California Monthly Climate Summary
April 2013

Weather Highlights

April 2013 was a warm and dry month for California. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 56.5°F which is 3.8°F higher than the long-term average of 52.7°F. This was the 10th warmest April since 1895. With a statewide average of 0.66 inches, precipitation in April was only 40% of average. While this is only the 26th driest April in the California Climate Tracker record, this is the driest January to April with a total of 3.36 inches of precipitation. The mean for this period is 12.76 inches. Regional maximum and minimum temperature and precipitation plots for the January through April time period are shown at the end of the document.

April started with light to moderate precipitation hitting most of the State. Warmer and drier conditions followed the exit of this system. Northerly winds also marked the exit of the system. Towards the end of the first week a second set of weak storm systems moved over the northern part of the State bringing thunderstorms with some hail. Another weak system moved through the State during the second week bringing light precipitation and more strong northerly winds upon its exit. The pattern of weak storms followed by strong northerly winds continued in the third week of April. The month closed out with high pressure sitting over the State with temperatures running well above normal.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 68 temperature records tied or broken and 2 precipitation records tied for the month. Of the 68 temperature records set, 28 were for new high maximum temperatures and 28 were for new high minimum temperatures. Records were set over 20 days of the month. Eureka set a new high temperature record on the 24th with a reading of 70°F. The old record of 68°F was set back in 1913. Also on April 24th, The Redding airport broke a high minimum temperature record with a reading of 57°F. The old record was 53°F set back in 1899. Santa Ana tied a 1921 record for low maximum temperature with a reading of 62°F. Palm Springs and Thermal reached 106°F on April 29th. Palm Springs tied its 1959 daily record while Thermal broke the old record of 105°F also set in 1959.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 170 stations recorded a minimum temperature below freezing in March while six 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 April was below average across the State. 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 5.85 inches. This is 90% of the average precipitation for this station for the month. At the other end of the spectrum, 12 stations recorded no precipitation for the month. For the CIMIS network, Lompoc in Santa Barbara County topped the precipitation charts with 3.78 inches for the month and 30 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 April. On average, 3.9 inches of precipitation is recorded for the 8-Station index for the month. For the combined January to April total, the 8-Station Index is 8.0 inches which is the lowest Jan-Apr total in the period of record which dates back to water year 1921. The previous record was 9.65 inches set in 1977. Statewide, the average precipitation for the month was 50.57% 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

April 2013 continues California's fifth 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 April 1, 2013 is shown at the end of the document. As of the end of April, California has 1026 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 at the end of April is Sonoma with 98 volunteers. San Diego County is close behind with 90 volunteers. For the month of April, 10,643 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in April was in Sonoma and Shasta Counties where 1.57 inches was recorded on 04/01/2013 and 04/05/2013 respectively. There were 22 snowfall reports recorded with the largest being 4 inches in Nevada County. The largest total depth of snow reported in April was 46 inches in Placer County. Three hail reports were submitted in April in El Dorado, Shasta, and Siskiyou Counties. The largest stone size reported was 1/4" sized. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

At the end of April the Northern region snowpack held 4 inches of snow water equivalent (SWE) which is 18% of the April 30 average. The Central region SWE was reported to be 7 inches which is 26% of the April 30 average. The Southern region SWE was reported to be 2 inches which is 10% of the April 30 average. The Water Supply Index (WSI) for WY2012 for the Sacramento Basin fell into the below normal category and the San Joaquin fell into the dry category. The median forecast for the WSI for the Sacramento Basin is dry and critical for the San Joaquin Basin. 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.

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. 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 March 26, 2013 and April 23, 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 April 23rd depiction, 30% of California is depicted in the D2 or severe drought category, 33.42% of California is depicted in the D1 or moderate drought category. An additional 33.74% of the state is depicted as D0 or abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for May through July from NOAA depicts California in persisting or developing drought throughout most of 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.

