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# Southwest Climate Hub Bulletin

*News and events for the Southwest Hub region*

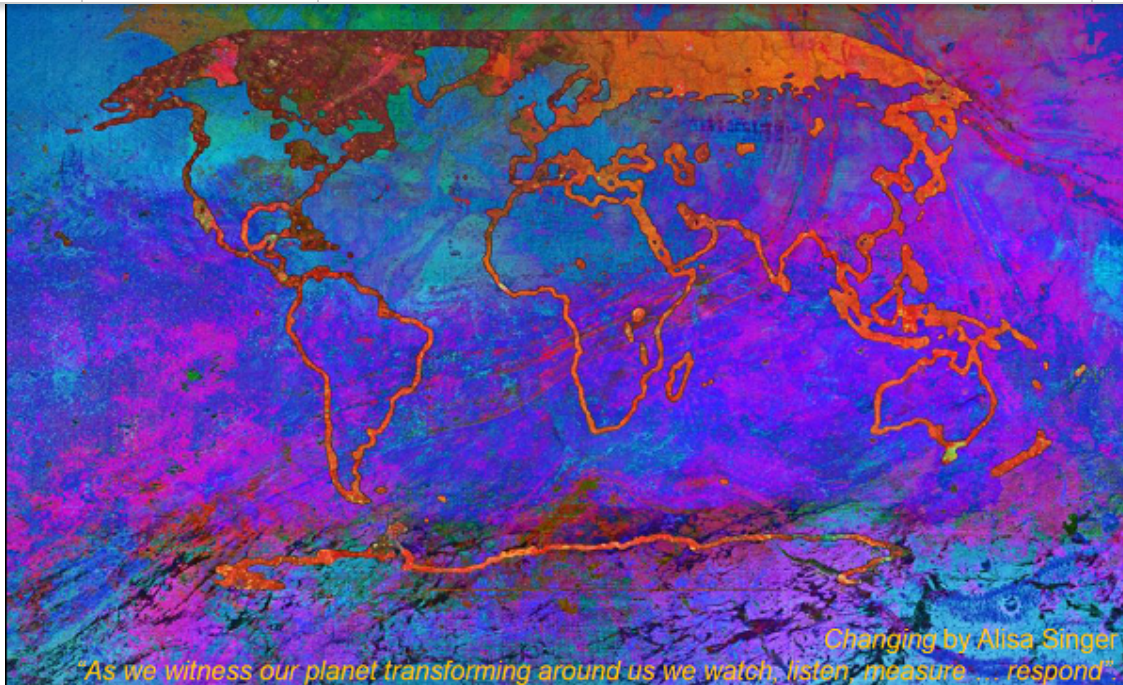
**August 2021**

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## National Climate Assessment News

The Fifth National Climate Assessment (NCA5) is underway with anticipated delivery in late 2023. Emile Elias (Director, USDA Southwest Climate Hub) and Mari-Vaughan Johnson (Director, Pacific Islands Climate Adaptation Science Center) are the Federal Coordinating Leads overseeing development of the Southwest and Hawaii-U.S. Affiliated Pacific Islands chapters, respectively. We are pleased to announce Dave White (Deputy Director, Global Institute of Sustainability and Innovation and Arizona State University Professor) as Southwest Chapter Lead and Abby Frazier (Assistant Professor, Clark University) as Hawaii and U.S. Affiliated Pacific Islands Chapter Lead. More about the NCA5 process and timeline [here](#).





## Now Available: IPCC Sixth Assessment Report - The Physical Science

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body charged with assessing the science related to climate change. The IPCC has three working groups: Working Group I addresses the physical science basis of climate change; Working Group II addresses impacts, adaptation, and vulnerability; and Working Group III addresses climate change mitigation.

In August 2021, Working Group I published the most up-to-date understanding of climate change and the climate system in their contribution to the Sixth Assessment Report. The Working Group I report states, “Recent changes in the climate are widespread, rapid, and intensifying, and unprecedented in thousands of years”. They also recommend action, stating that “To limit global warming, strong, rapid, and sustained reductions in CO<sub>2</sub>, methane, and other greenhouse gases are necessary”.

