

TAHOE:  
STATE  
OF THE  
LAKE  
REPORT  
2010

**METEOROLOGY**

## METEOROLOGY

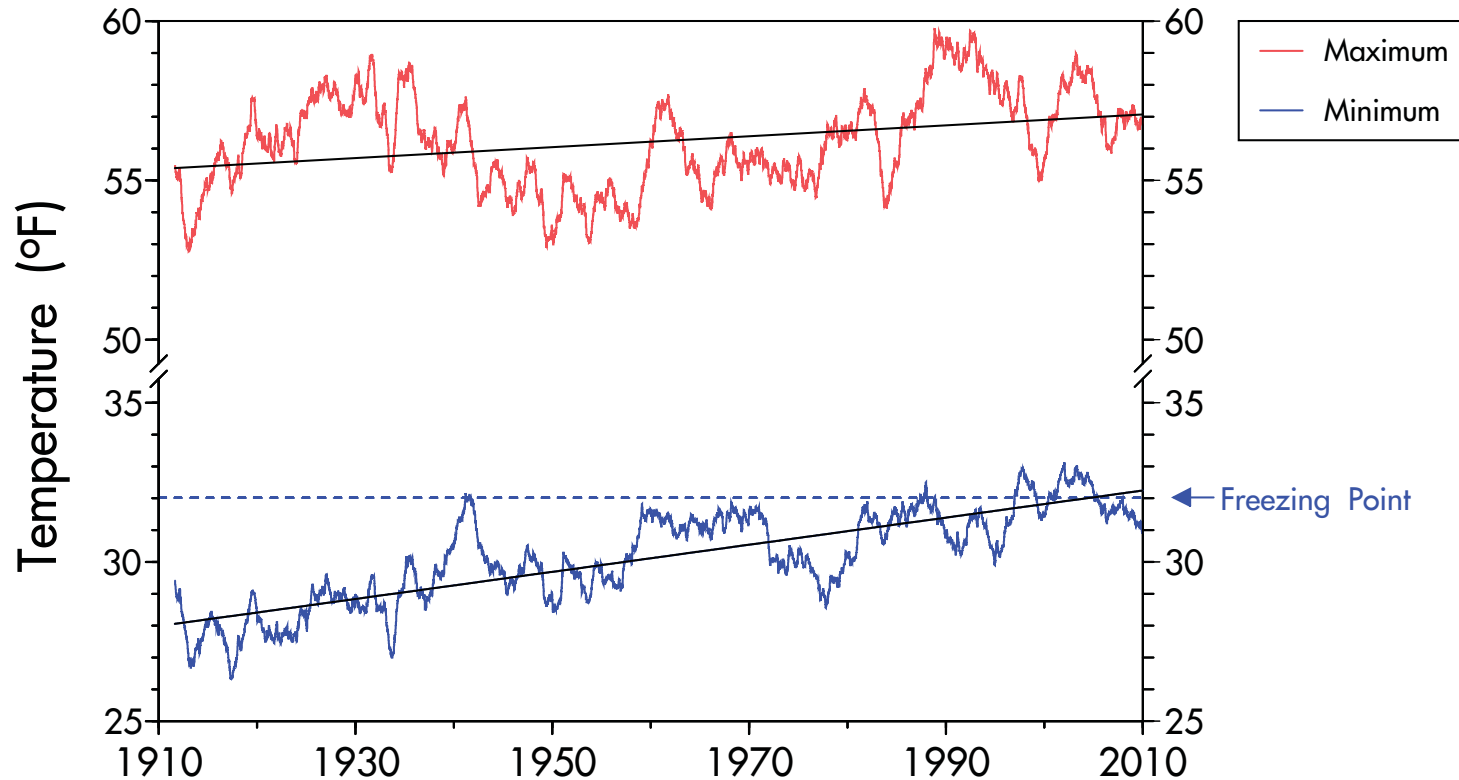
### Air temperature

Daily since 1911

Daily air temperatures have increased over the 98 years measured at Tahoe City. The trend in daily minimum temperature has increased by more than 4 degrees F., and the trend in

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.



