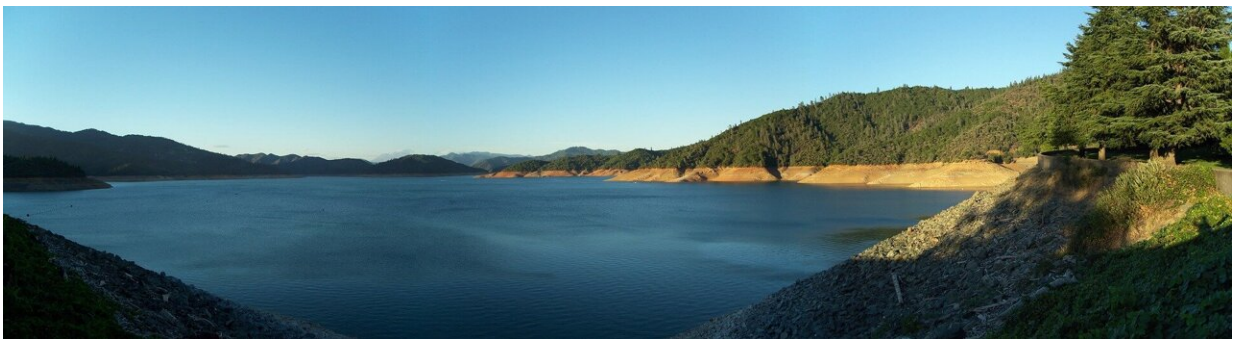


Sierra Nevada snowpack at lowest level in 10 years: What it means for California's water supply

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California's statewide Sierra Nevada snowpack—the source of nearly one-third of the state's water supply—is at its lowest level in a decade, a major turnaround from last year when huge storms ended a three-year drought and buried ski resorts in massive amounts of snow.

On Tuesday, the snowpack was just 25% of its historical average for Jan. 2. A year ago on the same date, it was a staggering 185% of normal. The last time there was less snow at the beginning of a new year was 2014 when it stood at just 19%.

The lack of snow so far this year is due to fewer big storms hitting the

state than normal. And when storms have come, they have been warmer, depositing snow mostly at higher elevations.

But the meager totals so far across California's pre-eminent mountain range are not a cause to panic, experts say.

Not only are there three months left in the winter season, which typically ends in early April, but last year's soaking winter filled reservoirs across the state. That "money in the bank" means chances are low that there will be significant urban [water](#) restrictions across the state this summer, even if the winter ends with below-average snow and rain.

"The reservoirs are in great shape," said Jay Lund, vice director of the Center for Watershed Sciences at UC Davis. "Almost every reservoir in the state is near or well above its historical average for this time of year. We can sleep better knowing there is water in the reservoirs."

On Monday, Shasta Lake, California's largest reservoir, was 69% full, or 116% of its historic average for New Year's Day. Similarly, Oroville in Butte County, the state's second-largest reservoir, was 68% full, or 130% of its historical average. To the south, Diamond Valley in Riverside County, a key water supply for Los Angeles, was 93% full.

Heading into the winter, many water managers were concerned that if huge atmospheric river storms pounded the state in November and December, that could have caused major flooding because there was less space left in the big reservoirs than in most years to catch runoff.

On Tuesday, officials from the state Department of Water Resources headed into the Sierra Nevada to take a manual snow reading as part of a monthly news conference at Phillips Station in El Dorado County, along Highway 50.

"While we are glad the recent storms brought a small boost to the snowpack, the dry fall and below-average conditions today show how fast water conditions can change," said Sean de Guzman, manager of snow surveys and water-supply forecasting for the state Department of Water Resources. "It's still far too early to say what kind of water year we will have, and it will be important for Californians to pay attention to their forecasts and conserve water, rain or shine."

The statewide totals Tuesday come from 130 automated snow sensors spread across the Sierra Nevada range.

Two storms are forecast to bring new snow to the Sierra on Wednesday and Saturday. Each is expected to deliver up to 1 foot to elevations above 5,000 feet, according to the National Weather Service in Sacramento. That's not enough to get the Sierra back to normal, but it will help.

"Finally there is some good cold air coming in this week," said Mike Anderson, state climatologist with the Department of Water Resources.

Large storms bringing many more feet of snow could still arrive in January, February and March. But with each passing dry day, the odds increase that this winter will end below normal.

"Because the first wet season months have been drier than average," Lund said, "we are less likely to have a very wet year overall and more likely to have a drier year overall."

California cities have fared better in the precipitation department this winter than mountain areas have.

Through Monday night, San Francisco had received 6.68 inches of rain since Oct. 1—79% of its historic average. With 3.43 inches, San Jose

was at 83% of normal. And with 3.18, Los Angeles was at 80%.

As the climate continues to warm, California's winters have become less predictable, swinging from very dry to very wet, experts say. Since the 1970s, more precipitation is falling as rain in the Sierra, rather than snow, which makes capturing water more difficult than if much of it was frozen for months and melting gradually. In recent decades, the trend has been particularly pronounced in October, November and May, said Andrew Schwartz, lead scientist at the UC Berkeley Central Sierra Snow Laboratory.

"We are seeing a shortening of the (snow) season from either end," he said, "and a lot more rain in the winter."

One area already feeling the impact of this year's low snowpack is California's ski industry.

Ski resorts around Lake Tahoe opened in December, some of them several weeks late. But without much natural snow, they have had to rely heavily on snow-making machines.

"Obviously things have been a little lighter than we would have hoped for. It's been a bit of a challenge," said Mike Reitzell, president of Ski California, an industry association.

Only about half the lifts are open at many Sierra resorts. This weekend, 12 of 20 were open at Northstar, six of 12 at Sugar Bowl, nine of 27 at Heavenly, nine of 13 at Kirkwood, and 23 of 36 at Palisades.

Reitzell said the industry had its best year in 20 years last year when there was so much snow that some resorts were open into April and May, and the large Palisades resort hosted Fourth of July skiing. Pent-up demand after the COVID pandemic had people flocking to the

mountains, and last year's massive Sierra snowpack—237% of its historical average on April 1—buried the Tahoe area in snow.

Ski resorts have invested heavily in [snow](#)-making equipment in recent years as [climate change](#) has made winters less predictable, Reitzell added. As a result, in a dry year as California has seen so far, there is still plenty of good opportunity to ski.

"It's still early in the season for sure," he said. "We've dealt with this before. It's obviously not ideal. But our resorts know how to handle it."

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