

Record winter warmth not helping with drought

By Kurtis Alexander

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Photo: Scott Sonner / Associated Press

Image 12 of 12

According to Florida-based meteorologist Ryan Maue [in a story from the Los Angeles Times](#), the storm that rolled over California last week dropped an estimated 10 trillion gallons on our parched state. How's that work out? Here's a breakdown from LAT: "Using data from the National Weather Service, Maue... calculated that an average of 3.5 inches of water fell across the Golden State. "In places such as the Sierra Nevada, where several inches of snow fell, Maue's model liquefied the powder: 1 inch of water for every 10 inches of snow. "Since 1 inch of rain in a square mile works out to 17,378,742 gallons, and California has 163,696 square miles — voila, 10 trillion." The next paragraph redoubles on how inaccurate the number is, but at least it's nice to think about. Of course, only a fraction of this water would be captured and saved for consumption. Still, it's no secret that yet another big storm would do a lot to help out.

The dismal snow pack in the Sierra visible southwest of Reno, Nev., on Wednesday, Feb. 18, 2015, has forecasters predicting a fourth consecutive year of drought and prompted Nevada Department of Wildlife officials to release thousands of hatchery trout into the Truckee River in Reno a month earlier than usual as highs approached 70 degrees. (AP Photo/Scott Sonner)

Temperatures across the Bay Area soared to record highs this winter, forecasters said Monday, the same day that a team of Stanford researchers warned that the historic heat is helping drive California's crippling drought — with little sign of letting up.

Highs in San Francisco last month were in the 60s or 70s nearly every day, according to the [National Weather Service](#), prompting city dwellers to reach for sunblock instead of scarves. Only twice did the city dip below 50 degrees.

San Francisco was joined by dozens of cities, including San Jose, Santa Cruz and Livermore, in registering their highest average temperatures in at least a century across the months of December, January and February — the period that forecasters consider the meteorological winter.

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The new records were sometimes two to three degrees above the previous highs. San Francisco's average 57.1 degrees was more than 1.5 degrees greater than the old record, set in the winter of 1969-70.

"It's pretty remarkable," said [Logan Johnson](#), a meteorologist with the weather service in Monterey.

The heat, Johnson said, is due largely to a mass of high-pressure air in the atmosphere above the West Coast that has blocked storms from hitting California and allowed the sun to spike both land and ocean temperatures. Warmer coastal waters have, in turn, reinforced the moderate weather, Johnson said.

Climate researchers at [Stanford University](#) have previously reported that the high-pressure system, which they've coined the "Ridiculously Resilient Ridge," is more likely to occur in the presence of man-made greenhouse gases. The report is one of many that has sought to link human-caused climate change to the California drought.

To date, though, there's little consensus on a connection.

The study released Monday, led by earth system science Professor [Noah Diffenbaugh](#), offers new evidence of a tie. Diffenbaugh finds that warmer temperatures, driven by greenhouse gas emissions, have increased the prevalence of dry years on California's historical record and will likely continue doing so in the decades to come.

The Stanford study doesn't show that climate change is necessarily reducing rainfall but that warming temperatures increase the chances of hot, dry conditions simultaneously occurring.

"Of course low precipitation is a prerequisite for drought, but less rain and snowfall alone don't ensure a drought will happen. It really matters if the lack of precipitation happens during a warm or cool year," Diffenbaugh said.

"We've seen the effects of record heat on snow and soil moisture this year in California, and we know from this new research that climate change is increasing the probability of those warm and dry conditions occurring together," he said.

According to the report, precipitation deficits are more than twice as likely to result in drought years when it's hot out. The findings are based on historical weather data and computer climate models.

The study was published in the journal Proceedings of the [National Academy of Sciences](#).

California water officials delivered a small piece of good news Monday. The [Department of Water Resources](#) said the state's vast system of lakes and reservoirs is full enough to offer cities and farms slightly more water than they expected earlier this year.

The State Water Project's 29 customers, a mix of urban and agricultural users that include Bay Area water agencies, are forecast to receive about 20 percent of what they normally get — up from a January projection of 15 percent.

While the amount is still meager, it's more than last year's 5 percent allocation. It follows last week's announcement by U.S. water officials that the federally run Central Valley Project will likely provide some customers no water at all this year.

"We're grateful that close coordination among water and wildlife agencies in managing limited runoff this winter will afford State Water Project contractors a slight increase in their supplies," said [Mark Cowin](#), director of the state Department of Water Resources, in a prepared statement.

"We're confident that this water, delivered to local districts around the state, will help offset some economic harm of this extended drought," he said.

The State Water Project delivers water from nearly three dozen lakes, reservoirs and storage sites in the Sierra, through hundreds of miles of canals, to contractors who provide water to nearly two-thirds of California residents and about 750,000 acres of agricultural land.

Both state and federal officials have reduced releases from their water projects in recent years because of the drought, forcing cities and farms to rely on alternative sources like groundwater and local storage.

Not only are state and federal reservoirs emptier than normal this year, but snowpack that fills these reservoirs is also down. State water officials are scheduled to release new information on snow levels Tuesday.

Department of Water Resources officials said Monday that the plan to raise water deliveries an additional 204,000 acre-feet, an amount that would supply about 400,000 households for a year, was made possible by heavy rain in December and storage of that precipitation.

Among those receiving state water are the Santa Clara Valley Water District, which provides water to many South Bay cities, as well as the Alameda County Water District and Alameda County's Zone 7 Water Agency.

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