California Monthly Climate Summary
November 2013

Weather Highlights

November 2013 was a warm, dry month for California. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 49.5°F which is 1.4°F higher than the long-term average of 48.1°F. With a statewide average of 0.84 inches, precipitation in November was 30% of average. This is the driest January to November on record with a total of 6.51 inches of precipitation. The mean for this period is 18.97 inches. The previous record low was in 1929 when 9.05 inches was recorded. Regional maximum and minimum temperature and precipitation plots for November and for the January through November time period are shown at the end of the document.

November began with cooler weather and widespread showers but little accumulation. A ridge of high pressure developed towards the latter part of the first week. A weather system in the Pacific Northwest at the end of the week cooled temperatures and created gusty winds. The second week saw light rainfall on the North Coast while the rest of the state remained dry with near normal temperatures. The pattern of ridging and troughing continued into the third week with the North Coast continuing to be the only region receiving significant precipitation. A cold front finally brought significant precipitation to California at the end of the third week and into the first part of the fourth week. Rainfall extended into Southern California. Strong winds accompanied the exit of this system including a Santa Ana episode for Southern California. The month closed out with another system moving ashore over Southern California bringing more to that region.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 47 temperature records tied or broken and 5 precipitation records set for the month. Of the 47 temperature records set, 28 were for new high maximum temperatures and 13 were for new high minimum temperatures. Records were set over 14 days of the month. South Lake Tahoe set 3 consecutive high maximum temperature records on the 11th, 12th, and 13th of the month. Readings of 63°F, 62°F, and 64°F broke or tied the old records of 63°F set in 1995, 62°F in 1996, and 63°F in 1989 respectively. Also on the 13th, Mountain View tied a high maximum temperature record of 74°F last set in 1999, Redding broke their high temperature record of 82°F set in 1936 with a reading of 83°F, and downtown Sacramento tied their high temperature record of 78°F last set in 1995. For precipitation on November 21, Lancaster Fox Field recorded 1.3 inches which broke the old daily record of 0.97 set in 1967. Also on the 21st, Barstow-Daggett recorded 0.75 inches w hich broke the 2004 record of 0.65 inches. On the 22nd, Barstow-Daggett recorded 0.92 inches which broke the 1965 record of 0.69 inches.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 164 stations recorded a minimum temperature below freezing during the month 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 for the CDEC stations are also shown at the end of the summary.

Precipitation in November was below average across the state with the exception of the southeast desert. For the CDEC precipitation gages, the largest amount of precipitation recorded for the month was at Gasquet Ranger Station in the North Coast region with 5.02 inches. This is 23% of the average precipitation for this station for the month. At the other end of the spectrum, Palm Springs in the Colorado River Desert region recorded 0.11 inches of precipitation for the month which is 38% of average. For the CIMIS network, Irvine in Orange County topped the precipitation charts with 1.50 inches for the month and 54 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 1.70 inches in November in 4 days of precipitation. On average, 6.0 inches of precipitation is recorded for the month. For the combined January to November total, the 8-Station Index is 15.6 inches which is the lowest Jan-Nov total in the period of record which dates back to water year 1921. The next lowest value was 17.76 inches set in 1929. Statewide, the average precipitation for the month was 44.9% 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

November 2013 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 November 20, 2013 is shown at the end of the document. As of the end of November, California has 1064 volunteers signed up spanning 54 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, and Modoc. The county with the most volunteers at the end of November is Sonoma with 98 volunteers. San Diego County is close behind with 96 volunteers. For the month of November, 10,485 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in November was in San Bernardino County where 3.30 inches was recorded on 11/22/2013. There were 14 snowfall reports recorded with the largest being 7.4 inches in Inyo County on 11/23/2013. One hail report was submitted in November in San Diego County on 11/22/2013 with rice to pea-sized stones. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

The Water Supply Index (WSI) for WY2013 for the Sacramento Basin fell into the dry category and the San Joaquin fell into the critical category. Further 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 October 29, 2013 and November 26, 2013 are shown below. The Drought Monitor maps can be found on the NDMC website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the November 26th depiction, 27.59% of California is depicted in D3 or extreme drought, 54.94% of California is depicted in the D2 or severe drought category, 11.62% of California is depicted in the D1 or moderate drought category. An additional 3.24% of the state is depicted as D0 or abnormally dry and 2.61% of the state is drought free. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for December through February from NOAA depicts California in persisting drought throughout the state. 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-month reservoir storage by hydrologic region is shown at the end of this document. Statewide, reservoir storage at the end of November was 74% of average. At the end of November 2012, storage was 97% of average.

