

February 1, 2011 Water Supply Forecast Discussion

The forecasts are posted at:

B120: <http://cdec.water.ca.gov/cgi-progs/iodir?s=b120>

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

Forecast Summary:

The projected median April-July runoff in the major Sierra river basins ranges from 83 percent on the Pit River to 147 percent on the Kern River.

Forecasted median Water Year runoff ranges from 83 percent for the Total Inflow to Lake Shasta to 162 percent on the Tule River

Following a very wet fall including well above normal precipitation statewide in the month of December, the new year has started out fairly dry and even given way to unseasonably warm temperatures which has brought statewide precipitation and snowpack back down from their high point around January 1. The fall months and early winter season were indeed wet with the southern half of the state, and particularly the Central and Southern Sierra Nevada, receiving the bulk of the moisture bucking the expected La Nina trend. However, a strong high pressure ridge has since dominated the weather outlook in California resulting in one of the driest Januarys on record in the Northern Sierra Nevada. Runoff has been curtailed from the well above normal levels seen in the last two months of 2010. While runoff in the Central and Southern Sierra has remained above normal, runoff has fallen below normal in the Northern Sierra and Trinity/Siskiyou mountains. Statewide, reservoir storage levels as of February 1 are, for the most part, above average.

This WSI forecast can be summarized as follows:

Sacramento River Unimpaired Runoff Water Year Forecast (50 percent exceedance) normal)	17.9 MAF (96 percent of
Sacramento Valley Index (SVI) (50 percent exceedance)	7.8 (Above Normal)
San Joaquin Valley Index (SJI) (75 percent exceedance)	3.8 (Wet)

The SVI decreased to 7.8 from 9.2 while the SJI decreased to 3.8 from 3.9 from the January 1, 2011 WSI.

Runoff:

As a result of the dry start to 2011, unimpaired flows for the month of January dropped below average for Northern Sierra and Trinity/Siskiyou Mountain streams but remain above average for the Central and Southern Sierra watersheds thanks in large part to the heavy snow and precipitation totals in those watersheds during the last quarter of 2010. Water year runoff totals through January stood at 108 percent, 212 percent, and 208 percent of average to date in the Sacramento River Region, San Joaquin River Region, and Tulare Lake Region, respectively.

Precipitation:

As noted, the first three months of the water year saw impressive precipitation totals throughout the state. The Northern Sierra 8-Station Precipitation index accumulated above normal precipitation in October (250 percent), November (127 percent), and December (195 percent) with a pace on par with the 1982-83 season (wettest on record). The San Joaquin Valley was not supposed to be as wet considering the moderate to strong La Nina influence on sea surface temperatures. Typical La Nina patterns would push precipitation to the north of California giving way to dry conditions in the Central and Southern Sierra Nevada. However the opposite was realized as the southern half of the State saw impressive rainfall totals that resulted in floods and debris flows in Southern California and the accumulation of a heavy snow pack in the Sierra Nevada. The San Joaquin 5-Station Precipitation index accumulated above normal precipitation in October (370 percent), November (149 percent), and December (279 percent) eclipsing the 1982-83 pace midway through December and remaining above that pace well into January.

With the new year came a dramatic change to this winter. December's wet and cold gave way to a warm and dry January. In stark contrast to the first three months of the water year, the Northern Sierra 8-Station Precipitation index only gained 2.1 inches in January (compared to the nearly 32 inches gained prior to January 1) which was just 23 percent of average for the month and ranked as the 9th driest January on record. The paltry accumulation brought the water year-to-date total in the Northern Sierra to 34.0 inches (127 percent of average to date; 68 percent of the water year total). Similarly, the San Joaquin 5-Station Precipitation Index gained just 3.3 inches in January (compared to roughly 31.7 inches gained prior to January 1) which was just 43 percent of average. This brought the water year-to-date total to 35.0 inches (163 percent of average to date; 86% of the water year total). Despite the incredibly dry start to the calendar year, we are still ahead of last year's pace throughout the Sierra Nevada.

