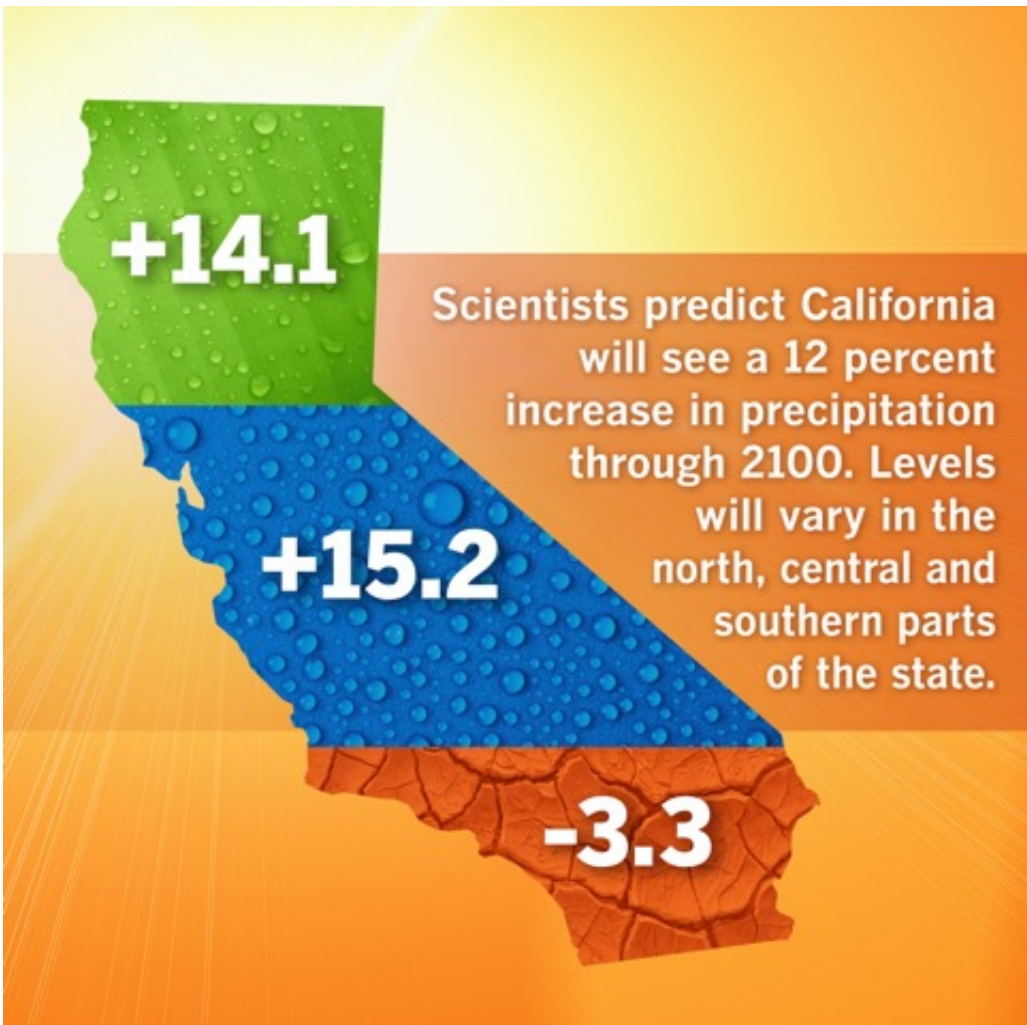


California projected to get wetter through this century

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Scientists at the University of California, Riverside predict California will get an average of 12 percent more precipitation through the end of this century, compared to the last 20 years of last century. Credit: UC Riverside Strategic Communications.

Under business-as-usual greenhouse gas emissions, climate models predict California will get warmer during the rest of the century and most also predict the state will get drier.

But, new research, published today in the journal *Nature Communications*, predicts that California will actually get wetter. The scientists from the University of California, Riverside predict the state will get an average of 12 percent more [precipitation](#) through the end of this century, compared to the last 20 years of last century.

The researchers found different rates of precipitation increase for northern, central and southern California. Northern California, which they define as starting just north of Santa Rosa, would increase 14.1 percent. Central California, which starts just south of San Luis Obispo, would go up 15.2 percent. Southern California would actually decrease 3.3 percent.

They also found the winter months of December, January and February, when California traditionally gets the bulk of its precipitation, would account for much of the overall increase in precipitation. During those three months, precipitation levels would increase 31.6 percent in northern California, 39.2 percent in central California and 10.6 percent in southern California.

All these percentages are in comparison to data from the Global Precipitation Climatology Project observed between 1979 and 1999.

"Most previous research emphasized uncertainty with regards to future precipitation levels in California, but the overall thought was California would become drier with continued climate change," said Robert Allen, an associate professor at UC Riverside and one of the authors of the paper. "We found the opposite, which is quite surprising."

The past uncertainty as to whether California would get more precipitation in the future was due to several factors, including year-to-year variations in individual weather events, shortcomings in models and because California lies within a transition zone, where northern parts of the state are expected to become wetter and southern portions are expected to be drier.

Allen, a faculty member in the Department of Earth Sciences, and Rainer Luptowitz, a graduate student working with Allen, analyzed 38 [climate models](#) developed around the world to reach their conclusions.

They found that warming in the tropical eastern Pacific Ocean [sea surface temperatures](#), an area about 2,500 miles east of the international date line, is the main reason for the predicted increase in precipitation levels.

The warming sea surface temperatures encourage a southeastward shift of the jet stream, which helps steer more rain-producing mid-latitude cyclones toward California.

"Essentially, this mechanism is similar to what we in California expect during an El Nino year," Allen said. "Ultimately, what I am arguing is El Nino-like years are going to become more the norm in California."

But, Allen cautions that prediction of an El Nino-like year is no guarantee of a more wet winter in California. The 2015-16 winter was an example of that. Many other climatic factors must be considered.

Provided by University of California - Riverside

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