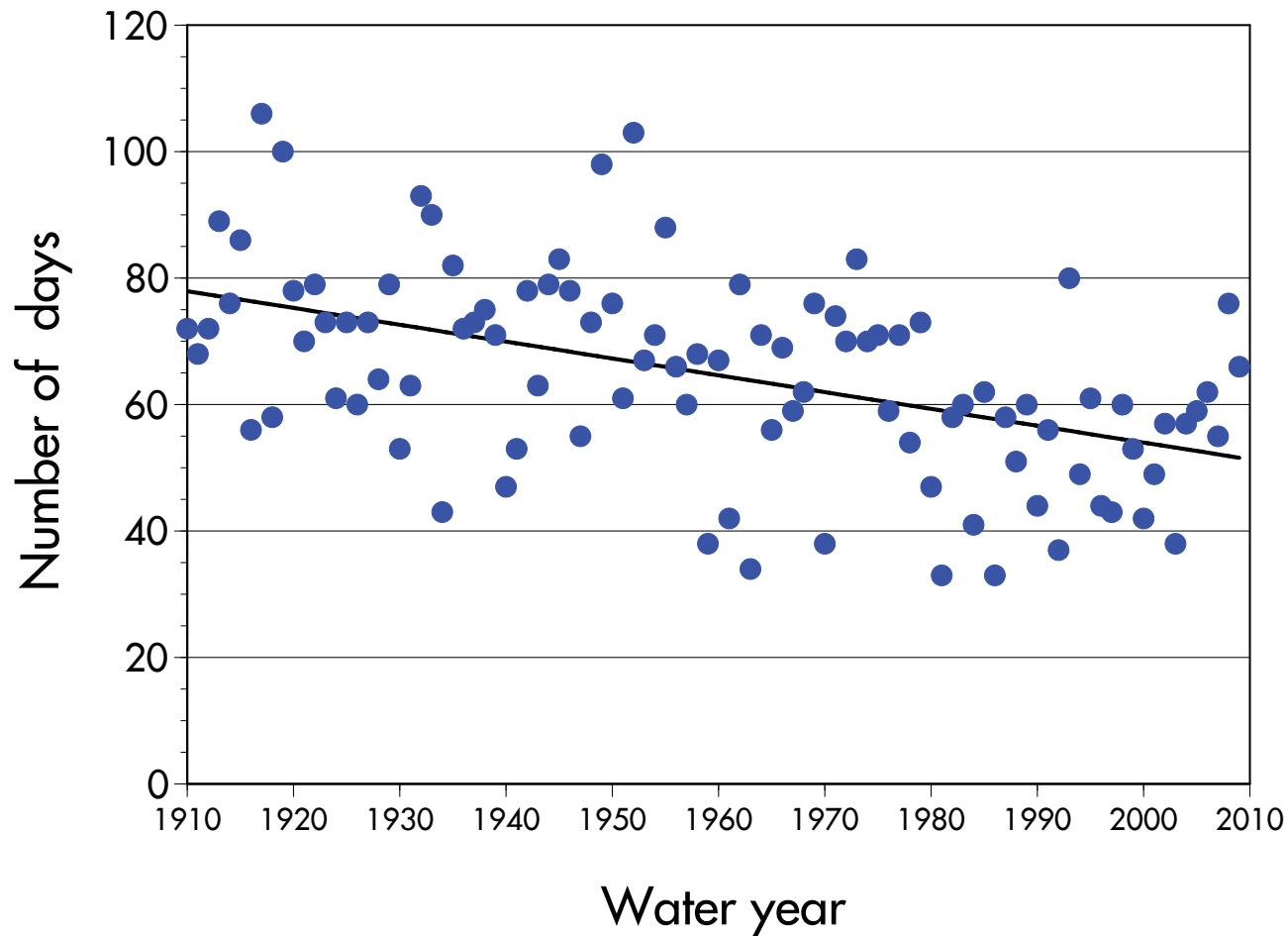
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**Below-freezing air temperatures**

