



CALIFORNIA HYDROLOGY UPDATE

CONDITIONS AS OF JANUARY 31, 2024



The California Hydrology Update is a regular summary of current weather conditions in the State of California and serves as a supplement to the data on the [California Water Watch](https://www.waterwatch.ca.gov/) website. It is produced by the California Department of Water Resources Hydrology Section and Sustainable Groundwater Management Office teams. For tips and resources on how to make water conservation a way of life, please visit [saveourwater.com](https://www.saveourwater.com).

PRECIPITATION

The statewide accumulated precipitation for the water year through end of January was 9.8 inches, which is about 80% of average. Although total water year to date statewide precipitation accumulations remains below average, a series of winter storms and Atmospheric Rivers (AR) during January helped to improve conditions and bring accumulated precipitation closer to average for California by the end of the month. The main period of precipitation occurred January 13-23 when four ARs made landfall. The first AR path covered Northern California during January 13-14, bringing a decent amount of rain over the North Coast and snow accumulation primarily over the Southern Cascade and Northern and Central Sierra mountain ranges. The second AR, from January 16-18,

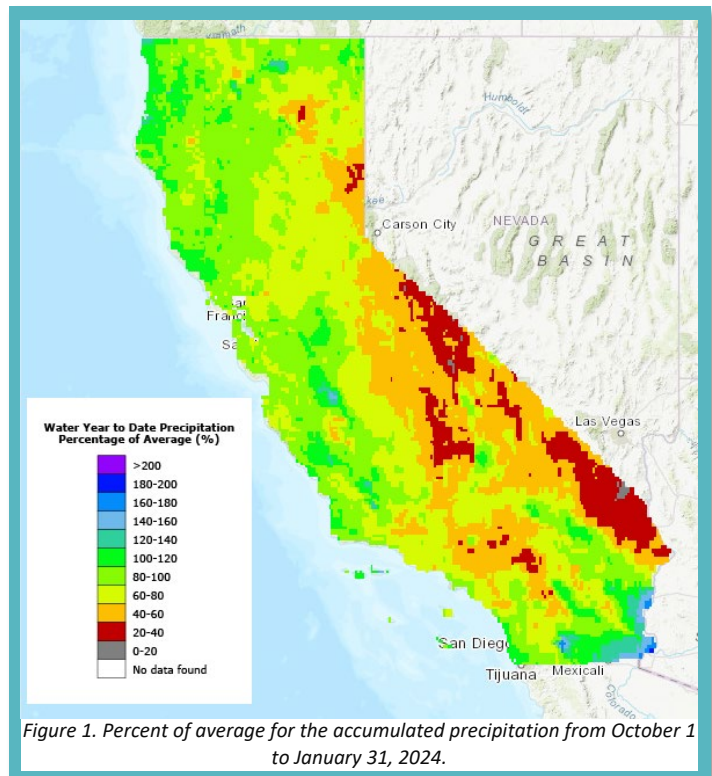


Figure 1. Percent of average for the accumulated precipitation from October 1 to January 31, 2024.



