

California Monthly Climate Summary December 2008

Weather Highlights

December 2008 ended 2008 with more below normal precipitation, but cooler than average temperatures. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 40.2°F which is 1.6°F below the long-term average temperature for the state. With a statewide average of 2.76 inches, precipitation for December was 70.5% of the long term average. This is the third December in a row with statewide below normal precipitation. However, regionally, the south coast and southeast desert regions fared the best with near normal or above normal precipitation. A review of calendar year 2008 precipitation and temperature departures from the California Climate Tracker is shown at the end of the summary.

December started with above normal temperatures in the south part of the state while the Central Valley was dealing with widespread fog. The fog persisted even with the arrival of a low pressure system towards the end of the week that created showers for southern California. The Central Valley fog persisted into the second week of December while southern California saw warm dry weather resulting from strong offshore flow conditions. A second cold front passed over the state towards the end of the second week bringing showers across the state. The third week of December brought rain across the state. Heavy rains in southern California resulted in the San Diego River reaching monitor stage twice with rises of 7 and 8 feet. Snow was also widespread in the California Mountains from the North Coast down to the southern peaks east of San Diego. Images created by [NOAA's National Operational Hydrologic Remote Sensing Center](#) are at the end of the summary and show the dramatic change in snow cover in California from December 13th (left image) to December 18th (right image). The storminess continued into the third week of December with more rain and snow for the state. Heavy rains after Christmas hit the North Coast causing rises on rivers in that region on the order of 10 to 15 feet. The Smith River and the Mad River both reached monitor stage during this time. The year ended quietly weather wise for the state with continued cool temperatures.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 42 temperature records tied or broken, and 25 precipitation records tied or broken for the month. Of the 42 temperature records, 19 were for new low maximums and 20 were for new low minimums. Records were set on 9 days during the month with the middle of the month being most active. For 2008, 137 days saw records set with a total of 921 temperature records and 97 precipitation records set. Graphs showing the distribution of new records through the year are shown at the end of the summary. On December 5th, Redding and Red Bluff tied an interesting pair of records. Redding tied a 1998 record low temperature with a reading of 28°F at the airport while Red Bluff tied a 1976 high temperature record with a reading of 72°F. On December 17th, Alturas set a new low temperature record with a reading of -14°F. The old record was -3°F set back in 1967. On the same day, Crescent City tied a low temperature record last set in 1984 with a reading of 31°F. Also on the 17th, several low maximum temperature

records were set in southern California. Alpine only reached 49°F for the day which was 3 degrees cooler than the 1961 record of 52°F. Big Bear Lake only managed to get to 23°F which was 9 degrees cooler than the 1987 reading of 32°F. Oceanside Harbor also managed to get to 49°F which beat the 1955 record of 56°F. December 17th was also a day for new rainfall records in southern California as Brown Field recorded 1.73 inches of rain smashing the old daily record of 0.27 inches set back in 1957. Palm Springs topped their 1940 record of 1.52 inches with a reading of 1.57 inches. Rain wasn't the only precipitation record set on December 17th. Big Bear Lake recorded their largest snow depth for December with a reading of 54 inches. The all-time snow record for Big Bear Lake is 58 inches set back on February 3, 1979. The 54 inches this year ties 2 other days in February 1979 for second all-time.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 207 stations recorded a minimum temperature below freezing, and no stations recorded a maximum temperature of 100°F or greater. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC and CIMIS networks is also shown.

Precipitation in December fell short of normal again. The largest amount of precipitation recorded in the CDEC precipitation gages for December 2008 was Gasquet Ranger Station which recorded 24.48 inches. This is 150% of average for this site for December. At the other end of the spectrum, Death Valley recorded only 0.04 inches for the month. This is 18% of average for this site for December. For the CIMIS network, the Kettleman site in Kings County topped the precipitation charts with 13.76 inches for the month. Precipitation totals from the CIMIS network should be viewed with caution as there are times when irrigation practices add to the precipitation totals reported by the gages. Twelve sites in the CIMIS network recorded zero for precipitation for the month. The 8-Station Index for northern California precipitation recorded 6 inches in December. On average almost 9 inches of precipitation is recorded for the 8-Station index in December. Statewide, the average precipitation for December was 91% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS California has been active for three months now. Over 300 volunteers have signed up and many are reporting every day. The top five counties for volunteers so far are: Nevada (28), San Diego (23), Santa Clara (20), Sacramento (19), and Humboldt (15). More information on the program can be found at <http://www.cocorahs.org>.