View the report, interactive atlas, and other materials [here](#).

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## A New Remote Sensing-based Carbon Sequestration Potential Index to Support Land Carbon Management

Remote sensing has revolutionized landscape scale assessments of carbon storage and has greatly enhanced our capacity to support decision making about climate smart practices. A team of scientists from Arizona State University, The USDA Forest Service, and US Geological Service used airborne laser scanning data and multi-source satellite imagery for the main Hawaiian Islands to estimate: (i) aboveground carbon density of forests; (ii) gross primary production (GPP) of these forests; and (iii) percent forest cover. This team then used these measures to develop the Carbon Sequestration Potential Index (CSPI), which distinguishes areas of high sequestration potential (low above ground carbon storage, high GPP, and low forest cover) from areas of low sequestration potential (high above ground carbon storage, variable GPP, and high

or carbon and ideally suited for protection. This study found that variation in CSPI was high across islands and between ecosystems, with low values for cool, dry and largely intact forest systems and high values for warm, wet and largely non-forested systems. Importantly, the CSPI provides a rapid and spatially explicit approach to identifying small scale project areas, for example multi-hectare areas within state forest reserves that are highly suitable for tree planting based restoration. In this way, the CSPI can help stewardship organizations can plan how they will engage climate-smart practices based on science-driven prescriptions that encompass both protection and restoration actions.

For the original article and more information, [view here](#).

