

California Monthly Climate Summary
December 2014

Weather Highlights

December 2014 was a warm and wet month for California. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 45.3°F which is 3.5°F higher than the long-term average of 41.8°F. With a statewide average of 7.07 inches, precipitation in December was 180% of average. Regional plots of precipitation and temperature for the past month are included at the end of the document. For the year, most regions set a new record for temperature and the statewide average was a new record high. Precipitation wise, the year was near the middle of the distribution with the rainfall events in February, March, and December and an active monsoon in the summer.

December started with a strong precipitation event that resulted when a cut-off low drifted south offshore and entrained a pulse of tropical moisture. While not a traditional atmospheric river event, the high precipitation totals across the state reflected the high moisture content pushed into the state by the low. The warm temperatures that accompanied the storm also limited the amount of snowpack that accumulated during this event. The second week included a strong Pacific storm that brought more rain and more snow to the high country. This event was focused more on the northern half of the state and included high winds over 100 miles per hour in the Sierra. Uncontrolled tributaries to the Sacramento River provided enough flow to trigger high water along the main stem and cause some flow into the flood bypass system. Reservoir storage increased noticeably in the northern reservoirs. Week three continued rainfall for the central and northern coasts with continued warm temperatures elsewhere. High pressure over Nevada led to a Santa Ana wind event for Southern California in the final week of 2014. A cold system pushed through towards the end of the week causing some freezing temperatures in the Central Valley and snow on New Year's Eve in Needles (see below).

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 107 temperature records tied or broken and 42 precipitation records set for the month. Of the 107 temperature records set, 36 were for new high maximum temperatures and 66 were for new high minimum temperatures. Records were set on 22 days of the month. For the year, there were 1,270 temperature records set or tied and 160 precipitation records tied or set. A monthly distribution of temperature and precipitation records is shown at the end of the document. For the year, many locations set records for warmest years. For the precipitation records for December, Needles California recorded snowfall for only the 4th time for any day when 0.3 inches were recorded as falling on December 31st. Records for Needles date back to 1888.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 242 stations recorded a minimum temperature below freezing in December while zero stations reached or exceeded 100°F at least once during the

month. 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 stations is also shown at the end of the summary.

Precipitation in December was above average across the state. For the CDEC precipitation gages for December 2014, the largest amount of precipitation recorded was at Strawberry Valley in the Sacramento region with 25.09 inches. This is 181% of the average precipitation for this station the month. At the other end of the spectrum, 3 stations recorded no precipitation for the month. For the CIMIS network, Petaluma East in Sonoma County topped the precipitation charts with 13.21 inches for the month and 9 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network. The 8-Station Index for northern California precipitation recorded 15.2 inches in December. On average, 8.4 inches of precipitation is recorded for the 8-Station index for the month. The San Joaquin 5-Station Index recorded 5.9 inches of precipitation for December. On average, 6.2 inches of precipitation is recorded for the 5-Station Index for the month.

CoCoRaHS Update

Water Year 2015 continues California's sixth year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns. A map from December 12, 2014 is shown at the end of the document. As of the end of December, California has 1246 volunteers signed up spanning 56 of California's 58 counties. The counties without volunteers are Alpine and Modoc. The counties with the most volunteers are Sonoma and San Diego and with 107 and 106 volunteers respectively. For the month of December, 15,333 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in December was in Lake County where 8.50 inches was recorded on 12/11/2014. There were 88 reports of snowfall recorded during the month with the largest daily snowfall recorded in Placer County with 22 inches recorded on 12/12/2014. Three hail reports were submitted for the month with one each from Shasta, Alameda, and Fresno Counties. The largest stone size was 1/4 inch. To join CoCoRaHS or find more information, please visit <http://www.cocorahs.org>.

Snowpack and Water Supply Conditions

As of December 31, 2014, the regional snow pillow report shows 6 inches of snow water equivalent in the northern region. This is 20% of the April 1 average and 56% of average for the date. For the central region, 5 inches of snow water equivalent is being reported which is 16% of the April 1 average and 44% of average for the date. For the southern region 4 inches of snow water equivalent is being reported which is 15% of the April 1 average and 47% of average for the date. The Water Supply Index (WSI) for WY2014 for the Sacramento Basin and the San Joaquin Basin fell into the

critical category. More information can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at <http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST>.