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 normal with values of 0.1°C in the Niño 3.4 at the end of November. The September through November 3-month running mean of the Ocean Niño Index (ONI) is -0.2. Five consecutive ONI values need to be below the threshold o f -0.5 for conditions to be classified as a La Niña event (five consecutive values above the 0.5 threshold need to be observed for classification as an El Niño event). Most forecast models have the tropical sea surface temperatures transitioning to warmer conditions by late spring 2014. 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 (December through February) from NOAA indicates equal chances of above or below normal conditions for both temperature and precipitation apply across the state. Outlook plots and discussions can be fount 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

November 2013 saw crop harvests and post harvest activities progress throughout the state. Cotton harvest was in full swing during the month while the season's last cutting of alfalfa also occurred. Winter wheat fields were planted. Sorghum, sudan grass, and corn were also harvested during the month. Nut harvests were winding down during the month and post-harvest pruning occurred. Fields for new orchards were prepared for planting. Wine grape harvest neared completion while vines continued to lose leaves and go dormant. Pomegranates, kiwi, Asian pears, persimmons, apples, olives and citrus harvests continued. Harvested olive groves were pruned. Winter vegetables were planted while lettuce, broccoli, and cauliflower were harvested in Imperial County. Onions and basil were harvested in Stanislaus County while unsold pumpkins were plowed into the ground in San Mateo County. Range conditions remained in fair to very poor condition due to the lack of significant precipitation. Supplemental feeding continued and ranchers have been searching for winter feed. Calving season continued and lambing began. Offshore, Dungeness crab harvest began. 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 – 98°F (Santa Fe, South Coast)
Low Temperature – -12°F (Casa Vieja Meadow, Tulare)
High Precipitation – 5.94 inches (Cuyamaca Dam, South Coast)
Low Precipitation – 0.11 inches (Palm Springs, Colorado River Desert)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 79.2^0F (Westmoreland North, Imperial County)
Low Average Minimum Temperature – 19.3^0F (Alturas, Modoc County)
High Precipitation – 3.04 inches (Kesterson, Merced County)*
Low Precipitation – 0 inches (17 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	Nov	Oct-Nov	Stations	Nov	Oct-Nov	Nov	Oct-Nov
North Coast	0.27	5	4	4	17	9	9	25.5%	017%
SF Bay	0.03	2	1	1	6	1	1	26.5%	17%
Central Coast	0.06	3	2	2	11	3	2	31.3%	44%
South Coast	0.06	3	3	3	14	12	12	48.5%	63%
Sacramento River	0.26	5	5	5	41	31	31	27.1%	24%
San Joaquin River	0.12	6	5	5	24	13	12	30.4%	29%
Tulare Lake	0.07	5	5	5	28	26	25	38.4%	45%
North Lahontan	0.04	3	3	3	13	4	4	20.5%	23%
South Lahontan	0.06	3	3	3	15	3	3	147%	98%
Colorado River	0.03	1	1	1	6	3	3	312%	144%
Statewide Weighted Average	1	36	32	32	175	105	102	44.9%	35.5%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

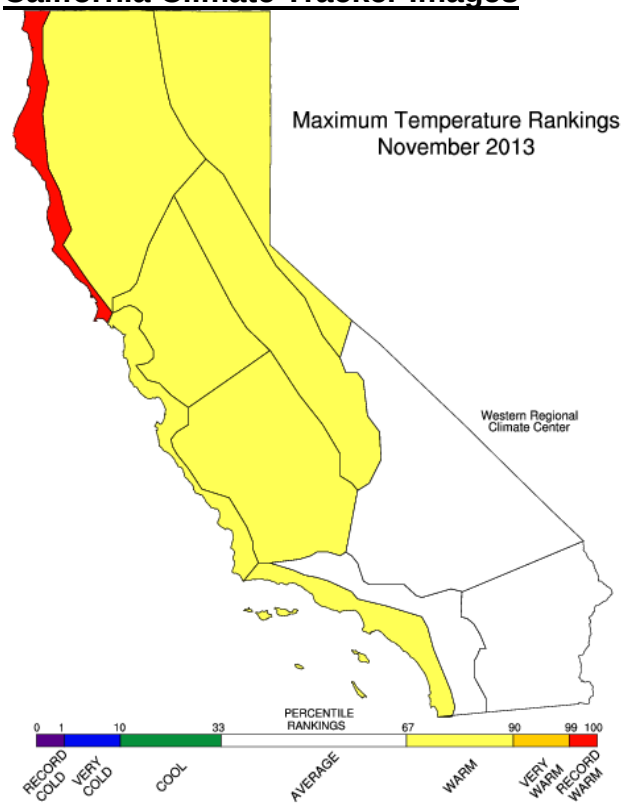
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	19	26.9	45.9	68.8
SF Bay	9	41.2	55.2	74.7
Central Coast	10	36.5	54.0	80.7
South Coast	39	40.7	57.8	86.1
Sacramento	74	27.2	46.2	70.9
San Joaquin	47	28.4	44.6	69.1
Tulare Lake	20	21.8	38.4	62.2
North Lahontan	27	14.6	36.6	60.3
South Lahontan	14	20.9	40.6	65.9
Colorado River Desert	7	42.4	62.0	87.9
Statewide Weighted Average	266	28.3	46.6	70.9