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

1911. In 2009, the number of freezing days was above the long-term trend at 66 days.



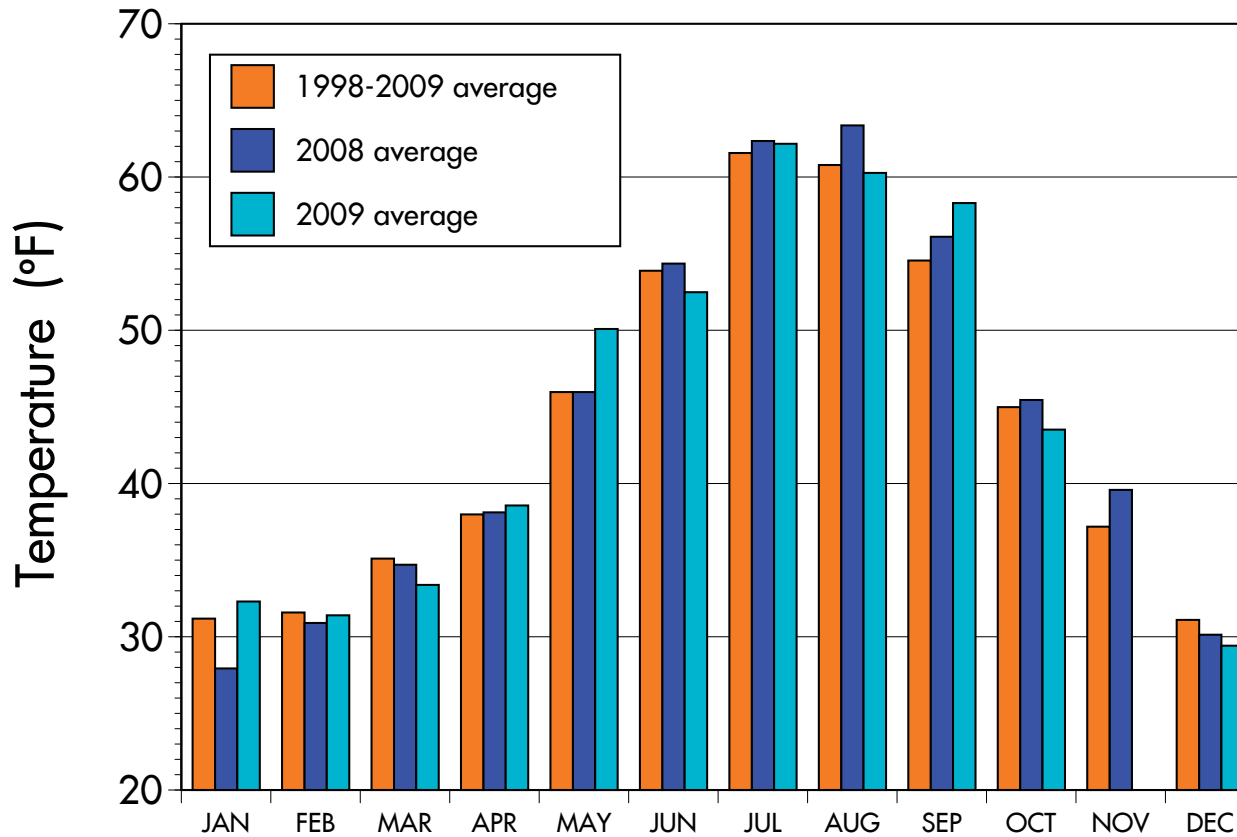
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**Monthly air temperature**

Since 1998

In 2009, January, April, May and September were warmer than either the previous year or the twelve-year average. The months of March, June,

August, October and December were significantly cooler than the previous year and the twelve-year average.



