

California Monthly Climate Summary  
September 2015

**Weather Highlights**

September 2015 was a warm, dry month for California. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 70.1°F which is 2.9°F higher than the long-term average. With a statewide average of 0.31 inches, precipitation was 64% of average. For the water year 2015, the average temperature was 59.4°F which is 3.3°F above the long term average and is the warmest value in 120 years of record. Precipitation for water year 2015 totaled 17.73 inches which is 77% of the long term average and is the 40<sup>th</sup> driest water year in 120 years of record. Statewide plots of precipitation and temperature for the past month and water year are included at the end of the document.

September began with hot dry weather across the State. Towards the end of the first week a cooler weather pattern moved in dropping temperatures closer to normal. High pressure returned for the second week leading to record breaking temperatures in many locations. The remains of Hurricane Linda moved into the South Coast region and Southern Sierra causing thunderstorms and locally heavy showers. For the city of Los Angeles, September 15, 2015 is the wettest day of 2015, second wettest day in any September, and the month is the third wettest as a result of the decaying tropical system. The heat continued into the third week with the exception of the far North Coast which returned to normal conditions. The month closed out with fog along the coast and dry warm conditions inland. Needles recorded its warmest September on record with an average temperature of 92.5°F which broke the old record of 91.2°F set in 2001 and tied in 2012.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 208 temperature records tied or broken and 33 precipitation records set for the month. Of the 208 temperature records set, 63 were for new high maximum temperatures and 143 were for new high minimum temperatures. Records were set on 23 days of the month with 15 of those days coming from the San Diego and Los Angeles Forecast Areas. For the water year there were 1482 temperature records set and 252 precipitation records set. The largest monthly total for temperature records was in March 2015 with 319 records. The largest monthly total for precipitation records was in July 2015 with 81 records. Plots showing the monthly distribution of temperature and precipitation records are included at the end of the summary.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 53 stations recorded a minimum temperature below freezing while 105 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 September was below average in all but two of the hydrologic regions (South Coast at 460% and the Tulare Basin at 119%). For the CDEC precipitation gages for August 2015, the largest amount of precipitation recorded was at Mount Wilson No. 2 on the South Coast with 3.51 inches. This is 488% of the average precipitation for this station the month. At the other end of the spectrum, 12 stations recorded no precipitation for the month. For the CIMIS network, Moraga in Contra Costa County topped the precipitation charts with 3.31 inches for the month and 32 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 0.4 inches in September. On average, 0.9 inches of precipitation is recorded for the 8-Station index for the month. For the water year, the 8-station index recorded 37.2 inches which is the 4<sup>th</sup> consecutive year of below average precipitation. The San Joaquin 5-Station Index recorded 0.2 inches of precipitation for the month. On average, 0.7 inches of precipitation is recorded for the 5-Station Index for the month. For the water year the San Joaquin 5-Station Index recorded 19.0 inches which is the 4<sup>th</sup> consecutive year of below average precipitation. The Tulare Basin 6-Station Index recorded 0.1 inches of precipitation for the month. On average, 0.6 inches of precipitation is recorded. For the water year the Tulare Basin 6-Station index recorded 13.5 inches which is the 4<sup>th</sup> consecutive year of below normal precipitation.

### **CoCoRaHS Update**

The end of Water Year 2015 completes 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 September 16, 2015 is shown at the end of the document. As of the end of the past month, California has 1,335 volunteers signed up spanning 55 of California's 58 counties. The counties without volunteers are Alpine, Glenn, and Modoc. The counties with the most volunteers are San Diego County with 113 volunteers and Sonoma County with 115. For the month of September, 11,403 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in September was in Orange County on 9/16/2015 where 3.19 inches was recorded. There were no reports of snowfall recorded during the month. There were no hail reports filed for the month. To join CoCoRaHS or find more information, please visit <http://www.cocorahs.org>.

### **Snowpack and Water Supply Conditions**

As of May 26, 2015, the regional snow pillow report shows no snow in any of the regions. The Water Supply Index (WSI) for WY2015 for the Sacramento Basin and the San Joaquin Basin are in the critical category. More information can be found at <http://cdec.water.ca.gov/watersupply.html>. A historical listing of water year categories for both basins can be found at <http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST>. A table showing end-of-September reservoir storage by hydrologic region is shown at

the end of this document. For more information on water conditions in California, visit <http://www.water.ca.gov/waterconditions/>.

### **Drought Monitor and Seasonal Outlook**

The maps for California for August 25, 2015 and September 29, 2015 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 September 29th depiction, 46% of California is depicted in the D4 or exceptional drought category, 25.08% of California is depicted in the D3 or extreme drought category, and 21.28% of California is depicted in D2 or severe drought category, 4.97% of California is depicted in D1 or moderate drought, 2.53% depicted in abnormally dry or D0, and 0.14% with no drought depiction. Maps are updated weekly.

The U.S. Monthly Drought Outlook for October 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](http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html). Updates are provided twice per month.

### **ENSO Conditions and Long-Range Outlooks**

The El Niño/Southern Oscillation (ENSO) is currently in El Niño conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been positive with values of 2.4°C in the Niño 3.4 at the end of September. The July through September 3-month running mean of the Ocean Niño Index (ONI) is 1.5 which is now the 6<sup>th</sup> 3-month running mean value above the 0.5 threshold for an El Niño event using the Climate Prediction Center's recomputed ONI time series. 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 remaining warm into the winter and subsequent spring. More information can be found at the Climate Prediction Center's web site:

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/enso\\_advisory/](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/)

Updates are posted weekly. 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](http://www.wrcc.dri.edu/anom/cal_anom.html).

### **Agricultural Data**

September 2015 saw harvest in full swing in California. Alfalfa was irrigated, cut and baled. Rice fields were dried and harvest began. Sunflowers and beans were harvested along with Pistachios, pecans and almonds. Walnut fields were prepared for harvest. Grape harvest continued while peach, plum and pomegranate harvests completed. Melons, vegetables and produce continued to be harvested. Rangeland conditions and fire danger were unfavorable with forage very poor at lower elevations. Supplemental feeding costs continued to be high. Water needed to be hauled in for

some livestock. Cooler weather in the latter half of the month increased dairy production. For further crop information see <http://www.nass.usda.gov/index.asp>.

