



WESTERN WATER ASSESSMENT

A NOAA RISA TEAM

February 2022 Newsletter

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Marshall Fire

The Marshall Fire ignited at the base of the foothills in Boulder County, Colorado on the morning of December 30th in the midst of a significant downslope wind event. Fire spread eastward across tinder-dry grasslands, fanned by wind gusts from the west of over 100 mph. Throughout the remainder of 12/30 and early on 12/31, the Marshall Fire burned 6,200 acres and 991 structures in the towns of Superior and Louisville. The Marshall Fire was not just a wildfire; it began in the wildland urban interface, or WUI, burned rapidly through grassland, and then turned into a suburban fire burning homes and businesses in first Superior, then Louisville after the fire jumped Highway 36. Although the source of the fire remains under investigation, the speed and ferocity of the fire was driven by multiple concurrent hazards. First, a very wet late winter and early spring caused prolific plant growth in the foothills grasslands. Second, August through December was one of the warmest and driest on record in Boulder; by December, Boulder County, including the grasslands, was in extreme drought conditions. Third, extreme downslope winds blowing west to east across the grasslands were observed the morning of the fire. Combined, these conditions set the stage for the catastrophic fire to spread rapidly. A more detailed analysis of the Marshall Fire is available [here](#).

WWA News

Welcome, Katie Clifford!

We would like to introduce and give a warm welcome to our new Research Integration Specialist for Colorado and Wyoming, Katie

Clifford! We are so excited to have her back on the WWA team.

Katie is a social scientist who studies human-environment relationships in the context of environmental change and worked with Western Water Assessment during her graduate studies. Her research blends a mix of methods, approaches, and theoretical expertise from risk and hazards, adaptation social science, political ecology, science and technology studies, co-production, and decision making. Katie's commitment to community-engaged scholarship comes from a long history of working with stakeholders to co-produce research and conduct usable science. In addition to nearly a decade of work with Western Water Assessment, she has worked with a number of other boundary organizations including the North Central and National Climate Adaptation Science Centers, CU Engage, National Park Climate Change Response Program and others. Katie received her B.A. at Macalester College and her master's and doctorate degrees in Geography from the University of Colorado at Boulder. She returns to WWA after completing her postdoc at the USGS Social and Economic Analysis (SEA) branch, where she worked with environmental managers to support adaptation in transforming ecosystems on public lands. Specifically, she helped develop the Resist-Accept-Direct (RAD) Framework for managing ecological transformation and co-produced research with managers and tribes to understand RAD decision-making on public lands.

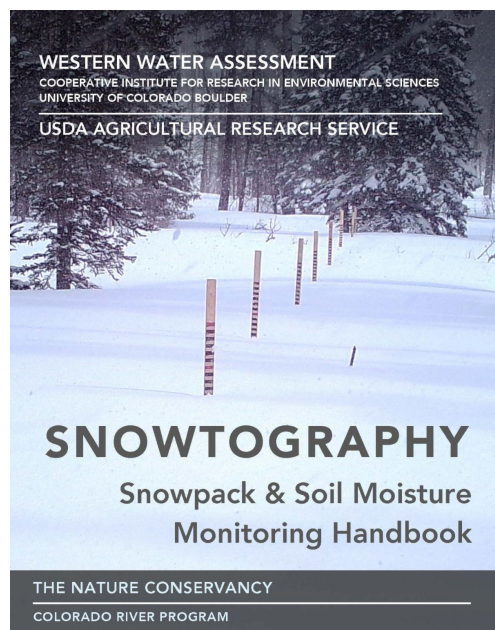


Research and Products

Snowtopography: Snowpack & Soil Moisture Monitoring Handbook

Western Water Assessment, in collaboration with The Nature Conservancy and the USDA-Agricultural Research Service, has produced [Snowtopography: Snowpack & Soil Moisture Monitoring Handbook](#) to support resource managers, researchers, and practitioners studying forest structure impacts on snowpack persistence and soil moisture availability.

Led by Liz Payton, the project set out to develop a handbook that guides readers through the process of establishing their own snowtopography and soil moisture monitoring stations. It offers guidance on site selection, snowtopography



options, equipment requirements, and installation. The instructions are based on snow-forest research and hands-on experience at multiple sites in Arizona, and in the San Juan National Forest in southwestern Colorado.

We hosted a webinar to introduce the handbook on January 21. The webinar covered TNC's motivation for developing the handbook, the science supporting the snowtopography method, the structure and contents of the handbook, and on-the-ground experiences of handbook beta testers, followed by Q&A. The speaker list included **Marcos Robles** (The Nature Conservancy), **Joel Biederman** (USDA-ARS), **Liz Payton** (Western Water Assessment), **Danny Margoles** (Dolores Watershed Resilient Forest Collaborative), **Lindy Hutchinson** (Northern Arizona University), and **Seth Arens** (Western Water Assessment).

