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Nature, not climate change, blamed for drought

By Kurtis Alexander

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Photo: Leah Millis / The Chronicle

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An old Pepsi can sits in cracked, exposed mud that was once submerged in Lake Oroville, the Butte County reservoir that is near a record low after three years of drought.

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California's historic drought is the result of naturally changing ocean conditions, according to a new federal report tha dismisses man-made climate change as the root cause.

The study, released Monday by the National Oceanic and Atmospheric Administration, says sea surface temperatures in the tropical Pacific helped trigger a mass of high-pressure air along the West Coast — a wall that blocked storms from hitting California for three straight years.

Those ocean temperatures, which were initially cooler as a La Niña weather pattern emerged during the 2011-12 winter, were the result of natural variability, according to the report.

“Climate change would not have been a main driver of the precipitation anomalies,” said Marty Hoerling, a co-author of the report and researcher at NOAA’s Earth System Research Laboratory.

The study comes amid a flurry of speculation about what is driving the crippling dry spell that has forced California communities to reduce their water use and farmers to fallow their fields.

Forecasts for another big storm this week have fueled hopes that the drought won’t enter a fourth year. A huge wet system is expected to hit California starting Wednesday evening, bringing wind and rain in amounts not seen in years, according to the National Weather Service.

Some criticize report

But concern about the cause and effects of the drought remains high. Some who have surmised that the drought is another upshot of a warming planet were taken aback by NOAA’s findings, criticizing the report as failing to consider the influence of record heat.

Global temperatures, which are on track to be their warmest in at least a century this year, may have helped create the ocean conditions behind the dry years, critics said. Rising temperatures, they said, also increase evaporation and can prolong dry periods like the one seen in California.

“While connections to the tropical Pacific are exposed, the analysis is incomplete,” Kevin Trenberth, a senior climate analyst at the nonprofit National Center for Atmospheric Research, said in an e-mail.

NOAA’s 42-page report, “Causes and Predictability of the 2011-14 California Drought,” is yet to be published in a peer-reviewed journal, though it has been shared with scientists within the agency and elsewhere.

It’s based on 160 models that eight researchers from NOAA, Columbia University, NASA and the International Research Institute for Climate used to simulate weather.

The report says the drought began three years ago with the emergence of a La Niña, the cool ocean waters in the Equatorial Pacific that influence worldwide weather and have been associated with dry winters in California.

Even after the La Niña faded and sea surface temperatures warmed, the report said, ocean conditions continued to support the ridge of high pressure that had formed, keeping storms from hitting the West Coast.

The report’s authors said the dry spell, while devastating, is part of a natural process that has previously visited California. The three-year period beginning in October 1974, for example, was drier, they said.

The report did not speculate on whether higher ocean temperatures this year, with an El Niño developing in the Pacific, would break down the high-pressure ridge and ease the drought.

NOAA’s recent climate models, however, suggest that the ridge has dwindled and a more normal storm track is likely this winter.

Clarifying the picture

Scientists are likely to find a consensus on what is driving California’s drought as they study it further, said Noah Diffenbaugh, an associate professor of environmental earth system science at Stanford University.

Diffenbaugh's research has suggested that climate change may have helped prompt the high-pressure ridge responsible for California's dry weather.

"I think it's great to see the scientific community trying to understand this," he said. "Over time, we'll get a much clearer picture of this event."

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