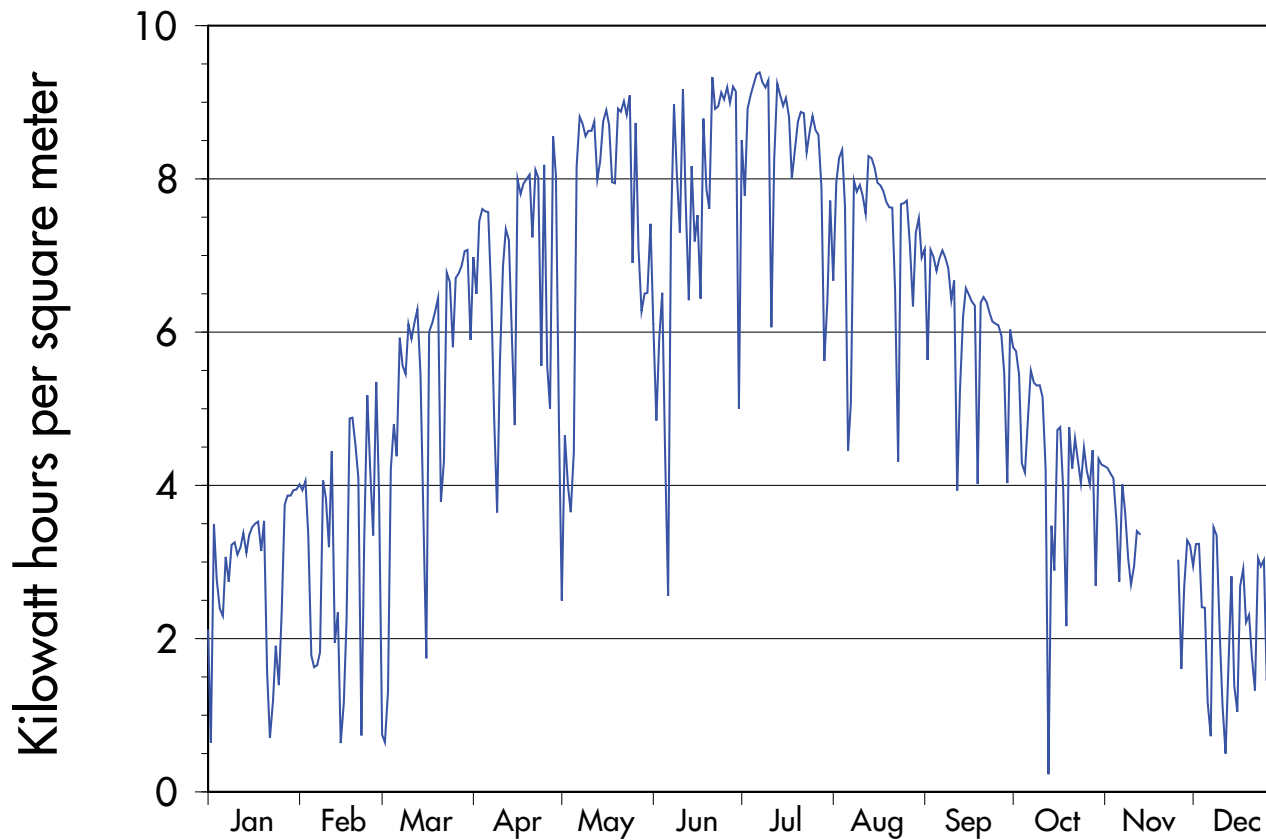
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### Solar Radiation

Daily in 2009

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.