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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 near normal with values of 0.0°C in the Niño 3.4 at the end of April. The February through April 3-month running mean of the Ocean Niño Index (ONI) is -0.4. 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 remaining near neutral conditions for the rest of the calendar year. 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 (May through July) from NOAA indicates equal chances of above or below normal temperatures for the State with the exception of the southeastern deserts which have a higher probability of above normal conditions. For precipitation, a higher probability of below normal conditions is forecast for the far northern parts of the State and equal chances elsewhere. 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

April 2013 saw ample crop planting and development. Winter forage crops were prepared for harvesting. Rice fields were prepared for planting. Cotton planting had progressed beyond 75% completion. Emerging plants were developing quickly. Cherry, nectarine, and peach trees were showing fruit with some growers thinning. Apples and pears continued to leaf out while grape vineyards had leafed out and were treated with sulfur. Some frost damage to apples was reported in El Dorado County. Almond and walnut orchards were irrigated and branches blown down by the winds were cleaned up. Range conditions were reported as fair and supplemental feeding continued. Livestock was moved to higher elevation pastures as they became available. 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 – 108°F (Buttercup, Colorado River Desert)
Low Temperature – -6°F (Charlotte Lake, Tulare)
High Precipitation – 5.85 inches (Gasquet Ranger Station, North Coast)
Low Precipitation – 0.0 inches (12 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 90.2^0F (Salton Sea East, Imperial County)
Low Average Minimum Temperature – 27.9^0F (Big Bear Lake, San Bernardino County)
High Precipitation – 3.78 inches (Lompoc, Santa Barbara County)*
Low Precipitation – 0 inches (30 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	Apr	Oct-Apr	Stations	Apr	Oct-Apr	Apr	Oct-Apr
North Coast	0.27	5	5	5	15	9	8	77.6%	83%
SF Bay	0.03	3	3	2	6	3	2	72.7%	84%
Central Coast	0.06	5	4	4	10	6	6	17.5%	54%
South Coast	0.06	5	5	5	14	13	13	2.2%	44%
Sacramento River	0.26	10	9	9	42	33	33	67.8%	84%
San Joaquin River	0.12	7	7	7	26	20	16	43.1%	71%
Tulare Lake	0.07	5	5	5	27	27	27	20.9%	55%
North Lahontan	0.04	6	5	5	13	10	10	40.2%	79%
South Lahontan	0.06	5	5	5	14	7	7	6.4%	49%
Colorado River	0.03	2	2	2	6	3	3	0.0%	56%
Statewide Weighted Average	1	53	50	49	173	131	125	50.6%	73%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

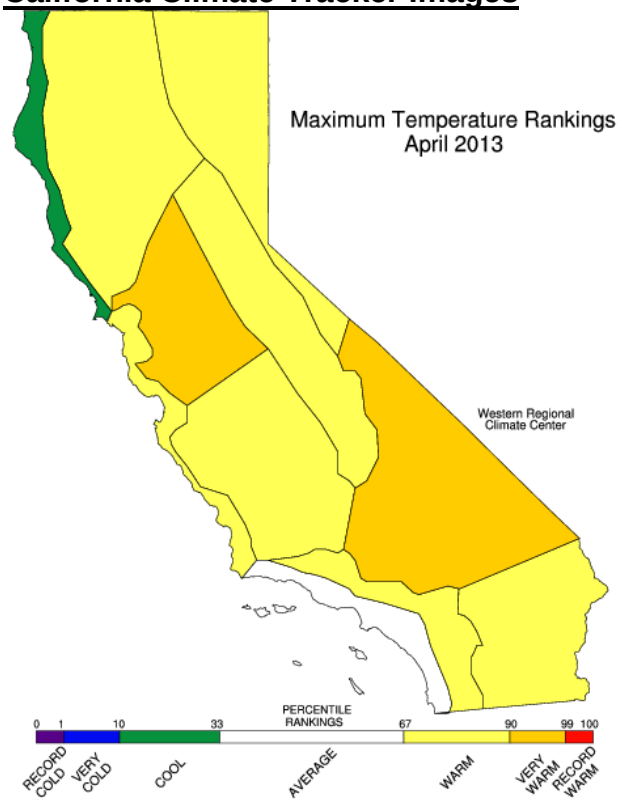
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	19	28.6	49.7	80.3
SF Bay	7	35.9	57.0	83.0
Central Coast	10	32.7	57.9	88.6
South Coast	36	38.2	59.2	87.9
Sacramento	73	28.9	52.2	80.7
San Joaquin	44	25.5	49.6	76.9
Tulare Lake	17	19.0	45.2	71.0
North Lahontan	26	16.5	40.5	66.3
South Lahontan	15	18.1	46.7	75.1
Colorado River Desert	7	46.7	72.5	102.4
Statewide Weighted Average	254	28.1	51.4	80.2

