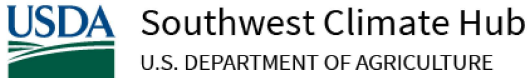


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Southwest Climate Hub Bulletin

News and events for the Southwest Hub region

April 2024

Grounded in Science

The USDA Climate Hub network synthesizes scientific advances to promote climate-informed decision making. We are grateful to our colleagues for advancing knowledge, including scientists contributing to the **Long-Term Agroecosystem Research Network** of the Agricultural Research Service and the **Experimental Forest and Ranges** of the US Forest Service. The **Southwest Chapter** of the Fifth National Climate Assessment has more than 440 citations of research, mostly published within the last four years, underpinning the findings of the chapter. However, rapid advances by many research teams across the globe keep us busy keeping up with novel findings. To integrate these advances, we have hired an Associate Director for Science. We are fortunate to be located at the Rangeland Management Research Unit at the Jornada Experimental Range – a unit focused on scientific research to inform management for more than a century. Last month, our Southwest Climate Hub team heard from four scientists about crucial programs. Dr. Sarah McCord presented the **Rangeland Analysis Platform**. Dr. Dawn Browning shared insights from data collected using Eddy Covariance flux towers and PhenoCams that offer new and expanded information about vegetation changes in the Southwest and beyond. Dr. Brandon Edwards presented on the **National Wind Erosion Research Network** and how this network measures sediment transport, vegetation, and dust emissions in different ecosystems. Lara Macon shared **precision ranching** technologies including water level sensors, GPS-enabled cattle-tracking collars, virtual fencing, and how these technologies can help ranchers increase efficiency and build resiliency while continuing to operate in the Southwest.

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Hawai'i Climate Week 2024

Discover how Hawai'i Climate Week 2024 helped to foster knowledge exchange among community leaders, academics, and state and federal government representatives in the move towards more informed and successful climate mitigation and adaptation initiatives for Hawai'i. Read more [here](#).

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Climate Change Workshops for Educators

The Asombro Institute for Science Education invites educators to join in teacher workshops this summer. Practice standards-aligned lessons and take home materials to use with your students

New Mexico Climate Champions: June 25-26th, Albuquerque, NM. Middle school teachers will learn to empower students to turn climate knowledge into action.

Climate Change in your Schoolyard: July 12th, Las Cruces, NM. Middle and high school teachers will explore your schoolyard as a lab for understanding weather, climate, and monitoring change.

The Science of Ranching: July 29th, Amarillo, TX. 4th and 5th grade teachers will learn about ranching research investigating how technology and heritage breed cattle make ranching more sustainable.

Connecting to Climate: July 30, Amarillo, TX. Middle and high school teachers will learn about current research exploring the impacts of climate change on the water and agriculture of the Southwest.

Climate Change in the Southwest: August 17th, Virtual Workshop. Explore the of climate change impacts on the Southwest's people, agriculture, and ecosystems. about how climate change impacts the people and ecosystems of the southwest from a water, wildfire, and agriculture perspective.

For information and to sign up, visit: asombro.org/teacher-workshops.

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Nature-Based Solution for Community-Level Preparedness to Wildfire

Many state and federal recommendations for wildfire protection place considerable onus on the individual and are often too costly or difficult to implement. These barriers leave entire communities vulnerable to severe wildfires. To scale up wildfire protections, Paradise Recreation and Park District (**PRPD**) plans to establish multi-benefit greenspaces around the town's borders. The greenspaces will not only minimize wildfire spread via fuel load breaks, but they will also improve community well-being through increased opportunities for positive experiences with nature. Learn more about PRPD's strategies and lessons learned [here](#).



Four Corners Climate Summit

The **Fifth National Climate Assessment** was a monumental undertaking with more than 700 people contributing as authors and technical contributors. It is the US Government's preeminent report on climate

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Angeles, authors of the Southwest Chapter of NCA5 brought the findings to over 400 residents of rural Colorado in the inaugural **Four Corners Climate Summit** hosted at Fort Lewis College. The event allowed residents to interface directly with authors, learn more about the Art x Climate effort, and hear from author Terry Tempest Williams. Due to overwhelming support and interest, the Four Corners Climate Summit will be an annual collaboration between Fort Lewis College and the USDA Southwest Climate Hub. Thanks to Drs. Mark Brunson, Steve Ostoja, Caiti Steele, and Jenni Vanos for presenting climate impacts and solutions, and Allyza Lustig with the U.S. Global Change Research Program for sharing Art x Climate.