The seasonal snowpack started developing during December. As of January 5th, regional averages show the north Sierra and Cascades at 52% of normal for the date with 6" of snow water equivalent, the central part of the Sierra Nevada Mountains with 75% of normal with 9" of snow water equivalent and the southern

Sierra Nevada with 87% of average with 8" of snow water equivalent. Values are updated regularly during the winter and can be found on the CDEC [snow page](#).

The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website <http://drought.unl.edu/dm/>. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of December 30th, 2008, the California depiction has 1.7% of the state drought free, 10.1% listed in the D0 – Abnormally Dry, 45.2% listed in the D1 – Moderate Drought, 40.2% listed in the D2 – Severe Drought category and 2.8% listed in the D3 – Extreme Drought category. During the week of December 16th D3 was also introduced into the northern Central Valley prior to the rains of that week. At that time D3 occupied 5.8% of the area and no area was drought free. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for January through March from NOAA depicts California with persisting drought conditions across most of the south part of the state with improvement possible for the north coastal regions. Some improvement is possible for the north-central part of the state. Updates are provided twice per month. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is moving back to a La Niña pattern. Equatorial sea surface temperature anomalies for the tropical Pacific for the end of December varied from -0.3°C to -1.1°C . The October through December 3-month running mean of the Ocean Niño Index was -0.3. Most statistical and dynamical models forecast La Niña conditions through early 2009. More information can be found at the Climate Prediction Center's web site:

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

Updates are posted weekly. The latest three month outlook (January through March) from NOAA indicates equal chance for above or below normal temperatures for the entire state of California. For precipitation, equal chance for above or below normal conditions applies across the entire state as well. Outlook plots and discussions can be found at <http://www.wrcc.dri.edu/longrang/>. General weather information of interest can be found at <http://www.noaawatch.gov/>. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

For December, field work continued for cultivation, irrigation, and weed control in alfalfa, wheat, barley and rye fields. New alfalfa fields were planted during the month. Cotton field plow down was completed. Rice fields were being prepared for spring planting. Vineyards were being pruned and cultivated. Some old vineyards were removed. Stone fruit, nut and pomegranate trees were also pruned. Blueberries continued to be planted while raspberry and strawberry nursery stock harvests were pursued. Citrus crops were harvested including navel and mandarin oranges, lemons and tangerines. Winter vegetables grew well in the cool weather although heavy rained slowed some field work. Some crops were exposed to freezing temperatures, but damage has not yet been assessed. December's rains were welcome for rangeland areas. However, they remain in poor or very poor

condition necessitating continuation of supplemental feeding. Irrigated pastures were in good condition. Fall beef cow calving neared completion. Bee hive movement into the state increased in preparation for spring pollination. Mild temperatures maintained high milk production and were also good for poultry production. For further crop and livestock information see <http://www.nass.usda.gov/index.asp>

Other Climate Summaries

[California Climate Tracker](#) (new product of Western Region Climate Center)

[Golden Gate Weather Service Climate Summary](#)

[NOAA Monthly State of the Climate Report](#)

Statewide Extremes (CDEC)

High Temperature – 88°F (Newhall Pass and Saugus, South Coast)

Low Temperature – -11°F (Charlotte Lakes – Tulare Basin, Cottonwood Lakes and Sawmill – South Lohantan)

High Precipitation – 12.88 inches (Gasquet Ranger Station, North Coast)

Low Precipitation – 0 inches (Giant Forest, Tulare Basin)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 82.7°F (Borrego Springs, San Diego County)

Low Average Minimum Temperature – 13.4°F (Alturas, Modoc County)

High Precipitation – 13.76* inches (Kettleman, Kings County)

Low Precipitation – 0 inches (12 stations)

*Sometimes irrigation practices add to precipitation measurements from the CIMIS network if the gage is not covered during irrigation.