Drought Monitor and Seasonal Outlook

The maps for California for November 25, 2014 and December 30, 2014 are shown below. 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 the December 30th depiction, 32.21% of California is depicted in the D4 or exceptional drought category, 45.73% of California is depicted in the D3 or extreme drought category, and 16.40% of California is depicted in D2 or severe drought category, 3.78% of California is depicted in D1 or moderate drought, and 1.88% depicted in abnormally dry or D0. Maps are updated weekly.

The U.S. Monthly Drought Outlook for January from NOAA depicts California in persisting drought conditions. This forecast is based primarily on climatology and forecast models. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html. Updates are provided twice per month.

For more information on water conditions in California, visit <http://www.water.ca.gov/waterconditions/>. A table showing end-of-December reservoir storage by hydrologic region is shown at the end of this document.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is currently in neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been positive with values of 0.7°C in the Niño 3.4 at the end of December. The October through December 3-month running mean of the Ocean Niño Index (ONI) is 0.7 which is the second 3-month running mean value above the 0.5 threshold for an El Niño event. Five consecutive ONI values need to be above the 0.5 threshold need to be observed for classification as an El Niño event. Most forecast models have the tropical sea surface transitioning to El Niño conditions by the latter part of fall. 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 a higher probability for above normal temperatures for the State. For precipitation, a higher probability of above average conditions is forecast across the state. 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

December 2014 saw winter vegetables harvested and winter wheat planted. Orchards were pruned while harvested fruits and nuts were processed and packaged. Cattle were relocated to foothill and valley pastures. The rainfall helped with the germination of new grasses but more rain will be needed in the future to ensure proper growth and development. Supplemental feeding continued due to the lack of quality forage. For further crop 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 – 89°F (Beverly Hills, South Coast)

Low Temperature – -22°F (Casa Vieja Meadow, Tulare)

High Precipitation – 25.09 inches (Strawberry Valley, Sacramento Basin)

Low Precipitation – 0 inches (3 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 70.6 °F (San Benito, San Benito County)

Low Average Minimum Temperature – 21.0°F (Big Bear Lake, San Bernardino County)

High Precipitation – 13.21 inches (Petaluma East, Sonoma County)*

Low Precipitation – 0 inches (9 stations)

*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	27	20.3	42.1	61.2
SF Bay	9	32.9	49.6	64.8
Central Coast	13	28.4	49.9	72.5
South Coast	49	28.6	51.0	76.0
Sacramento	73	21.4	41.2	62.2
San Joaquin	43	17.8	39.3	63.0
Tulare Lake	20	8.5	31.6	56.8
North Lahontan	27	3.1	31.6	52.3
South Lahontan	16	7.9	34.2	59.9
Colorado River Desert	6	30.0	54.7	78.3
Statewide Weighted Average	283	19.7	41.5	63.1