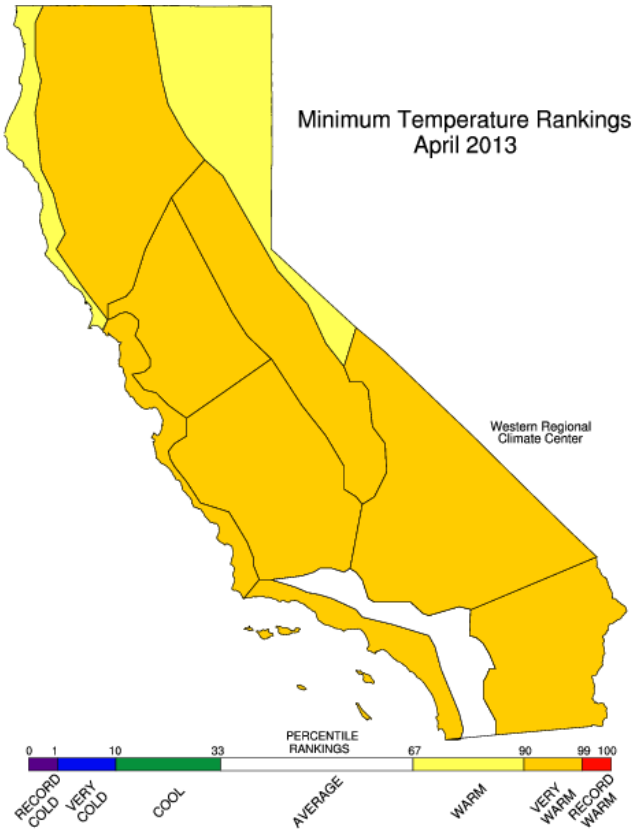
End-of-April Reservoir Storage by Hydrologic Region

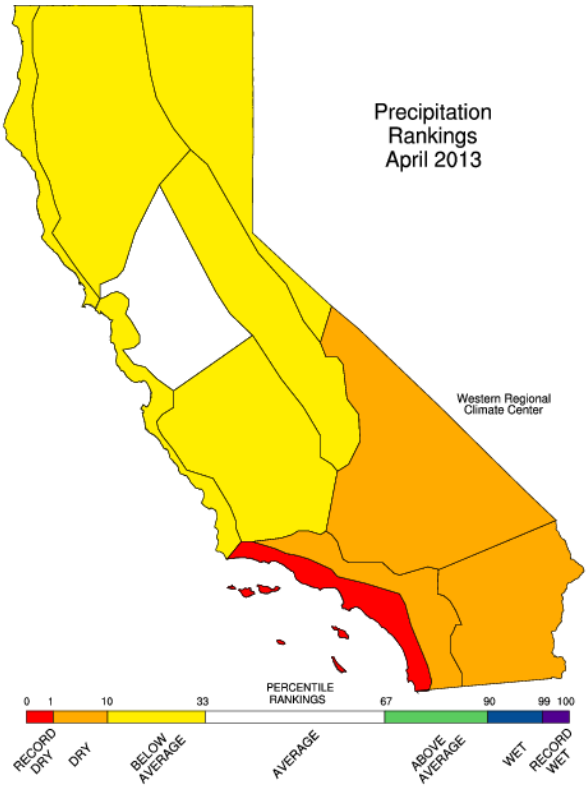
Storage in Thousand Acre-Feet (taf)