**Other Climate Summaries**

[California Climate Tracker](#) (Western Region Climate Center)

[Golden Gate Weather Service Climate Summary](#)

[NOAA Monthly State of the Climate Report](#)

**Statewide Extremes (CDEC)**

High Temperature – 113°F (Cahuilla, Colorado River)

Low Temperature – 20°F (Tunnel Guard Station, Tulare)

High Precipitation – 3.51 inches (Mt Wilson No. 2, South Coast)

Low Precipitation – 0 inches (12 stations)

**Statewide Extremes (CIMIS)**

High Average Maximum Temperature – 104.1 °F (Meloland, Imperial County)

Low Average Minimum Temperature – 33.4°F (Macdoel II, Siskiyou County)

High Precipitation – 3.31 inches (Moraga, Contra Costa County)\*

Low Precipitation – 0 inches (32 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	26	38.3	63.4	96.3
SF Bay	9	49.3	70.4	99.0
Central Coast	13	46.2	71.2	99.3
South Coast	49	52.3	74.0	98.6
Sacramento	74	40.9	66.3	96.7
San Joaquin	43	41.6	65.5	92.2
Tulare Lake	17	38.3	64.0	86.9
North Lahontan	26	32.0	55.4	79.0
South Lahontan	17	37.9	61.5	84.4
Colorado River Desert	6	64.7	86.5	105.8
Statewide Weighted Average	280	41.5	66.0	94.5

### Statewide Precipitation Statistics

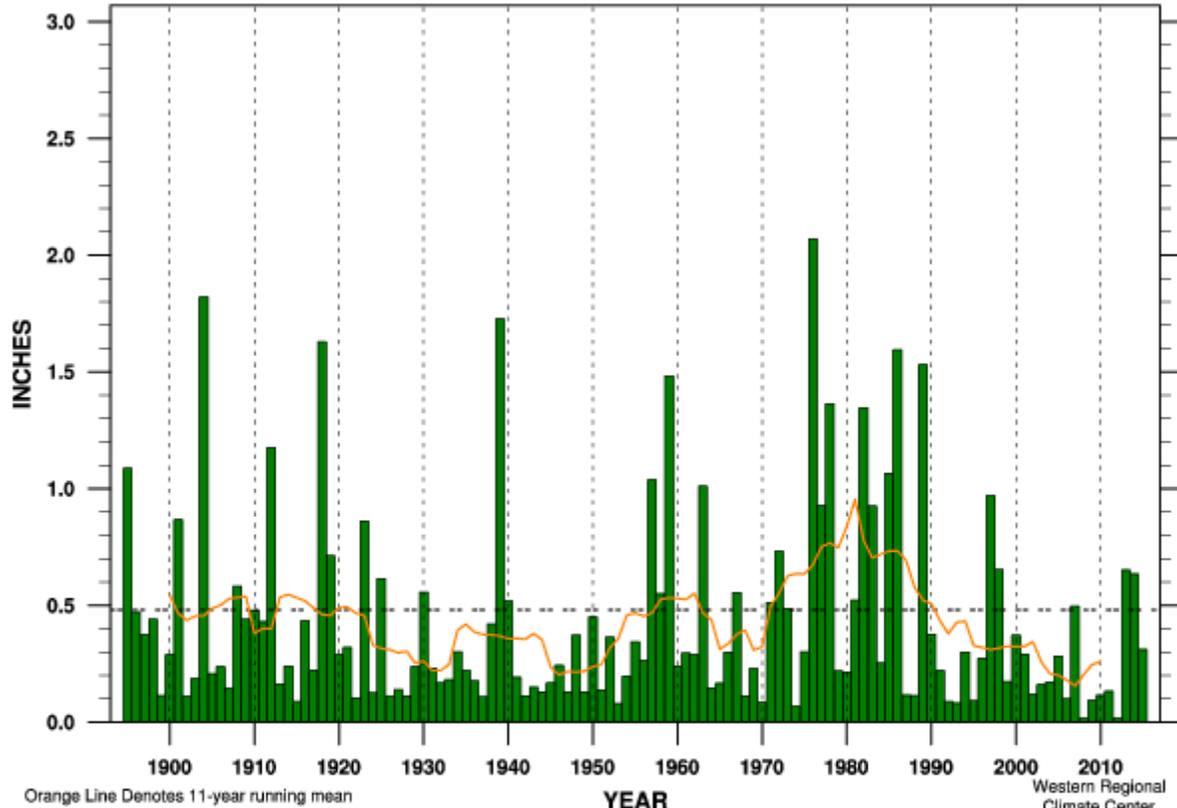
Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Sep	Oct-Sep	Stations	Sep	Oct-Sep	Sep	Oct-Sep
North Coast	0.27	5	3	3	15	4	4	53.8%	78%
SF Bay	0.03	3	2	2	6	3	2	77.4%	87%
Central Coast	0.06	5	2	2	10	3	3	10.4%	77%
South Coast	0.06	5	5	5	14	10	8	460%	76%
Sacramento River	0.26	10	8	7	42	25	24	50.0%	80%
San Joaquin River	0.12	7	5	5	26	12	12	6.5%	60%
Tulare Lake	0.07	5	4	4	28	13	5	119%	59%
North Lahontan	0.04	6	4	3	13	6	4	58.1%	84%
South Lahontan	0.06	5	4	4	14	8	8	35.3%	67%
Colorado River	0.03	2	1	1	6	1	1	35.9%	53%
Statewide Weighted Average	1	53	38	36	174	85	71	72.7%	74%

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

End-of-Month Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2015 Storage (taf)	% of Average
North Coast	6	1,988	791	40%
San Francisco Bay	17	420	413	98%
Central Coast	6	546	138	25%
South Coast	29	1,326	929	70%
Sacramento	43	9,912	6,239	63%
San Joaquin	34	6,399	2,850	45%
Tulare	6	678	251	37%
North Lahontan	5	507	45	9%
South Lahontan	8	279	215	77%
Total	154	22,058	11,875	54%

