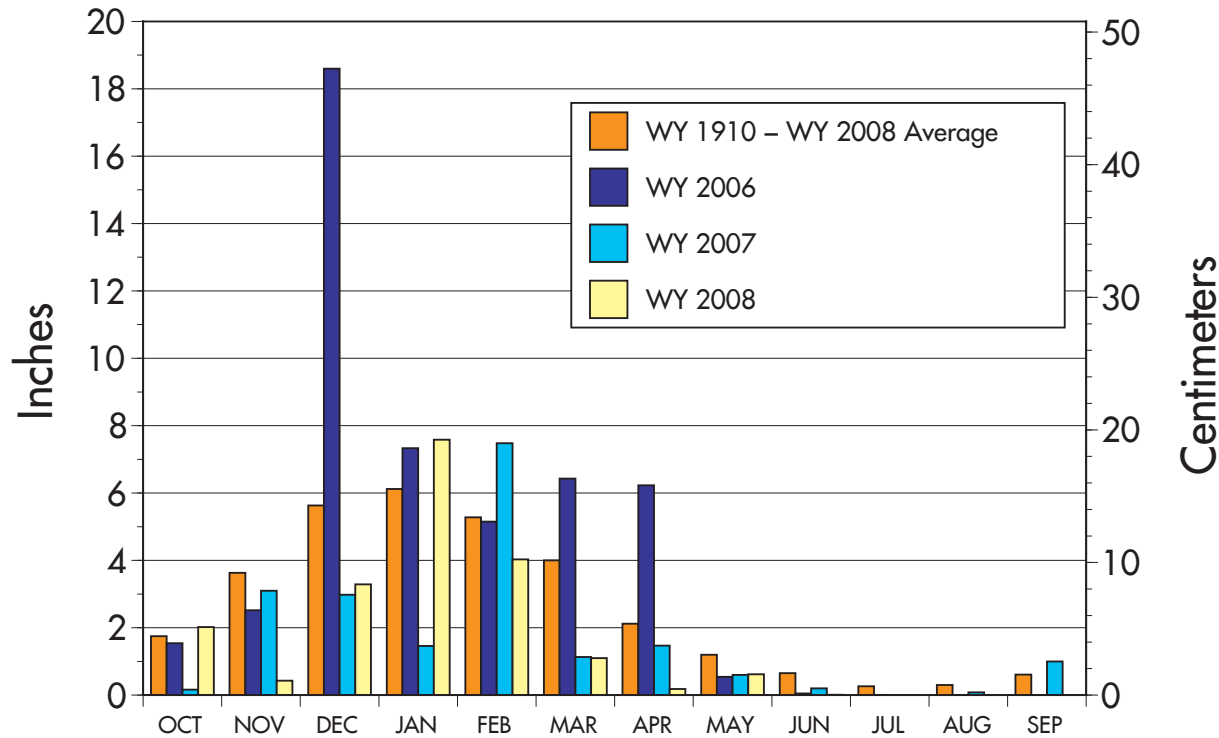
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Monthly precipitation

2006, 2007, 2008 and 1910 to 2008 Average

2008 was notable as the 12th driest year on record. Annual precipitation barely exceeded the amount received in the month of December 2006. Ten months were drier than the 99-year

historical average and January was by far the wettest month in 2008. The 2008 Water Year extended from Oct. 1, 2007, through Sept. 30, 2008.



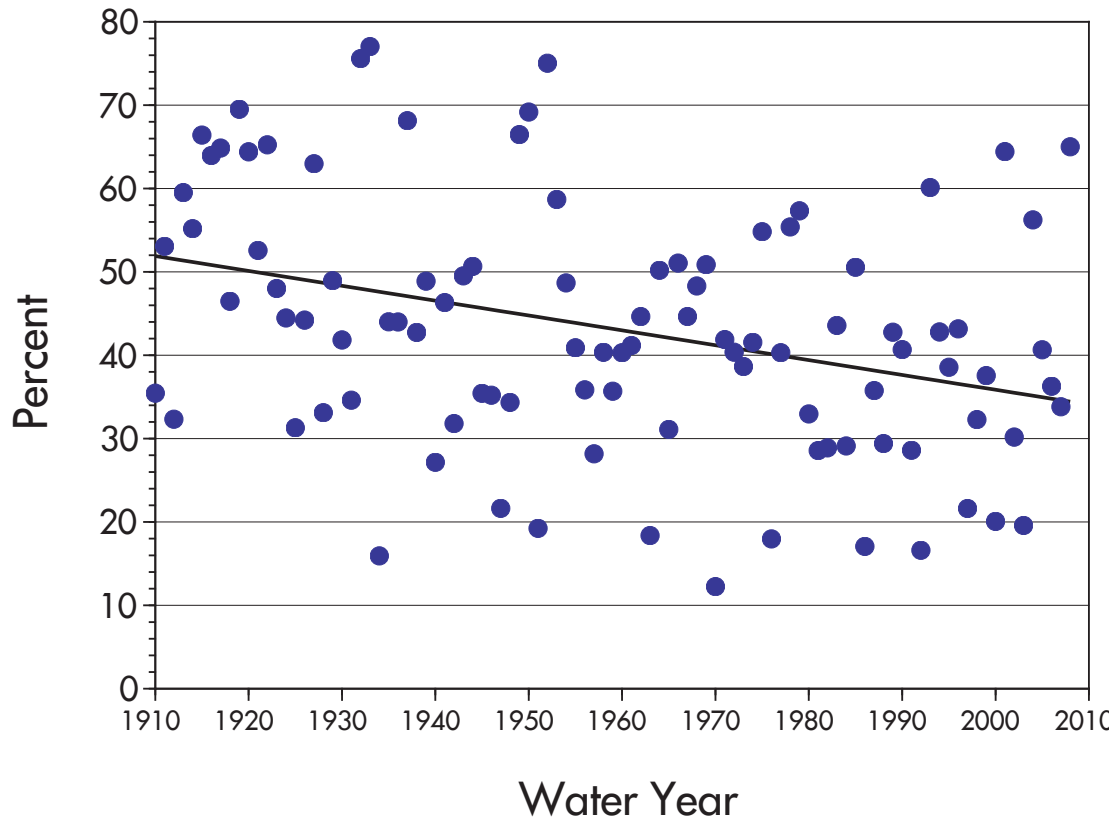
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Snow as a fraction of annual precipitation

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 65 percent of 2008 total precipitation, a marked increase over recent years.

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 by 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.