End-of-April Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2013 Storage (taf)	% of Average
North Coast	6	2,459	2,526	103%
San Francisco Bay	17	529	446	84%
Central Coast	6	711	496	70%
South Coast	29	1,524	1,239	81%
Sacramento	43	13,043	13,106	100%
San Joaquin	34	7,773	7,273	94%
Tulare	6	1,062	761	72%
North Lahontan	5	585	589	101%
South Lahontan	8	261	253	97%
Total	154	27,950	26,693	96%

California Climate Tracker Images






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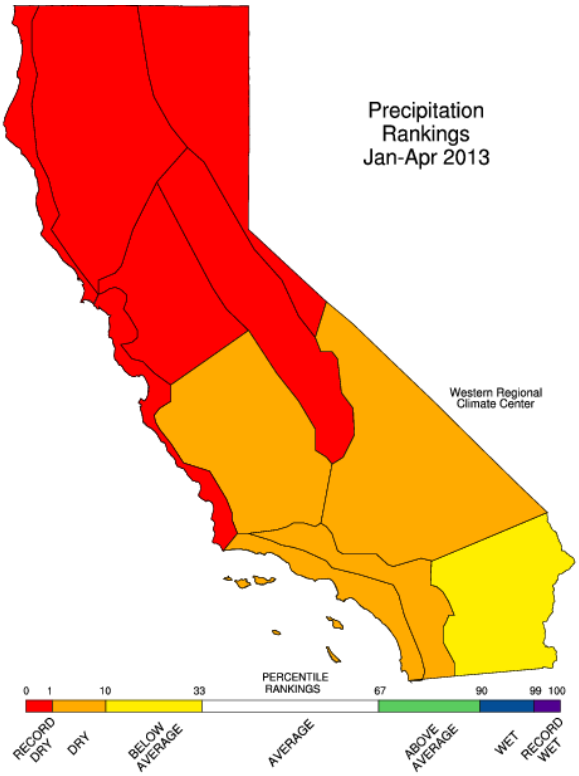
RECORD DRY
DRY
BELOW AVERAGE
AVERAGE
ABOVE AVERAGE
WET
RECORD WET