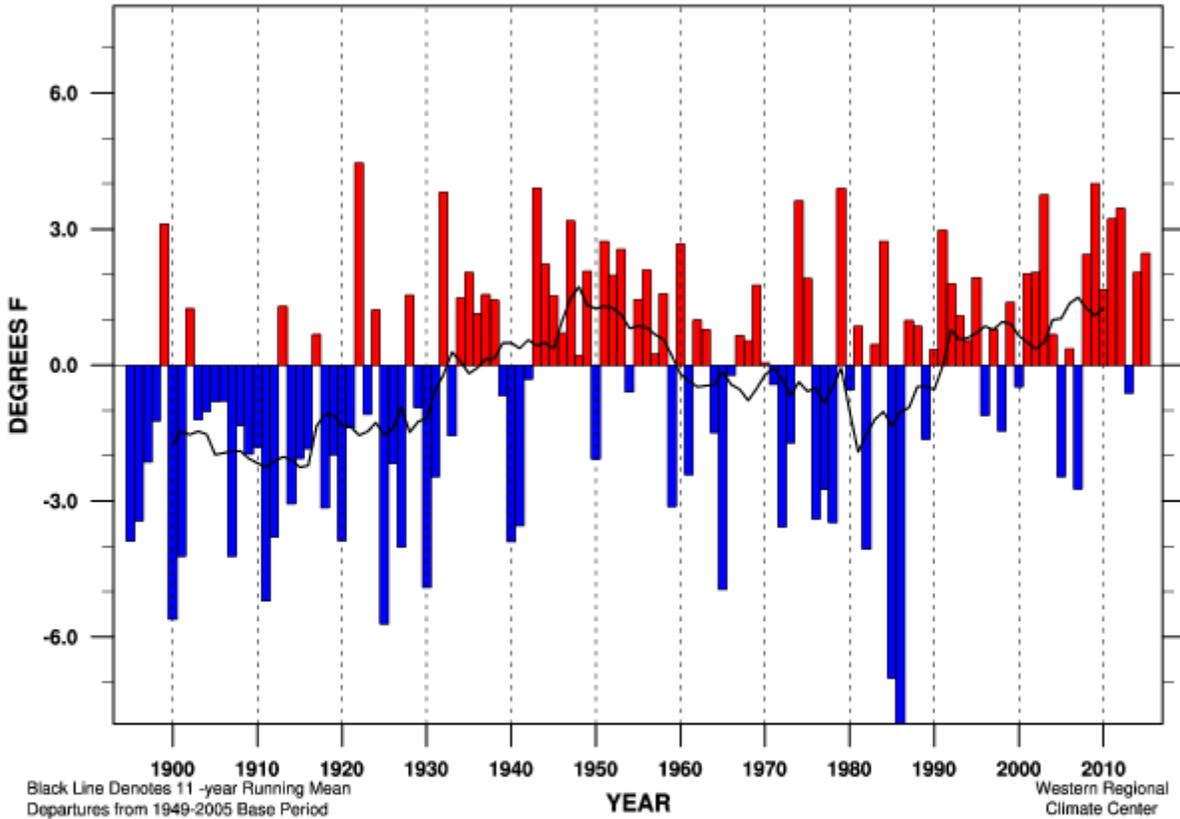
California Climate Tracker Images

### California Statewide Precipitation September



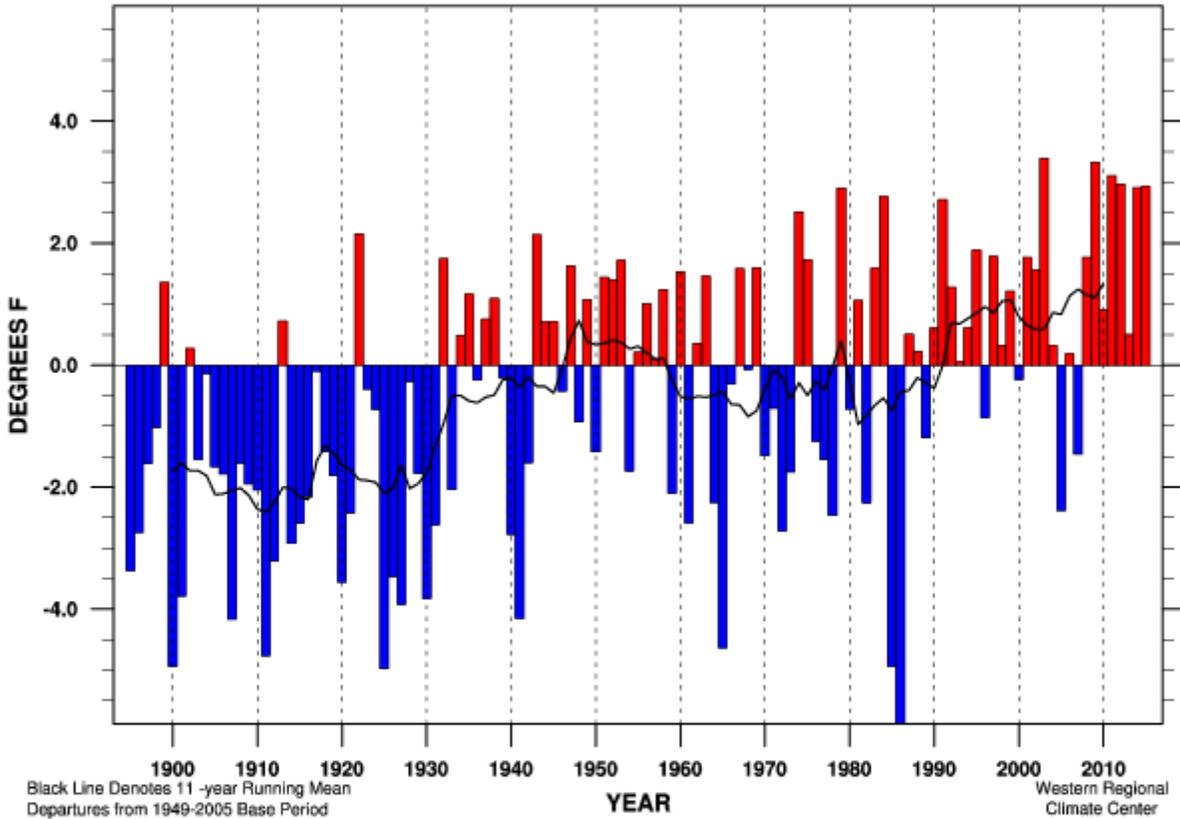
Linear Trend 1895-present	- 0.04 ± 0.22 in.	(- 8 ± 45%) per 100 yr		
Linear Trend 1949-present	- 0.25 ± 0.56 in.	(- 51 ± 116%) per 100 yr		
Linear Trend 1975-present	- 1.95 ± 1.19 in.	(- 404 ± 246%) per 100 yr		
Wettest Year	2.07 in. ( 429%)	in 1976	MEAN	0.48 in.
Driest Year	0.02 in. ( 3%)	in 2008	STDEV	0.47 in.
September	2015	0.31 in. ( 64%)	RANK	72 of 121

