

California Monthly Climate Summary
June 2011

Weather Highlights

June 2011 was a wetter and cooler than average month for California. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 64.7°F which is 2.0°F lower than the long-term average of 66.7°F. With a statewide average of 1.54 inches, precipitation in June was the largest value recorded. The previous maximum was in 1929 when 1.14 inches fell.

June's weather was punctuated by two sets of storms, one at the beginning of the month and one at the end. The month started with temperatures more than 10 degrees below average and precipitation falling in the northern half of the state. The storm system moved southward towards the end of the first week bringing rain to parts of southern California. The weather following this system alternated between seasonably warm and cooler than average as high and low pressure systems moved over the region. This pattern continued until the last week of the month when an unusually strong storm dropped out of the Gulf of Alaska and brought atmospheric river conditions into Northern California. This warm storm brought more than an inch of precipitation to many locations in northern California. The storm moved through quickly with hot weather following closely on its heels.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 32 temperature records tied or broken and 42 precipitation records tied or broken for the month. Of the 32 temperature records set, 18 were for new low maximum temperatures and 13 were for new low minimum temperatures. Records were set over 15 days of the month. Precipitation records dominated the month focusing on two storms that passed through the State. In the first storm on June 4th, San Francisco recorded 1.07 inches of rain which smashed the 1939 record of 0.49 inches. In only five days, Ukiah set a new all-time June precipitation record with 1.39 inches breaking the 1967 record of 1.30 inches. More rain fell during the month as well with the Fire Department recording 1.99 inches for the month. Also on June 5th, the Santa Barbra airport recorded 1.24 inches of rain breaking the 2009 record of 0.51 inches. This record is also the wettest month of June for Santa Barbara Airport. On June 6th Camarillo recorded its first rainfall on June 6th with 0.07 inches. The lone high temperature record for the month was set in Death Valley with a 124°F reading on the 23rd. This is the 25th time the high temperature has reached at least 124°F in June in Death Valley since 1911.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 125 stations recorded a minimum temperature below freezing in June while 53 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 June was well above normal across most of the state with the exception of the Colorado River Basin. For the CDEC precipitation gages for June 2011, the largest amount of precipitation recorded was at Georgetown Ranger Station in the Sacramento River Region with 4.33 inches. This is 646% of the average precipitation for this station for June. At the other end of the spectrum, 9 stations recorded no precipitation for the month. For the CIMIS network, Sisquoc in Santa Barbara County topped the precipitation charts with 6.02 inches for the month and 20 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 2.8 inches in June with 13 days showing precipitation. On average, 1 inch of precipitation is recorded for the 8-Station index in June. Statewide, the average precipitation for June was 400% 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

June 2011 continues California's third 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 in participating states. A map from June 6, 2011 is shown at the end of the document. As of the end of June 2011, California has 788 volunteers signed up spanning 53 of California's 58 counties. The county with the most volunteers at the end of June is Sonoma with 88 volunteers. For the month of June 9,339 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in June was in Trinity County with 2.90 inches recorded on 6/28/11. Seven hail reports were recorded from three counties. The largest reported hail stones were grape sized in Sacramento County. Eleven snow reports were included with the precipitation reports with a 6-inch depth being the largest new snow total from Placer County on the 2nd and the 6th. The largest total snow depth reported was 99 inches reported in Placer County. Note that 99 inches is the largest number that the observer can enter into the database. In the notes section the Placer County observer notes that 100 inches of snow depth was present on 6/7/2011. To join CoCoRaHS or find more information, please visit <http://www.cocorahs.org>.

Snowpack and Water Supply Conditions

As of the end of June, the snow pillow sensors show the statewide snowpack to be 15% of average for April 1st average peak with a total of 4 inches of snow water equivalent. The Northern Region (from the Trinity to the Feather and Truckee Basins) shows 5 inches of snow water equivalent which is 19% of the April 1st peak. The Central Region (the Yuba Basin to the Merced/Walker Basins) shows 4 inches of

snow water equivalent which is 16% of the April 1st peak. The Southern Region (the San Joaquin Basin to the Kern Basin) shows 1 inch of snow water equivalent which is 5% of the April 1st peak. Water year 2010 resulted in a below normal category for the Sacramento Basin and above normal category for the San Joaquin Basin for the Water Supply Index. The end-of-June Water Supply Index forecast for WY 2011 is wet for the Sacramento Basin and wet for 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>.

Drought Monitor and Seasonal Outlook

The maps for California for May 31, 2011 and June 28, 2011 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 June 28th depiction, California is depicted as drought free except for portions of the desert regions which are categorized as abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for July through September from NOAA depicts California continuing to be drought free. This forecast is based primarily on climatology and forecast models. Updates are provided twice per month. Maps and information can be found at

http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.

The California Nevada River Forecast Center produces some drought monitoring tools for California. These tools look at the frequency associated with precipitation deficits for the Northern California Eight Station Index and the San Joaquin Five Station Index. Another tool looks at the frequency of end-of-month storage for select reservoirs in California. The frequencies of the observations are related to the Drought Monitor's drought categories D0 through D4. These tools can be found at <http://www.cnrfc.noaa.gov/climate.php>. For June, the Eight Station Index is in drought free conditions for a 12-month and 24 month period. The Five Station Index is also drought free for both periods. All reservoirs have above average storage for this time of year.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) has transitioned to ENSO neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been negative with values of -0.1°C in the Niño 3.4 at the end of June. The April through June 3-month running mean of the Ocean Niño Index (ONI) is -0.2. This ends the consecutive ONI values that have fallen below the -0.5 threshold at ten. Five consecutive ONI values need to be below the threshold for conditions to be classified as a La Niña event. Most forecast models have the tropical sea surface temperatures moving to ENSO neutral conditions, but split on above or below mean conditions by the end of 2011. 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 (July through September) from NOAA indicates increased chances of above normal temperatures for the southeastern part of the state and equal chances of above normal or below normal temperature for the rest of the state. For precipitation, equal chances of above or below normal conditions are forecast for the entire 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