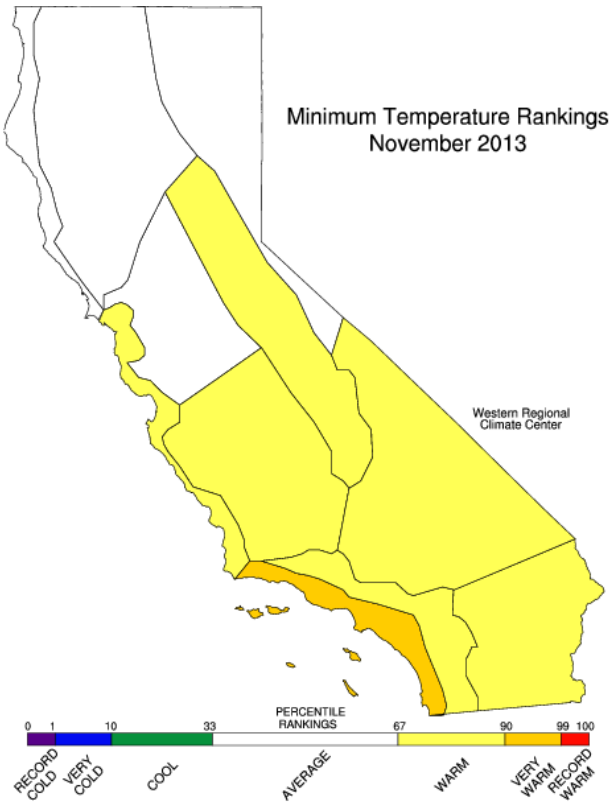
End-of-Month Reservoir Storage by Hydrologic Region

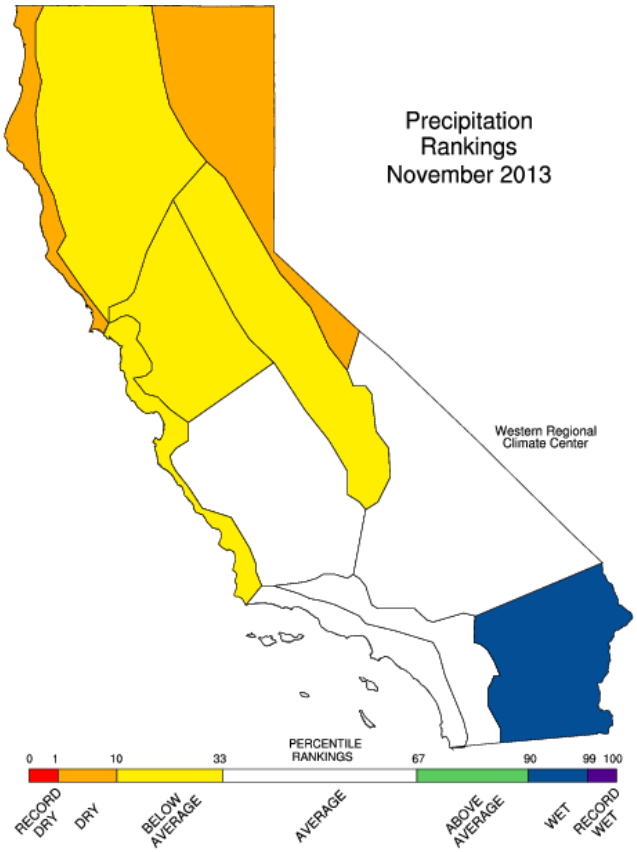
Storage in Thousand Acre-Feet (taf)