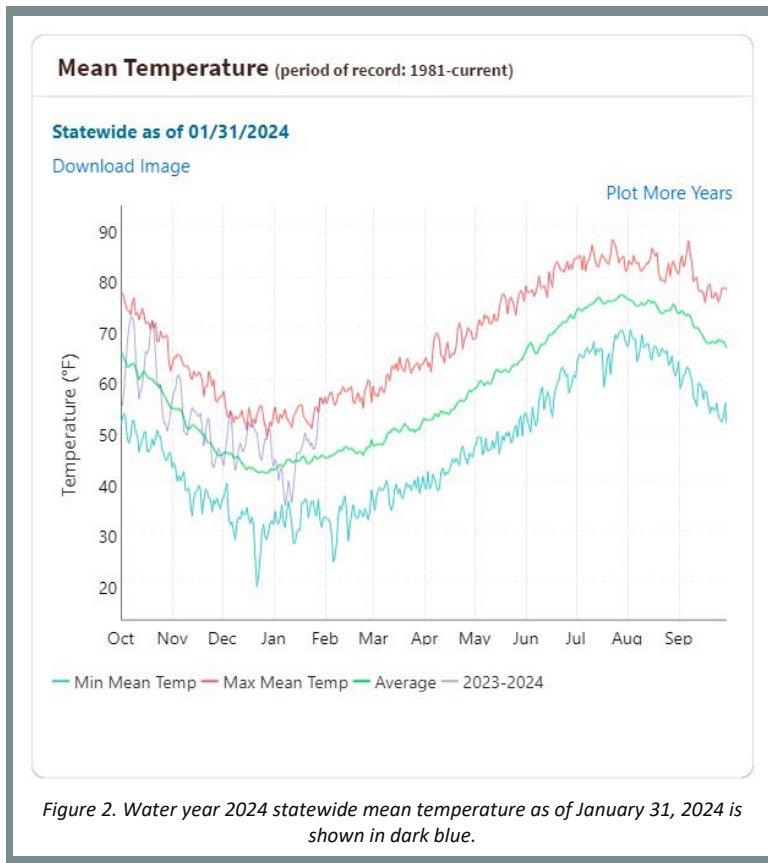
brought precipitation mainly along the California-Oregon border. Although the third AR was directed towards the Pacific Northwest, a low-pressure system off California’s coast allowed moisture, which materialized into precipitation, to reach Northern and Central California (with higher amounts along the coast) from January 19-20. The fourth AR help transport tropical moisture to reach inland and along the coast of California, which resulted in another round of rain across Northern California, Central Coast, and Southern California and additional snow accumulation for Sierra Nevada from about January 21-23.

As shown in Figure 1 with the green shading, California’s coastal regions, most of Northern California, and across the Mojave Desert and the California-Mexico border are near average precipitation for the October 2023 to January 2024 period. The precipitation that fell during the month of January was mainly over Northern California, coastal regions, and along the Northern and Central Sierra Nevada. The North Coast has received 28.6 inches for the water year accumulated precipitation through January, which is 97% of average. The Central Coast has received 9.1 inches for the water year accumulated precipitation through January, which is 87% of average. The Sacramento River region received about 15.2 inches for the water year accumulated precipitation through January, which is 80% of average. The Southern California coastline has accumulated precipitation of 5.7 inches for the water year through January, which is 67% of average.

Based on the Climate Prediction Center (CPC) monthly outlook issued on January 31, 2024, for the month of February 2024 indicates above normal precipitation across California (excluding along the California-Oregon border having equal chances) with up to 50% chance for Northern California, 50-90%

chance for Central California, and 80-90% chance for Southern California. The CPC seasonal outlook covering the period of February 2024 through end of April 2024 indicates that Central California and Southern California have a 33-50% chance of receiving above normal precipitation and equal chances of below, near, or above normal precipitation for Northern California.

Sources: [Statewide Hydroclimate and Water Supply Conditions, Forecast Information, Center for Western Weather Water Extremes \(CW3E\) Event Summary](#)



TEMPERATURE

The statewide average temperature for the end of January was 55°F, which is about 10 degrees above the historical average for this time of year. The statewide average



temperature for California during the month of January exhibited both extremes: being well below average in the beginning of the month (nearly reaching the minimum statewide average around January 9) and then exceeding historical average during the last two weeks of January (reaching the maximum statewide average on January 30).

El Niño conditions are still observed, remain to be a prominent climate driver, and are forecast to continue through the winter months. CPC predicts, with a 79% chance, of the weakening and transition from El Niño to neutral conditions during spring (sometime between April to June 2024). Based on the CPC temperature outlook issued on January 31, 2024, for the month of February 2024 there is a 33-50% chance of near normal temperatures for Southern California and equal chances of experiencing either below, near, or above normal temperatures for the rest of the State. The CPC seasonal outlook covering the period of February 2024 through end of April 2024 indicates 40-50% chance of above normal temperatures for Northern California, 33-40% chance of above normal temperatures for Central California, and equal chances of below, near, or above normal temperatures for Southern California.

