California Monthly Climate Summary
January 2013

Weather Highlights

January 2013 was a cool, dry month for California. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 39.9°F which is 1.6°F lower than the long-term average of 41.4°F. With a statewide average of 1.02 inches, precipitation was only 23% of average. This is the sixth driest January in 119 years of record. Regional plots of mean temperature and precipitation rankings for the month are shown at the end of the report along with plots of the last 12 months of mean temperature and precipitation relative to the historical distribution.

January started high pressure and offshore flow covering the State. Cold weather resulted in morning freezes extending into the San Joaquin Valley. A storm system at the end of the week brought light precipitation across the State. A brief high pressure system moved over the State to start the week followed by a very cold, low-pressure system midweek. Freezing temperatures returned with this system with temperatures falling into the 20s in the Central Valley. A strong dome of high pressure built in behind the cold low resulting in valley temperature inversions and morning freezing conditions. As the high pressure moved into the Great Basin, temperatures warmed with off-shore flow conditions developing. The fourth week of January saw the heaviest precipitation with the heaviest amounts recorded in the South part of the State where some subtropical moisture was entrained. High pressure returned to dominate the weather to close out the month.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 95 temperature records tied or broken and 2 precipitation records set or tied for the month. The San Diego Weather Forecast Office recorded records on 16 days of the 22 days records were set in California for January 2013. Of the 95 temperature records set, 13 were for new high maximum temperatures and 33 were for new high minimum temperatures. South Lake Tahoe set three consecutive days of low minimum records from 1/13 to1/15 with readings of -12°F, -14°F, and -11°F. The old records were -7°F set in 1993, -6°F set in 2007, and -7°F set in 1997 respectively. On January 14th downtown Los Angeles dropped to 34°F which broke the old daily record of 36°F set in 2007. This was the lowest temperature recorded in Los Angeles since the last time it dropped to 34°F 12/23/1990.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 244 stations recorded a minimum temperature below freezing and no 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 January was above average in the Colorado River Desert Region of the State and below average everywhere else. For the CDEC precipitation gages, the largest amount of precipitation recorded was at Gasquet Ranger Station in the North Coast region with 5.36 inches. This is only 33% of the average precipitation for this station for the month. At the other end of the spectrum, two stations recorded no precipitation. For the CIMIS network, Goleta Foothills in Santa Barbara County topped the precipitation charts with 2.34 inches for the month and 8 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 1.5 inches in January. On average, 9 inches of precipitation is recorded for the 8-Station Index for the month. Statewide, the average precipitation for the month was 29% 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 Update

January 2013 is part of California's 5th 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 January 24, 2013 is shown at the end of the document. Currently, California has 991 volunteers signed up spanning 53 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, Modoc, and Tuolumne. The county with the most volunteers is Sonoma with 97 volunteers. For the month of January, 11,620 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA for the month was in Del Norte County where 2.57 inches was recorded on 1/24/2013. One-hundred-thirteen snow reports were filed with the largest daily snowfall of 10 inches reported on 1/10/2013 in Placer County. Five hail reports from four different Counties were entered. All reports were for hail in the rice to pea size. For more information on CoCoRaHS, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

At the end of January the Northern region snowpack held 17 inches of snow water equivalent (SWE) which is 59% of the April 1st average and 94% of the average for the date. The Central region SWE was reported to be 17 inches which is 57% of the April 1st average and 92% of the average for the date. The Southern region SWE was reported to be 13 inches which is 50% of the April 1st average and 86% of the average for the date. The WSI for WY2012 for the Sacramento Basin fell into the below normal category and the San Joaquin fell into the dry category. The initial forecast for the WSI for both the Sacramento and San Joaquin Basins is the below normal 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.

Extreme Precipitation Monitoring Network

The National Oceanographic and Atmospheric Administration (NOAA) Earth System Research Laboratory (ESRL), Scripps Institute of Oceanography, and the California Department of Water Resources have been working on the installation of new observing equipment to monitor characteristics of extreme precipitation events associated with atmospheric rivers. Initial data is starting to flow from this network. No extreme precipitation events occurred in January 2013 where the network components are installed. Some subtropical moisture was entrained into a system that hit Southern California, but no instruments are currently online in that part of the State. Data can be viewed on the NOAA ESRL website: http://hmt.noaa.gov and will be available later this year on the California Data Exchange Center.