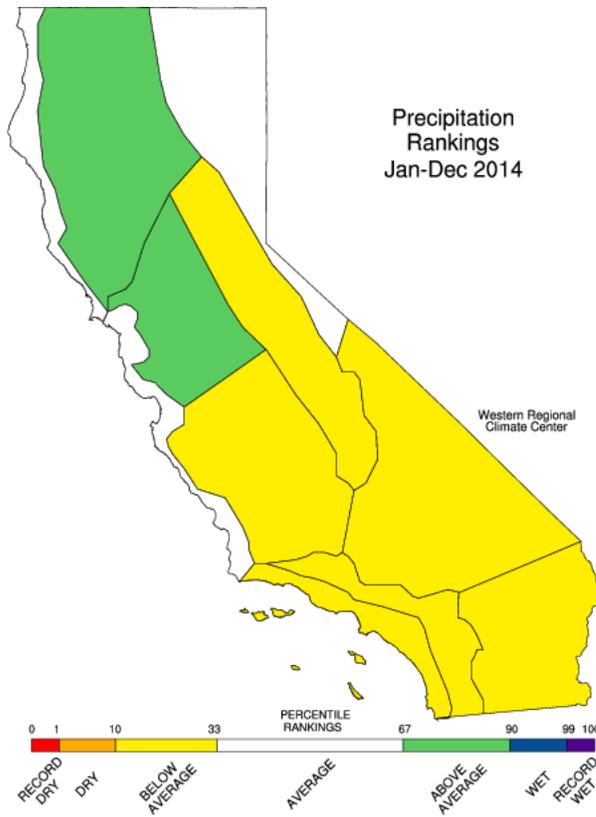
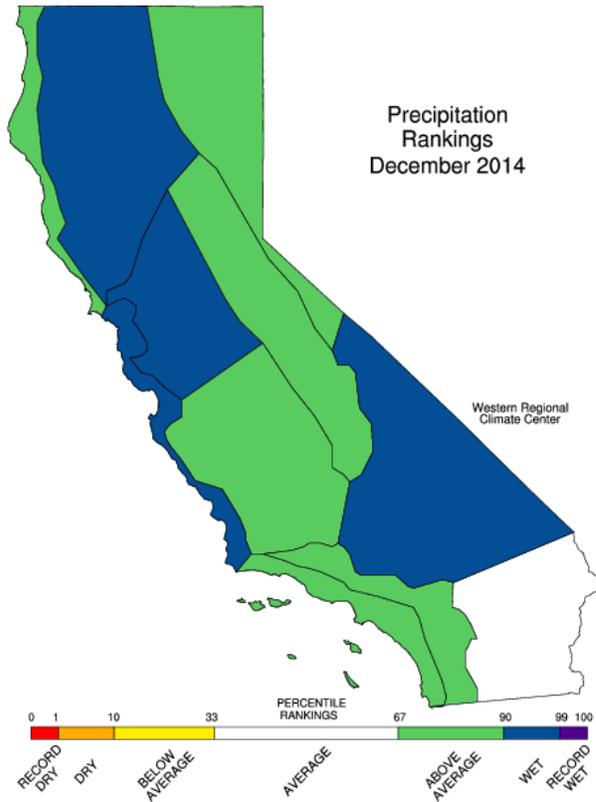
Statewide Precipitation Statistics

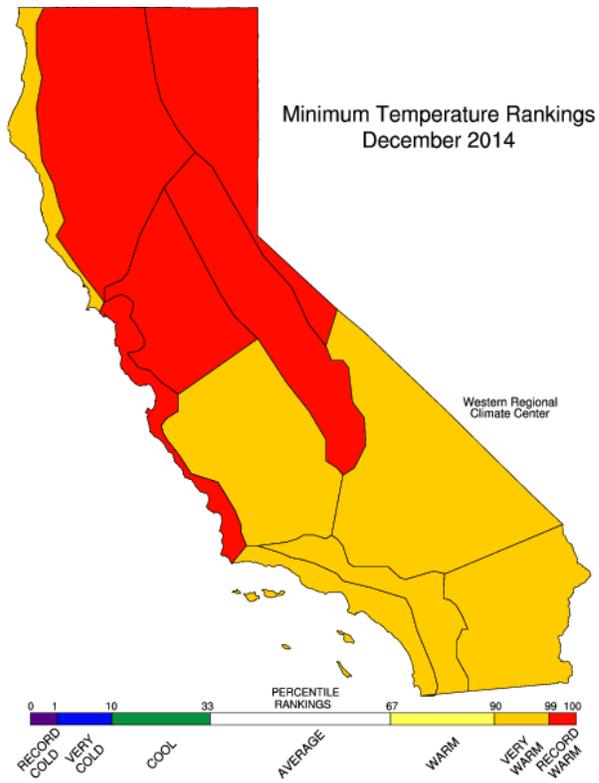
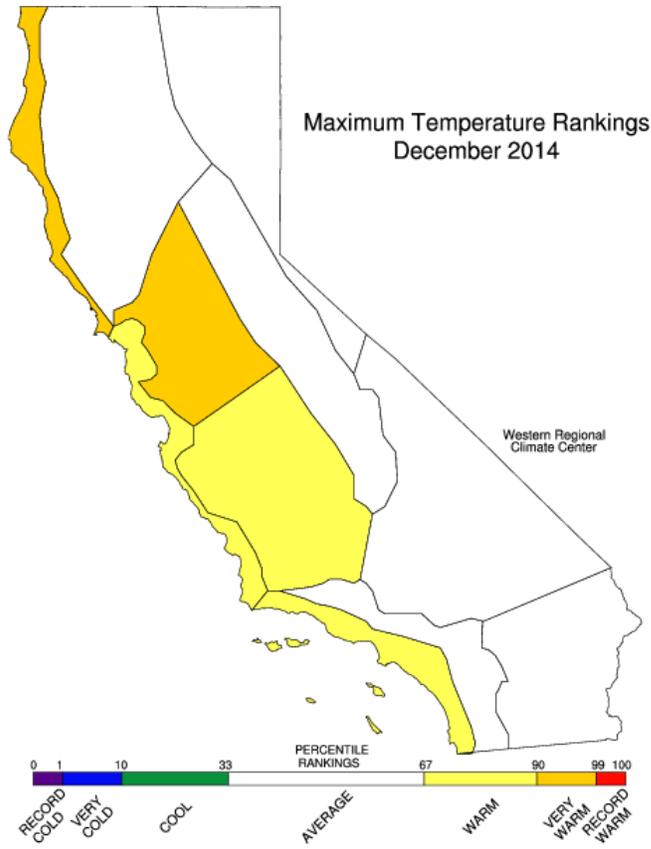
Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Dec	Oct-Dec	Stations	Dec	Oct-Dec	Dec	Oct-Dec
North Coast	0.27	5	4	4	17	9	9	120.6%	111%
SF Bay	0.03	2	2	2	6	6	6	268.1%	182%
Central Coast	0.06	3	3	3	11	5	5	187.1%	136%
South Coast	0.06	3	3	3	14	11	11	182.9%	112%
Sacramento River	0.26	5	5	5	41	32	31	189.2%	131%
San Joaquin River	0.12	6	6	6	24	19	18	132.5%	98%
Tulare Lake	0.07	5	5	5	29	24	20	115.8%	88%
North Lahontan	0.04	3	3	3	13	11	11	99.5%	76%
South Lahontan	0.06	3	3	3	15	12	12	176.6%	87%
Colorado River	0.03	1	1	1	6	3	3	107.2%	62%
Statewide Weighted Average	1	36	35	35	176	119	119	153.8%	112%

