

Weather Highlights

January started 2007 with record cold air and dry weather. Winter storms that normally cross the state in January were few and far between with cold stable air as a substitute. Record high temperatures were being broken in the beginning of the month. However, an arctic air mass dropped into the state in the middle of the month causing temperatures to drop below freezing yielding record low temperatures and widespread crop damage. The cold weather even brought snow in the Tehachapi Mountains. Temperatures moderated by the end of the month with some rain falling in the southern part of the state. Regional average temperature and precipitation data are shown in tables at the end of the summary. Statewide, the National Weather Service Cooperative Network reported an average temperature of 43°F which is 2°F below the long-term average. The mean maximum temperature in the state was 55.9°F or 0.3°F below the long-term average. The mean minimum temperature was 31.3°F which was 3.8°F below the long-term average.

Preliminary records reported on the National Weather Service Record Event Report show that there were 243 temperature records tied or broken statewide for the month. There were only eight days in January that did not record a record somewhere in California. It should be noted that this data is preliminary and may not include all records set. New daily minimum records account for 186 of the 243 reports. There were 57 record high temperatures set during the month of January including Santa Maria which tied a 1923 record of 81°F for a daily maximum temperature on January 9. On January 10th Lancaster tied a record high temperature of 68°F. Four days later on January 14, Lancaster set a new monthly record for a low temperature of 3°F. Some of the record lows broke old records set back in 1930 (Oakland Airport, 1/16, 28°F), 1932 (Ramona Fire Station 1/22, 25°F and 1/23, 27°F), 1945 (Santa Barbara Airport, 1/23, 30°F), 1947 (Sacramento Executive Airport, 1/16, 23°F) and 1949 (Sacramento Executive Airport, 1/15 21°F). On January 14th downtown Los Angeles set a new daily minimum temperature record of 36°F breaking the old record of 37°F set in 1932. This is the first daily low record set in January for downtown LA since 1957. In Sacramento, Sacramento Executive Airport set a new record of 15 consecutive days with a low below 32°F breaking the old record of 13 days set in 1949. This is one day short of the all-time cold-weather streak of 16 days set in December 1990. Statewide extremes from the California Data Exchange Center's (CDEC) network of temperature gages are shown below.

Crabtree Meadow (CDEC code CBT) recorded some potentially all-time low temperatures for California. The station which sits at an elevation of 10,700 feet in the Kern River basin recorded daily minimum temperatures below -40°F several times in January. A plot of the daily minimum temperatures is shown below in Figure 1. A closer look at the hourly data showed instabilities in the readings limiting the quality of the data recorded. The current coldest temperature recorded in California was -45°F at Boca elevation 5582 feet in Nevada County.

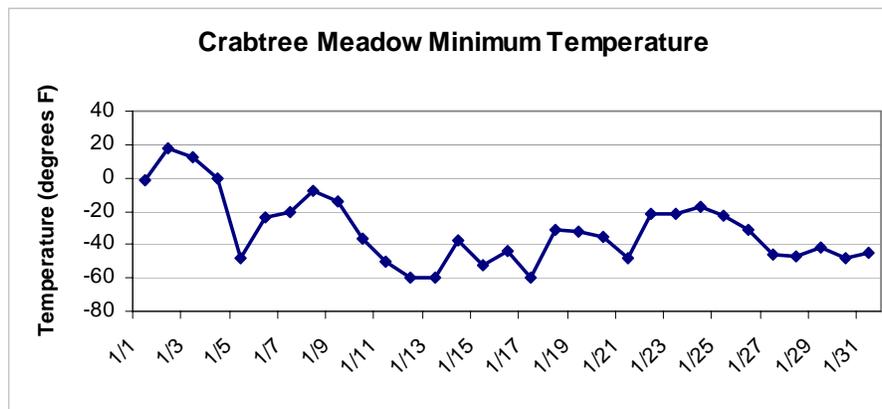


Figure 1. Daily minimum temperatures recorded at Crabtree Meadow for January 2007.

Precipitation in January was limited across the entire state. The largest amount of precipitation recorded for January 2007 was at Gasquet Ranger station where 5.7 inches of rain fell. This is only 35% of the average January rainfall at this site. Several stations in the state reported no precipitation for the month. The 8-Station Index for northern California precipitation showed 6 days of precipitation for a total of 1.5 inches. This is 17% of the long-term average for January and ranks as the 6th driest January in 88 years of record. The Sacramento City, Sacramento Executive Airport, and Red Bluff stations all recorded the driest January on record. Sacramento only recorded one day with measurable precipitation in January which ties 1976 for the fewest days of rain. The south part of the state was also dry. The statewide average precipitation for January was 19% of the long-term average based on the California Data Exchange Center (CDEC) gages. The National Weather Service Cooperative Network showed a statewide average precipitation of 0.70 inches which is 3.15 inches below the long-term average or 23% of average.