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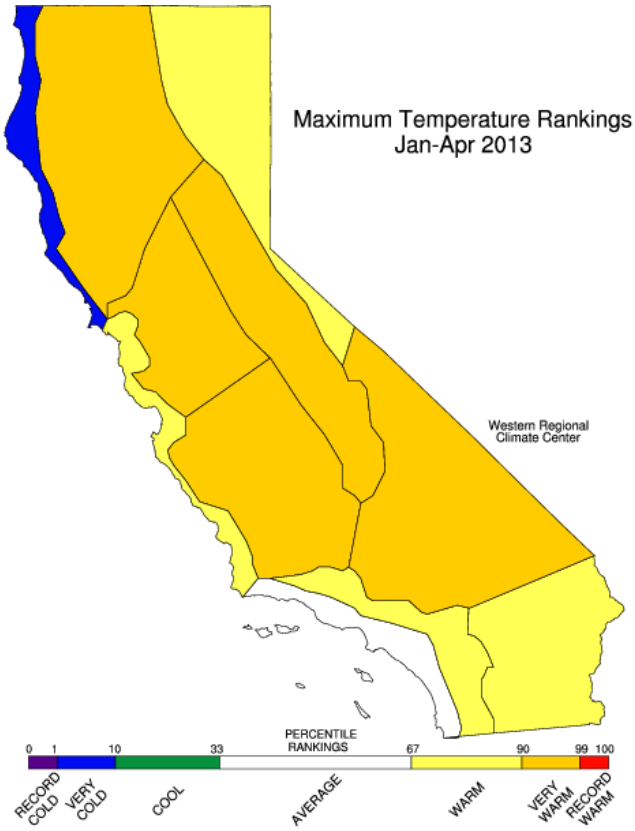
Maximum Temperature Rankings
Jan-Apr 2013
Western Regional
Climate Center
PERCENTILE
RANKINGS
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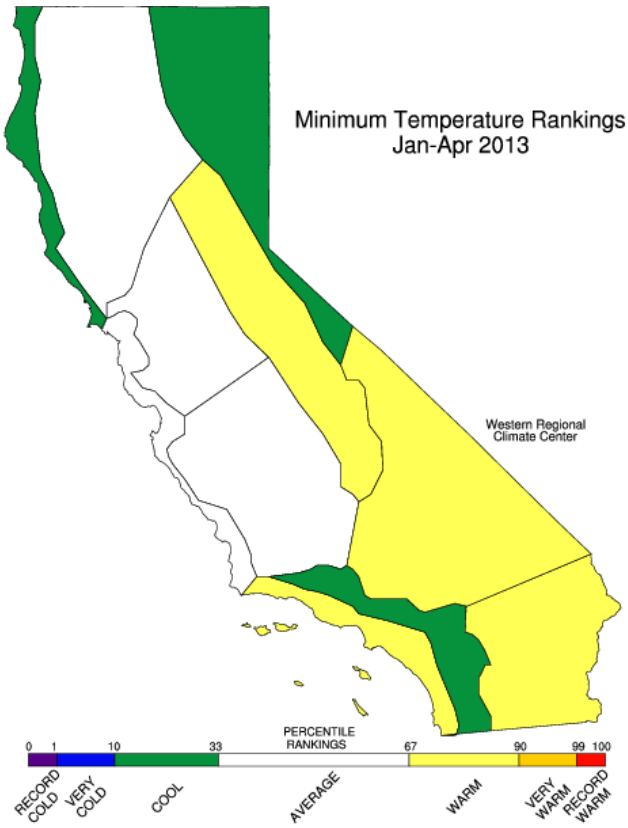
RECORD COLD
VERY COLD
COOL
AVERAGE
WARM
VERY WARM
RECORD WARM