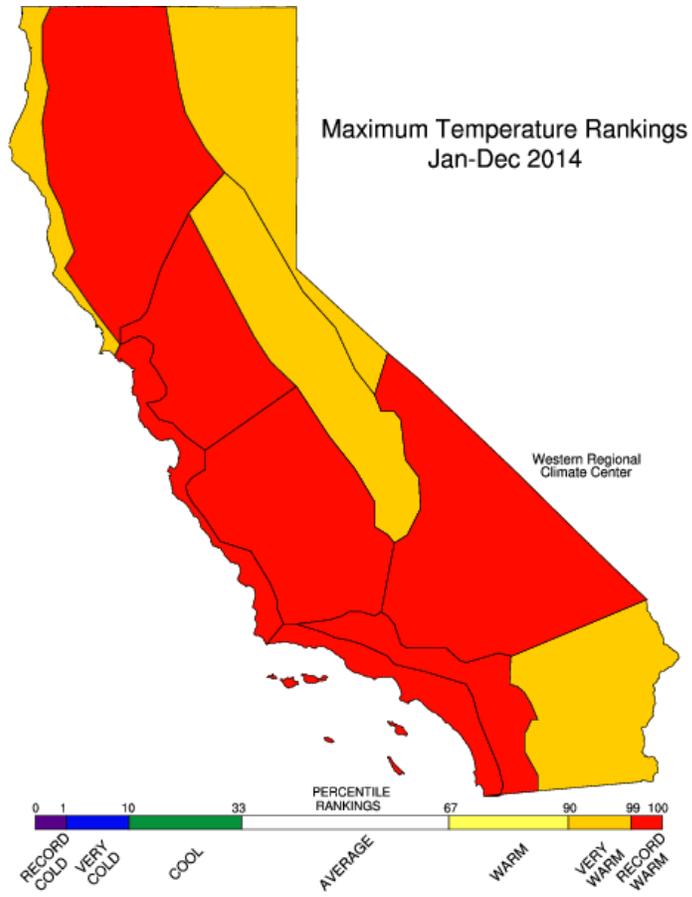
End-of-December Reservoir Storage by Hydrologic Region **Storage in Thousand Acre-Feet (taf)**

End-of-December Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2014 Storage (taf)	% of Average
North Coast	6	1,993	1,144	57%
San Francisco Bay	17	423	454	107%
Central Coast	6	535	178	33%
South Coast	29	1,308	893	68%
Sacramento	43	9,826	7,641	78%
San Joaquin	34	6,501	3,825	59%
Tulare	6	684	270	39%
North Lahontan	5	473	76	16%
South Lahontan	8	265	211	80%
Total	154	22,012	14,697	67%

