

California Monthly Climate Summary March 2009

Weather Highlights

March 2009 started wet in places and ended dry for California. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 47.6°F which is 0.3°F lower than the long-term average of 47.9°F. With a statewide average of 2.07 inches, precipitation for March was only 66% of the long term average.

March began where February left off with a series of storms moving over the northern part of the state. Rainfall for the northern Sierra quickly passed totals accumulated during the previous two Marches. During this time southern California remained dry and warm. By the middle of the month, high pressure had built over most of the state bringing dry and mild conditions across the state. A weak system passed over the northern part of the state at the end of the second week, but rainfall was limited to the north coast region. The month closed out with dry windy conditions.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 42 temperature records tied or broken and 1 precipitation record tied or broken for the month. Of the 42 temperature records, 35 were for new low minimum temperatures. Records were set over 10 days of the month. The Oakland Airport recorded the only new daily precipitation record for the month on March 3rd. As of 5:00 pm, 0.55 inches had fallen which beat the old record of 0.52 inches set back in 1978. On March 9th, Crescent City tied a low temperature record from 1951 with a reading of 31°F. On the 10th of March, Lancaster, Palmdale, and Paso Robles set new low temperature records. The oldest record was Palmdale's record which was set in 1935 with a reading of 27°F. March 10, 2009 reached a low of 26°F.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 163 stations recorded a minimum temperature below freezing in March. One station, Buttercup in the Colorado River Desert Hydrologic Region, reached 100°F. 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 March started strong as the storminess of February continued, particularly for the northern Sierra. However, the latter half of the month was dry across the state. The largest amount of precipitation recorded in the CDEC precipitation gages for March 2009 was Gasquet Ranger Station on the North Coast (Smith River) with 15.56 inches. Normally this station records 11.08 inches of precipitation in March. At the other end of the spectrum, seven stations recorded no precipitation for the month. For the CIMIS network, Camino in El Dorado County topped the precipitation charts with 5.79 inches for the month. The 8-Station Index for

northern California precipitation recorded 8.2 inches in March with 14 days showing precipitation. On average 6.9 inches of precipitation is recorded for the 8-Station index. March 2009 surpassed both March 2008 and March 2007's 8-Station Index totals by the 4th day of the month. March 2009 was the second consecutive above average precipitation month for the 8-Station Index. This is the first time two consecutive above average months of precipitation have occurred since 2006. Statewide, the average precipitation for March was 82% 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.

In October 2008, California joined the Community Collaborative Rain, Hail and Snow Network (CoCoRaHS). 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 in participating states. By the end of March 2009, California has had almost 500 volunteers sign up spanning 48 of California's 58 counties. The county with the most volunteers at the end of March is Sonoma with 80 volunteers.

Drought Monitor and Seasonal Outlook

For March, the Drought Monitor showed improvement across the northern part of the state due to the rains at the beginning of the month. The maps for California for March 3, 2009 and March 31, 2009 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. The very northwest and southeast parts of the state are not considered in any drought condition. As of the March 31st depiction, the rest of California is depicted in either D0 (abnormally dry), D1 (moderate drought) conditions, or D2 (severe drought) conditions. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for April through June from NOAA depicts California with persisting drought conditions across most of the state. Improvement is expected for the North Coast and parts of the Sacramento Basin. Updates are provided twice per month. Maps and information can be found at http://cdec.water.ca.gov/water_supply.html

Snowpack and Water Supply Conditions

April 1 marks the end of the snowpack accumulation and the beginning of the melt season in California. This year the peak accumulation of snowpack occurred about one week early. Statewide, the April through July runoff forecast is nearly 80% of average. April through July runoff forecasts can be found in the Department's [Bulletin 120](#). Water year runoff is lower, around 70%, due primarily to the dry January. Outlooks for the water year 2009 water supply index categories are dry for both the Sacramento Basin and the San Joaquin Basin. Water supply information for California 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>.