End-of-November Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2013 Storage (taf)	% of Average
North Coast	6	1,892	1,449	77%
San Francisco Bay	17	399	375	94%
Central Coast	6	516	223	43%
South Coast	29	1,279	1,132	89%
Sacramento	43	9,478	7,093	75%
San Joaquin	34	6,276	4,736	75%
Tulare	6	647	325	50%
North Lahontan	5	459	238	52%
South Lahontan	8	267	223	84%
Total	154	21,217	15,799	74%

California Climate Tracker Images






Precipitation
Rankings
November 2013
Western Regional
Climate Center
PERCENTILE
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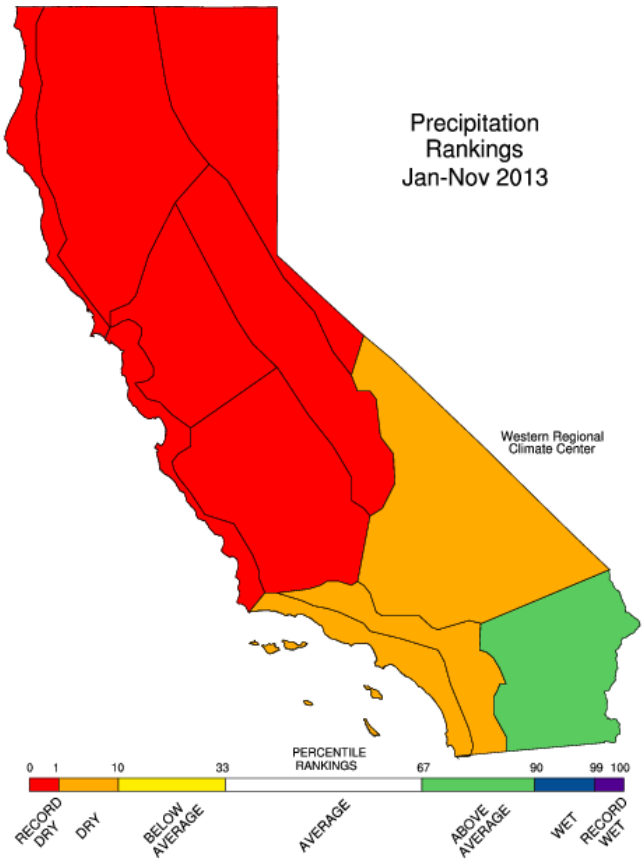
RECORD DRY
DRY
BELOW AVERAGE
AVERAGE
ABOVE AVERAGE
WET
RECORD WET