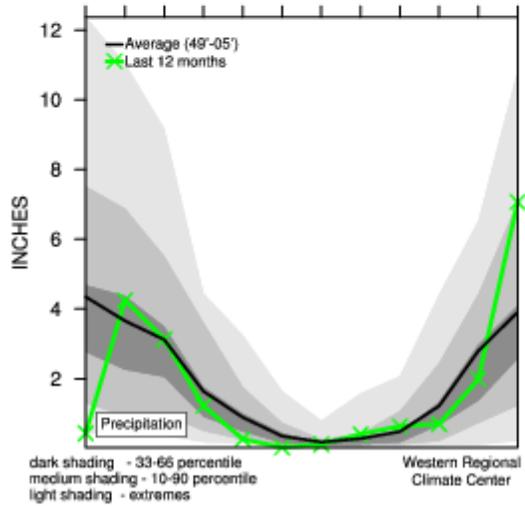
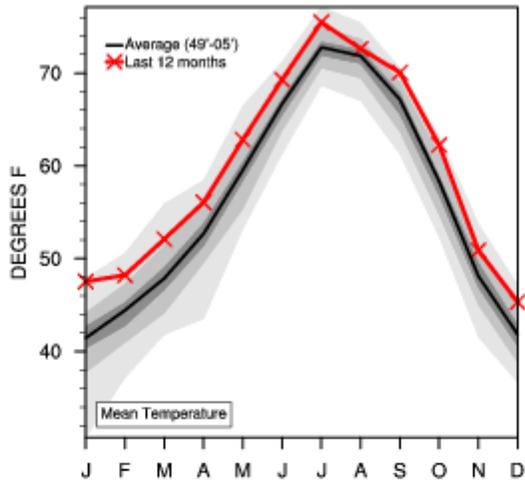
California Climate Tracker Images