The snow covered area reports from the University of California, Merced are back for 2009. The reports utilize MODIS data to document the extent of the seasonal snowpack and provide snow information for select elevation bands in select watersheds. The reports can be found on the State Climatologist website under the [climate data and information link](#) under the Agency and Academic Research Collaborative tab. A sample figure from the report is shown below.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is being classified as a La Niña pattern, although conditions have continued to weaken. Equatorial sea surface temperature anomalies for the tropical Pacific for March ranged from -0.3°C in the Niño 3.4 region to 0.6°C for the Niño 1+2 region. The January through March 3-month running mean of the Ocean Niño Index is -0.7 which is the 3rd consecutive 3-month running mean value to be below the threshold value of -0.5°C . Five consecutive values need to be below the threshold for the event to be classified as a La Niña event. Both statistical and dynamical models forecast the tropical sea surface temperatures to vary near normal (-0.5°C to 0.5°C) for the remainder of 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 (April through June) from NOAA indicates an equal chance of above, below or near normal temperatures for most of the state with above normal temperatures expected for southeastern California. For precipitation, below average conditions are forecast for the northern third of 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

March saw the spring bloom for many crops. Rains at the beginning of the month led to good growth of dryland field crops. However, dry conditions at the end of the month may necessitate irrigation. Winds near the end of the month hindered orchard spraying and bee pollination. Frost protection measures were needed with the cold periods during the month and some almond damage from frost was reported.

Treatment for blight and mites continued for walnuts and almonds with little damage reported. Citrus harvest continued as did harvests for asparagus, broccoli, leaf lettuce, garlic, carrots, and onions. Outdoor plantings of vegetable crops and melons started. The rains of February and early March helped rangeland conditions improve, but dry conditions in the latter part of the month led to some decline. Hay inventories are being depleted as supplemental feeding continues. Dairy herds continue to be downsized due to low milk prices. Sheep that had been grazing in alfalfa fields began to be moved off at the end of the month. 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 – 100°F (Buttercup, Colorado River Desert)

Low Temperature – -12°F (Tunnel Guard Station, Tulare)

High Precipitation – 15.56 inches (Gasquet Ranger Station, North Coast)

Low Precipitation – 0.00 inches (7 Stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 82.2°F (Salton Sea East, Imperial County)

Low Average Minimum Temperature – 22.3°F (Big Bear Lake, San Bernardino County)

High Precipitation – 5.79 inches (Camino, El Dorado County)

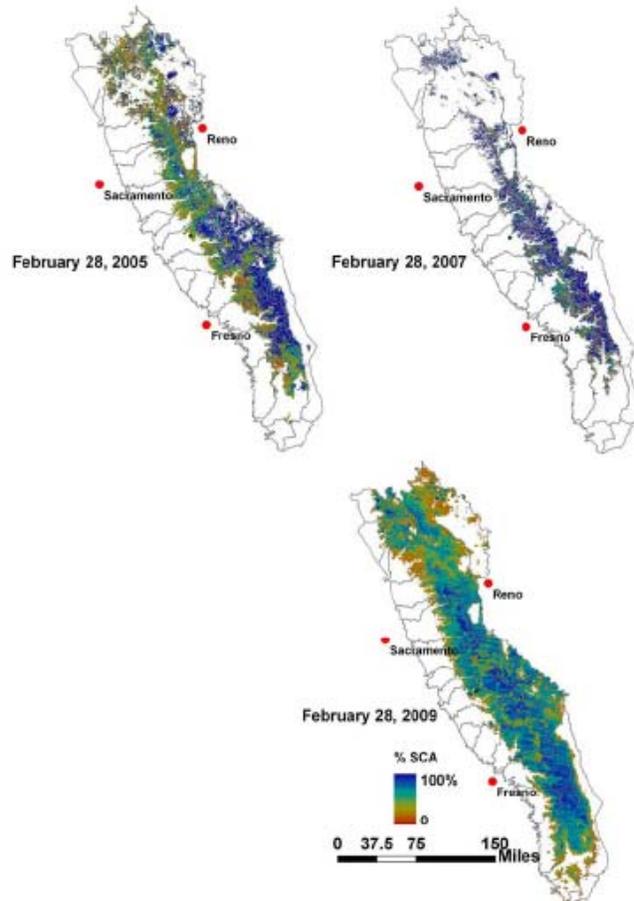
Low Precipitation – 0 inches (14 stations)

