

# Snowpack melts rapidly in Colorado; 'drought' may be too hopeful a term

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WRITERS ON THE RANGE

We are two and a half decades into the Southwest's most severe drought of the past 1,200 years, and this winter's snow dearth is one of the most extreme on record.

Without an April-May miracle, human-caused climate change likely will finally catch up with the Colorado River — and the 40 million people who rely on it — in the form of a full-blown crisis this year.

"Drought" may be too hopeful a word, because it implies an eventual end. Most climate scientists refer to the phenomenon as "long-term aridification," caused by a lack of rain and snow and warming temperatures.

The West has just experienced its warmest winter since record-keeping began in 1895. The average October-through-December temperature in some parts of the region has been more than 8 degrees Fahrenheit warmer than the 20th century mean. This is a huge anomaly.

In Gunnison County, one of the colder places in the nation, the average minimum temperature for that four-month stretch was about 19 degrees. That doesn't seem so bad until you realize that back in 1990, another dry, warm winter, the corresponding measure was 13.6 degrees. For the Upper Colorado River Basin, the average minimum temperature for that four-month stretch was about 26 degrees, the warmest on record.

The warmer temperatures tinker with the health of the watershed.

This water year, which began Oct. 1, started with record-high precipitation in some areas, most of which fell as rain. That helped fend off severe drought conditions. But what really counts is the mountain snowpack, which serves as a giant natural reservoir that supplies at least 70% of the Colorado River's water each year. Warm temperatures have left some areas snow-free even in parts of Wyoming, where the white stuff normally would be piled high in March.

The diminishing snow has, in turn, shrunk the Colorado River. The "natural" flow — or an estimate of how much water the river would carry without upstream diversions or human consumption — has been below 15 million acre-feet at Lees Ferry in 20 of the past 26 years, with an average flow of 12.25 million acre-feet during that time.

This matters, because when the Colorado River Compact of 1922 parceled out the river's waters, the river was assumed to carry an average annual flow of at least 16.5 million acre-feet. Demand has exceeded supply significantly for the past 26 years, forcing the drawdown of the watershed's big savings accounts, Lake Powell and Lake Mead, to about one-third of capacity.

Meanwhile, to comply with the Colorado River Compact of 1922 — the document that serves as the Ten Commandments for the management of the river's waters — the Upper Basin states must release, on average, at least 7.5 million acre-feet from Glen Canyon Dam each year.

Given that the Upper Basin states need a bunch of water to keep their cities and farms from drying up, and that an additional 800,000 acre-feet evaporates or seeps into the underlying rocks at Lake Powell each year, you can

see how the warming climate wreaks havoc on the math of the Colorado River.

The entire river system now teeters on the brink, and this year's snow drought may be what pushes it over the edge.

The Bureau of Reclamation's latest forecast says Lake Powell's surface level is likely to drop below the minimum level needed for power production this year. This so-called "deadpool" would not only mean the end of hydropower production, it also would force all of the dam's releases to go through the river's 8-foot-wide, steel outlet tubes, which were not made for sustained use. This could compromise the tubes and the dam itself.

It's possible the dam would even be shifted to a run-of-the-river operation, in which releases equal the amount of water flowing into the reservoir, minus evaporation and seepage. That would almost certainly result in water shortages downstream, at the very least for the Central Arizona Project, which serves the Phoenix area.

This quandary didn't sneak up on us. The seven Colorado River states and the federal water managers can't agree on who should make what cuts in consumption. The feds, meanwhile, haven't gotten around to re-engineering Glen Canyon Dam or creating a bypass around it that would enable the water to keep flowing. It's almost as if they've been paralyzed by the belief that dry winters were just a minor glitch.

Now, as the spring runoff gets underway, it has become clear that nature won't save us: We have no choice but to live within increasingly meager limits.

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