

Colorado River Basin Aquifers Are Declining Even More Steeply Than the River, New Research Shows

Overuse and climate change are rapidly depleting groundwater throughout the region, but aquifers are not part of the negotiations among the seven basin states to cut back water use.

By [Wyatt Myskow](#) June 2, 2025

Related

[Scientists Map Where Orphan Wells Pose Threats to Aquifers](#)

[In a First, Arizona's Attorney General Sues an Industrial Farm Over Its Water Use](#)

[A Rural Arizona Community May Soon Have a State Government Fix For Its Drying Wells](#)

[Gila River Tribes Intend to Float Solar Panels on a Reservoir. Could the Technology Help the Colorado River?](#)

Declines of underground water supplies that are vital to cities and farming in the Colorado River Basin are outpacing the losses of the river's water, according to [new research](#) published last week based on NASA satellite data.

It's the latest warning of the region's rapidly declining water supplies as the seven basin states—Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming—engage in [tense negotiations](#) over the [Colorado River's future](#) and cuts to water supplies, but with losses to groundwater left out of the debate.

Across the basin, the rate of water storage decline increased by a factor of three between 2015 to 2024 compared to the previous decade because of climate change, said Jay Famiglietti, the study's senior author and science director for Arizona State University's Arizona Water Innovation Initiative.

"That's pretty scary," he said. "When we drilled into figuring out what's going on, of course, it's groundwater and the disappearance of groundwater. That should grab people's attention, and I'm not sure that they do."

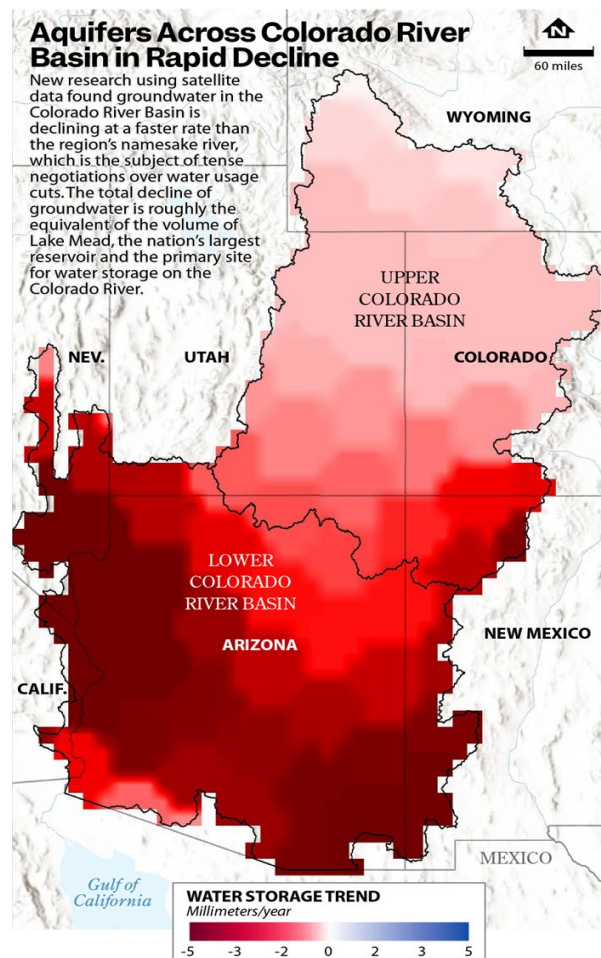
The Colorado River Basin has been in a drought for more than two decades, leading to what scientists have called an aridification of the region. The river supplies water to 40 million people across seven states, 30 tribes and Mexico, and generates billions of dollars' worth of agricultural outputs, supplying the U.S. with fruits and vegetables in winter. But an overallocation of the

river's resources and climate change have thrown that system into disarray, with the states now racing a 2026 deadline to come to an agreement to cut back use of the river.

