



WESTERN WATER ASSESSMENT

A NOAA RISA TEAM

July 2023 Newsletter

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Farewell, Lisa

We would like to congratulate our Principal Investigator and former Director, **Lisa Dilling**, on her new position as Associate Chief Scientist for the Environmental Defense Fund! Lisa was Director of WWA for seven years from 2014-2021, and has worked with WWA for over 14 years. Her current research focus is on decarbonization of the energy system, climate resilience, and understanding how science can best support robust decision-making in deeply uncertain contexts. Her past research has focused on climate adaptation and adaptive capacity, drought and urban water management, climate change and public lands, and municipal policies regarding natural hazards. We are forever grateful for Lisa's work for WWA over the years and we will miss her presence on the team. While we will acutely feel her absence at CU, we are relieved that she will continue to be based in Boulder, so we don't have to say goodbye. We wish her all the best in this next chapter of her career!



Welcome back, Ben

WWA Director **Ben Livneh** returned from a sabbatical at the Technion, Israel Institute of Technology. We are thrilled to have him back in the office! We are thankful for his steady leadership as we continue our work with communities, water managers, and other decision-makers in the region.



Research and Products

Supporting Community Climate Adaptation in Wyoming

This spring, WWA Co-PI **Corrie Knapp** (University of Wyoming) led our first-ever Adapting to Climate Change in Wyoming Small Grants Competition. Wyoming communities face increasing climate-related risks including wildfire, drought, flooding, and heat waves. This funding competition provided a rare and important opportunity to directly support adaptation and build climate resilience in underserved communities in the state. Over the coming two years, funding recipients will work closely with communities in the state and with the WWA team. We look forward to sharing more details about the awarded projects when they kick off later this summer.

Research Article Highlights

WWA Social Scientist **Katie Clifford** led the development of a new paper sharing lessons and considerations for co-production with communities. This paper was written in partnership with **Jen Henderson, Zoë McAlear, Lisa Dilling, Benét Duncan, Samuel Ehret, Seth Arens, Rebecca Page, and Ursula Rick**. Clifford and coauthors identified a set of eight questions for researchers to consider when designing and conducting co-produced science with communities. The questions link to topics that include community recruitment, champion selection (i.e., identifying a local individual or entity to help lead a collaborative effort), participant makeup (i.e., including individuals with a range of backgrounds and expertise in collaborative community workshops), geography, clarifying expectations, timing, prioritization, and next steps. Their work provides insights across knowledge co-production and draws on lessons learned from WWA's 2018-2019 VCAPS pilot project.

[The "Nuts and Bolts" of Doing Coproduction: Exploring Implementation Decisions in Climate Adaptation Research with Stakeholders](#)

Ben Livneh and colleagues recently published a groundbreaking new study in the journal *Science* that revealed that more

than 50% of global lakes are in decline. They attributed the key drivers of these changes to climate warming and human water consumption. Utilizing 250,000 satellite images taken between 1992 and 2020, the research team examined 1,972 of Earth's largest lakes. To ensure accuracy, they gathered water levels from nine satellite altimeters, incorporating long-term data to minimize uncertainties. For lakes lacking such historical data, they utilized more recent measurements from advanced satellite instruments. By combining these recent water level readings with long-term area measurements, the scientists successfully reconstructed the lakes' volume dating back several decades. The findings were remarkable: a significant 53 percent of lakes worldwide exhibited a decline in water storage. To illustrate the extent of this loss, the authors compared it to the equivalent of 17 Lake Meads, the largest reservoir in the United States.



Satellites Reveal Widespread Decline in Global Lake Water Storage

Climate Event

Record-breaking rainfall in Colorado

A near-stationary, persistent ridge of high-pressure air east of Colorado, coupled with a continuous low-pressure system to the west and moisture from the Pacific Ocean and Gulf of Mexico, has caused significant precipitation in the state in June. Denver broke June's record rainfall with 6.10", significantly surpassing the old record of 4.96" set in 1882. Denver also experienced the 6th wettest month of all time since weather records began in 1872. A rainfall total of 11.63" was recorded at DIA between May and June, which is 7.53" above the combined average for the two months and around 75% of normal annual precipitation. A daily maximum record of 1.85" of rain fell on June 21, significantly surpassing the old record of 0.85" set in 1947. Over five inches of rain fell in Boulder for the second month in a row, making June the 4th wettest on record since 1897. According to the Colorado Climate Center, June 2023 ranks as the 4th wettest June on record for Colorado (Figure 1), and many pockets of eastern Colorado had the wettest month of all time out of 1,542 months on record (Figure 2).