## California Statewide Maximum Temperature Departure September



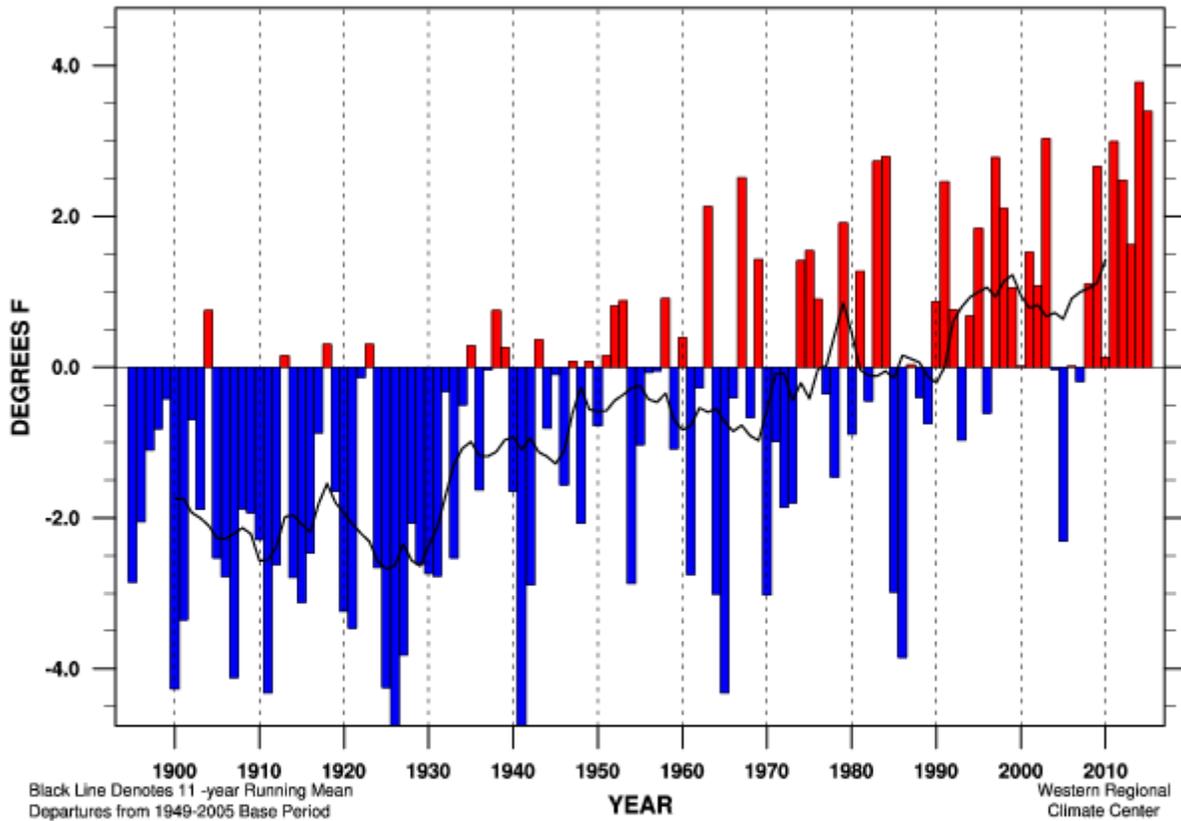
Linear Trend 1895-present	+ 2.41 ± 1.28 °F/100yr	
Linear Trend 1949-present	+ 1.76 ± 3.18 °F/100yr	
Linear Trend 1975-present	+ 8.86 ± 6.86 °F/100yr	
Warmest Year	86.7 °F (+ 4.5 °F) in 1922	MEAN 82.2 °F
Coldest Year	74.3 °F (- 7.9 °F) in 1986	STDEV 2.52 °F
September	2015 84.7 °F (+ 2.5 °F)	RANK 105 of 121

## California Statewide Mean Temperature Departure September



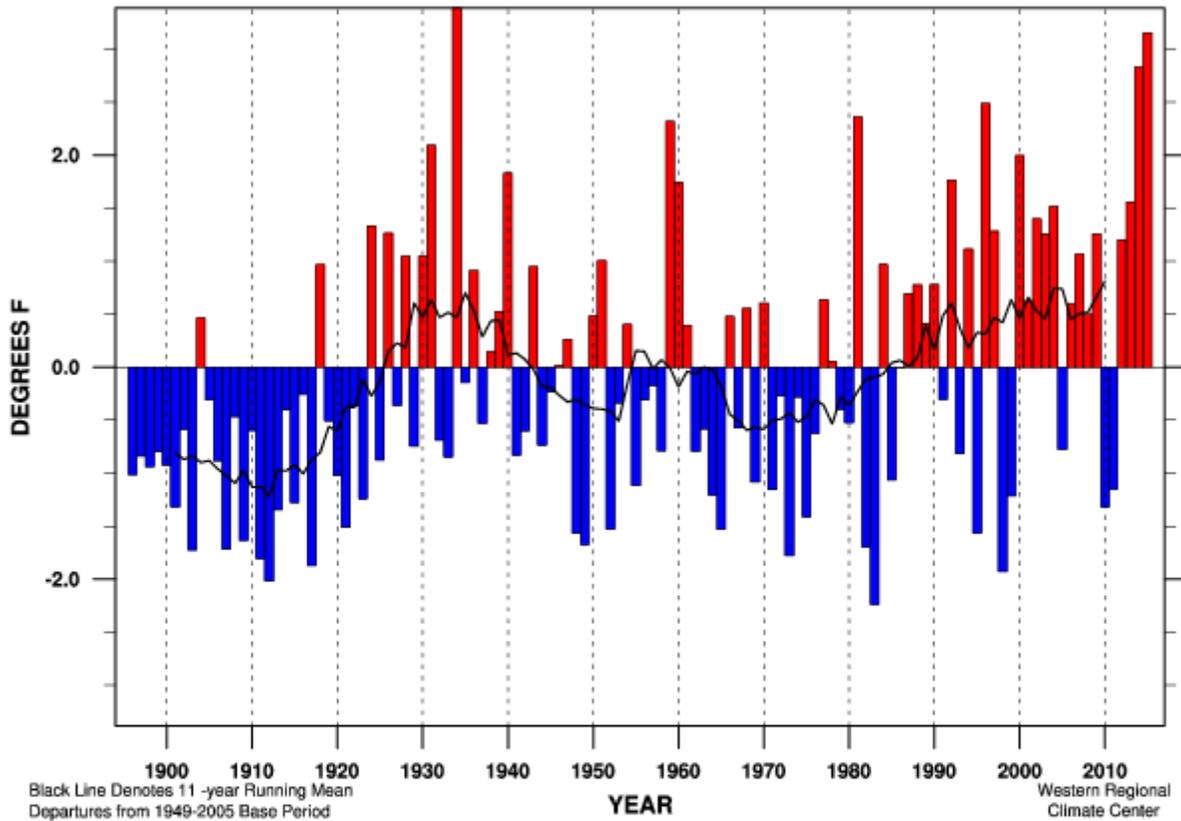
Linear Trend 1895-present	+ 2.91 ± 0.97 °F/100yr	
Linear Trend 1949-present	+ 2.80 ± 2.48 °F/100yr	
Linear Trend 1975-present	+ 6.96 ± 5.30 °F/100yr	
Warmest Year	70.5 °F (+ 3.4 °F) in 2003	MEAN 67.1 °F
Coldest Year	61.3 °F (- 5.9 °F) in 1986	STDEV 1.98 °F
September	2015 70.1 °F (+ 2.9 °F)	RANK 117 of 121