At the conclusion of the first four months of the water year, precipitation (based on all available reporting gauges per basin) in the Sacramento River Region was 121 percent of average, the San Joaquin River Region was 156 percent of average, and the Tulare Lake Region was 190 percent of average. Statewide, water year cumulative precipitation through January was 135 percent of average. The variation in precipitation totals from north to south is reflective of the forecasts shown above.

Snowpack:

Snowpack is monitored using two complementary methods: automatic snow sensor (or "pillow") readings and manual snow course measurements. On February 1, snow sensors recorded a snow pack that was 106 percent of average in the Northern Sierra, 124 percent of average in the Central Sierra, and 164 percent of average in the Southern Sierra. Statewide, snow water equivalent based on snow pillow data was 129 percent of the historical February 1 average and 80 percent of the historical statewide April 1 average.

Measurements from the snow courses this month revealed comparable yet slightly heavier snow pack conditions. Measurements in the Sacramento River Valley watersheds recorded a snow pack that is 111 percent of the historical February 1 average. Measurements in the San Joaquin Valley watersheds indicated a snow pack that is 145 percent of the February 1 average while the snow pack for the Tulare Lake region was 186 percent of the February 1 average. Statewide the snow pack was measured at 134 percent of the February 1 average and 84 percent of the historical April 1 average.

It is interesting to compare these values to what the snow sensors were indicating back on January 1, 2011. At the beginning of the calendar year, snow sensors recorded a much heavier snowpack in all regions with 179 percent of average to date in the Northern Sierra, 198 percent

of average to date in the Central Sierra, and a remarkable 271 percent of average to date in the Southern Sierra. The Statewide snow pack registered at 209 percent on January 1. The abnormally dry January conditions are evident in the snow sensor data where only 1 inch of snow water content was gained in the Northern Sierra, and just 2 inches of snow water content was gained in both the Central and Southern Sierra!

Weather and Climate Outlook:

The first week of February has continued the unseasonably dry and warm conditions statewide. This past weekend, record or near-record setting high temperatures were experienced statewide. For the next six days, the weather outlook is dry with freezing elevations easily topping 10,000 feet throughout the Sierra Nevada (including as high as 12,000 feet). For the next six to ten days, the weather models indicate a cooler and (thankfully) wetter pattern than we have experienced so far this calendar year. The outlook calls for below normal temperatures along the California coastline and into the interior valleys of California but not necessarily extending east as far as the Sierra Nevada. The precipitation outlook is above normal for the same exact locations. All other portions of the state including the Sierra Nevada are expected to have normal temperature and precipitation accumulations.

The NWS Climate Prediction Center's (CPC) 30-day outlook for February, last updated on January 31, 2011, suggests increased chances of below normal temperatures for all of California except for the Mojave Desert region. The same outlook calls for increased chances of above normal precipitation for the area skirting the Oregon border and conversely increased chances of below normal precipitation for the southern portion of the state including the Southern Sierra Nevada. All other areas which includes the Northern and Central Sierra Nevada show equal chances of above or below normal precipitation. La Nina is in full effect.

The CPC's three month outlook (February thru April) was last updated on January 20, 2011. This outlook suggests increased chances of below normal temperatures along the entire California coastline and extending east into the interior valleys of California and the Northern Sierra Nevada. This outlook also calls for increased chances of above normal temperatures in the Colorado River region of the state. For all other areas, including the majority of the Sierra Nevada south of Lake Tahoe, the outlook suggests equal chances of above or below normal temperatures. The same outlook calls for increased chances of below normal precipitation for the southern two-thirds of the state including all areas of the Sierra Nevada south of Lake Tahoe. For the northern third of the state including the Northern Sierra and the Trinity/Siskiyou mountains, the outlook suggests equal chances of above or below normal precipitation. La Nina should persist into the spring which does not bode well for the long term precipitation outlook.

Next Update:

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

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

Snow Surveys Staff Contact Information:

Dave Rizzardo, Chief	(daver@water.ca.gov)	916-574-2983
John King	(kingji@water.ca.gov)	916-574-2637
Steve Nemeth	(nemeth@water.ca.gov)	916-574-2634

Andy Reising (areising@water.ca.gov) 916-574-2181
Richard Mora (rmora@water.ca.gov) 916-574-2636

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