June 2011 resulted in delays to crop development and field activity due to the unusual precipitation and cooler than average temperatures. Weather conditions also increased the challenge of keeping pests and diseases in check. Cotton and rice crop development was delayed while baling and harvesting of small grains were interrupted by the weather events. Blueberry harvest was in full swing for the month while late citrus harvests continued. The cool weather improved the quality of the berry crop but some rain damage was expected for the cherry harvest. Apricot, nectarine, and peach harvests continued as well. Pesticides and fungicides were applied in nut orchards with cooler temperatures delaying almond development. Asparagus harvest wound down while bell pepper, honeydew, and cantaloupe planting took place. Wind and hail damaged some crops in the northern part of the State. Non-irrigated pasture was in good condition during the month with areas of drying in the south. Milk herds were less stressed by the cooler temperatures. 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 – 117°F (Buttercup and Cahuilla, Colorado River Desert)

Low Temperature – -3°F (Casa Vieja Meadows, Tulare)

High Precipitation – 4.33 inches (Georgetown Ranger Station, Sacramento Basin)

Low Precipitation – 0.0 inches (9 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 110.5 °F (Westmorland North, Imperial County)

Low Average Minimum Temperature – 35.6 °F (Big Bear Lake, San Bernardino County)

High Precipitation – 6.02 inches (Sisquoc, Santa Barbara)*

Low Precipitation – 0 inches (20 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 | Jun | Oct-Jun | Stations | Jun | Oct-Jun | Jun | Oct-Jun |
| North Coast | 0.27 | 5 | 4 | 4 | 17 | 9 | 9 | 182.9% | 119% |
| SF Bay | 0.03 | 2 | 2 | 1 | 6 | 2 | 1 | 917.9% | 141% |
| Central Coast | 0.06 | 3 | 2 | 2 | 11 | 3 | 3 | 813.1% | 152% |
| South Coast | 0.06 | 3 | 3 | 3 | 14 | 10 | 7 | 69.6% | 124% |
| Sacramento River | 0.26 | 5 | 5 | 5 | 42 | 19 | 17 | 407.7% | 138% |
| San Joaquin River | 0.12 | 6 | 6 | 6 | 24 | 14 | 12 | 954.8% | 165% |
| Tulare Lake | 0.07 | 5 | 5 | 5 | 28 | 26 | 25 | 511.7% | 151% |
| North Lahontan | 0.04 | 3 | 3 | 3 | 13 | 8 | 6 | 296.1% | 168% |
| South Lahontan | 0.06 | 3 | 2 | 2 | 15 | 8 | 8 | 38.5% | 194% |
| Colorado River | 0.03 | 1 | 1 | 1 | 6 | 2 | 3 | 0% | 118% |
| Statewide Weighted Average | 1 | 36 | 33 | 32 | 176 | 101 | 91 | 400% | 141% |

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

| Hydrologic Region | No. Stations | Minimum | Average | Maximum |
|----------------------------|--------------|---------|---------|---------|
| North Coast | 22 | 33.7 | 58.0 | 89.9 |
| SF Bay | 9 | 34.1 | 51.3 | 78.9 |
| Central Coast | 13 | 38.7 | 62.2 | 91.9 |
| South Coast | 52 | 42.0 | 64.6 | 92.5 |
| Sacramento | 77 | 33.8 | 60.9 | 90.8 |
| San Joaquin | 45 | 30.3 | 57.3 | 86.8 |
| Tulare Lake | 18 | 24.9 | 54.6 | 81.7 |
| North Lahontan | 26 | 24.3 | 49.9 | 75.2 |
| South Lahontan | 16 | 28.9 | 58.1 | 84.9 |
| Colorado River Desert | 8 | 54.6 | 84.1 | 110.4 |
| Statewide Weighted Average | 286 | 33.5 | 59.4 | 88.9 |

U.S. Drought Monitor

California

May 31, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 99.99 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Last Week (05/24/2011 map) | 99.99 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 Months Ago (03/01/2011 map) | 99.94 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start of Calendar Year (12/28/2010 map) | 98.62 | 1.38 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start of Water Year (09/28/2010 map) | 85.44 | 14.56 | 8.08 | 0.24 | 0.00 | 0.00 |
| One Year Ago (05/25/2010 map) | 87.02 | 12.98 | 8.08 | 5.97 | 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://drought.unl.edu/dm>



Released Thursday, June 2, 2011
Anthony Artusa, NOAA/NWS/NCEP/CPC

U.S. Drought Monitor

California

June 28, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 87.71 | 12.29 | 0.00 | 0.00 | 0.00 | 0.00 |
| Last Week (06/21/2011 map) | 99.99 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 Months Ago (03/29/2011 map) | 99.94 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start of Calendar Year (12/28/2010 map) | 98.62 | 1.38 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start of Water Year (09/28/2010 map) | 85.44 | 14.56 | 8.08 | 0.24 | 0.00 | 0.00 |
| One Year Ago (06/22/2010 map) | 87.97 | 12.03 | 8.08 | 0.24 | 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://drought.unl.edu/dm>



Released Thursday, June 30, 2011
Richard Helm/Liz Love-Brotak, NOAA/NESDIS/NCDC

Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am

California 6/6/2011

0.0 Trace 0.01 - 0.09 0.10 - 0.18 0.19 - 0.44 0.45 - 1.05 1.06 - 1.58 1.59 - 1.75