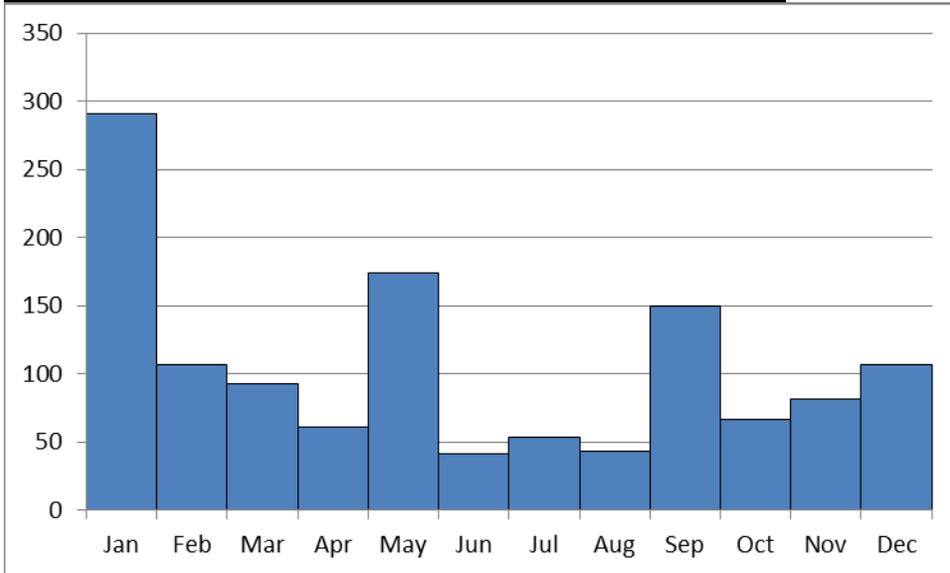




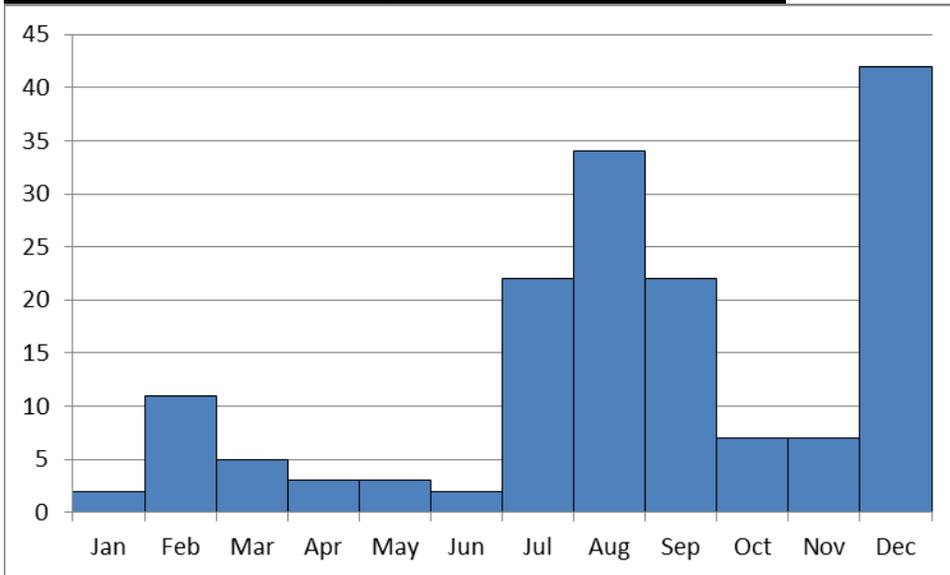
California Statewide Last 12 Months



Calendar Year 2014 Temperature Records by Month

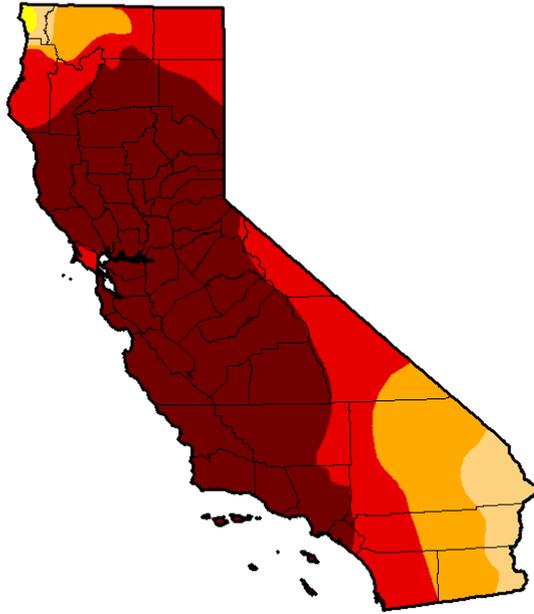


Calendar Year 2014 Precipitation Records by Month



United States Drought Monitor

U.S. Drought Monitor California



November 25, 2014
(Released Wednesday, Nov. 26, 2014)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.72	94.42	79.69	55.08
Last Week 10/19/2014	0.00	100.00	99.72	94.42	79.69	55.08
3 Months Ago 8/26/2014	0.00	100.00	100.00	95.42	81.92	58.41
Start of Calendar Year 1/1/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year 8/1/2014	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago 11/28/2013	2.61	97.39	94.15	82.53	27.59	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

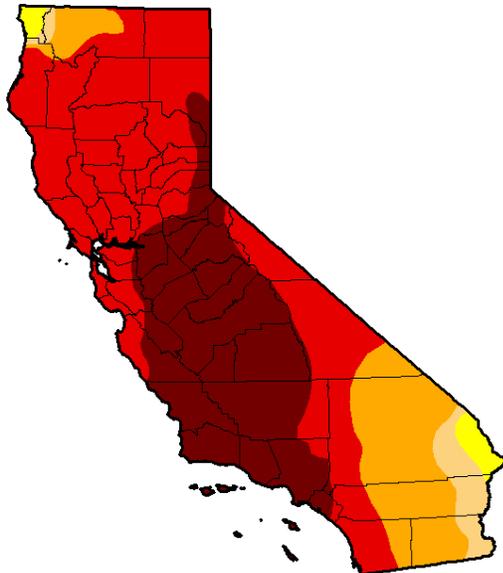
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor California



December 30, 2014
(Released Wednesday, Dec. 31, 2014)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	98.12	94.34	77.94	32.21
Last Week 12/23/2014	0.00	100.00	98.41	94.42	77.94	32.21
3 Months Ago 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41
Start of Calendar Year 1/1/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year 8/1/2014	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago 12/3/2013	2.61	97.39	94.25	87.53	27.59	0.00

Intensity:

- D0 Abnormally Dry
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The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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