Watch the webinar here: <https://www.colorado.edu/outreach/events/snowtopography-snowpack-soil-moisture-monitoring-handbook>

Utah Hazard Planning Tool workshop

Western Water Assessment convened an online workshop with Utah stakeholders on January 19th to introduce the Utah Hazard Planning Tool and to discuss hazard and climate adaptation planning. The online workshop drew over 30 Utah stakeholders representing local government, state and federal agencies. The Utah Hazard Planning Tool, developed by Seth Arens in collaboration with the Southern Climate Impacts Program, is a resource that provides information about past, present and future hazard risk specific to Utah. Information about eleven hazards is presented in the resource and a summary of the projected impacts of climate change on each hazard is provided. The Climate Change Impacts Appendix to the tool more thoroughly summarizes current scientific understanding of how climate change is projected to impact each hazard. The final version of the Utah Hazard Planning Tool will be available on our website by the end of February and an online, dashboard-style version of the tool will be launched this spring.



UTAH HAZARD PLANNING TOOL

January 2022

NCA5 Water Chapter workshop, February 9, 10:00-2:00 MT

WWA's Liz Payton is the Chapter Lead for the Water Chapter of the US Global Change Research Program's Fifth National Climate Assessment. The USGCRP and NCA5 chapter authors are soliciting input from the public through virtual workshops and a call for comment. The Water Chapter workshop will be held on February 9, at 10:00-2:00 MT. [Register here](#). Details from the [NCA5 webpage](#) and copied below provide more information:

- Call for Public Comment. The opportunity to submit comments on the annotated outlines for NCA5 is open through February 20, 2022. Author teams will use the feedback received to help shape their chapters. Please visit our [Open Notices](#) page for more information on the call and to learn how to participate.
- Public engagement workshops. In January and February of 2022, USGCRP and NCA5 authors will host a series of workshops to solicit feedback on climate change-related issues that are important to the public. The information gathered in these workshops will help the authors determine which topics to cover in their chapters of NCA5. The full schedule of workshops can be found [here](#).

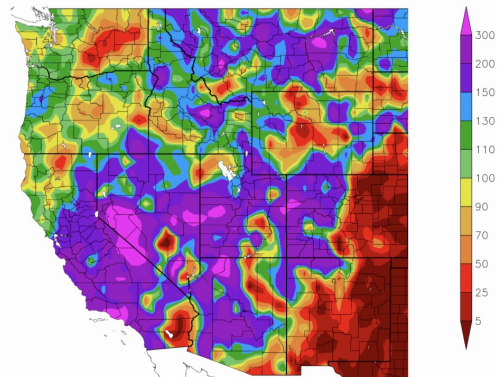
Climate Event

Near-record snowfall in late December

Large or prolonged storm cycles and periods of drought have characterized the 2022 water year in the WWA region. After a very wet and snowy October left most regional river basins with much-above average snowpack, few storms impacted the Intermountain West during November and most of December. Beginning on December 23rd, a series of

atmospheric river events impacted the region bringing significant snowfall to nearly the entire region until January 7th. Regional snowpack was much-above normal in early January. Over a 16-day period from December 23rd to January 7th, regional snowpack increased dramatically. In Utah, statewide snow water equivalent (SWE) went from 69% to 141% of normal. In Colorado, SWE increased from 67% to 131% of normal and Wyoming SWE increased from 73% to 118% of normal. Dry conditions returned to most of the region during the remainder of January except for southeastern Wyoming and east of the Continental Divide in Colorado. As of February 1st, statewide SWE as a percent of normal fell to near-normal conditions in Utah (97%), Colorado (107%) and Wyoming (93%).

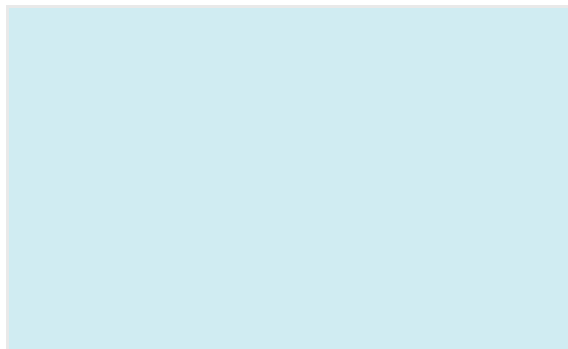
Percent of Normal Precipitation (%)
12/1/2021 – 12/31/2021



Generated 1/2/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

WWA Features





As Lake Powell shrinks, the Colorado River is coming back to life

[Read article](#)



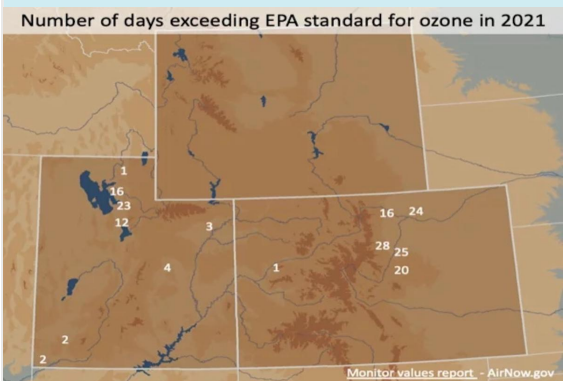
Unrelenting drought leaves millions who rely on Colorado River facing an uncertain future

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NOAA Funds Western Climate resiliency out West

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Extreme weather? Yes, and the events were interrelated

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Snowtography Handbook puts water data into the hands of small farmers and ranchers

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Q&A with an expert: Winter Olympics in a warming world

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