Drought Monitor and Seasonal Outlook

The maps for California for December 25, 2012 and January 29, 2013 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 January 29th depiction, 21.57% of California is depicted in the D2 or severe drought category, 25.61% of California is depicted in the D1 or moderate drought category. An additional 18.62% of the state is depicted as D0 or abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for February through April from NOAA depicts California with persisting drought conditions throughout the parts of the State depicted in drought by the US Drought Monitor with some development in the central and northern part of the State. This forecast is based primarily on climatology and forecast models. Visit http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html for more information. 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-January 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) has transitioned to neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have moved towards negative values with the Niño 3.4 region posting a reading of -0.5°C anomaly at the end of January. The November through January 3-month running mean of the Ocean Niño Index (ONI) is -0.3. Five consecutive ONI values need to be above the 0.5 threshold need to be observed for classification as an El Niño event (five consecutive values below the threshold o f -0.5 for conditions to be classified as a La Niña event). Most forecast models have the tropical sea surface temperatures remaining in neutral conditions through the first half of 2013. 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 (February through April) from NOAA indicates equal chances of above average, near average, or below average temperatures for the whole State except the Lahontan and Colorado River Desert regions which are expected to have a greater chance of above-normal temperatures. For precipitation, an increased probability of below normal precipitation is forecast for the entire State except for the northernmost reaches which have equal chances of above, average, or below average precipitation. 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

January saw harvests finish up and winter preparations continue. Cotton fields were plowed under after harvest and winter small grains fields were planted. Kiwi and persimmon harvests were completed. Navel orange, Satsuma mandarin, lemon, lime, grapefruit, tangerine, and pummelo harvests continued. Freezing temperatures caused some frost damage and necessitated the use of sprinklers and wind machines. Damage assessment so far does not show heavy losses. Blueberries were covered to help pollination. Nut post harvest activities were ongoing. Almond trees were beginning to bud by the end of the month. Vineyards and stone fruit orchards were pruned and dormant sprays were applied. Cold weather slowed winter vegetable growth. Range conditions showed signs of improvement with rainfall with drier, poor conditions persisting in the South. More rain will be needed to sustain new growth. Supplemental feeding continued to increase. 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 – 88°F (Beverly Hills, South Coast)
Low Temperature – -26°F (Bogard Ranger Station, North Lahontan)
High Precipitation – 5.36 inches (Gasquet Ranger Station, North Coast)
Low Precipitation – 0.0 inches (2 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 69.9^{0}F (Seeley, Imperial County)
Low Average Minimum Temperature – 7.8^{0}F (McArthur, Shasta County)
High Precipitation – 2.34 inches (Goleta Foothills, Santa Barbara County)*
Low Precipitation – 0 inches (8 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Jan	Oct-Jan	Stations	Jan	Oct-Jan	Jan	Oct-Jan
North Coast	0.27	5	5	5	17	13	10	27.6%	105%
SF Bay	0.03	2	2	2	6	6	4	14.5%	118%
Central Coast	0.06	3	3	3	11	8	6	28.3%	86%
South Coast	0.06	3	3	3	14	13	12	46.7%	66%
Sacramento River	0.26	5	5	5	41	32	31	17.3%	119%
San Joaquin River	0.12	6	6	6	24	19	17	23.5%	101%
Tulare Lake	0.07	5	5	5	28	25	24	35.5%	78%
North Lahontan	0.04	3	3	3	13	11	11	18.6%	105%
South Lahontan	0.06	3	3	3	15	10	10	38.1%	48%
Colorado River	0.03	1	1	1	6	5	3	130%	98%
Statewide Weighted Average	1	36	36	36	175	142	128	29.1%	99.6%

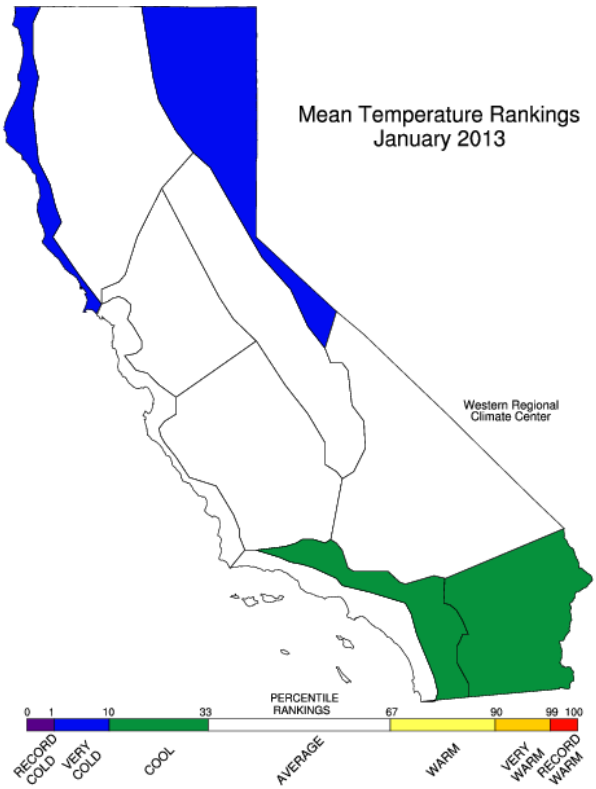
Statewide Mean Temperature Data by Hydrologic Region (degrees F)