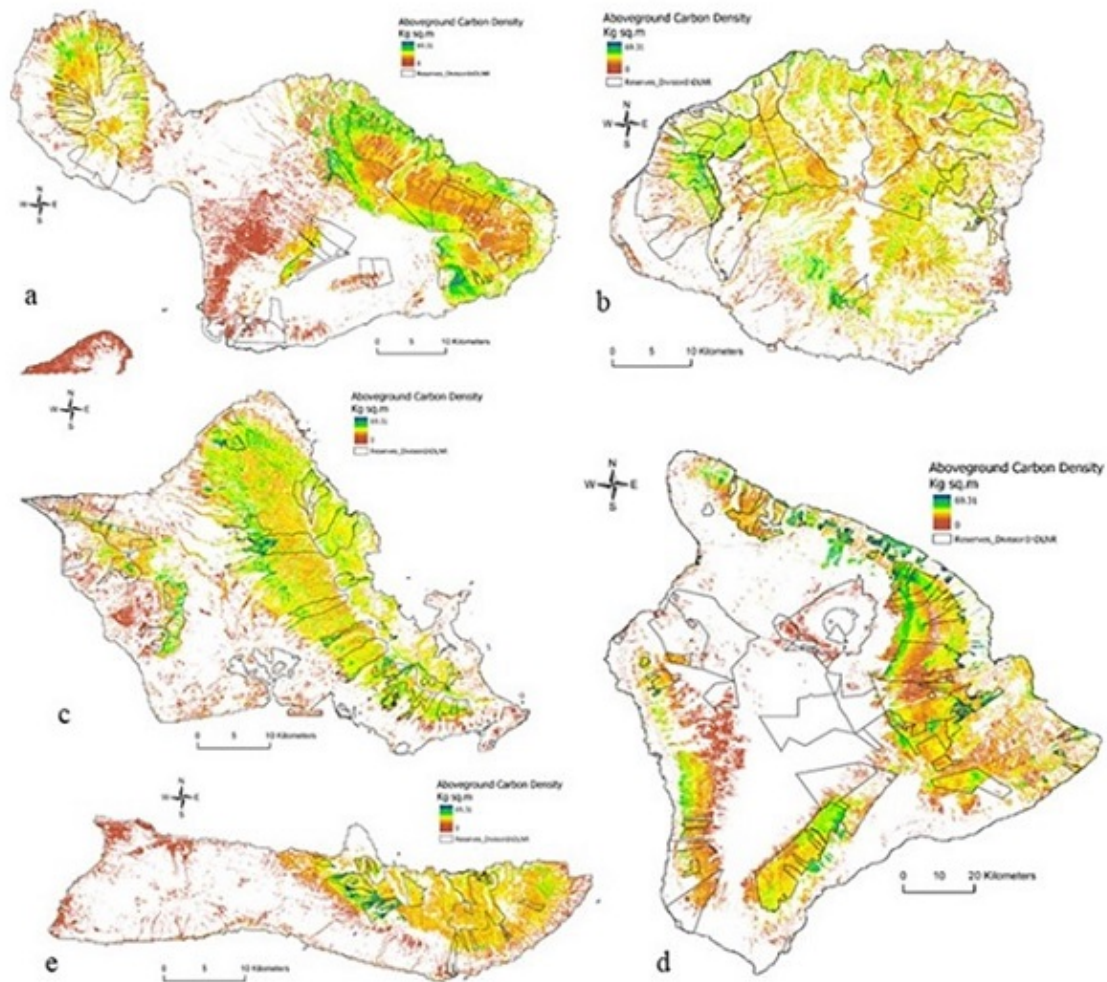


Fig. 1. Distribution of aboveground carbon density (ACD, expressed in  $\text{Kg C m}^{-2}$ ) predicted with [airborne laser scanning](#) and satellite images collected across five main Hawaiian Islands: Maui (a), Kaua'i (b), O'ahu (c), Hawai'i Island (d) and Moloka'i (e) (data from [Asner et al. 2016](#)).

## New Southwest Water Lesson for Middle School

The newest lesson on climate change in the Southwest has arrived from the Southwest Climate Hub and Asombro Institute! Using data from across the southwest, these activities help students to make a claim about the future of water availability and back it up with evidence and reasoning. An engineering design challenge then asks them to look to the past to plan for the future and conserve water with methods that have been

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Asombro Institute  
FOR SCIENCE EDUCATION

USDA Southwest Climate Hub  
U.S. DEPARTMENT OF AGRICULTURE

WHERE'S  
OUR  
WATER? in the Southwest

• Water Conservation •

A ready-to-use lesson for middle school science.

FIGURE 3. WATER USE  
ESTIMATED PER PERSON WATER USE 2001 - 2015

Year	Estimated Per Person Water Use (Gallons/Day)
2001	~100
2005	~75
2015	~60

© Southwest Climate Hub - Developed by the A

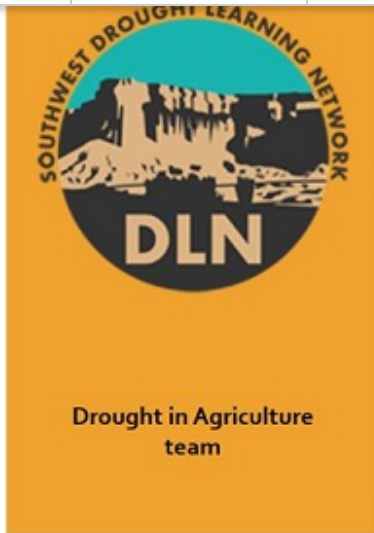
WHAT DO YOU THINK CAUSED THIS CHANGE?

2001 2015  
PHOTO FROM NATIONAL PARK SERVICE (NPS)

NGSS aligned for the classroom or remote learning.