Sources: [Statewide Hydroclimate and Water Supply Conditions](#), [CPC 30-Day Forecasts](#)

RESERVOIRS

Statewide reservoir storage at the end of January is 115% of average. There are still several reservoirs retaining above average storage, largely due to retention from the previous water year and also the addition from storms in January. Major reservoirs in Tulare Lake Basin remain well above average with 144% of average storage for the end of January. Most major reservoirs in the San Joaquin region are either near or above average with 113% of average storage for end of January. Most reservoirs in Northern California are near historical average. Reservoir storage in the North Coast region is at its historical average for the end of January. Most flood control reservoirs are near their respective top of conservation level. Two reservoirs, Lake Oroville and Millerton Lake, both had storage levels below their respective top of conservation levels at the end of December and remain below their respective top of conservation at the end of January. Lake Oroville was about 253 thousand acre-feet [TAF] below its top of conservation storage and Millerton Lake was about 150 TAF below its top of conservation storage.

Sources: [California Water Watch](#), [California Data Exchange Center Reservoirs Flood Control](#)

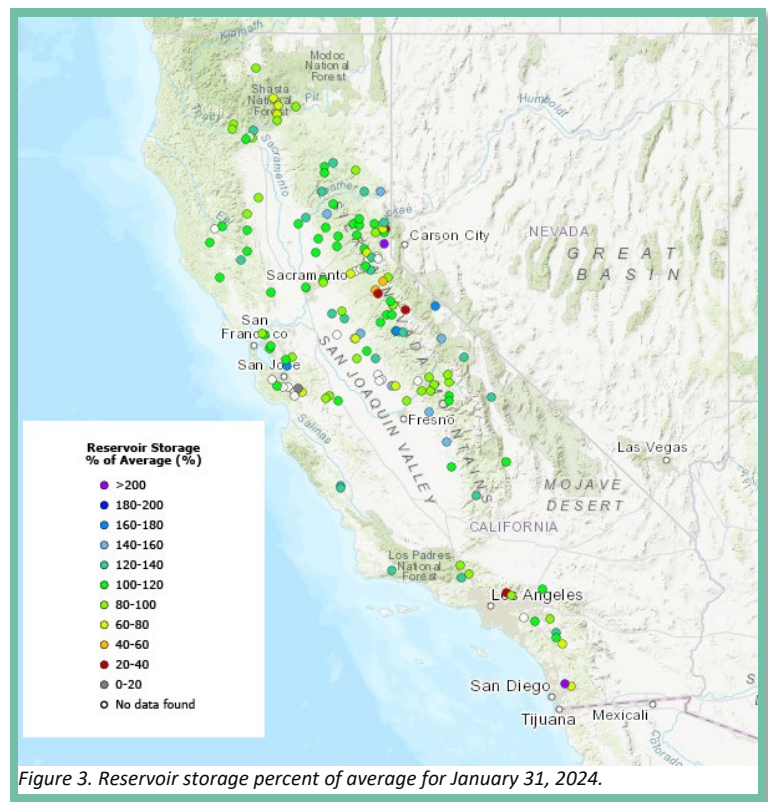
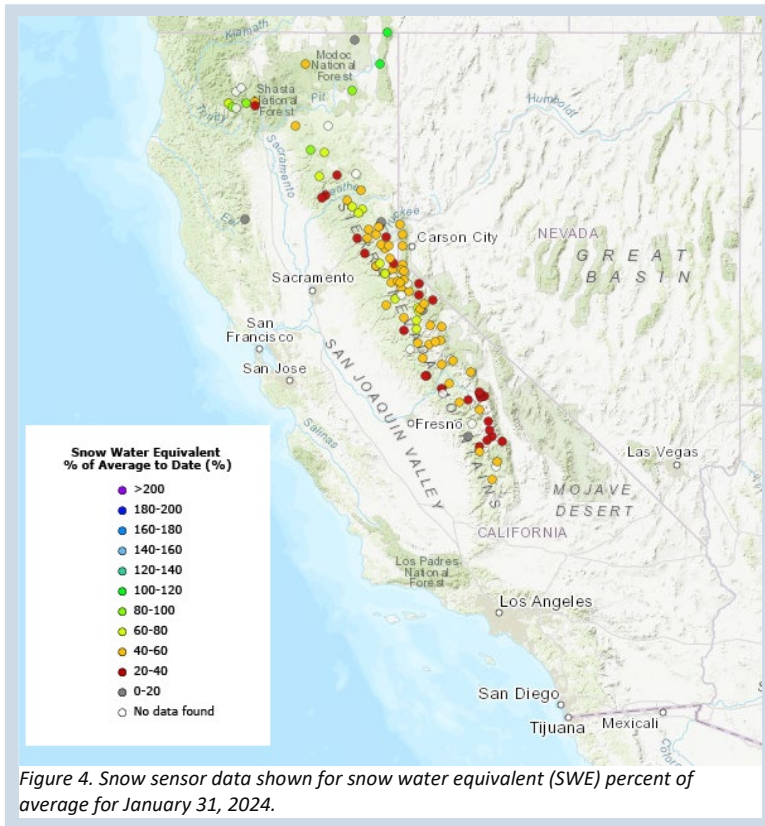