On-Ranch Demonstration

The **Sustainable Southwest Beef Project** invites you to an On-Ranch Demonstration at Evergreen Ranching and Livestock in **Edgemont, South Dakota** on **June 6, 2024**. Learn about heritage Rarámuri Criollo cattle, technologies for precision ranch management, and more! Social mixer in the evening, Lunch and dinner provided.

Please RSVP [here](#) by May 20, 2024.

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Come Rain or Shine Podcast

The Come Rain or Shine Podcast reports actionable science to facilitate adaptation and resilience in the Southwest. Here's a look at some of our most recent episodes:

Solutions for Sustaining Environmental Flows, a discussion with Paul Tashjian, Director of Freshwater Conservation with Audubon Southwest, about solutions that have been implemented to alleviate pressures on the Rio Chama and other waterways, bringing back flows for the natural habitat.

Climate Change, Coastlines, and Aquaculture, a discussion with Halley Froehlich to learn more about climate change impacts on coasts and oceans, with a strong focus on aquaculture, as the final episode in our series highlighting Key Messages in the Southwest Chapter of the 5th National Climate Assessment.

Fifth National Climate Assessment, Southwest Chapter: Health, Water, Agriculture, and Wildfire, an interview with the lead authors of four Key Messages in the Southwest Chapter, covering human health, water, agriculture, and wildfire. Each author shares what they would like people to know and what they found hopeful or encouraging within their Key Message topic.

Inside the Fifth National Climate Assessment, Southwest Chapter, a special episode with lead authors of the 5th National Climate Assessment's Southwest chapter, Dr. Dave White and Dr. Emile Elias as they share what's new in this assessment, how it's being shared, some major findings, and other highlights.

Find us on Buzzsprout at: <https://rainorshine.buzzsprout.com/>



Vulnerability of Cultural Resources in the Southwest to Impacts of Climate Change

damage materials, and endanger these irreplaceable treasures. Indigenous communities, with traditions deeply interwoven with the land, face disruptions to cultural practices and spiritual connections. Preserving this heritage requires a multifaceted approach. A swift and comprehensive response is needed to assess vulnerability and develop mitigation strategies. By collaborating, archaeologists, historians, indigenous communities, and scientists can safeguard this irreplaceable heritage for future generations.

For a deeper dive into this topic, you can listen to the [podcast](#) on cultural resources in Southwest. This podcast explores the challenges and opportunities associated with cultural resource preservation in a changing climate. The podcast also discusses a project that developed an online, interactive tool called [CREVAT](#) (Cultural Resources Environmental Vulnerability Assessment Toolbox). CREVAT helps assess the vulnerability of cultural resources to natural hazards that climate change may intensify in the Intermountain region of the US.

Further to address this challenge, a collaborative effort is underway between the US Forest Service (R3 USFS), the Southwest Climate Hub, and the Northwest Climate Hub. The project will focus on developing a decision support tool for land managers. It consists of an assessment that will be developed through spatial analysis of expected changes in temperature, precipitation, flood risk, fire risk, and erosion risk within the Southwest region, an adaptation guide, and a sensitivity guide by material type. Additionally, the project will involve the evaluation and synthesis of published literature relevant to the cultural resources of interest in the assessment area.



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Adaptation Strategy Workshop

Coconino and Kaibab National Forests join forces for a Climate Adaptation Workshop. The workshop aimed to increase awareness of the **Regional Climate Adaptation Strategy (CAS)** which provides a structured process for integrating climate change considerations into management planning and activities. Read more [here](#).



Freeze Drying Crops for Increased Climate Change Resilience



Crops are vulnerable to the effects of heat and drought stress, often rendering them unsalable due to sun scald or reduced size. In response, Backyard Farms, purchase imperfect crops and freeze-dry those crops that farmers would typically have to throw out. As a result, farmers maintain a profit, less food is wasted, and rural communities in southern New Mexico gain increased access to nutritious foods for longer periods of time. Read more about the technology and its implications for communities [here](#).