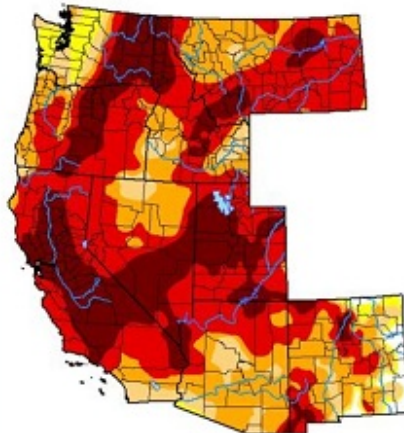
## Sharing Drought Information with Resource Managers

The Southwest Drought Learning Network (DLN) is a constellation of topic-focused teams, each of which addresses a different facet of drought resilience. So far this year, the Drought in Agriculture team has hosted two stakeholder-requested webinars: **Preparing for Drought**, requested by Oklahoma conservation district directors; and **Fundamentals of Drought** for the Quivira Coalition's New Agrarian Program apprentices. Several more exciting webinars are planned for later this year. Recordings of past webinars can be accessed [here](#). Interested in joining the team? Want to request a presentation for your group/organization? Contact [Skye Aney](#) or [Katie Goetz](#).



### West

(Released Thursday, Aug. 5, 2021)  
Valid 8 a.m. EDT



**Intensity:**

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/about.aspx>

**Author:**

Richard Tinker  
CPC/N/OAAN/WB/NCEP



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

## Asombro Teacher Workshops: Climate Change in the Southwest

As K-12 teachers prepare to return to school this fall, they are looking for new ideas and the latest science to share with their students. That's where the partnership between the Southwest Climate Hub and the Asombro Institute for Science Education comes in. Asombro has a 30-year history of bringing current and local science research into classrooms, bridging the gap between researchers and educators. [Read more](#) about the teacher workshops hosted by Asombro over Summer 2021.





## Adapting Management of Spring Ecosystems During Drought

The Sky Island region of southeastern Arizona and northern Mexico is a world-renowned biodiversity hotspot. This arid landscape is home to thousands of springs that sustain a vast diversity of life that are threatened by the warming, drying climate, and prolonged exceptional drought. **During this webinar**, Louise Misztal discussed what Sky Island Alliance is learning about spring ecosystems from surveys and monitoring, management tools they have developed to support stewardship, and responses practitioners can take to protect and restore springs to ensure they sustain a diversity of life.

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## Agriculture, Air Quality, and Climate Change Road Map

In February, nearly 60 professionals from the agricultural, environmental, and health sectors met to identify knowledge gaps and progress barriers within the agriculture–air quality–climate change nexus for the Southwest and Southern Plains regions. This meeting resulted in a roadmap of actions to navigate for policy, research, and land management. You can access the article [here](#).

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## Come Rain or Shine Podcast

### Extreme Heat & Public Health

According to the Center for Disease Control and Prevention, Extreme heat kills on average more than 600 people in the U.S. each year. Over the course of just a few weeks this summer (2021), three different heat waves baked the western U.S., breaking numerous heat

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interview three experts, Drs. Jennifer vanos and Rachel Braun, from Arizona State University, and Dr. Adelle Monteblanco from Middle Tennessee State University, about the impacts of extreme heat on public health, especially in vulnerable populations. You can find more episodes [here](#).



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## Climate Reporting for the Southwest

### Southwest Climate Podcast - 2021 - A Generational Monsoon?

In the [August 2021 edition of the CLIMAS Southwest Climate Podcast](#), Mike Crimmins and Zack Guido sit down to discuss the "monsoon that comes to you" and the (record) July for some areas, as well as the well above average conditions around much of the region.

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### El Niño/Southern Oscillation (ENSO)

