

# Southwest may face 'megadrought' within century, study finds

August 26 2014, by Blaine Friedlander

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A photograph of a farmer showing his affected plot due to drought in Karnataka, India, 2012. Credit: Pushkarv/Wikipedia

(Phys.org) —Due to global warming, scientists say, the chances of the southwestern United States experiencing a decadelong drought is at least 50 percent, and the chances of a "megadrought" – one that lasts up to 35 years – ranges from 20 to 50 percent over the next century.

The study by Cornell, University of Arizona and U.S. Geological Survey researchers will be published in a forthcoming issue of the American Meteorological Society's *Journal of Climate*.

"For the southwestern U.S., I'm not optimistic about avoiding real megadroughts," said Toby Ault, Cornell assistant professor of earth and atmospheric sciences and lead author of the paper. "As we add [greenhouse gases](#) into the atmosphere – and we haven't put the brakes on stopping this – we are weighting the dice for megadrought."

As of Aug. 12, most of California sits in a D4 "[exceptional drought](#)," which is in the most severe category. Oregon, Arizona, New Mexico, Oklahoma and Texas loiter in a substantially less severe D1 moderate [drought](#). Ault says climatologists don't know whether the severe western and southwestern drought will continue, but "with ongoing climate change, this is a glimpse of things to come. It's a preview of our future," he said.

While the 1930s Dust Bowl in the Midwest lasted four to eight years, depending upon location, a megadrought can last more than three decades, which could lead to mass population migration on a scale never before seen in this country.

Ault said that the West and Southwest must look for mitigation strategies to cope with looming long-drought scenarios. "This will be worse than anything seen during the last 2,000 years and would pose unprecedented challenges to water resources in the region," he said.

In computer models, while the southern portions of the western United States (California, Arizona, New Mexico) will likely face drought, the researchers show the chances for drought in the northwestern states (Washington, Montana, Idaho) may decrease.

Prolonged droughts around the world have occurred throughout history. Ault points to the recent "Big Dry" in Australia and modern-era drought in sub-Saharan Africa. As evidenced by tree-ring studies, a megadrought occurred during the 1150s along the Colorado River. In natural history, they occur every 400 to 600 years. But by adding the influence of growing greenhouse gas in the atmosphere, the drought models – and their underlying statistics – are now in a state of flux.

Beyond the United States, southern Africa, Australia and the Amazon basin are also vulnerable to the possibility of a megadrought. With increases in temperatures, drought severity likely will worsen, "implying that our results should be viewed as conservative," the study reports.

**More information:** "Assessing the Risk of Persistent Drought Using Climate Model Simulations and Paleoclimate Data."

[dx.doi.org/10.1175/JCLI-D-12-00282.1](https://doi.org/10.1175/JCLI-D-12-00282.1)

Provided by Cornell University

Citation: Southwest may face 'megadrought' within century, study finds (2014, August 26)  
retrieved 19 April 2024 from

<https://phys.org/news/2014-08-southwest-megadrought-century.html>

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