Figure 3. Reservoir storage percent of average for January 31, 2024.



SNOWPACK

At the end of January, the statewide average snow water equivalent (SWE) is 8.3 inches, which is 50% of normal for January 31 and 32% of April 1 average. As shown in Figure 4, snow sensor readings for SWE percent of average for January 31 are well below average for Southern Sierra Nevada (36% of average) and Central Sierra Nevada (53% of average) with slight improvement for Northern Sierra and Trinity (60% of average). The snowpack at the end of January was largely accumulated during the month of January mainly due to the contributions from the first AR, January 13-14 and fourth AR driven moisture reaching inland, January 21-23.

In general, for the Sierra Nevada, snowpack accumulation peaks around

April 1 each year, and thereafter begins to melt with longer days and longer exposure to solar radiation. Several factors involving the timing, pace, and scale of storms and their temperature characteristics through the end of March can influence the total amount of snowpack and when it will begin to melt.

Source: [California Water Watch](#), [CDEC Snow Water Content Plot](#)

STREAMFLOW

Streamflow for about 71% of locations across California was at a normal flow rate for the end of January according to United States Geologic Survey (USGS) stream gage locations. About 17% of streamflow locations were flowing greater than average for this time of year, while 12% of streamflow locations were flowing below normal for this time of the year. The series of AR and winter storms brought higher amounts of rain throughout Northern California in January, which caused a few California-Nevada River Forecast Center (CNRFC) forecast locations to exceed their respective flood stages and then shortly thereafter receded below. A few of these locations that exceeded their flood stages (with dates on when it occurred) include: Smith River near Crescent City (January 13), Smith River at Doctor Fine Bridge (January 13), Mad River at Arcata (January 13), and Russian River at Hopland (January 14). The rain, saturated soil from previous storms, and routed flow along Sacramento River resulted in weir flow at Colusa Weir (from January 23-24) and Tisdale Weir (from January 22-28). Colusa Weir allows overflow to go into the Butte Basin and Tisdale Weir (through the Tisdale Bypass) allows overflow to go into the



Sutter Bypass. The fourth AR which help bring moisture into California, ultimately produced heavy rain in San Diego which resulted in localized flooding and the San Diego River at Fashion Valley to exceed its flood stage on January 22.

Source: [USGS Water Watch, California Nevada River Forecast Center \(CNRFC\)](#)

GROUNDWATER

While the State’s surface water reservoirs were replenished from the storms and runoff in water year 2023, groundwater basins are much slower to respond and still have a long way to go to recover from past decades of drought and significant pumping. Groundwater levels, especially in shallow aquifers, saw some improvement this year, however, monitoring wells measured in the last 60 days show groundwater levels in 35% of monitoring wells across California are below normal, 32% are normal, and 33% are above normal. There were 11 dry domestic wells reported in the last 30 days, as of February 14, 2024.

Source: [DWR California’s Groundwater Live](#)