## California Statewide Minimum Temperature Departure September



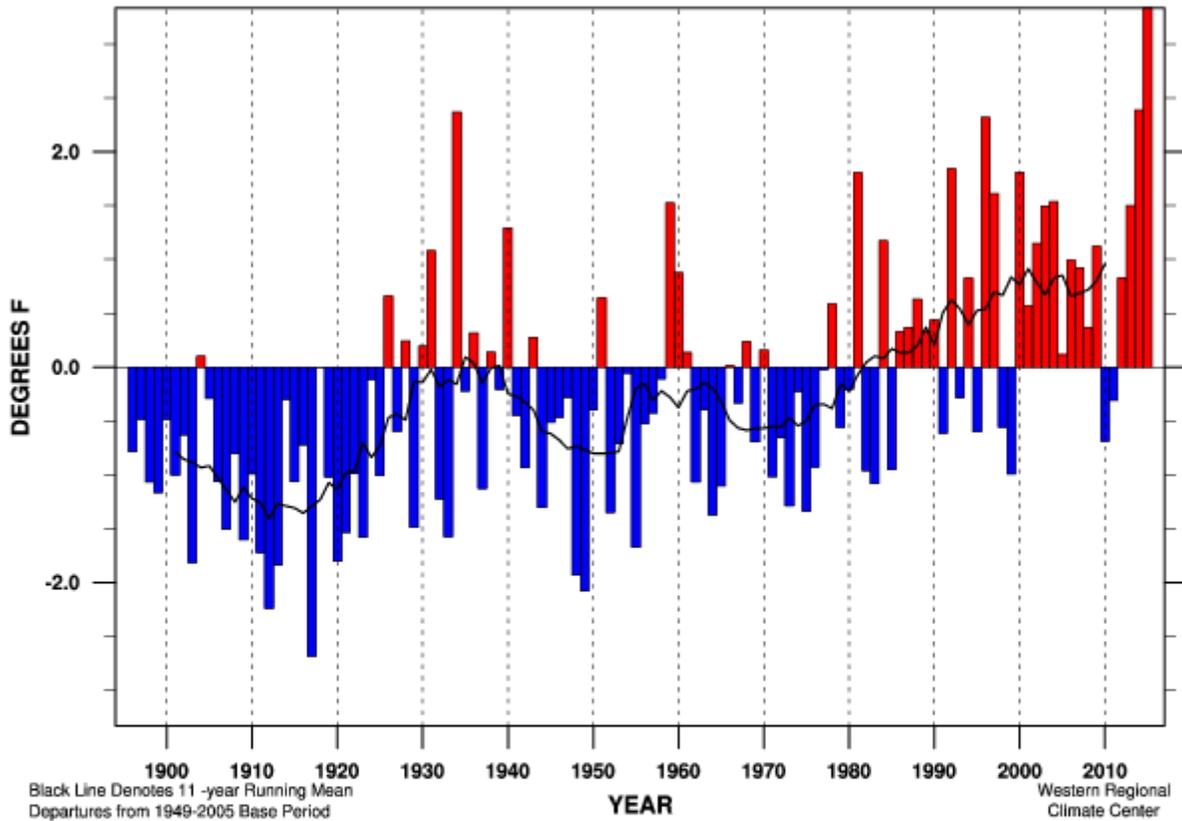
Linear Trend 1895-present	+ 3.40 ± 0.83 °F/100yr	
Linear Trend 1949-present	+ 3.84 ± 2.13 °F/100yr	
Linear Trend 1975-present	+ 5.05 ± 4.41 °F/100yr	
Warmest Year	55.8 °F (+ 3.8 °F) in 2014	MEAN 52.0 °F
Coldest Year	47.3 °F (- 4.8 °F) in 1926	STDEV 1.76 °F
September	2015 55.4 °F (+ 3.4 °F)	RANK 120 of 121

