

The Water Tap: Climate change and climate denial on the Colorado River



This article is part of a series addressing topics relevant to water security in southwestern Utah. Look for stories online on select Fridays and in print on select Saturdays that feature updates on ongoing water issues, interviews with experts and explorations of how we can ensure a better water future for our growing communities.

Management of the Colorado River under climate change, much like the phenomenon of climate change itself, is inherently complicated and confusing due to its importance and scale. Different approaches to measuring long-term change and accounting for natural fluctuations can both confound conclusions and delay responsive action in systems as complex as the water lifeline of the American West and the chemical makeup of the Earth's atmosphere. For decades, centuries even, nuanced inconsistencies have been seized upon by climate change deniers to cast doubt on the scientific method and dilute the resounding message from the research community: That, any way you slice it, the climate is warming and the Colorado River is drying.

In a new stab at exploring ways to slice up the Colorado River under possible future climate change scenarios, researchers at the [Center for Colorado River Studies](#), based at Utah State University, did not shy away from making waves in the extensive Colorado River management community by pointing out contradictions, misunderstandings and ill-conceived plans that may be hampering the West's ability to pursue water-wise growth.



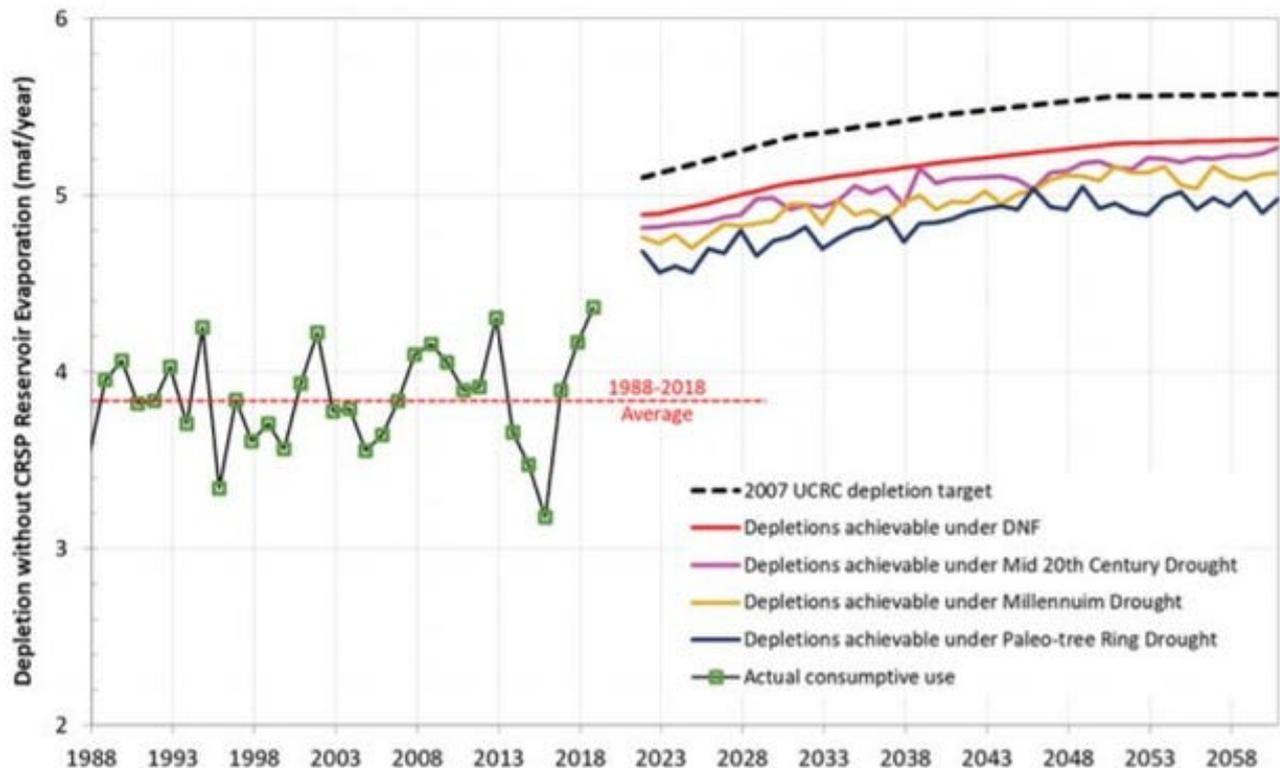
[Their study](#), published earlier this month, describes possible management paradigms for the Colorado River — the main, and highly contested, source of water for 40 million people across seven western states — under future climate change scenarios using a new metric of combined storage in the reservoirs at Lake Powell and Lake Mead. The researchers chose this measurement unit [with the express objective of](#) addressing "institutional divisions in accounting for and

