

March 1, 2011 Water Supply Forecast Discussion

This forecast includes observed conditions through February 2011.

<http://cdec.water.ca.gov/cgi-progs/iodir/B120>

Forecast Summary:

The projected median April-July runoff in the major Sierra river basins ranges from 83 percent on the Pit River to 141 percent on the Kern River.

Forecasted median Water Year runoff ranges from 81 percent for the Inflow into Shasta Reservoir and the Sacramento River at Bend Bridge to 153 percent on the Tule River.

February started out in much the same way that calendar year 2011 had, unseasonably warm and dry. Around the middle of the month, however, these conditions drastically changed and the last two weeks of the month were characterized by a series of cold and wet storms that boosted the rainfall and snowpack accumulation totals across the state. The storms were not as wide-spread as they were in December with only certain areas of the State receiving above normal precipitation. This includes the San Joaquin River region at 102 percent of the monthly average resulting in a slight increase in the SJI (75 percent exceedance level). Conversely the Sacramento River region was slightly below normal at 97 percent of the monthly average resulting in a slight drop in the SVI (50 percent exceedance level).

This WSI forecast can be summarized as follows:

Sacramento River Unimpaired Runoff Water Year Forecast (50 percent exceedance) normal)	17.3 MAF (93 percent of
Sacramento Valley Index (SVI) (50 percent exceedance)	7.7 (Below Normal)
San Joaquin Valley Index (SJI) (75 percent exceedance)	3.9 (Wet)

The SVI decreased to 7.7 from 7.8 while the SJI increased to 3.9 from 3.8 from the February 1, 2011 WSI. The SJI increase to 3.9 places the index back where it was on January 1, 2011.

Runoff:

Despite the return of wet weather during the second half of February, unimpaired flows for the month of February were below normal for all streams in the Sierra Nevada and Trinity/Shasta Mountains from the Tuolumne River northward. All streams from the Yuba River northward, except for the McCloud River, were below 65 percent of the monthly average with the Klamath River the lowest at 45 percent. With the exception of the Tule River, all streams from the Merced River southward were above average for February. Water year runoff totals through February stood at 92 percent, 172 percent, and 190 percent of average to date in the Sacramento River Region, San Joaquin River Region, and Tulare Lake Region, respectively.

Precipitation:

The year of stark contrasts continues. After a wet end to 2010, January and early February were remarkably dry. Then the storm door opened again during the last two weeks of February and ushered in a series of cold and wet storms. These storms brought February's precipitation totals in the Sierra Nevada up to their historic averages. For the month, the Northern Sierra 8-

Station Precipitation index gained 8.3 inches (104 percent of the monthly average). This accumulation brought the water year-to-date total in the Northern Sierra to 42.3 inches (122 percent of average to date; 85 percent of the average water year total). In similar fashion, the San Joaquin 5-Station Precipitation Index gained 6.9 inches in February which was 100 percent of the monthly average. This brought the water year-to-date total to 41.9 inches (153 percent of average to date; 103% of the average water year total). Thanks to the very wet start to the water year, we remain ahead of last year's pace in both the Northern Sierra as well as the San Joaquin Valley.

From a regional perspective, accumulated precipitation (based on all available precipitation gauging stations per basin) during February in the Sacramento and San Joaquin River basins was near average at 98 and 102 percent respectfully. February was drier in the Tulare Lake region as accumulated precipitation only accounted for 72 percent of the historic monthly average for that region. At the conclusion of the first five months of the water year, precipitation in the Sacramento River Region was 116 percent of average, the San Joaquin River Region was 142 percent of average, and the Tulare Lake Region was 158 percent of average. Statewide, February accumulated precipitation was 93 percent of the monthly average while water year cumulative precipitation through February was 127 percent of average.

Snowpack:

Snowpack is monitored using two complementary methods: automatic snow sensor (or "pillow") readings and manual snow course measurements. On March 1, snow sensors recorded a snow pack that was 113 percent of average in the Northern Sierra, 123 percent of average in the Central Sierra, and 139 percent of average in the Southern Sierra. Statewide, snow water equivalent based on snow pillow data was 124 percent of the historical March 1 average and 109 percent of the historical statewide April 1 average.

Measurements from the snow courses this month proved to be somewhat tricky as the more recent snow that accumulated during the last two weeks of February is now sitting atop a thick base layer of snow and ice that accumulated during the first three months of Water Year 2011. It appears that the early season snowpack in most cases remained largely intact despite the abnormally warm, dry January and February. However ablation did occur in some locations while a consolidation of the snow pack was evident at most locations during the prolonged dry stretch.

Despite these elements, manual course measurements revealed comparable snow pack conditions to those recorded from the snow sensors. Measurements in the Sacramento River Valley watersheds recorded a snow pack that is 120 percent of the historical March 1 average. Measurements in the San Joaquin Valley watersheds indicated a snow pack that is 133 percent of the March 1 average while the snow pack for the Tulare Lake region was 145 percent of the March 1 average. Statewide the snow pack was measured at 125 percent of the March 1 average and 110 percent of the historical April 1 average.