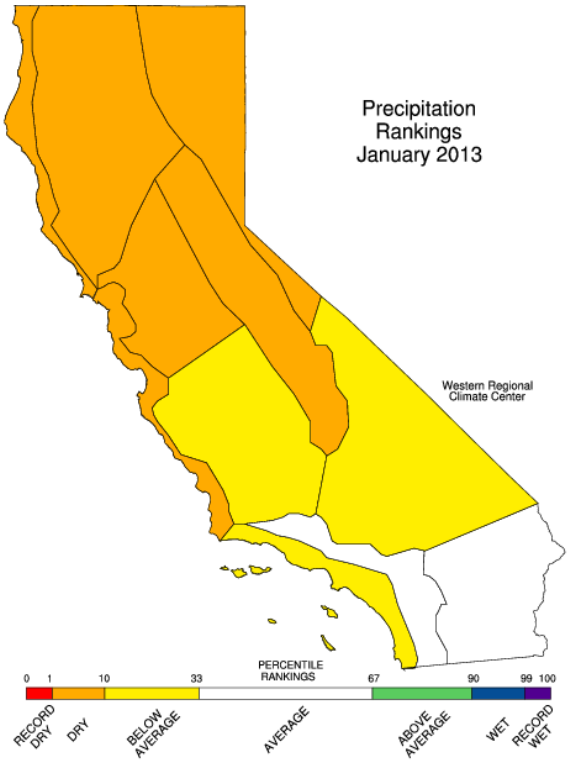
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	21	18.0	38.0	64.2
SF Bay	10	28.3	45.4	64.0
Central Coast	12	25.4	46.2	74.0
South Coast	39	26.4	49.6	75.6
Sacramento	74	14.4	37.9	64.3
San Joaquin	42	12.5	36.9	64.1
Tulare Lake	17	4.7	30.7	56.0
North Lahontan	24	-5.9	26.0	52.5
South Lahontan	12	4.0	32.9	59.3
Colorado River Desert	6	25.0	50.6	75.8
Statewide Weighted Average	257	15.2	38.3	64.5

