california water impact network

NEWS RELEASE

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The Worst Drought in 1,200 Years

California at the Rubicon

A paper that was recently published in the journal *Nature Climate Change* had a convoluted title: *Rapid Intensification of the Emerging Southwestern North American Megadrought in 2020-2021*.

But what the paper detailed was explicit, easily understood – and terrifying. Using tree-ring data, researchers determined that the decades between 2000-2021 were the driest 20-year period in the American Southwest (including much of California) since 800 CE. Moreover, the current drought will likely continue through 2022, making it equivalent to a prolonged "megadrought" that afflicted the area in the late 1500s.

"Reservoirs are low," said Jay Lund, the co-director of the Center for Watershed Sciences at the University of California, Davis. "Lake Shasta is lower than it was at this time last year. The warming climate is making smaller droughts bigger, even as it's increasing weather variability – as we just saw this past winter, where we had some of the driest and wettest months on record in the same year. At the same time, we've been losing a lot more water off the landscape even during years of average or above average precipitation. We get less runoff from the snowpack because much of it evaporates into the atmosphere before it can melt and soak into the ground."

We have, in short, entered territory that is unknown and unmapped in the modern era. Further, the potential impacts of great droughts have increased as human populations have grown. When the last megadroughts occurred, California was inhabited by perhaps 300,000 people, all pursuing subsistence lifestyles that could adjust to massive shifts in climate regimes.

Now? There are 40 million people in California, the great majority living in urbanized areas. All of us are dependent on the abundant energy, material goods – and water – that are hallmarks of modern civilization. Throughout the modern era, we've never had enough water to waste in California – even though we did waste it. And now, in the depths of a devastating drought – one with no end in sight – we are at a crisis point.

But who is acknowledging this crisis? Not the people who can respond to it most effectively – the managers of the gigantic state and federal conveyance projects that deliver water from the North State to Southern California. Their approach remains mired in the myth of abundance that drove the construction of the projects more than 70 years ago – a myth that still provides water at subsidized rates to the sprawling industrial agricultural complexes of the San Joaquin Valley.

“More than 30 years ago, we published papers on California’s vulnerability to climate change,” said Peter Gleick, the co-founder of the Pacific Institute. “At the time, we were projecting possible impacts to snowpack and water availability. Today, those impacts are not hypothetical – they are real. We are seeing the unambiguous consequences of climate change. And as we compare recent droughts with the historical long-term record, we see that those consequences are far worse than anyone expected. But despite this, the agencies and institutions that control water in this state have failed to either prepare or act.”

As an example, Gleick cites the snowpack and run-off models the state Department of Water Resources and the U.S. Bureau of Reclamation use to calculate annual water availability and allocations.

“Simply put, they are no longer correct,” Gleick said. “We saw that last year, when the snowpack didn’t deliver much of the anticipated water due to evaporation. Climate change has presented us with a new hydrology – what used to happen isn’t happening anymore. But the agencies are still predicating policy on the historical record.”

Both agencies and lawmakers have avoided taking any comprehensive action even when effective solutions are obvious.

“There has been persistent pressure on urban areas to do more to conserve water,” said Lund. “And to their credit, they’ve been responding. Considerable progress in conservation and water recycling has been made in many cities.”

But cities use only about 20% of California’s developed water, said Lund. The remaining 80% is used by agriculture. Therefore, Lund emphasized, the only practical way to achieve significant water savings is through the retirement of “impaired” lands”: croplands in the southern San Joaquin Valley that are heavily laced with selenium and salt. To remain productive, these lands must be flushed periodically with large volumes of water, simultaneously wasting a public trust resource and creating floods of toxic effluent that imperil fish and wildlife.

Relying on outmoded computer models and supporting destructive “old school” industrial agriculture aren’t the worst faux pas of the water agencies. Even more egregious is the state’s continued support for “paper water” – reserves that exist on legal documents, but not in our rivers, reservoirs, and aquifers. Ted Grantham, a water and climate specialist with the Division of Agriculture and Natural Resources at the University of California, analyzed California’s appropriative water rights data and concluded the State was allocating five times more water than actually existed.

“If anything, our work probably underestimated the ratio of paper water relative to average supply,” said Grantham. “So as we come off the second year of the current drought, things are looking extremely grim. That’s true for agriculture, but it’s especially the case for the environment. Reservoir operators are

going to have a very difficult time maintaining [cold] temperature requirements for Sacramento and Klamath system salmon."

Along with fisheries, disadvantaged communities are suffering disproportionate impacts from the drought, said Grantham.

"We learned from the last drought [2012-2014] that many of the water systems used by disadvantaged communities are highly vulnerable," Grantham said. "A significant number of drinking water wells went dry or became unusable due to water quality deterioration. So looking ahead, it's critical that the State considers both the social equity and environmental justice implications of any drought preparedness or adaptation actions it pursues."

As Grantham noted, surface water isn't the only issue of concern. Increasingly, Californians are turning to groundwater as surface supplies dwindle, leading to aquifer depletion across the state. The Sustainable Groundwater Management Act of 2014 was a good first step in managing groundwater depletion, observed Grantham – but in many cases, it's honored more in the breach than the observance.

"SGMA was the most important policy change in a long time," said Grantham. "Managing groundwater properly is fundamental to any future drought response. But the impression I get [about SGMA's groundwater quantification and pumping plans] is mixed. Many of the local groundwater agencies have made rosy projections about future supply that probably are not realistic."

In sum, said Gleick, "The water agencies are long overdue for integrating climate change into their models. The drought isn't a short-term problem – it's a whole new reality. The potential to do things differently is enormous, and we've already made significant progress. Per capita water use in California, for example, is going down. At the same time, agricultural efficiency is going up. A lot more food and profit are now produced per acre foot of water used. But some of that improvement has come explicitly at the expense of groundwater reserves and natural ecosystems. That isn't justified – or sustainable."

Carolee Krieger, Executive Director of the California Water Impact Network (C-WIN), a ratepayer advocacy and environmental justice organization that litigates for equitable water policy, said immediate action is needed to prevent California's water emergency from evolving into an outright catastrophe.

"It's not a simply a matter of restrictions on watering lawns anymore," said Krieger. "It's a matter of cities running out of water, of California's salmon runs becoming extinct. This is a 21st-century crisis, and our agencies are approaching it with a 1950s mindset. We need to implement long-term solutions that distribute our limited water fairly and sustainably to ratepayers, responsible agriculture, and the environment."

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The California Water Impact Network is a state-wide organization that advocates for the equitable and sustainable use of California's freshwater resources for all Californians.

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