New Mexico Tribal Forest and Fire Summit

Trees, Water & People, the New Mexico Forestry Division, The Nature Conservancy, and the Forests Stewards Guild co-hosted the **New Mexico Tribal Forest and Fire Summit** from January 30 to February 1, 2024, at the Santa Ana Star Casino in the Santa Ana Pueblo, New Mexico. There were 180 participants with the majority of New Mexico tribes and pueblos represented. The summit was organized into two session tracks with

The Resilience of Agroforestry to Major Climate Challenges



This study, “[Predictors of tree damage and survival in agroforests after major cyclone disturbance in Fiji](#),” highlights the incredible resilience of agroforests in Fiji to Category-5 Cyclone Winston – the strongest cyclone on record in the South Pacific. The study reveals how specific tree traits, such as wood density, and Indigenous management practices are important for resilience, highlighting the role of agroforestry in ensuring food security and climate adaptation. Agroforestry is practiced on up to 43.5% of agricultural land globally ([Zomer et al. 2014](#)), thus, these insights are critical to inform climate-resilient and nutrition-focused agroecosystems not only in the Pacific Islands but globally.

Summary and Synthesis of the Southwest Climate Hub Symposium at SRM Annual Meeting

The Southwest Climate Hub sponsored a special session at the 2024 Annual Meeting of the Society for Range Management. Presentations by Hub scientists covered efforts, some long-running and some new, to provide information and support improved decision-making as people in the Southwest confront the realities of a changing climate. Along with partners, Hub scientists have developed information and tools specifically targeted to different groups and their unique challenges, ranging from primary school students to national policy makers and from intensive irrigated crops to arid rangelands. The purpose of the session was twofold: to provide an overview of SWCH activities to a new audience of professionals, and to reflect, with some audience input, on our effectiveness. One challenge is condensing and synthesizing information to support climate-informed decision-making in a time-sensitive situation. Read more [here](#).

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Intermountain West Drought and Climate Outlook Webinar

These webinars provide the region's stakeholders and interested parties with timely information on current and developing drought conditions, as well as climatic events like El Niño and La Niña. Speakers also discuss the impacts of these conditions on things such as wildfires, floods, disruption to water supply and ecosystems, as well as impacts to affected industries like agriculture, tourism, and public health.

Presentations by:

Intermountain West Current Conditions and Drought Outlook

Dave DuBois | New Mexico Climate Center, New Mexico State University

New Mexico Healthy Soil Program

Katie Goetz | New Mexico Department of Agriculture Healthy Soil Program

Climate Reporting for the Southwest

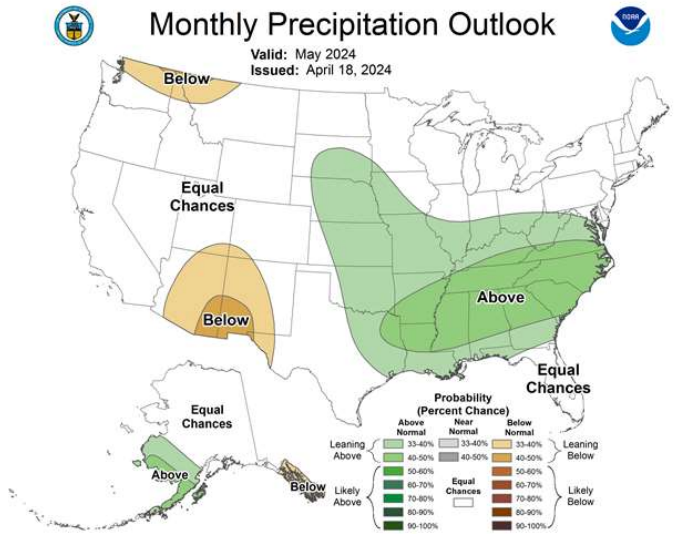
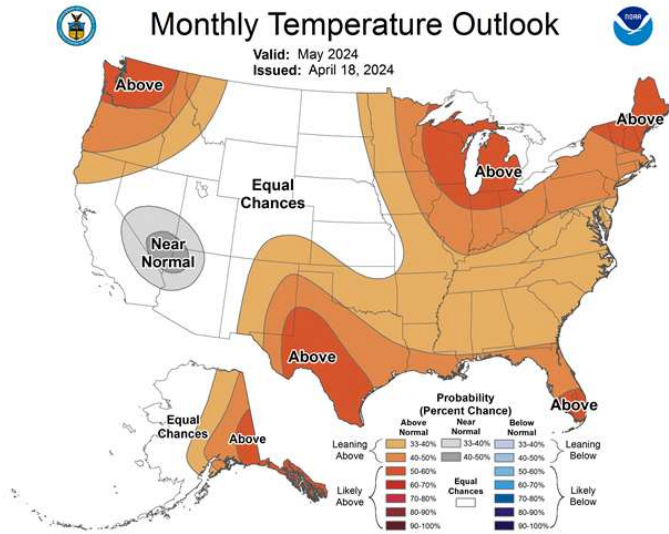
El Niño/Southern Oscillation (ENSO)

As of April 11, 2024, the ENSO alert system status is **El Niño Advisory / La Niña Watch**. Forecasters predict an 85% chance of ENSO-neutral conditions by April-June 2024 and predict a 60% chance of La Niña developing by June-August 2024. You can read more perspectives and analyses about ENSO available at the NOAA [ENSO Blog](#). The next ENSO Diagnostics Discussion is scheduled for May 9, 2024.