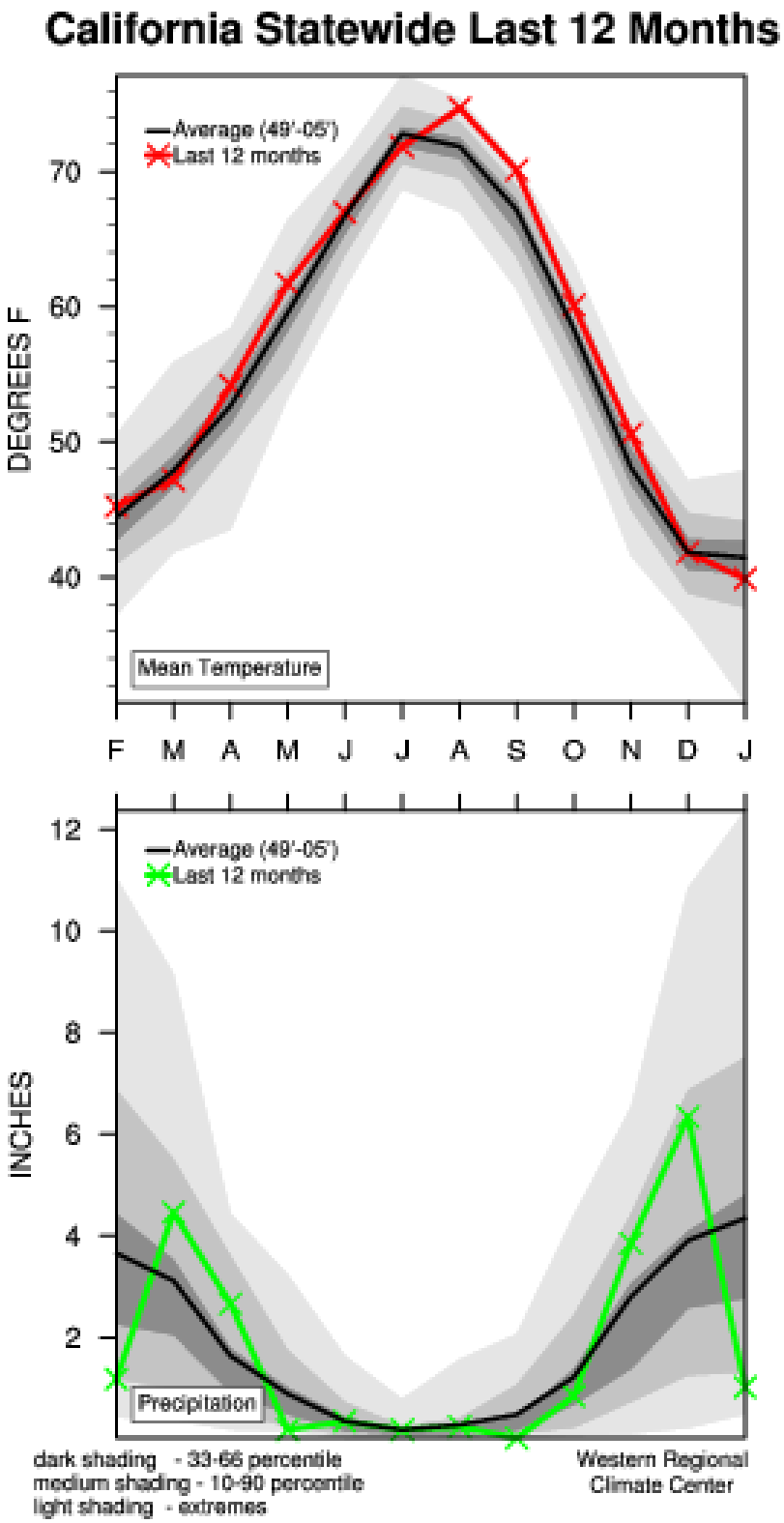
End-of-January Reservoir Storage by Hydrologic Region
Storage in Thousand Acre-Feet (taf)

End-of-January Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2012 Storage (taf)	% of Average
North Coast	6	2114	2,354	111%
San Francisco Bay	17	466	465	100%
Central Coast	6	597	545	91%
South Coast	29	1,375	1,190	87%
Sacramento	43	10,358	11,955	115%
San Joaquin	34	6,933	6,958	100%
Tulare	6	763	504	66%
North Lahontan	5	503	580	115%
South Lahontan	8	267	228	85%
Total	154	23,558	24,782	105%