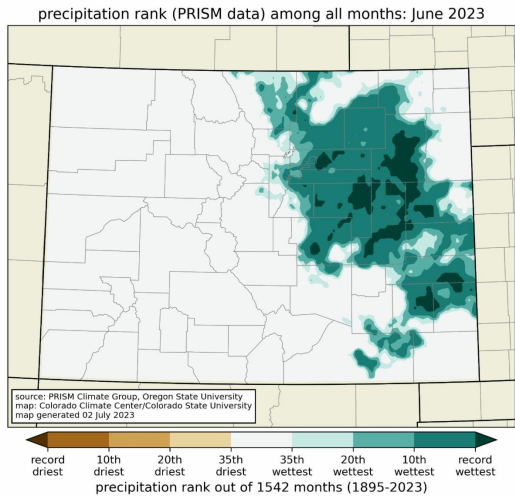
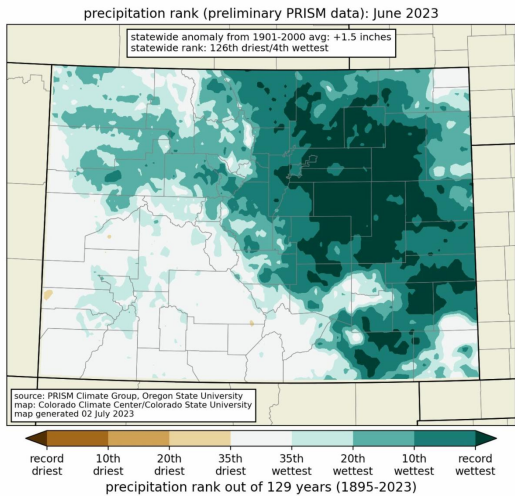
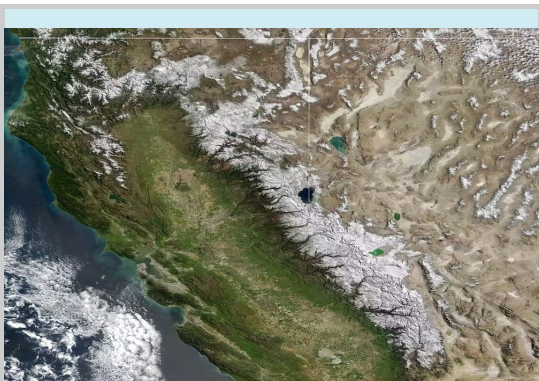


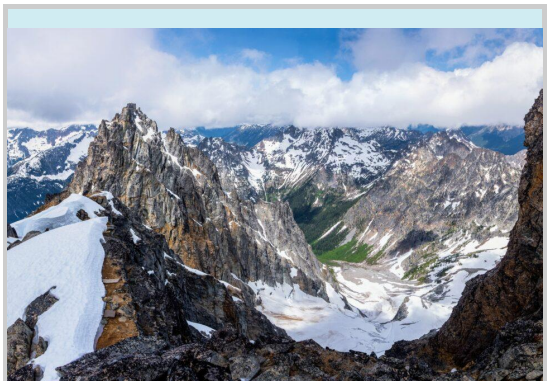
Figure 1 (left) and Figure 2 (right). Credit: Colorado Climate Center.

WWA Features



This year California's snowpack reached record-high levels — 40 million acre-feet at its peak in April.

[Read article](#)



Despite record snowpack in the West, early melting could lead to water scarcity

[Read article](#)



Incredible shrinking lakes: Humans, climate change, diversion costs trillions of gallons annually

[Read](#)



What to know about Colorado's deadliest natural disasters, including key safety tips

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Songs of the Dammed: As Lake Powell water levels drop, native plants are reclaiming Glen Canyon.

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The Search for Solutions to Colorado's Water Crisis

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Background photo by Ethan Knight

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