Weather and Climate Outlook:

The first week of March has been fairly typical for this time of year. Intermittent storms have brought a near normal pace for rainfall accumulation so far this month for the Northern Sierra and San Joaquin Valley. When the rain is not falling, nice pleasant Spring-like weather has settled in. For the next six days, the weather outlook across the state is mostly dry. Precipitation is expected along the North Coast for the first few days of this period with precipitation totals expected to be less than 1.5 inches cumulatively. Precipitation makes its

way into the Sacramento River region on Thursday, March 10 with accumulations not expected to exceed 0.5 inches before conditions dry out again. There is a slight chance of light showers returning to the region by the beginning of next week. Snow elevations during this period will range from 5000 to 8000 feet. The Central and Southern Sierra Nevada are expected to be dry during this entire period with freezing elevations relatively high ranging from 8000 to 11000 feet. For the next six to ten days, the weather models show cooler than normal temperatures across most of the state with normal to above normal temperatures expected in the Mojave Desert and Colorado River regions. Above normal precipitation is expected in the northern half of the state including all areas of the Sierra Nevada from Yosemite Park northward. Below normal precipitation is expected elsewhere.

The NWS Climate Prediction Center's (CPC) 30-day outlook for March, last updated on February 28, 2011, suggests increased chances of below normal temperatures for all of California except for the Owens River Valley and the Mojave Desert region. The same outlook calls for increased chances of above normal precipitation for the northern third of the state including all areas of the Sierra Nevada from Lake Tahoe northward. Equal chances of above or below normal precipitation are expected for the central third of the state including all areas of the Sierra Nevada south of Lake Tahoe. For the southern third of the state, including the Colorado River region, the outlook calls for increased chances of below normal precipitation.

The CPC's three month outlook (March through May) was last updated February 17, 2011. This outlook suggests increased chances of below normal temperatures over a region north of Monterey Bay and Lake Tahoe. Above normal temperatures are expected over a region south of line from Bishop to Mexicali, Mexico. Equal chances of above or below normal temperatures are expected elsewhere. The same outlook calls for increased chances of below normal precipitation for the southern half of the state including all areas of the Sierra Nevada south of Lake Tahoe. Equal chances of above or below normal precipitation are forecasted elsewhere.

The CPC's latest (March 7) El Nino-Southern Oscillation (ENSO) discussion indicates that while La Nina is still present across the equatorial Pacific, negative sea surface temperature anomalies have begun to weaken in parts of the Pacific Ocean meaning that La Nina conditions or ENSO neutral conditions are equally likely during May-June 2011. In short, La Nina is losing her grip on our climate forecast.

Next Update:

A Bulletin 120 Update for conditions on March 8, 2011 will be available this Thursday, March 10. The April 1, 2011 Bulletin 120 forecast will be available on April 8, 2011.

If you have any questions regarding this forecast, please contact a member of the Snow Surveys staff. We are happy to help.

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Important Links

Full Natural Flow Data:

Daily FNF

http://cdec.water.ca.gov/cgi-progs/snowsurvey_ro/FNF

Monthly FNF

http://cdec.water.ca.gov/cgi-progs/snowsurvey_ro/FNFSUM

Seasonal FNF

http://cdec.water.ca.gov/cgi-progs/snowsurvey_ro/FLOWOUT

Precipitation Data:

Latest Northern Sierra 8-Station Precipitation Index

<http://cdec.water.ca.gov/cgi-progs/queryDaily?s=8SI&d=today>

Northern Sierra 8-Station Precipitation Tabulation Table

http://cdec.water.ca.gov/cgi-progs/products/8-Stations_Tab.pdf

Latest San Joaquin 5-Station Precipitation Index

<http://cdec.water.ca.gov/cgi-progs/queryDaily?s=5SI&d=today>

San Joaquin 5-Station Precipitation Tabulation Table

http://cdec.water.ca.gov/cgi-progs/products/5-Stations_Tab.pdf

2010 WY Precipitation Summary

<http://cdec.water.ca.gov/cgi-progs/precip/PRECIPSUM>

Snow Data:

Latest Snow Sensor Report

<http://cdec.water.ca.gov/cgi-progs/snow/PAGE6>

Latest Statewide Summary of Snow Water Equivalents

<http://cdec.water.ca.gov/cgi-progs/snow/DLYSWEQ>

Monthly Snow Course Report

<http://cdec.water.ca.gov/cgi-progs/snow/COURSES>

Extended Regional Forecasts:

California Nevada River Forecast Center 6 Day QPF and Snow Level Forecast

<http://www.cnrfc.noaa.gov/awipsProducts/RNOHD6RSA.php>

Climate Prediction Center One-Month Outlook Forecasts

<http://www.cpc.noaa.gov/products/predictions/30day/>

Climate Prediction Center Three-Month Outlook Forecasts

<http://www.cpc.noaa.gov/products/predictions/90day/>

Drought Information:

California Drought Information

<http://www.water.ca.gov/drought/>

U.S. Seasonal Drought Outlook

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

El Nino/La Nina:

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