Recent wet years provided a reprieve from the worst case scenarios in the basin, but a recent study looking at the next 24 months on the river from the Bureau of Reclamation, the federal agency tasked with managing it, predicts steep declines in the levels of lakes Mead and Powell, the nation's largest reservoirs, which dictate the availability of water in much of the basin and factor heavily into the negotiations.

One acre foot of water is enough to supply two to three households for a year; the Colorado River supplies somewhere around 13 million acre feet annually. But the century-old compact between Colorado Basin states allocated more water than that—more than the river carries—leading in part to its overuse and decline.

Using satellite data from NASA that tracks water supplies both below and above ground, the researchers were able to record the declines across the region. Across all sources of water in the basin, a total of 42.3 million acre feet have been lost, the study found.



A majority of those losses, 27.8 million acre feet, were from groundwater. The total decline of groundwater is roughly the equivalent of the volume of Lake Mead, the nation's largest reservoir and the primary site for water storage on the Colorado River. The lake's decline has made headlines around the world, with images of its "bathtub ring" serving as visual reminders

of how much more water the lake once stored. But losses to groundwater are far outpacing the losses to surface water such as that in lakes Mead and Powell, the researchers found.

Despite the steep declines in aquifers, groundwater management remains haphazard across the Colorado River Basin and is not among the considerations for negotiating new guidelines for managing the river. The federal government under the [Biden administration had taken steps](#) to identify how federal involvement [could aid groundwater management](#), but it's unlikely the Trump administration will move forward with that work or that groundwater will become part of Colorado River negotiations.

"I wish that it did factor into the negotiations, but it doesn't," Famiglietti said. "Groundwater is controlled by states. That's fine, but there has to be some discussion of total water availability in these discussions, and how that water can be used sustainably over the next century and the groundwater part gets left out. I'm not sure that we can continue to thrive in the western U.S. if that continues to be the case."

Cuts on the Colorado River, experts have said, will likely lead to states using more groundwater, despite the region's aquifers' dire condition, and in many cases, suffering worse losses.

Arizona is likely to bear the biggest cuts on the river due to its high usage, but lesser rights in the system, forcing it to use more groundwater. Most of the state, however, has [no groundwater regulations](#). That has led to wells running dry and aquifers that would take centuries with no pumping to recover. The state has taken action to begin regulating groundwater in some new areas, but long-term solutions remain divisive in the Arizona legislature.

Even where groundwater is regulated, the study found the aquifers there are still in decline, though not as rapidly. But it remains unclear, Famiglietti said, if that's because of the management or those areas having access to surface water supplies from the Colorado River.

"We can assume that states like Arizona will have to rely increasingly more on groundwater, and that, of course, it's a problem, because, as the paper shows, it's disappearing quickly," he said.

"Groundwater management only covers 18 percent of the state by area. So to me, that puts the state at incredibly high risk."

Elizabeth Koebele, an associate professor of political science focused on water policy at the University of Nevada, Reno, who was not involved with the study, said the research points to the need for further monitoring and planning for all sources of water in the basin.

Scientifically, she said, it is known that surface water supplies and aquifers are often interconnected, meaning impacts to one affect the other. Despite that, only surface water is collectively managed by the federal government and the states.

"These resources are more interconnected than our laws lead us to think, and as a result of that, we need to be finding ways to more explicitly consider them in seven-state negotiations," Koebele said.

Though groundwater is not an explicit part of the negotiations to use less Colorado River Basin water, it is certainly top of mind for state leaders. “The negotiators are going to have to negotiate cuts across the seven states, but then they all have to come back to their own state and figure out how to implement those cuts,” she said. “I think that’s one of the most challenging things about these negotiations, and that’s where a lot of this data really comes to bear on decision making.”

Article link: https://insideclimatenews.org/news/02062025/colorado-river-groundwater-rapid-decline/?utm_source=InsideClimate+News&utm_campaign=73ccb9d85c-EMAIL_CAMPAIGN_2025_06_09_09_06&utm_medium=email&utm_term=0_29c928ffb5-73ccb9d85c-327834825