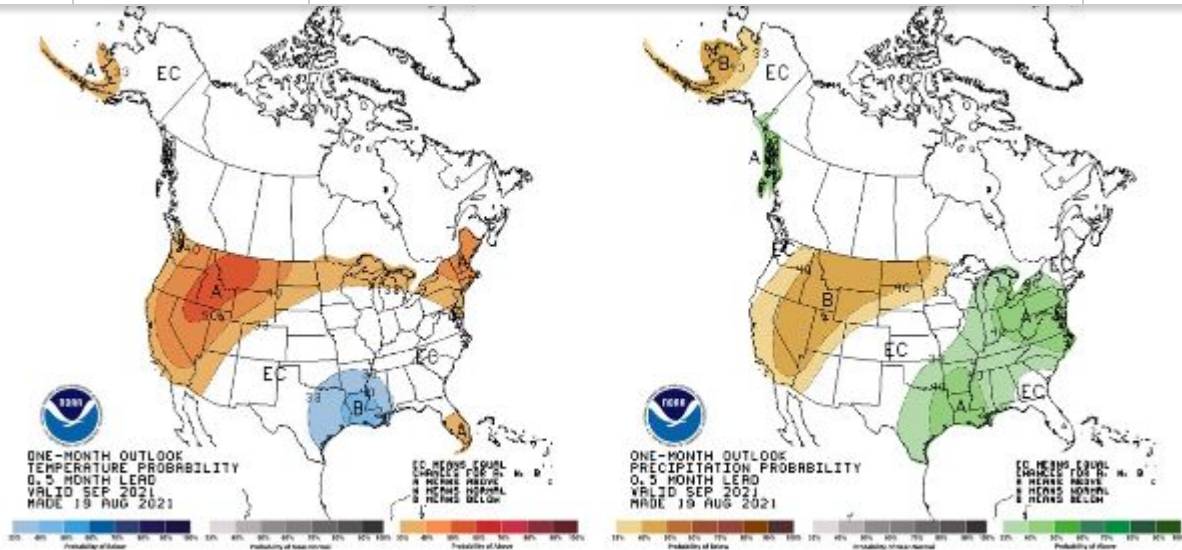
As of August 12, 2021, the ENSO alert system status indicates a [La Niña Watch](#). Forecasters predict a 60% chance of ENSO-neutral for the remainder of summer. There will be a La Niña possibly developing during fall and lasting through the 2021-22 winter. Learn more about additional ENSO perspectives and analysis available at the NOAA [ENSO Blog](#) and the [ENSO Tracker - Aug 2021](#), an analysis by [CLIMAS](#).

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### National Weather Service Climate Prediction Center Outlooks

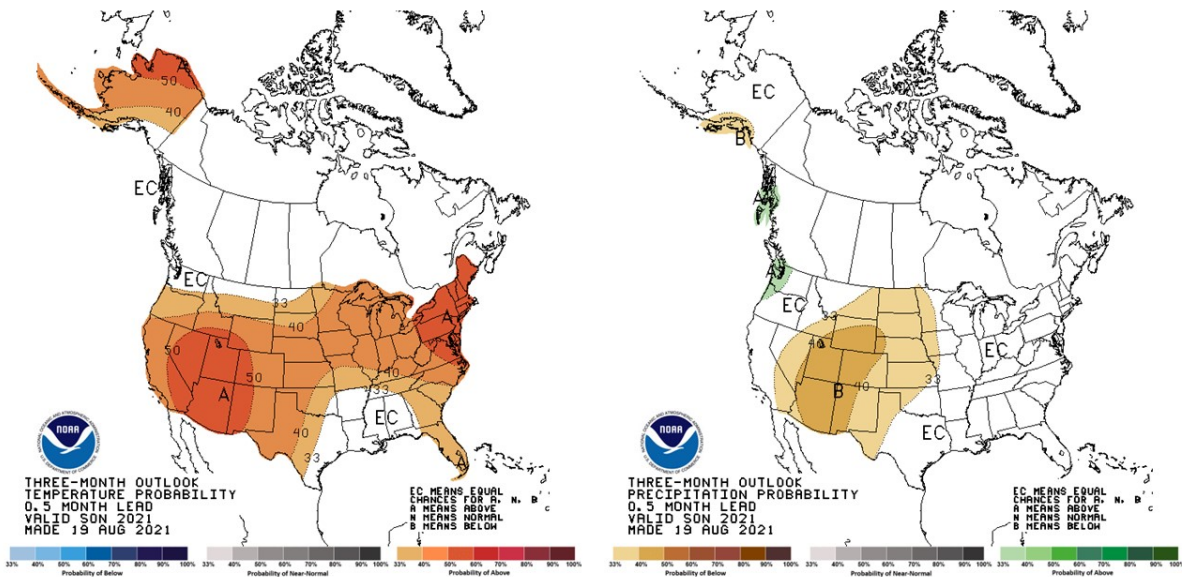
#### 1-month outlook

As of August 19, the [one-month outlook](#) for September shows a 33-50% chance for above-normal temperature for much of Arizona, Utah, and Nevada. There will be a 33-40% chance for below-normal precipitation for much of Arizona, Utah, and Nevada.