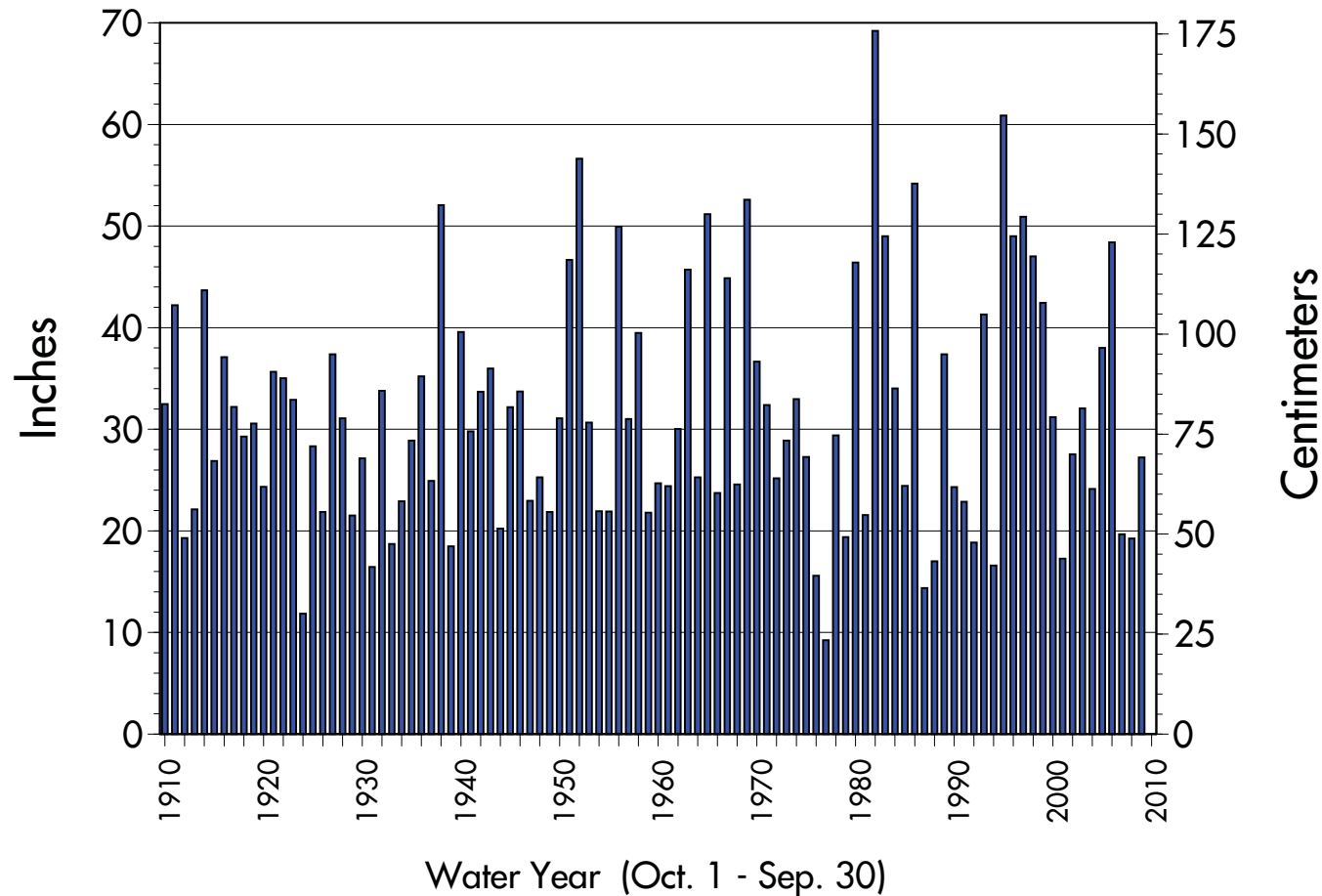
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**Annual precipitation**

Yearly since 1910

From 1910 to 2009, average annual precipitation (water equivalent of rain and snow) at Tahoe City was 31.5 inches. The maximum was 69.2 inches in 1982. The minimum was

9.2 inches in 1977. 2009 was slightly below average, with 27.2 inches of precipitation. (Precipitation is summed over the Water Year, which extends from October 1 through September 30.)