National Weather Service Climate Prediction Center Outlooks

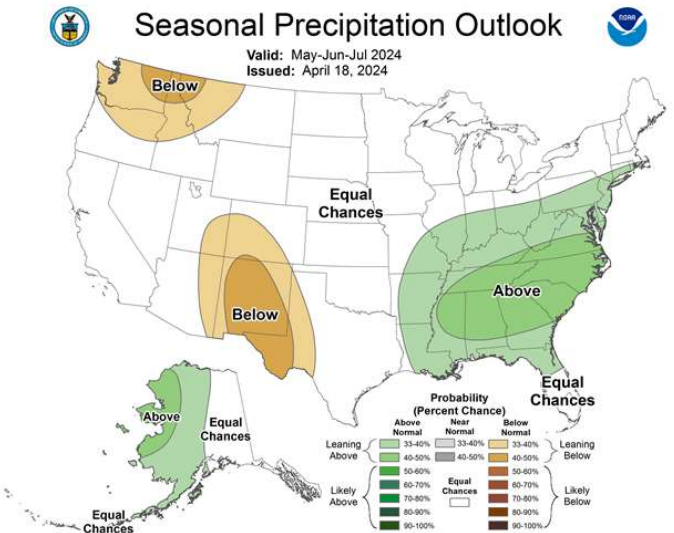
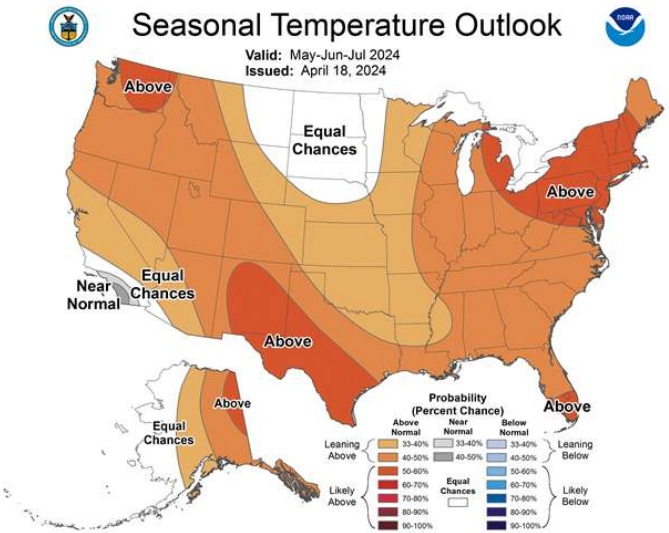
1-month outlook

As of April 18, the **one-month outlook** for May 2024 shows a 33-60% chance of above-normal temperatures for most of New Mexico. A 33-50% chance of near-normal temperatures for portions of Nevada, and Utah. The



3-month outlook

As of April 18, the **three-month outlook** (May-Jun-Jul 2024) shows a 33-60% chance of above-normal temperatures for the Southwest region. There will be an equal chance of precipitation for Nevada and portions of Arizona and Utah. And a 33-50% chance of below-normal precipitation for New Mexico and portions of Arizona and Utah. To view more short-term outlooks, visit the [NOAA's National Weather Service Climate Prediction Center](#).