2008 Climate Notables

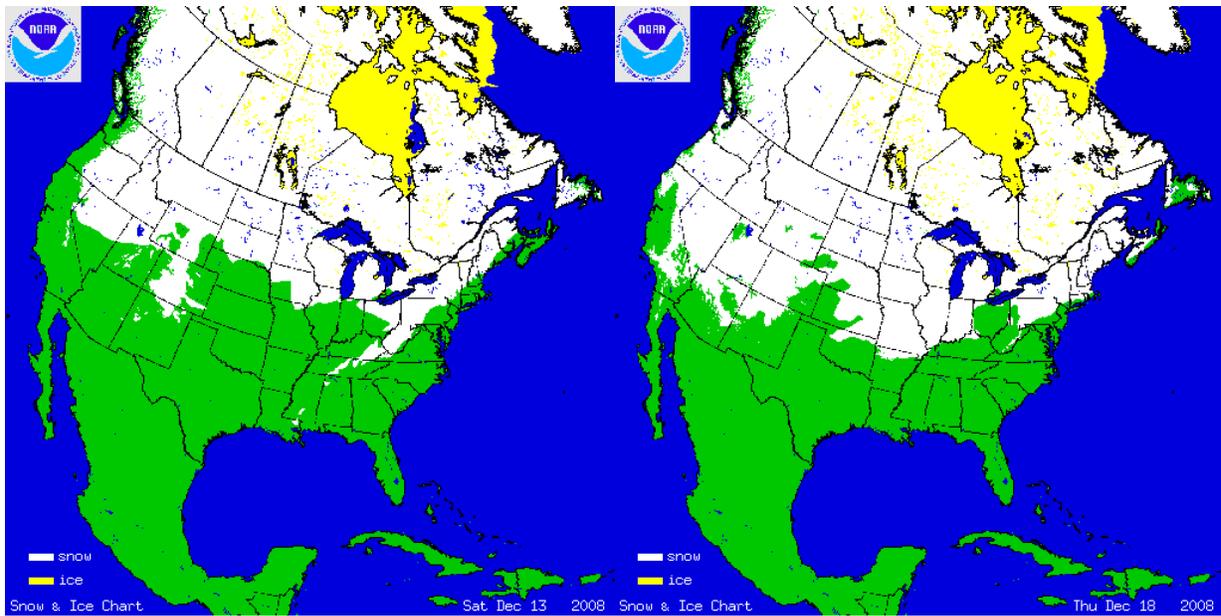
- January 3-5 storm with winds topping 100 mph over some mountain peaks
- January 21-25 rainfall exceeds July 2006 to June 2007 totals for some sites in Southern CA
- January 24 tornado in Ventura County
- April Sacramento Valley Freeze damages some crops
- April 100 °F readings in SE desert region locations
- May 23rd storm set new low pressure record for Sacramento for May
- June dry convective event in Northern CA sets off more than 1,000 fires from approximately 8,000 lightening strikes in 19 hours
- July heat wave
- July flash flood for southern Sierra
- October freezing temperatures in many parts of the state
- October Santa Ana winds for Southern CA
- November Santa Ana winds for Southern CA fuel wildfires
- November Central Valley fog
- December snow for southern CA