## California Statewide Maximum Temperature Departure Oct-Sep



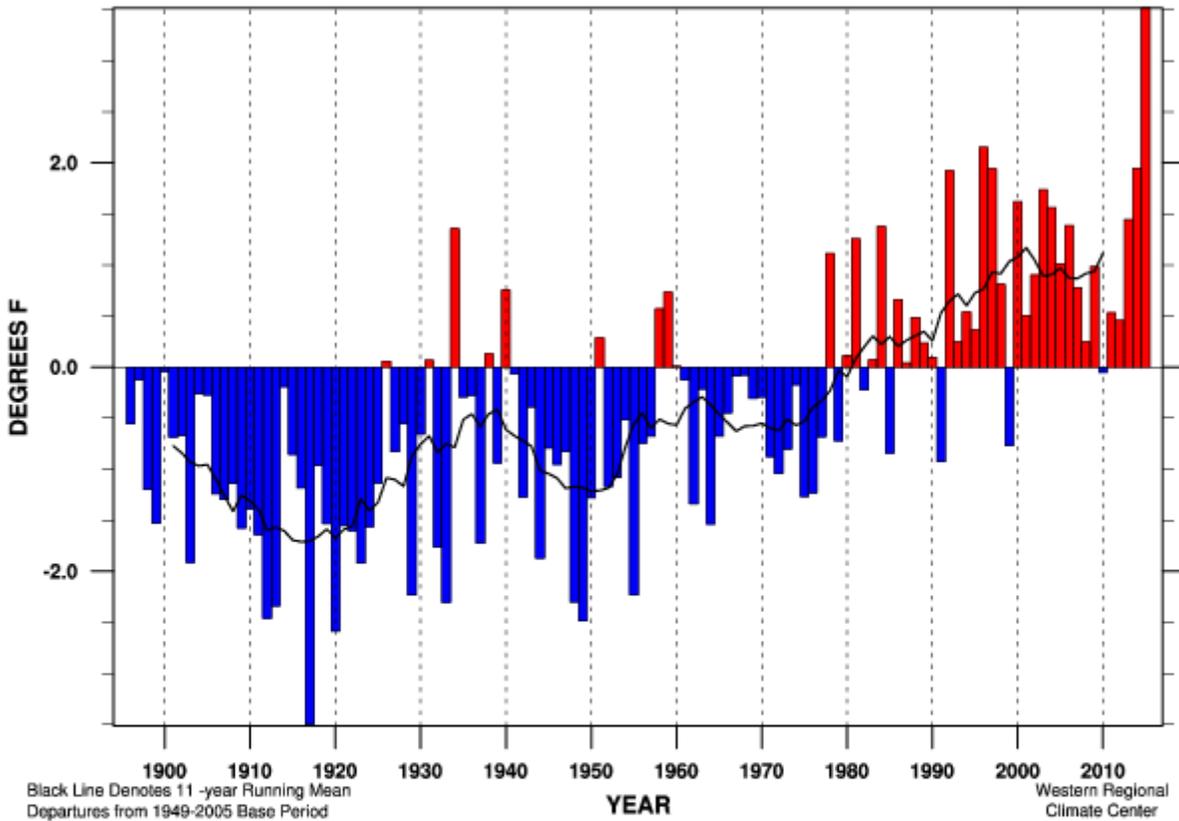
Linear Trend 1895-present	+ 1.24 ± 0.60 °F/100yr	
Linear Trend 1949-present	+ 2.09 ± 1.56 °F/100yr	
Linear Trend 1975-present	+ 3.83 ± 3.57 °F/100yr	
Warmest Year	72.4 °F (+ 3.4 °F) in 1934	MEAN 69.0 °F
Coldest Year	66.8 °F (- 2.2 °F) in 1983	STDEV 1.18 °F
Oct-Sep	2015 72.2 °F (+ 3.2 °F)	RANK 119 of 120

## California Statewide Mean Temperature Departure Oct-Sep



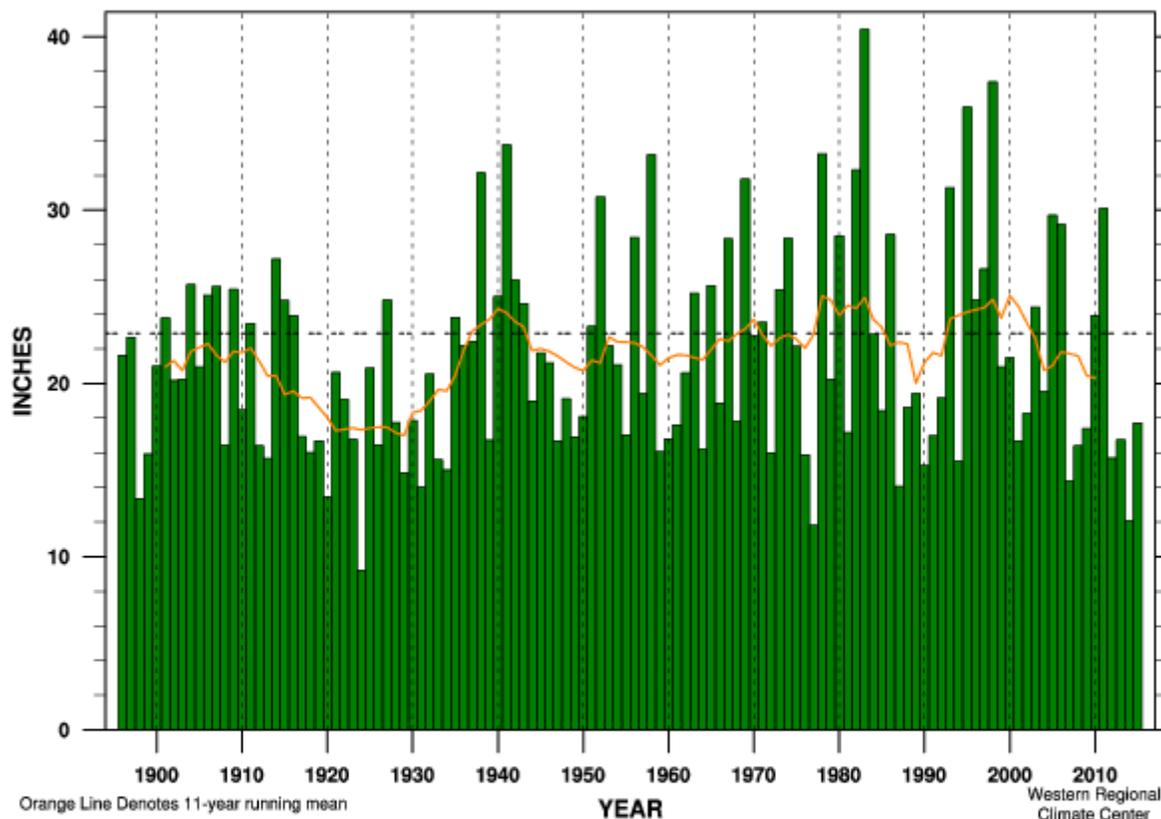
Linear Trend 1895-present	+ 1.72 ± 0.48 °F/100yr	
Linear Trend 1949-present	+ 2.90 ± 1.19 °F/100yr	
Linear Trend 1975-present	+ 4.05 ± 2.72 °F/100yr	
Warmest Year	59.4 °F (+ 3.3 °F) in 2015	MEAN 56.1 °F
Coldest Year	53.4 °F (- 2.7 °F) in 1917	STDEV 0.98 °F
Oct-Sep	2015 59.4 °F (+ 3.3 °F)	RANK 120 of 120