Minimum Temperature Rankings
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RECORD COLD
VERY COLD
COOL
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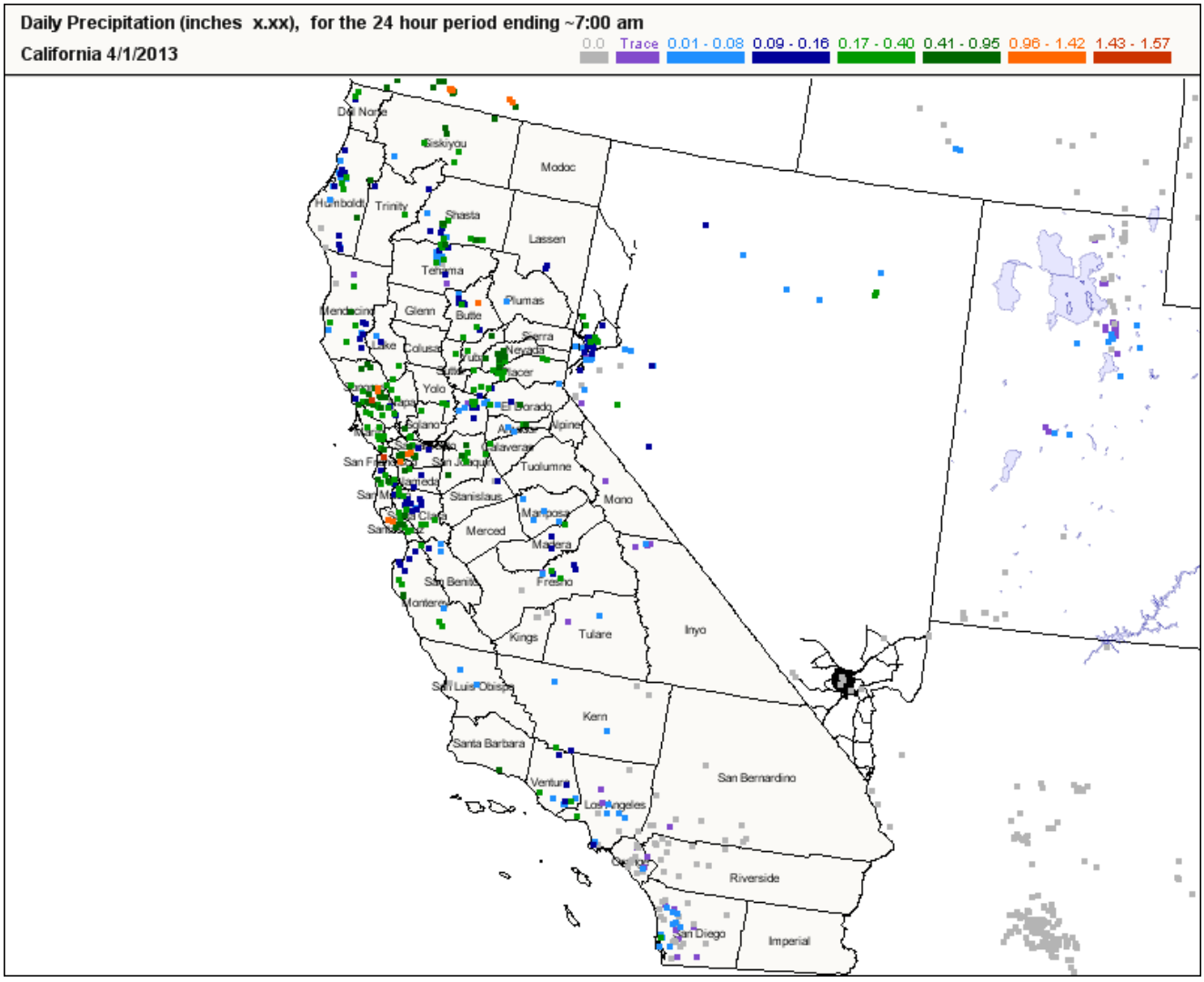
VERY WARM
RECORD WARM

CoCoRaHS Map



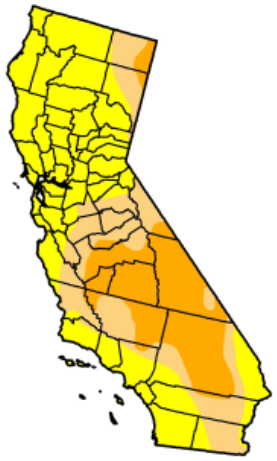
U.S. Drought Monitor

March 26, 2013
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	48.38	24.22	0.00	0.00
Last Week (03/19/2013 map)	12.85	87.15	48.38	24.19	0.00	0.00
3 Months Ago (12/25/2012 map)	30.94	69.06	56.19	25.22	0.05	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 (03/20/2012 map)	2.22	97.78	89.61	40.14	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, March 28, 2013
Anthony Artusa, NOAA/NWS/NCEP/Climate Prediction Center

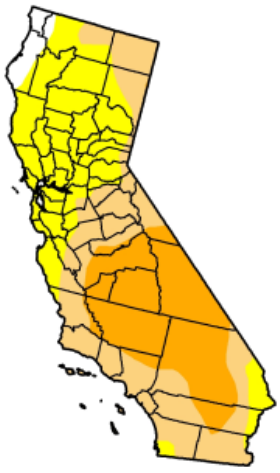
U.S. Drought Monitor

April 23, 2013
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.84	97.16	63.42	30.00	0.00	0.00
Last Week (04/16/2013 map)	2.84	97.16	48.39	23.22	0.00	0.00
3 Months Ago (01/22/2013 map)	34.20	65.80	53.58	21.57	0.00	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 (04/17/2012 map)	15.84	84.16	60.23	26.35	0.00	0.00



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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, April 25, 2013
Eric Luebehusen, U.S. Department of Agriculture