Precipitation
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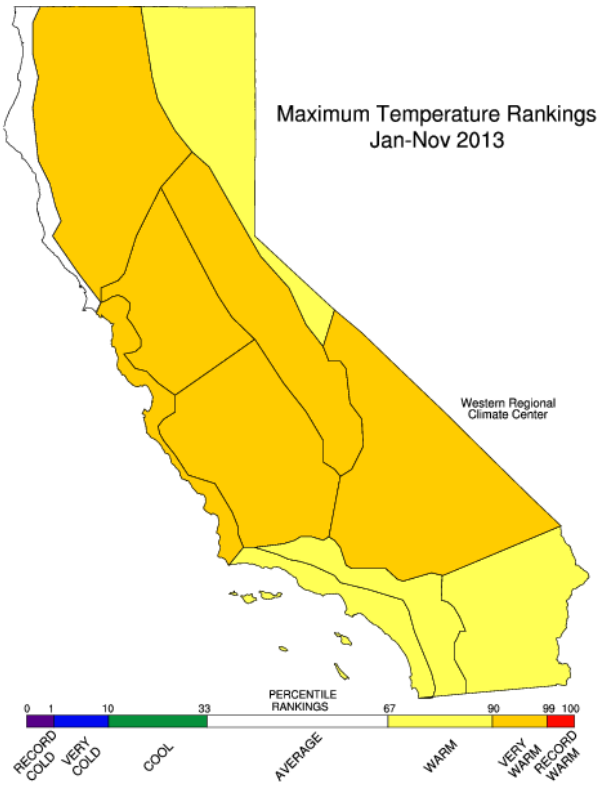
Maximum Temperature Rankings
Jan-Nov 2013
Western Regional
Climate Center
PERCENTILE
RANKINGS
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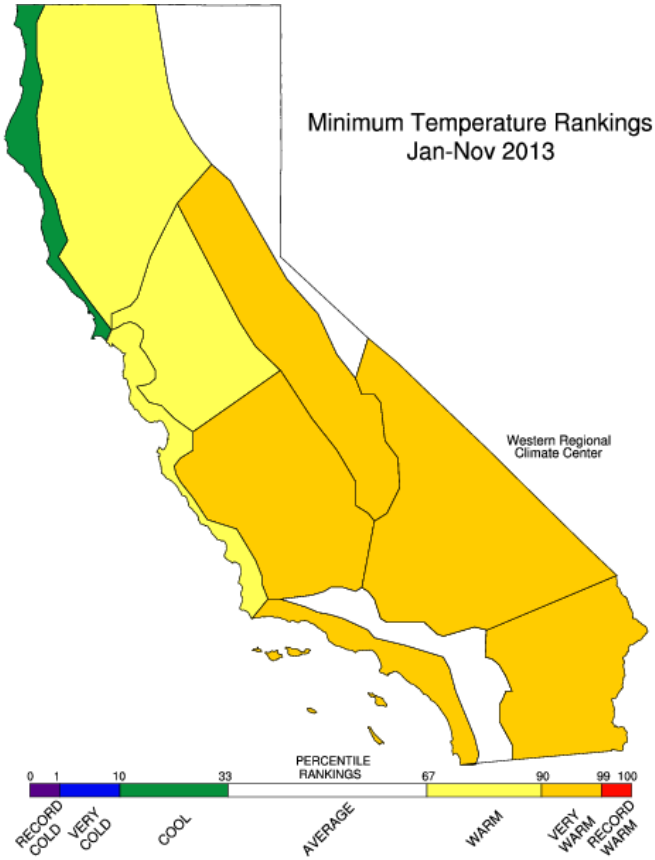
RECORD COLD
VERY COLD
COOL
AVERAGE
WARM
VERY WARM
RECORD WARM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RECORD COLD
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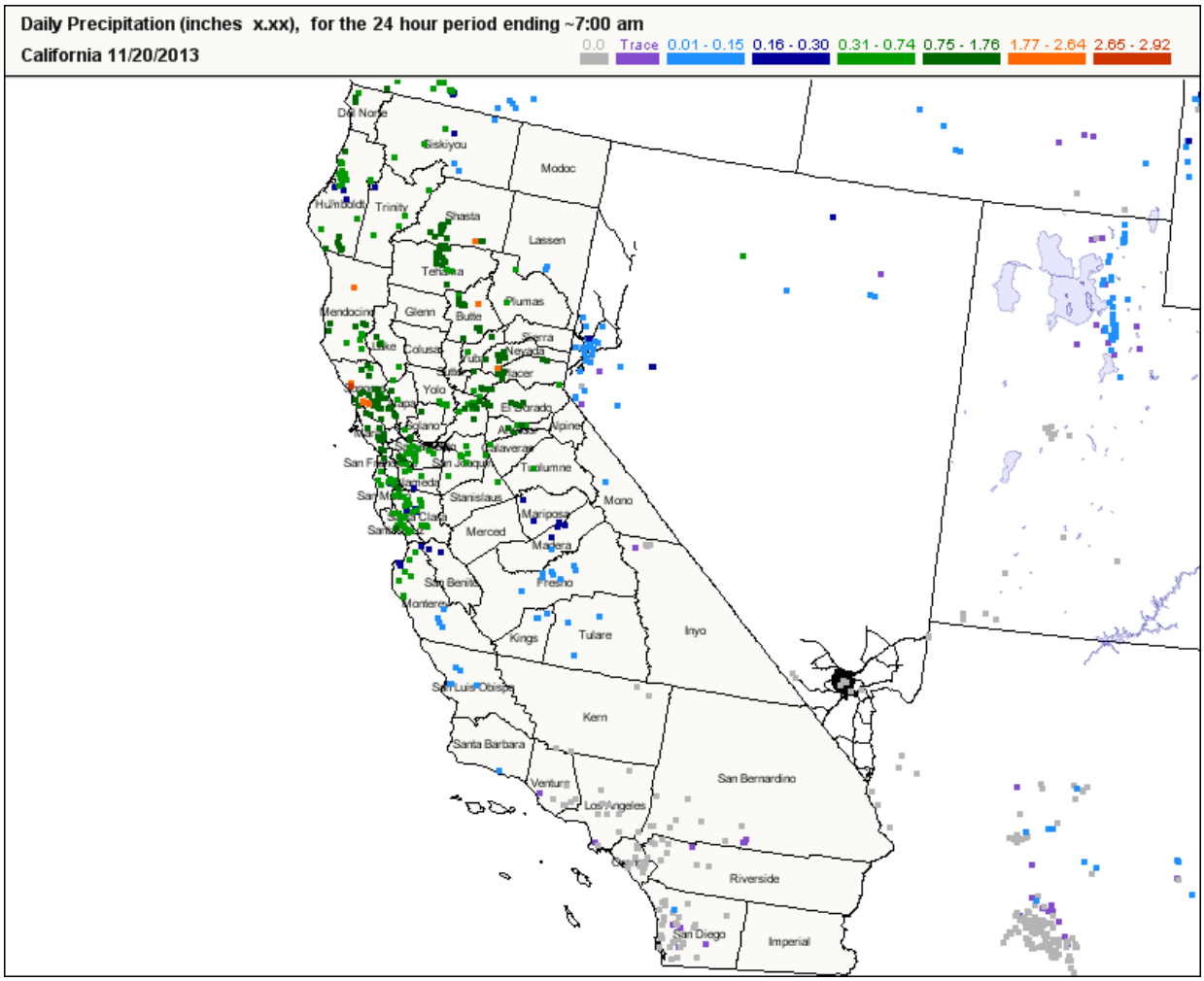
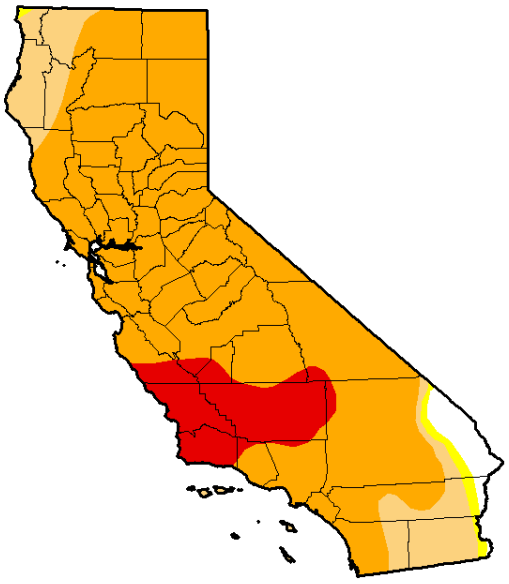
RECORD WARM