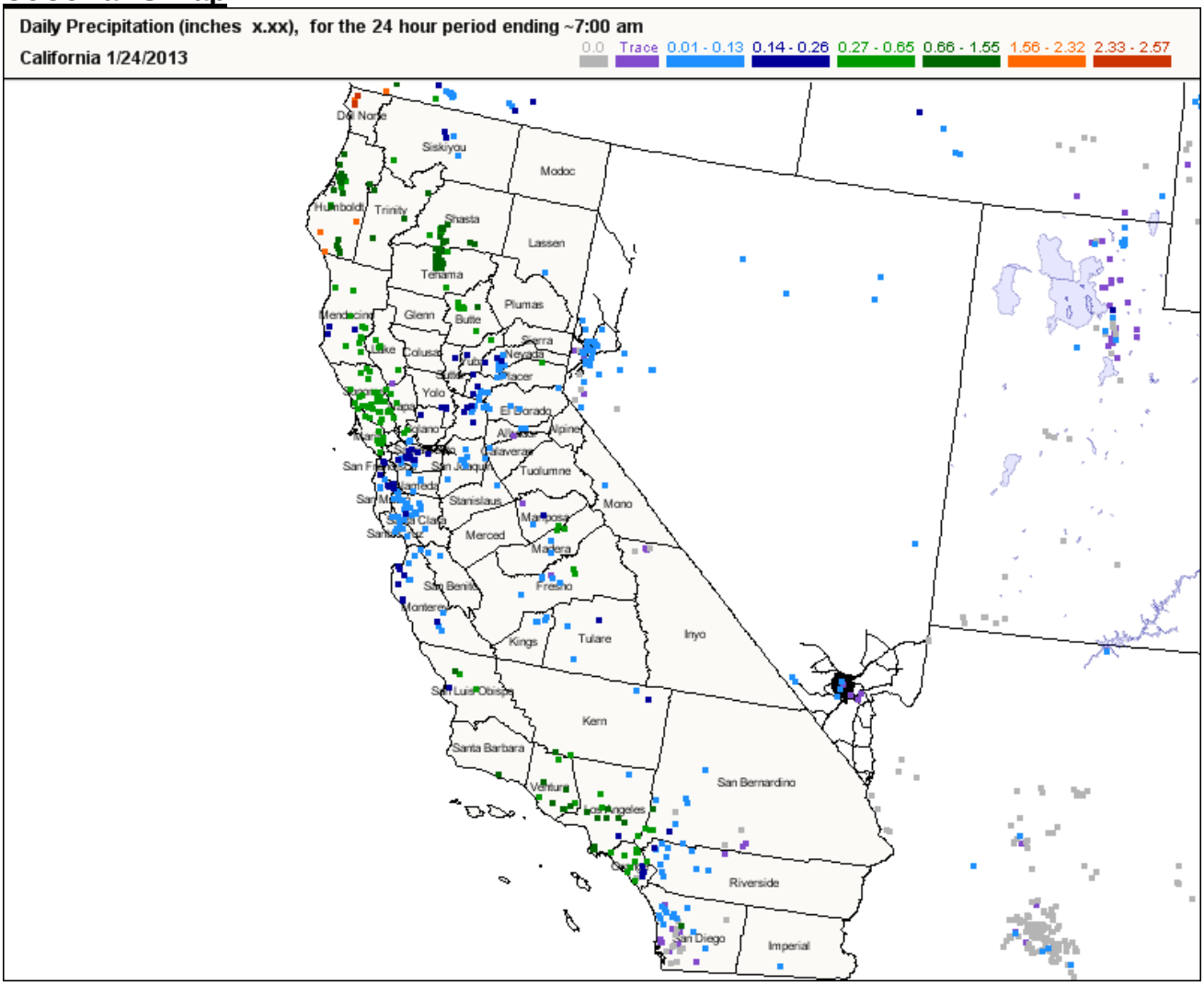
California Climate Tracker Images






California Statewide Last 12 Months
Average (49'-05')
Last 12 months
DEGREES F
70
60
50
40
Mean Temperature
F M A M J J A S O N D J
12
10
8
6
4
2
INCHES
Average (49'-05')
Last 12 months
Precipitation
dark shading - 33-66 percentile
medium shading - 10-90 percentile
light shading - extremes
Western Regional
Climate Center

CoCoRaHS Map



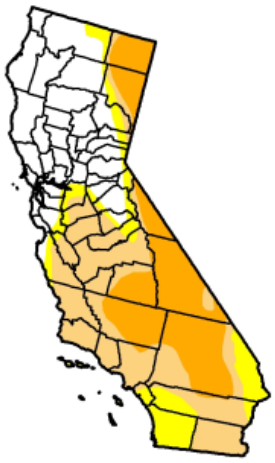
U.S. Drought Monitor

December 25, 2012
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.94	69.06	56.19	25.22	0.05	0.00
Last Week (12/18/2012 map)	30.94	69.06	56.19	26.15	0.05	0.00
3 Months Ago (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
Start of Calendar Year (12/27/2011 map)	33.91	66.09	5.41	0.00	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (12/20/2011 map)	71.58	28.42	0.00	0.00	0.00	0.00



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.

http://droughtmonitor.unl.edu

Released Thursday, December 27, 2012
Richard Heim, National Climatic Data Center, NOAA

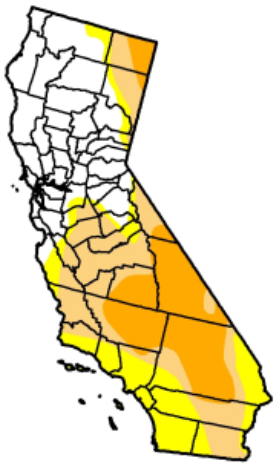
U.S. Drought Monitor

January 29, 2013
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.20	65.80	47.18	21.57	0.00	0.00
Last Week (01/22/2013 map)	34.20	65.80	53.58	21.57	0.00	0.00
3 Months Ago (10/30/2012 map)	6.73	93.27	68.48	19.10	1.14	0.00
Start of Calendar Year (01/01/2013 map)	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (01/24/2012 map)	19.12	80.88	41.23	0.00	0.00	0.00



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.

http://droughtmonitor.unl.edu

Released Thursday, January 31, 2013
Mark Svoboda, National Drought Mitigation Center