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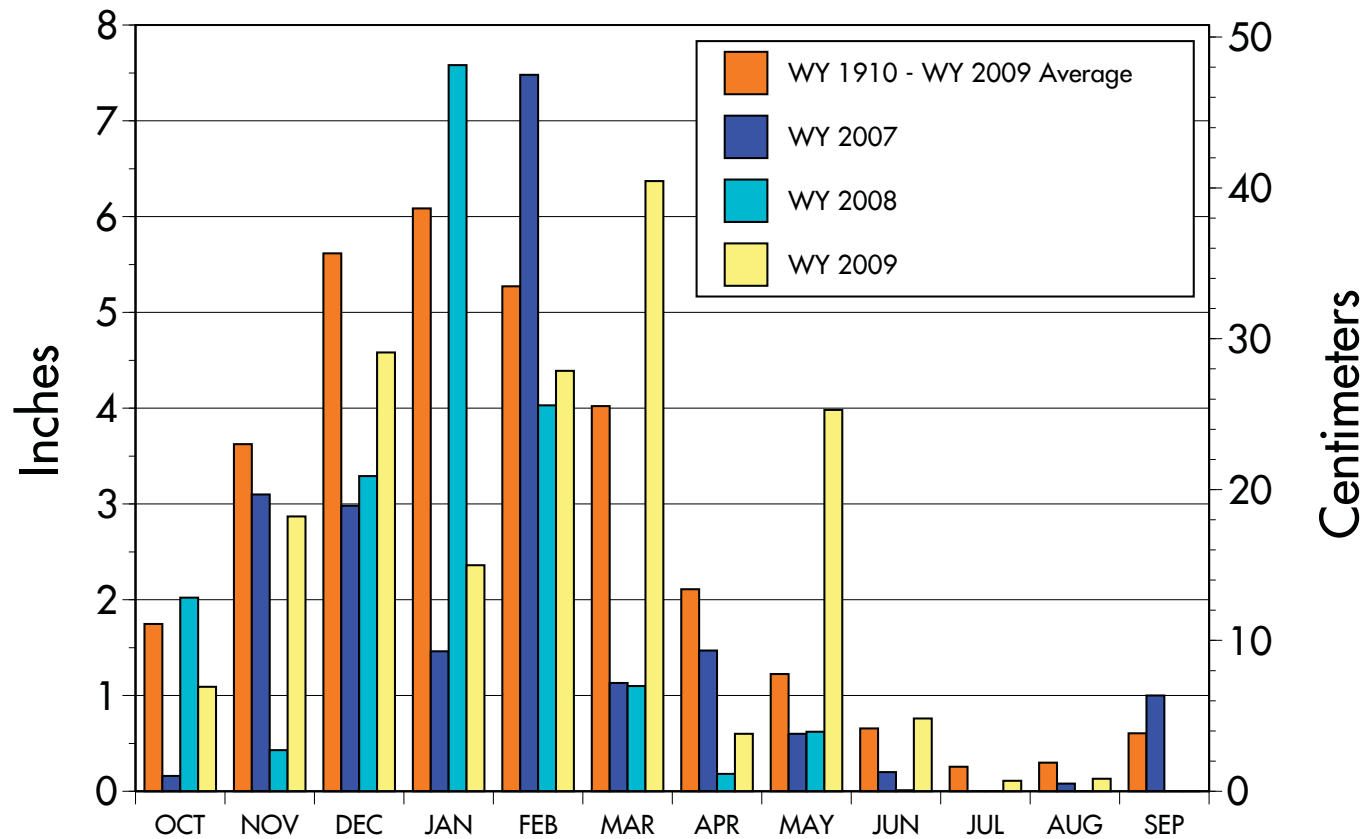
### Monthly precipitation

2007, 2008, 2009 and 1910 to 2009 Average

2009 was slightly below an average year in total precipitation. However, nine months were below the long-term average precipitation. An exceptionally

wet spring, particularly the months of March and May, accounted for most of the precipitation. Precipitation in May was more than three times the long-

term average. The 2009 Water Year extended from October 1, 2008, through September 30, 2009.