### 3-month outlook

As of August 19, the **three-month outlook** (Sep-Oct-Nov 2021) shows a 40-50% chance of above-normal temperatures for the southwestern U.S. There will be a 33-40% chance of below-normal precipitation for the southwestern U.S. These outlooks are created monthly by NOAA Climate Prediction Center and based on departures from the 1981-2010 base period. To view more short-term outlooks, please visit the [NOAA's National Weather Service Climate Prediction Center](#).



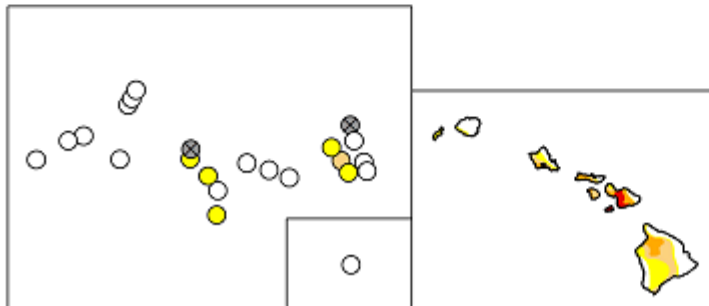
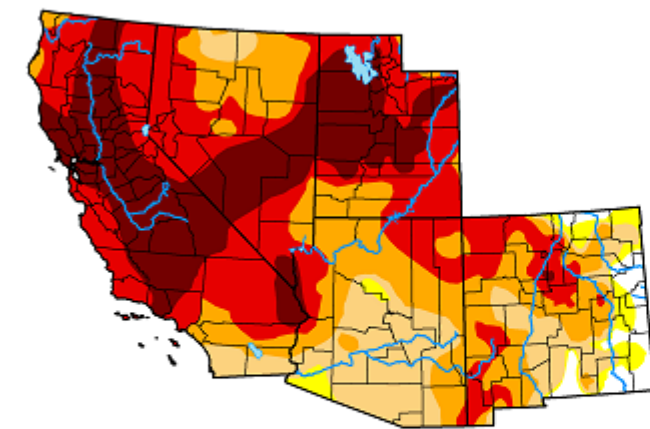
### Drought

Drought conditions remain however there has been at least a 1 class improvement in Arizona and Hawai'i when compared to last month's drought map. You can also view the [U.S. Drought Monitor Class Change map](#) to see how conditions have improved or degraded in your area



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## U.S. Drought Monitor USDA Southwest Climate Hub


**August 24, 2021**

(Released Thursday, Aug. 26, 2021)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	3.15	96.85	93.69	79.14	56.31	24.05
<b>Last Week</b> 08-17-2021	3.02	96.98	94.52	80.94	62.05	27.54
<b>3 Months Ago</b> 05-25-2021	0.33	99.67	98.72	94.06	78.56	43.92
<b>Start of Calendar Year</b> 12-29-2020	0.67	99.33	97.80	89.82	70.06	39.27
<b>Start of Water Year</b> 09-29-2020	4.30	95.70	90.16	70.65	46.82	4.14
<b>One Year Ago</b> 08-25-2020	5.99	94.01	84.33	62.23	23.47	0.00

Note: Statistics do not include areas represented by points.