reporting water conditions between the Upper and Lower Basin and the non-linearity of relationships between pool elevation and storage volume [that] obscure the public's understanding of the current condition in the basin and convolutes management responses to critical situations."

In other words, they took aim at some of the murky messaging about the Colorado River supply by honing in on the amount of water actually stored and the amount actually used and calling perceived bluffs about how these numbers have been misrepresented in the past.

To do this, the team of researchers first showed that, based on past usage data for water from the Colorado River by states in what is considered the Upper Basin (Utah, Wyoming, Colorado and New Mexico), projections of future use calculated by the [Upper Colorado River Commission](#) may be overinflated. In the figure below, the green boxes represent actual consumptive use of water by the Upper Basin from the two reservoirs since 1988, while the black dashed line shows the projected future depletion, or need for water, that was estimated in 2007 by the Upper Colorado River Commission.

Upper Basin historical depletions and modeled 2007 UCRC depletion schedules



That the two lines don't match up is both encouraging and inflammatory. It suggests that the Upper Basin states are capable of living within their current water means, so to speak, and may not require restructuring of Colorado River agreements in order to accommodate future sensible growth given predicted water savings from decommissioning some coal-fired power plants and transitioning irrigated land out of agriculture. But in doing so, it also calls into question efforts to prove that Upper Basin states like Utah will require a larger share of water from the river than they currently have, via projects like, for example, Washington County's Lake Powell Pipeline.

More: [The Water Tap: Getting up to speed on the Lake](#)

[Powell Pipeline project](#)

This first conclusion was met with resistance from Amy Haas, executive director of the Upper Colorado River Commission, who told *The Spectrum & Daily News* that the authors of the study used an outdated (2007) schedule of projected depletions even though an updated one (2016) was available to them. Haas indicated that incorporating the newer predictions released by the UCRC would have reduced the discrepancy between historic and projected water use.

"The 2016 Schedule, which shows a decrease in future demand over the 2007 Schedule as well as a slower rate of projected future demand, has long supplanted the 2007 Schedule and was recently incorporated by the Bureau of Reclamation into its CRSS model, the model relied upon by the authors in their study," said Haas. "We hope the authors will consider replicating their analysis using the current CRSS model, which includes the 2016 Schedule."

But she did not indicate that the large gap between historic and projected use would disappear with the newer schedule, opening the door to this study being used to bolster long-time claims from opponents of the [Lake Powell Pipeline project](#) that the need for this potentially expensive and environmentally risky plan to bring water from Lake Powell to Washington County via a 140-mile buried

pipeline has been justified through improperly exaggerated estimates of need for the water. Conservationists argue that southwest Utah can grow on its existing Virgin River supply with additional conservation and reuse, while Washington County Water Conservancy District officials maintain that the drying influences of climate change on the Virgin River basin necessitate the import of a second water source.

More: [The Water Tap: 'A slippery slope.' Critics oppose creation of a Utah Colorado River Authority that could operate behind closed doors](#)

The [full white paper](#) does specifically refer to the potential impact on the Colorado River of the proposed Lake Powell Pipeline project, calling it "the most significant new consumptive use of Colorado River water that is being considered today."