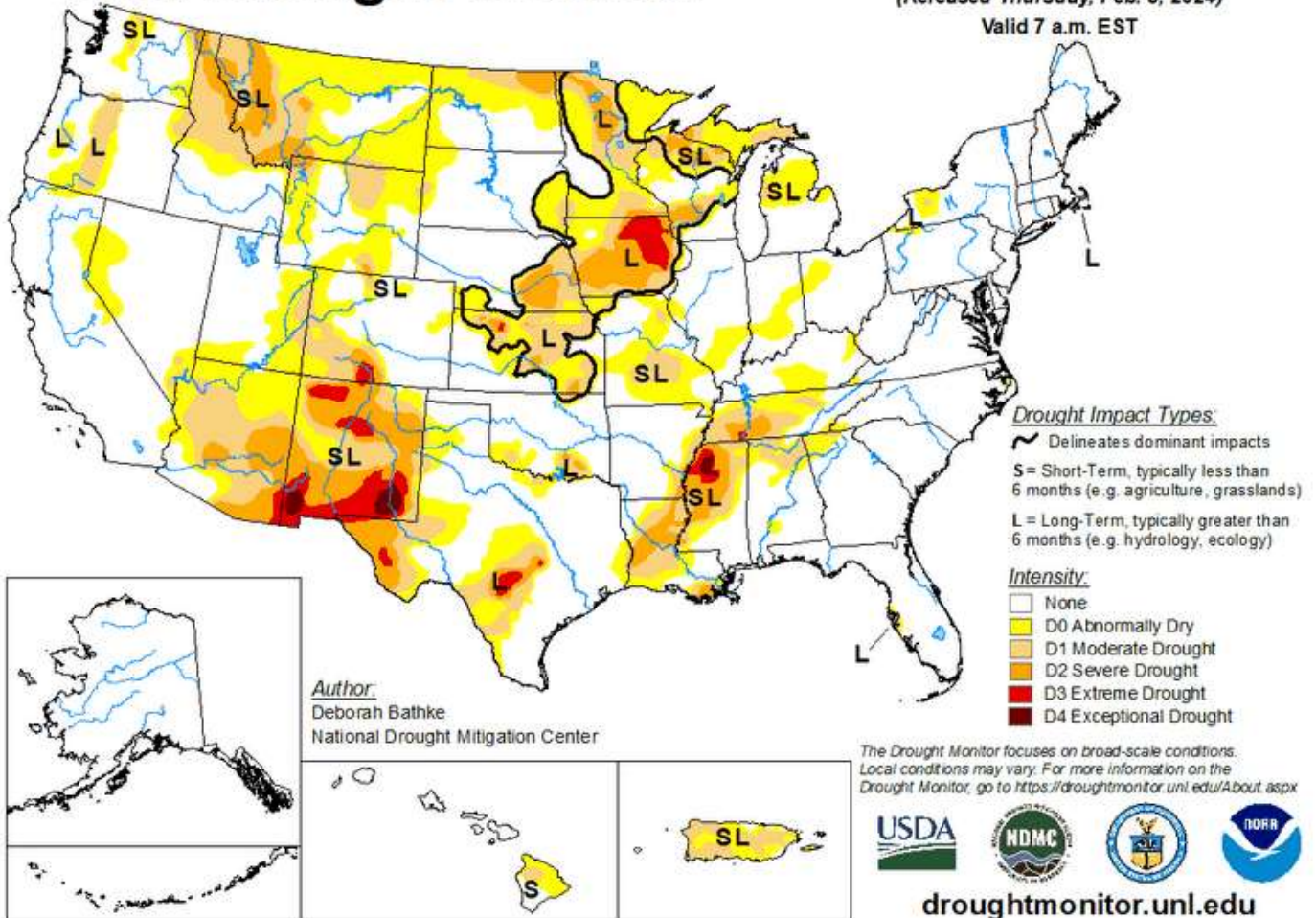
Drought

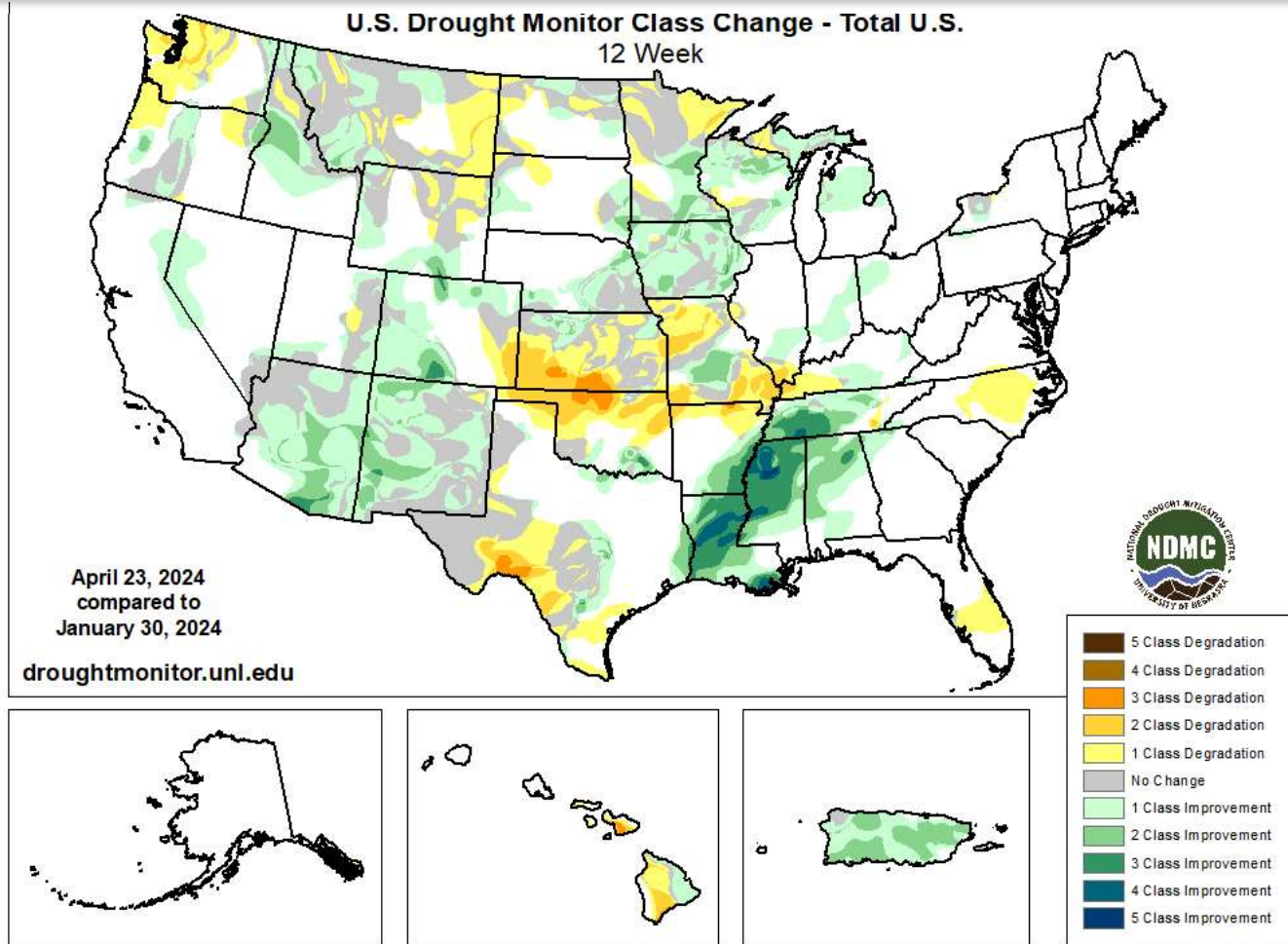
The U.S. Drought Monitor [Animation map](#) is a compilation of the past 12 weeks of the drought monitor maps. The U.S. Drought Monitor Class [Change map](#) illustrates the difference in drought class changes for the past 12 weeks. For the Southwest region, some areas show 1-3 classes of improvement, and some areas in Utah,

Animation Map (February 6 - April 23, 2024)

U.S. Drought Monitor

February 6, 2024
(Released Thursday, Feb. 8, 2024)
Valid 7 a.m. EST



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Announcements

Call for Papers: Water Scarcity Solutions for Irrigated Agriculture in the Warming Western U.S.

The issue has two main goals. First, to illuminate the historic development of irrigated agriculture in the West, especially highlighting shifts in cropping patterns and irrigation technologies that have unfolded over the past several decades and understanding how these shifts have contributed to the imbalance of water supply and demand at a regional and sub-regional scale. Second, to highlight research that explores solutions for more effectively managing agricultural water use in this context. Topics could include novel irrigation technologies, decision-support tools and education programs for irrigators, alternative low water-use crops, or on-farm aquifer recharge.

When submitting your manuscript please select the article type “**VSI: Western Water Solutions**”. Submissions are due by **August 15, 2024**. More information [here](#).

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Partner News

Southwest Climate Adaptation Science Center welcomes the Acting Assistant Regional Administrator to their team. Tamara Wilson is a Research Geographer with the USGS Western Geographic Science Center. Read more [here](#).

Upcoming Events

- May 13-16: [Native American Fish and Wildlife](#)
 - May 14-16: [National Adaptation Forum](#)
 - May 15-17: [New Mexico Indian Livestock](#)
 - June 12-13: [Animas and San Juan Watersheds Conference](#)
 - August 4-9: [Ecological Society of America Conference](#)
 - Sept. 30- Oct. 2: [AWRA, UCOWR, NIWR 60th Anniversary Joint Water Resources Conference](#)
-

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