The dry weather has been reflected in the Drought Monitor Maps which can be found on the National Drought Mitigation Center's (NDMC) website <http://drought.unl.edu/dm/>. Most of California is depicted as having abnormally dry (D0) or moderate drought conditions (D1). The southeast corner of the state is depicted by the NDMC as a severe drought (D2). Maps are updated weekly.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is being classified as a weak El Niño episode. Equatorial sea surface temperature anomalies for the eastern Pacific are running near 1.0 degrees Celsius with the exception of the far eastern tropical Pacific where the temperature anomalies are only around 0.5 degrees Celsius. Trends are continuing downward. ENSO neutral conditions are expected by spring of 2007. More information on the topic can be found at the Climate Prediction Center's web site:

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/. ENSO conditions along with current trends indicate a warmer than average February through April period for Northern California and an equal chance of above, near, or below-normal temperatures for Southern California. Precipitation forecasts show above normal totals for the next three months for the southern third of the state and equal chance of above, near, or below normal precipitation for the rest of the state. Long-range outlook plots of precipitation and temperature 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

Citrus damage due to the hard freeze in the middle January is still being assessed. Preliminary estimates in excess of \$100 million have been made in Fresno County alone. Most of the sweet corn in the Imperial Valley was killed by the cold weather. For vegetable crops, greenhouse seedlings survived the freeze and are progressing well. Small grain crops are showing signs of drought stress. Winter pastures for livestock are also degrading due to low rainfall. Supplemental feeding is occurring in places. Nut orchard cultural activities continued. Bee hives are being moved to almond orchards in central and northern California. For further crop information, please see <http://www.nass.usda.gov/index.asp>

Snow Data

The snow water equivalent at the beginning of February is running at 40% of normal statewide with an average of 8.3 inches in the north, 7.5 inches in the central, and 5.9 inches in the south parts of the Sierra. These values are approximately one quarter of the average April 1 values and represent 40% of the long-term average.

January 2007 begins a new snow product for the climate summary provided by the University of California, Merced and University of California, Santa Barbara under NASA Grant NNG04GC52 (REASoN CAN 'Multi-resolution snow products for the hydrologic sciences'). For further information or comments/suggestions please contact Robert Rice (rrice@ucmerced.edu or (209)228-4397) or Roger Bales at University of California, Merced. A more detailed product is available on the state climatologist web site under the climate data and information link under the heading monthly SCA report.

The analysis of Snow Covered Area (SCA) is derived from MODIS (Moderate Resolution Imaging Spectroradiometer) aboard NASA's Terra and Aquas satellites. Data from MODIS are processed to provide a resolution of 500 meters and a fractional SCA product where each pixel can range in value between 0 and 100% (e.g. 50%=50% of the 500 meter pixel is covered by snow) as opposed to the operational binary product that defines a pixel as either snow or snow free. The MODIS SCA product is available on a daily basis, but viewable areas are subject to cloud cover. In addition, tree canopies mask a portion of the SCA and should be viewed accordingly based on the vegetation characteristics of each hydrologic unit and watershed.

This analysis covers the Sierra Nevada and various river basins, with Figure 2 highlighting the SCA over the Sierra Nevada and Figure 3 showing the daily SCA in various river basins in January 2005 and 2007. As can be seen from Figures 2 and 3, January 2007 has little resemblance to January 2005. The lack of snow in 2007 is readily visible. Year-to-year comparative analyses of this product will be used until sufficient data exists to prepare a suitable climatology for comparison.

