

Climate and Environment

# Mapping the strain on our water

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Pockets in several U.S. states — and across the globe — are draining their limited water supplies

By [Bonnie Berkowitz](#) and  
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The United States has enough water to satisfy the demand, but newly released data from the World Resources Institute shows some areas are out of balance.

The WRI's Aqueduct Water Risk Atlas researchers used hydrological models and more than 50 years of data to estimate the typical water supply of 189 countries compared to their demand. The result was a scale of "water stress" — how close a country comes to draining its annual water stores in a typical year.

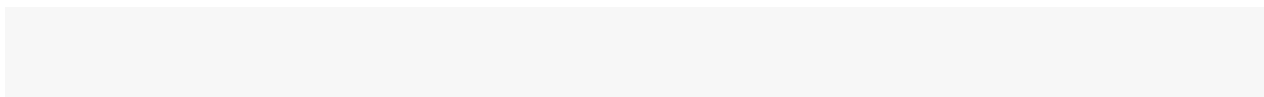
Of course, many years are not typical, and unpredictable weather patterns of a changing climate can have drastic consequences. In areas of high or extremely high water stress, said Betsy Otto, director of WRI's Global Water Program, "if you then hit a drought ... you're really in trouble, because you're already using most of what you have."

The United States ranked 71st of 189 countries, and low-medium on the stress scale, meaning we are pulling out just under 20 percent of our available water.

But within the country, the push-and-pull for water varies greatly. Paul Reig, an environmental scientist who leads Aqueduct, helped explain why.

## The southwest is most stressed

Because much of the territory is naturally arid, southwestern states are in the most precarious positions when it comes to water, Reig said.



New Mexico, for instance, was the only state in the “extremely high” category, earning the same alarming score (4.26 on a five-point scale) as the United Arab Emirates, which was the 10th most-stressed in the world.

New Mexico’s demand sucks up more than 80 percent of the largely arid state’s annual supply. That leaves 20 percent, but such a narrow margin means that it may have trouble withstanding an extended drought or an increase in demand from population or industry growth.

Neighboring Arizona was among four states in the somewhat-less-perilous “high stress” category.

## California uses more water than any state

Ample water resources in northern areas of California are balanced by huge demands from Central Valley agriculture and the large populations in hotter, drier southern areas such as Los Angeles and San Diego.

California [uses the most water](#) of any state, according to the U.S. Geological Survey, up to 9 percent of all withdrawals from the national supply.

## Central Florida is straining its aquifer

On the other coast, Florida demonstrates that a state surrounded by seas and perforated by lakes and rivers can still have a water problem.

Desalinization of saltwater is expensive and often not practical. The enormous [Floridan aquifer](#) provides most of the area’s freshwater, but demand is high. Florida uses the fourth-most water of any state. Reig said it also supplies up to 7 percent of the water used for the country’s thermoelectric power.

## Stress appears in seemingly unlikely areas

Only part of Colorado is snowy peaks and mountain streams. Much of the eastern half of the state is largely flat, fairly dry agricultural land that uses an enormous amount of water for irrigation. Same for Colorado’s northeast neighbor, Nebraska.

Even the “Land of 10,000 Lakes” can have water issues. Parts of Minnesota and Wisconsin border Great Lakes, and in those places water is plentiful, Reig said. But other heavily agricultural parts of the states rely on limited resources that tend to fluctuate.

## Much of the world is worse

The U.S. water picture is far less grim than that of other places.

Seventeen countries ranked in the “extremely high stress” category, and they are home to about a quarter of the world’s population.

The most dire numbers are in Qatar (4.97 on a water-stress scale of 1 to 5), which pulls out nearly all its available water in any given year, followed by Israel and Lebanon.

But by far the most populous high-stress country is India, where more than 600 million people live in areas of high or extreme water stress, said Shashi Shekhar, the country’s former secretary of India’s Ministry of Water Resources. After two straight unusually weak monsoon seasons, taps in the city of [Chennai](#) ran dry in June.

In South Africa, [Cape Town](#) only narrowly avoided Chennai’s fate in 2018 after [drastically curbing water use](#). Mexico City, meanwhile, is sinking because so much groundwater is being pulled out, Otto said.

## Not all the news is bad

Fourteen countries had a score of 0.0, meaning either supply is very high, demand is very low or both. Those include countries such as Uruguay, Norway, Jamaica and Equatorial Guinea.

And in the United States? Many places are in good shape, but this may be the only metric ever in which D.C.’s stress level ranks lowest in the country.

*Note: Reig said that small islands are very difficult to model because they’re not part of a watershed. So Hawaii and some island nations are not included in the data.*