CoCoRaHS Map



U.S. Drought Monitor
California



October 29, 2013
(Released Thursday, Oct. 31, 2013)
Valid 7 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.66	97.34	95.98	84.12	11.36	0.00
Last Week 10/22/2013	2.66	97.34	95.98	84.12	11.36	0.00
3 Months Ago 7/30/2013	0.00	100.00	98.23	93.86	0.00	0.00
Start of Calendar Year 1/1/2013	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 10/30/2012	6.73	93.27	68.48	19.10	1.14	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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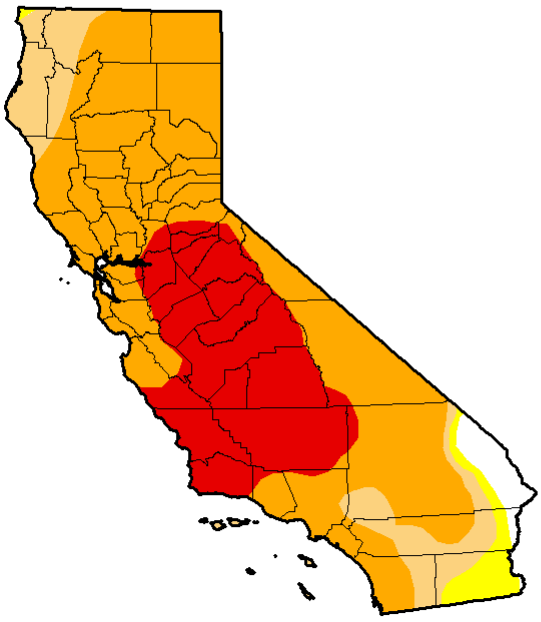
http://droughtmonitor.unl.edu/

U.S. Drought Monitor
California



November 26, 2013
(Released Thursday, Nov. 28, 2013)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.61	97.39	94.15	82.53	27.59	0.00
Last Week 11/19/2013	2.61	97.39	96.00	84.12	27.59	0.00
3 Months Ago 8/27/2013	0.00	100.00	98.23	93.86	11.36	0.00
Start of Calendar Year 1/1/2013	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 11/27/2012	6.77	93.23	70.47	28.16	1.14	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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