## California Statewide Minimum Temperature Departure Oct-Sep



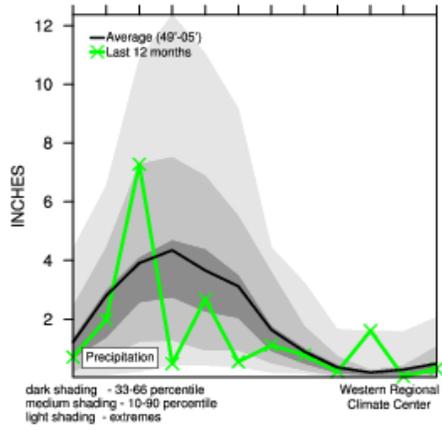
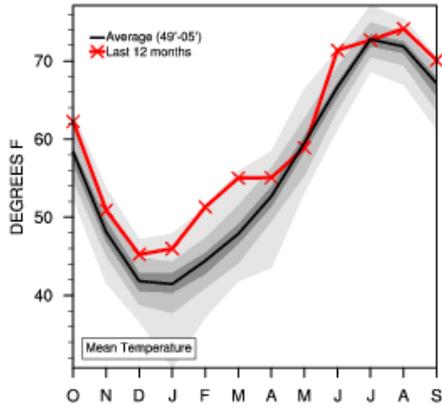
Linear Trend 1895-present	+ 2.20 ± 0.47 °F/100yr	
Linear Trend 1949-present	+ 3.70 ± 1.04 °F/100yr	
Linear Trend 1975-present	+ 4.26 ± 2.39 °F/100yr	
Warmest Year	46.7 °F (+ 3.5 °F) in 2015	MEAN 43.1 °F
Coldest Year	39.7 °F (- 3.5 °F) in 1917	STDEV 1.00 °F
Oct-Sep	2015 46.7 °F (+ 3.5 °F)	RANK 120 of 120

## California Statewide Precipitation Oct-Sep

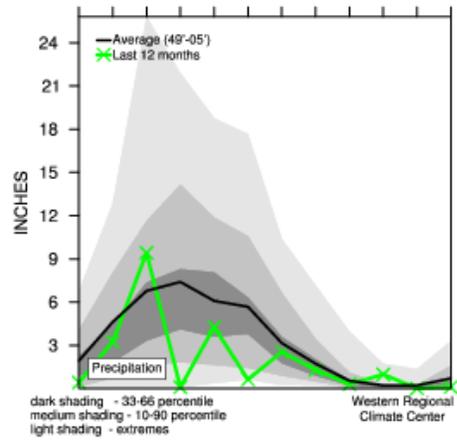
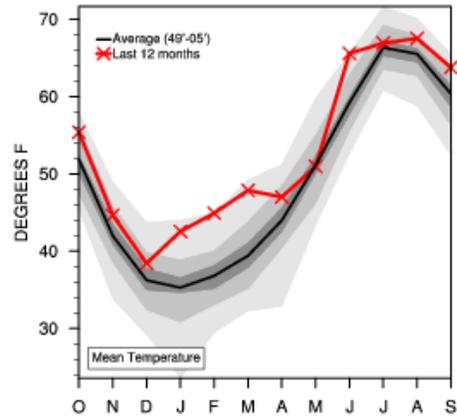


Linear Trend 1895-present	+ 2.23 ± 3.05 in.	(+ 9 ± 13%) per 100 yr	
Linear Trend 1949-present	- 2.61 ± 8.51 in.	(- 11 ± 37%) per 100 yr	
Linear Trend 1975-present	-10.02 ± 20.41 in.	(- 43 ± 89%) per 100 yr	
Wettest Year	40.44 in. ( 176%)	in 1983	MEAN 22.90 in.
Driest Year	9.23 in. ( 40%)	in 1924	STDEV 6.53 in.
Oct-Sep	2015	17.73 in. ( 77%)	RANK 40 of 120