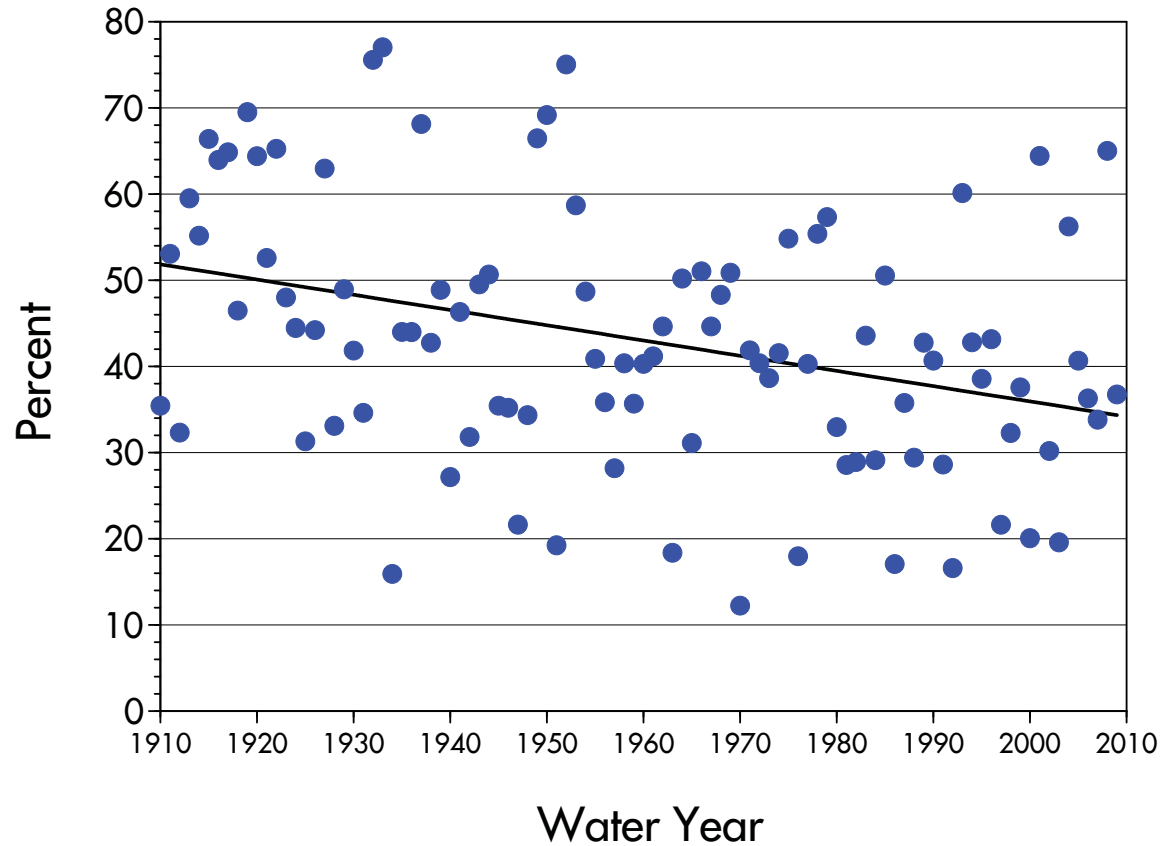
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### Snow as a fraction of annual precipitation

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 37 percent of 2009 total precipitation, consistent with the long-term decline.

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.)





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**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 radia-

tion and longer days. The data here are based on the average from the Upper Truckee River, Trout Creek, Blackwood Creek, Ward Creek, and Third Creek.