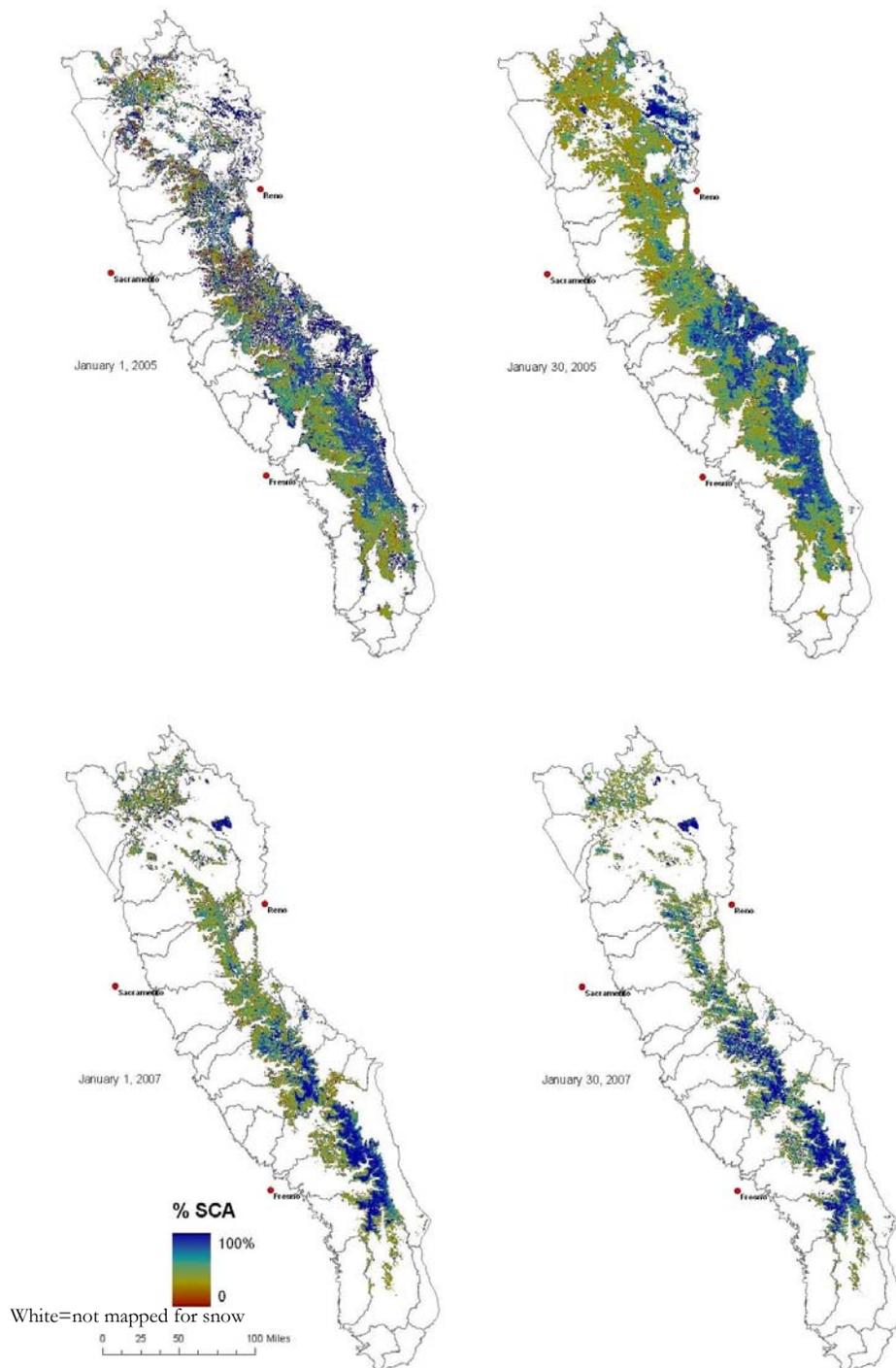


Figure 2. SCA over the **Sierra Nevada** on January 1 and 30, 2005 and January 1 and January 30, 2007 outlined by the individual watersheds. Evident is the extent of snowcover between January 2005 and 2007 in which the statewide snow water equivalent (SWE) on February 1, 2007 was 39% of the historical February 1 average, while the February 1, 2005 was 163% of the February 1 average.