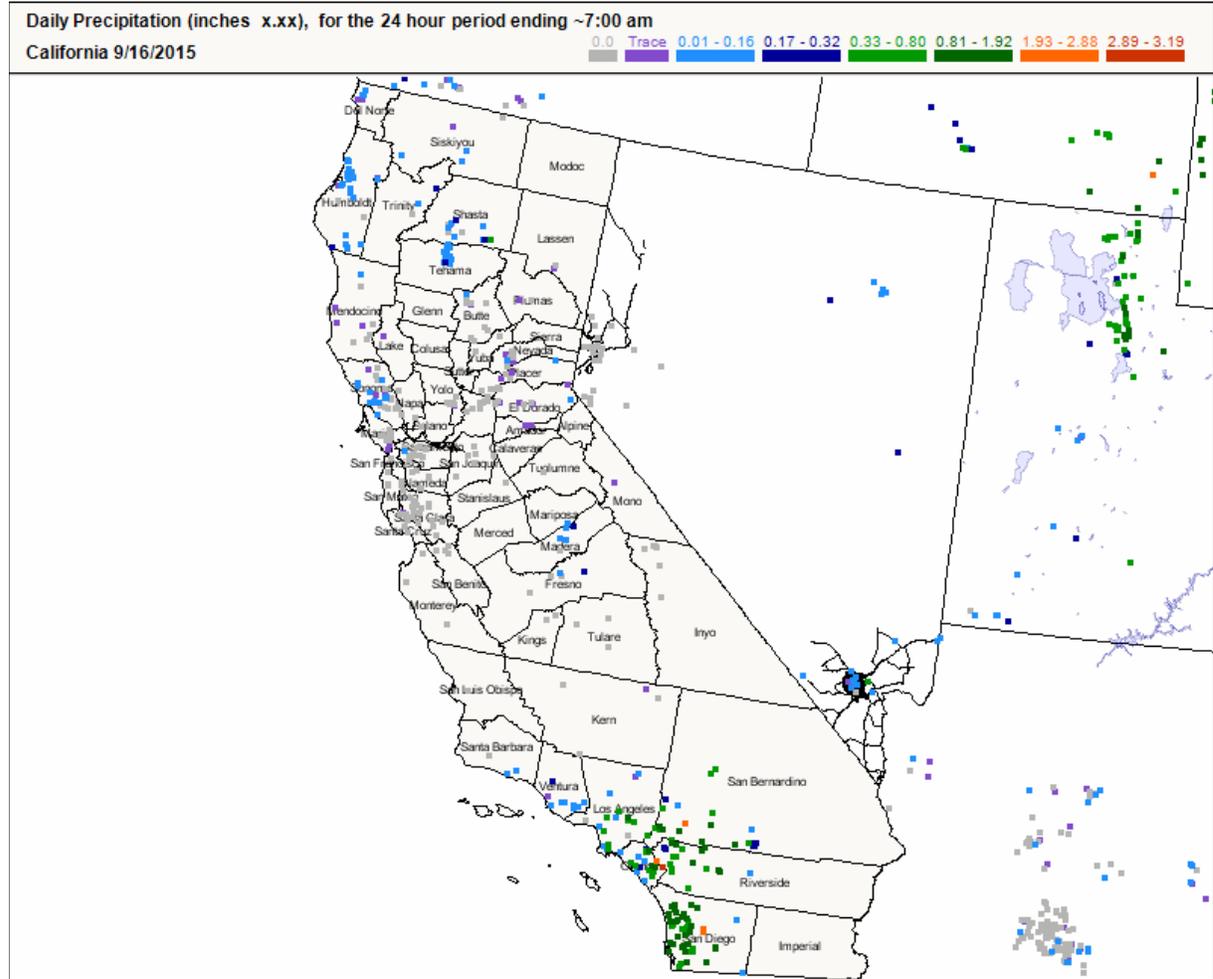
### California Statewide Last 12 Months



### Sierra Region Last 12 Months

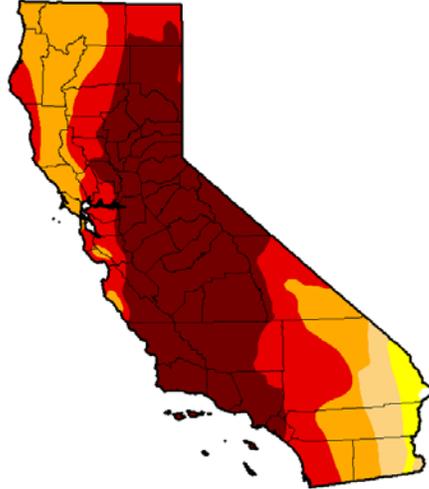


# CoCoRaHS Map



# United States Drought Monitor

## U.S. Drought Monitor California



**August 25, 2015**  
(Released Thursday, Aug. 27, 2015)  
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.14	99.86	97.35	92.36	71.08	46.00
<b>Last Week</b> 8/18/2015	0.14	99.86	97.35	92.36	71.08	46.00
<b>3 Months Ago</b> 5/25/2015	0.14	99.86	98.71	93.91	66.60	46.73
<b>Start of Calendar Year</b> 12/29/2014	0.00	100.00	98.12	94.34	77.94	32.21
<b>Start of Water Year</b> 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41
<b>One Year Ago</b> 8/26/2014	0.00	100.00	100.00	95.42	81.92	58.41

*Intensity:*

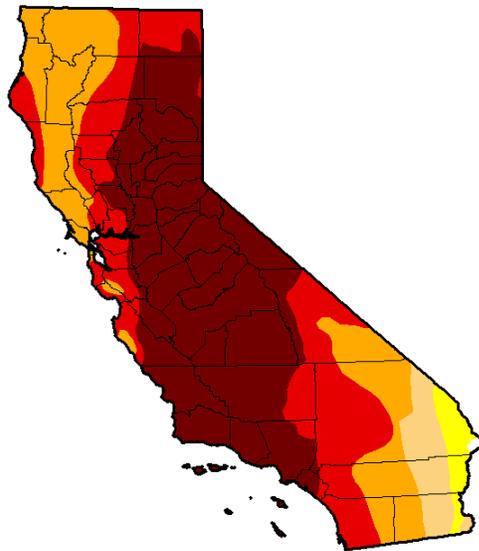
*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

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

## U.S. Drought Monitor California



**September 29, 2015**  
(Released Thursday, Oct. 1, 2015)  
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.14	99.86	97.33	92.36	71.08	46.00
<b>Last Week</b> 9/22/2015	0.14	99.86	97.33	92.36	71.08	46.00
<b>3 Months Ago</b> 6/29/2015	0.14	99.86	98.71	94.59	71.08	46.73
<b>Start of Calendar Year</b> 12/29/2014	0.00	100.00	98.12	94.34	77.94	32.21
<b>Start of Water Year</b> 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41
<b>One Year Ago</b> 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41

*Intensity:*

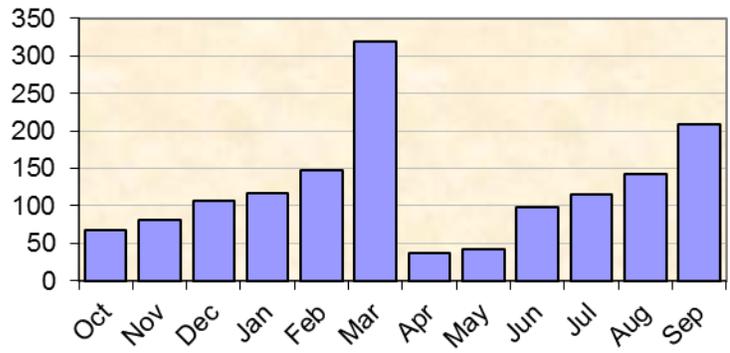
*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

**Author:**  
Eric Luebbehusen  
U.S. Department of Agriculture



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

### Temperature Records by Month for Water Year 2015



### Precipitation Records by Month for Water Year 2015