**Intensity:**

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

 The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>
**U.S. and Puerto Rico Author:**

 Curtis Rigant  
National Drought Mitigation Center

**Pacific Islands and Virgin Islands Author:**

 Brad Ripsey  
U.S. Department of Agriculture

[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

## Announcements

### Job Opportunity

The **Sustainable Southwest Beef Project** is recruiting for a Program Specialist on our extension & knowledge co-production team. Come work with this exciting project that is evaluating novel strategies in beef production, with an emphasis on the southwestern US. Required education is a Bachelor's degree in a related field, and the job location is in Las Cruces, NM. Application deadline is September 4, 2021. [More information](#)

### Graduate Student Research Opportunity

The **Southwest Fire Climate Adaptation Partnership** (SWFireCAP) is seeking a graduate level student to conduct literature review on the topic of cultural use of fire in the Southwest (primary focus on New Mexico and Arizona, but not exclusive of surrounding areas). Outputs will include annotated bibliography with entry into an existing fire/climate literature database and a literature review. There is potential for further work in the future, including a larger synthesis aimed at helping land managers understand existing knowledge and practitioner interviews. Students from the Southwest or with ties to the Southwest are preferred. [More information](#)

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## Introduction To The Soil For Water Project

September 8, 2021

3:00 – 4:00 pm MT

[Register here!](#)

Learn about an exciting new initiative which targets soil health as a water conservation strategy. This free webinar is intended for resource managers, agency professionals, and other interested parties working in the area of soil and water conservation. Hosted by the Southwest Drought Learning Network. For more information contact [Skye Aney](#).

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## Adaptation Planning and Practices Online Training for the Rio Grande Basin

The Northern Institute of Applied Climate Science, and the USDA Southwest and Northern Forests Climate Hubs are offering a free online course in Adaptation Planning and Practices for landowners and managers, agricultural producers, and natural resource professionals in the Rio Grande Basin. It is our goal to assist private individuals and public agencies integrate climate change impacts information into their land, water, and ecosystem management practices. Our online course gives hands-on training for identifying relevant climate impacts and climate adaptation actions that will help participants plan for and respond to less predictable weather events and a warmer climate. The online course will be held weekly from October 4 to November 15, 2021. [Register today!](#)

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## Funding Opportunities

[WaterSMART Drought Response Program: Drought Resiliency Projects for Fiscal Year 2022](#)

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### **Oceanic and Atmospheric Research (OAR), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce**

Award Ceiling: \$750,000

**Deadline:** October 08, 2021

### **Water Conservation Services, Lower Colorado Basin Region**

Award Ceiling: \$100,000

**Deadline:** October 08, 2021

### **Farm of the Future**

Award Ceiling: \$3,936,000

**Deadline:** October 15, 2021

### **Climate Program Office FY2022**

Award Ceiling: \$1,500,000

**Deadline:** October 18, 2021

### **Native American Affairs: Technical Assistance to Tribes for Fiscal Year 2022**

Award Ceiling: \$200,000

**Deadline:** October 20, 2021

### **WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022**

Award Ceiling: \$2,000,000

**Deadline:** November 03, 2021

### **FY2022 Weather Program Office Research Programs**

Award Ceiling: \$1,500,000

**Deadline:** November 17, 2021

### **Specialty Crop Multi-State Program**

Award Ceiling: \$1,000,000

**Deadline:** December 06, 2021

### **Agriculture and Food Research Initiative - Foundational and Applied Science**

Estimated Total Program Funding: \$300,000,000

**Deadline:** December 15, 2021, Conference Grants - Letter of Intent required, Letter of Intent Deadline - Minimum of 195 days before the conference begins; Application Deadline Dates - Dates vary by program.

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## **Events**

**Tribal Water Resilience in a Changing Environment**, August 30 - September 1

**Introduction To The Soil For Water Project webinar**, September 8 at 3pm MT

**Rio Grande Adaptation Planning and Practices online course**, October 4 - November 15

**U.S. Drought Monitor Forum**, October 21-22

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[AMS Annual Meeting](#), January 23-27, 2022

[Society for Range Management Annual Meeting](#), February 6-10, 2022

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