That this new consumptive use of Colorado River water could be a problem is then implied by the paper's next major finding. The authors looked at how combined water storage in the two reservoirs would decline under various usage regimes, plus either the persistence of the current Millennium Drought or a climate warming scenario that resulted in decreased runoff and increased evaporation. Those results were less encouraging.

The red line in the figure below shows how reservoir

storage would drop under the climate change scenario if operations stay the same and both the Upper and Lower Basins continue on their current path to access all the water to which they believe they are entitled. According to Jack (John) Schmidt, a professor of Watershed Sciences at Utah State University and an author of the CCRS white paper, approaching a combined storage of only 5 million acre-feet, as the figure shows is possible after 2050, could cause one or both reservoirs to dry out through evaporation, hydropower operations to fail and the Grand Canyon ecosystem to "go berserk."

"The big take-home point is that, under the conditions of future drought or progressively decreasing runoff associated with a warming climate, the system tanks, the system is not sustainable," Schmidt explained.

Furthermore, the paper, Schmidt confirmed, did not even address the worst-case scenario of the combined impacts on Colorado River flows from climate change *and* continued drought.

"What we didn't do, only because you can only do so much and then your brain blows up, is we did not look at it getting even worse," Schmidt said. "But it would get worse if temperature adjusted flows then also included a major drought."

More: [The Water Tap: It snowed! Is the drought over?](#)

The goal of this work was not just to rock the boat on Colorado River management but, as stated in the paper, "to encourage conversation and consideration of new management concepts that will better meet future needs." The paper also clarifies that the period of time in which the [Colorado River Compact of 1922](#), which initially divided up shares of the Colorado River, was negotiated "was unusually wet, and no indication exists that flows of a similar magnitude will reoccur in the future."

"If everybody still wants to get a slice as big as when they imagined the pie was much bigger, that ain't gonna work," said Schmidt. "The flip side, if you want to find the silver lining or you want to call the glass half full, is that even under severe droughts, if you simply maintain that average upper basin depletion, you can sustainably manage the system."

More: [The Water Tap: New study finds climate change will dry Colorado River even more than previously thought](#)

Some local environmentalists hope that these results, and the fact that they came from a group based in Utah, will encourage the state to reconsider pursuing the full allotment of water they believe was allocated to Utah by this 100-year-old agreement and instead refocus efforts on

water conservation.

"It was so interesting to have a Utah University come out with a study, because maybe that will have more impact with elected officials to understand how the Colorado River is in dire straights and there really isn't any more water to take out of it," said Jane Whalen, a Washington County resident and board member with the local conservation organization, [Conserve Southwest Utah](#). "We have to take steps now to use what we have more efficiently. It's just not sustainable management to continue to build projects to take water out of the Colorado river."

But recent action and attitudes in the Utah Legislature give little indication that things will shift this way. Just this week, the Utah Senate's Natural Resources, Agriculture, and Environment Committee [unanimously supported a bill](#) to create a new 6-member Colorado River Authority specifically to strategize over pursuing Utah's claim to additional water from the Colorado River. The measure looks likely to pass the Senate soon, despite repeated assertions from environmentalists, and this new study, that there simply is not more water to be had.

More: [Utah advances bill to create new Colorado River Authority](#)

Plus, confusion about the effects of climate change persists

in Utah within these governing bodies. In a hearing about this Colorado River Authority bill, [House Bill 297](#), Rep. Carl Albrecht, R-Richfield, was among several representatives to voice a personal confidence that climate change is a natural cycle.

"I'm an optimist. I believe that climate change is a cycle. And I believe we'll come back," Albrecht said. "All you got to do is look back when State Street was flooded. We'll have those years again. Might be a while, but we'll have some good years. And I think we need to consider that as we go forward. So I support this."

Though natural global temperature fluctuations have and do occur, scientists have determined that the accumulation of greenhouse gases in the atmosphere from human actions like burning fossil fuels and removing forests that capture carbon have led to a rise in retained heat beyond that generated naturally. One of the consequences of this, as demonstrated by the recent CCRS white paper and countless studies before it, is more water in some regions of the globe, and less in others.

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