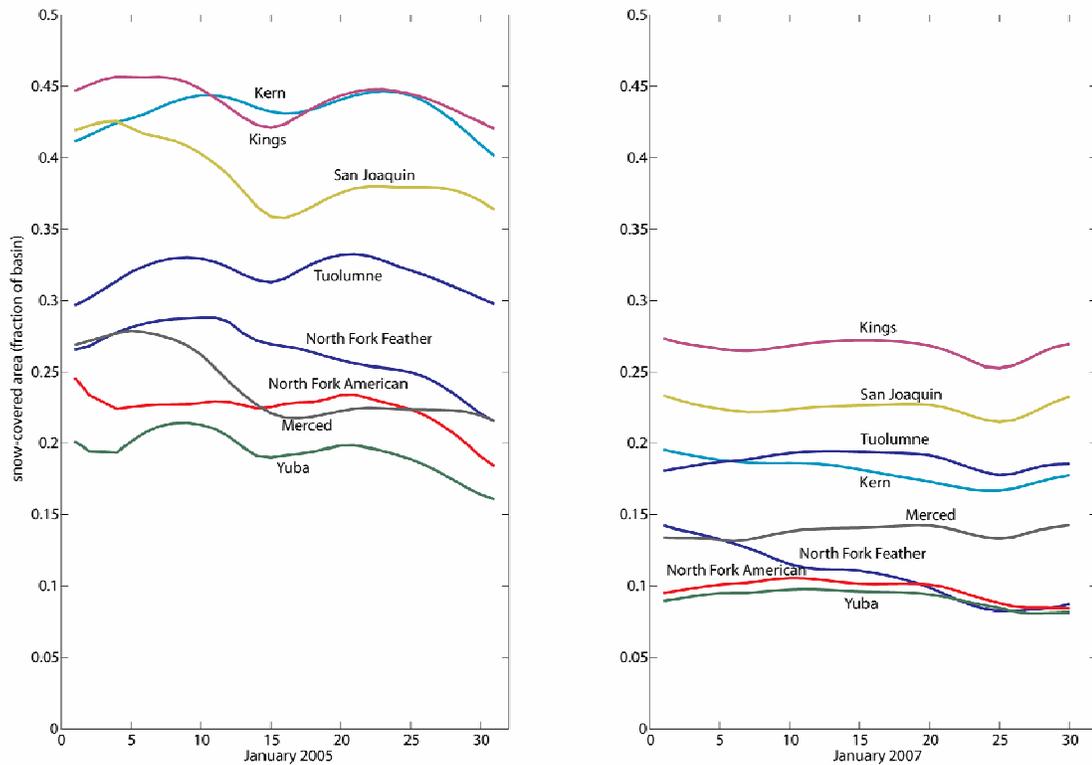


Figure 3. The graphs show the daily January 2005 and 2007 progression of SCA, expressed as a fraction of the basin area (e.g. 0.25 = 25%) in the Sierra Nevada (above the Central Valley) and shows significant differences between the January 2005 and 2007 snowpacks in 8 river basin.

Other Climate Summaries

Western Region Climate Center has launched a new page for tracking California's climate. It is called California Climate Tracker. It contains statewide precipitation and temperature anomaly data as well as regional data.

[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

High Temperature – 93 deg F (Camp Pendleton, South Coast)

Low Temperature - -27 deg F (Crestview, South Lahontan)*

High Precipitation – 5.7 inches (Gasquet Ranger Station, North Coast)

Low Precipitation –0 inches (Six stations around state)

*Crabtree Meadow recorded lower temperatures, but sensor became unstable causing data quality questions

Statewide Precipitation Statistics (as of 2/7/07)

Hydrologic Region	Region Weight	Basins Reporting			Stations Reporting			Percent of Historic Average	
		Basins	Jan	Oct-Jan	Stations	Jan	Oct-Jan	Jan	Oct-Jan
NORTH COAST	0.27	5	5	5	19	14	13	23.1%	73%
SAN FRANCISCO BAY	0.03	2	2	2	6	5	5	13.4%	64%
CENTRAL COAST	0.06	3	3	3	11	7	6	27.0%	43%
SOUTH COAST	0.06	3	3	3	15	12	9	25.3%	28%
SACRAMENTO RIVER	0.26	5	5	5	43	34	31	12.0%	54%
SAN JOAQUIN RIVER	0.12	6	6	6	25	21	20	23.2%	52%
TULARE LAKE	0.07	5	5	5	28	27	27	21.6%	42%
NORTH LAHONTAN	0.04	3	3	3	14	11	11	23.0%	38%
SOUTH LAHONTAN	0.06	3	3	3	15	6	5	11.2%	24%
COLORADO RIVER	0.03	1	1	1	6	4	3	2.3%	4%
STATEWIDE WEIGHTED AVERAGE	1.00	36	36	36	182	141	130	18.9%	52.2%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	32	18.1	38.0	61.4
SF Bay	19	29.7	44.6	61.4
Central Coast	36	30.3	46.1	67.6
South Coast	68	27.4	49.1	75.4
Sacramento	93	16.7	38.6	62.8
San Joaquin	77	15.5	36.7	60.6
Tulare Lake	17	1.6	31.5	60.9
North Lahontan	28	-3.9	25.5	52.4
South Lahontan	23	3.7	31.9	57.7
Colorado River	22	31.9	50.4	68.7
Statewide Weighted Average	416	16.6	38.4	62.5