Statewide Precipitation Statistics

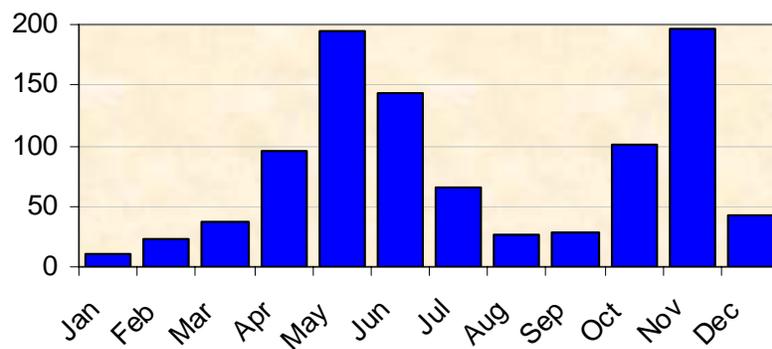
Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Dec	Oct-Dec	Stations	Dec	Oct-Dec	Dec	Oct-Dec
North Coast	0.27	5	5	5	17	8	8	91.7	81
SF Bay	0.03	3	2	2	6	3	3	73.0	79
Central Coast	0.06	5	4	4	10	5	5	64.6	68
South Coast	0.06	5	5	5	15	9	9	130.7	111
Sacramento River	0.26	10	9	9	43	34	31	61.0	74
San Joaquin River	0.12	8	7	7	27	22	20	79.8	79
Tulare Lake	0.07	5	5	5	27	22	22	98.3	94
North Lahontan	0.04	6	6	5	14	11	9	73.2	7
South Lahontan	0.06	5	5	4	14	9	8	123.8	130
Colorado River	0.03	2	2	2	6	2	2	324.6	209
Statewide Weighted Average	1	54	50	48	179	125	117	91.1	87

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

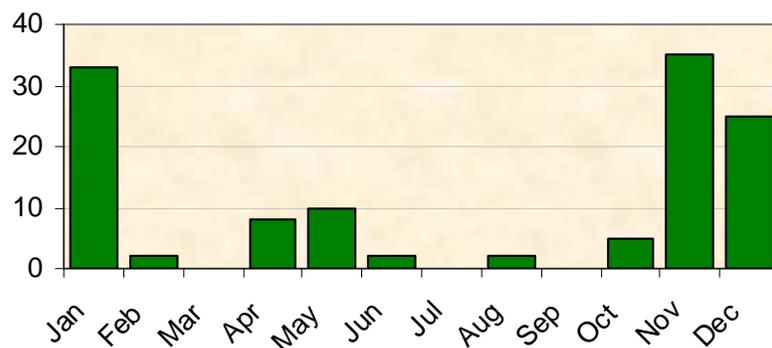
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	29	21.2	37.7	59.8
SF Bay	17	32.4	44.3	59.7
Central Coast	35	36.2	48.4	67.3
South Coast	65	33.4	49.9	76.6
Sacramento	80	20.1	38.3	63.0
San Joaquin	72	23.6	38.6	60.4
Tulare Lake	15	9.3	32.4	62.8
North Lahontan	25	3.6	28.5	55.0
South Lahontan	20	15.0	34.9	60.9
Colorado River Desert	20	38.8	53.1	70.5
Statewide Weighted Average	378	21.8	39.1	62.6



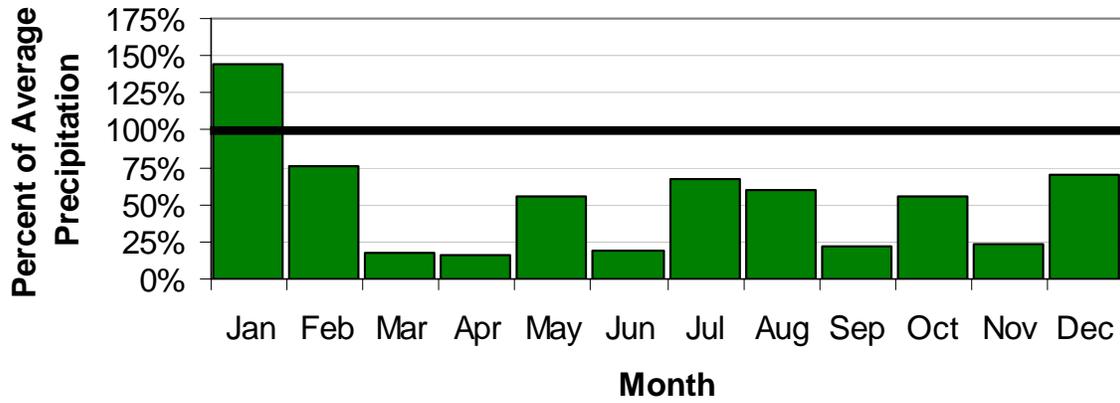
Temperature Records by Month for Calendar Year 2008



Precipitation Records by Month for Calendar Year 2008



California Climate Tracker Statewide Precipitation Percentages



California Climate Tracker Statewide Temperature Departures 2008