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Mar	Oct-Mar	Stations	Mar	Oct-Mar	Mar	Oct-Mar
North Coast	0.27	5	5	5	17	14	13	91.8%	72%
SF Bay	0.03	3	3	3	6	5	5	95.6%	93%
Central Coast	0.06	5	4	4	10	7	7	63.1%	87%
South Coast	0.06	5	5	5	15	11	9	8.7%	70%
Sacramento River	0.26	10	9	9	43	34	32	110%	83%
San Joaquin River	0.12	8	7	7	27	24	23	86.4%	89%
Tulare Lake	0.07	5	5	5	27	27	26	52.4%	80%
North Lahontan	0.04	6	6	5	14	11	10	150.4%	72%
South Lahontan	0.06	5	4	4	14	9	8	13.1%	107%
Colorado River	0.03	2	2	2	6	5	5	0.0%	96%
Statewide Weighted Average	1	54	50	50	179	147	138	81.5%	82.0%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	30	26.1	43.9	67.7
SF Bay	18	36.0	50.3	68.2
Central Coast	37	37.9	51.9	69.2
South Coast	63	36.1	53.6	78.4
Sacramento	82	25.6	45.2	69.1
San Joaquin	69	28.1	46.6	67.4
Tulare Lake	13	15.8	40.0	66.0
North Lahontan	9	14.4	36.8	59.3
South Lahontan	14	25.3	43.4	66.0
Colorado River Desert	23	43.7	63.0	82.8
Statewide Weighted Average	358	27.1	45.8	68.7



Example figure from SCA report showing a comparison of the end-of February snow covered areas for 2005, 2007, and 2009.

U.S. Drought Monitor

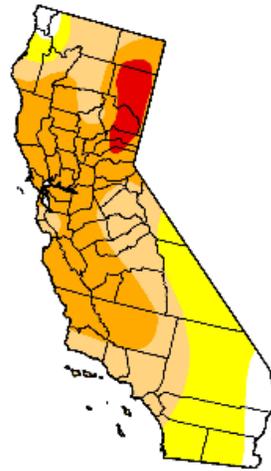
California

March 3, 2009
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	5.2	94.8	70.7	41.8	4.4	0.0
Last Week (02/24/2009 map)	5.2	94.8	70.7	49.7	14.8	0.0
3 Months Ago (12/09/2008 map)	0.0	100.0	87.4	49.2	3.2	0.0
Start of Calendar Year (01/06/2009 map)	1.7	98.3	88.2	41.3	2.8	0.0
Start of Water Year (10/07/2008 map)	0.0	100.0	95.9	55.0	0.0	0.0
One Year Ago (03/04/2008 map)	44.5	55.5	34.3	13.3	0.0	0.0

Intensity:

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



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



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<http://drought.unl.edu/dm>

U.S. Drought Monitor

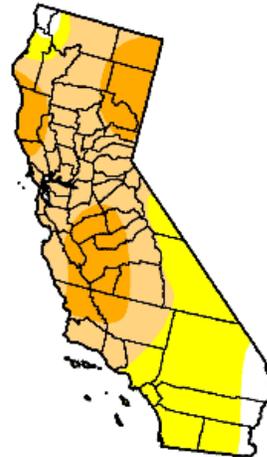
California

March 31, 2009
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	5.2	94.8	63.8	22.5	0.0	0.0
Last Week (03/24/2009 map)	5.2	94.8	63.8	22.5	0.0	0.0
3 Months Ago (01/06/2009 map)	1.7	98.3	88.2	41.3	2.8	0.0
Start of Calendar Year (01/06/2009 map)	1.7	98.3	88.2	41.3	2.8	0.0
Start of Water Year (10/07/2008 map)	0.0	100.0	95.9	55.0	0.0	0.0
One Year Ago (04/01/2008 map)	44.5	55.5	31.6	3.8	0.0	0.0

Intensity:

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



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



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<http://drought.unl.edu/dm>