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Southwest Climate Hub Bulletin

News and events for the Southwest Hub region

December 2021

Introducing the Southwest Climate Hub Interns

Through the Virtual Student Federal Service and partnerships within the Southwest Drought Learning Network, we are thrilled to welcome six awesome student interns for the 2021-2022 academic year! Although we enter another year of virtual collaboration, students are able to join us from across the country, bringing with them various climate and drought experiences to their work. Guided by the DLN and the Collaborative Conservation and Adaptation Strategy Toolbox, they write case studies on drought and climate change adaptations for use by natural resource managers and agricultural producers. [Read more](#)

Colorado Plateau Grasslands Climate Change Adaptation Workshop

In a changing climate, natural resource managers and professionals are considering climate adaptation planning in their management plans. The National Park Service (NPS) Southeast Utah Group (SEUG), U.S. Geological Survey (USGS), Northern Arizona University (NAU), and the Northern Institute of Applied Climate Science (NIACS) held an adaptation planning and practices workshop to address climate impacts and challenges across the Colorado Plateau Grasslands. [Read more](#)

Climate Change Adaptation: Options

RESISTANCE



- Improve defenses of forest against change and disturbance
- Maintain relatively unchanged conditions

RESILIENCE



- Accommodate some degree of change
- Return to prior reference condition following disturbance

TRANSITION



- Intentionally facilitate change
- Enable ecosystem to respond to changing and new conditions

Millar et al. 2007, Swanston et al. 2016, Nagel et al. 2017

Estimating Rangeland Grazing Loss for the Noninsured Crop Disaster Assistance Program

The Southwest and Northern Plains Climate Hubs convened an online forum in June 2021, with FSA personnel and partners from five Western states to discuss challenges and solutions for estimating grazing losses on rangelands for the **Noninsured Crop Disaster Assistance program** (NAP). In addition, Climate Hub partners presented three remote sensing-based tools for estimating forage productivity including the **Rangeland Analysis Platform**, **FuelCast**, and **Grass-Cast**. Presenters and participants discussed the relevance of each of the tools for estimating the 50% grazing loss threshold for NAP. [Read more](#)



Partnered, Applied Research for Great Basin Restoration

Bryce Richardson

An understanding of plant traits, plant evolutionary history, and local adaptive mechanisms can be used to optimize restoration for important plant species in the Great Basin, and sagebrush ecosystems across the West. The U.S. Forest Service Rocky Mountain Research Station and partners are developing a genetic management plan for target native plant species. [Read more](#)



Climate Change in New Mexico over the Next 50 Years: Impacts on Water Resources

Dave DuBois

In October the Leap Ahead Analysis Assessment, which is a scientific report describing climate change impacts to water resources in New Mexico was published in draft. It was prepared by a team of climate and water resources scientists convened by New Mexico Bureau of Geology & Mineral Resources (NMBGMR). This report will inform the development of the 50-Year Water Plan, in preparation by the New Mexico Interstate Stream Commission. This report is a separate document from the New Mexico 50-Year Water Plan.

This report details the current state of knowledge on how climate change and water resources may vary in New Mexico over the next 50 years. In addition to synthesizing the state of knowledge on this topic, the report identifies significant data and modeling gaps and uncertainties, and suggest research directions to strengthen our understanding of climate and water resource changes. The team focused only on summarizing the state of knowledge of projected climate and water resource variation, and did not carry out new research, propose ways to mitigate projected changes, or define potential infrastructure initiatives that could optimize the use of a diminishing resource. You can access the report at this link from the NMBGMR: <https://geoinfo.nmt.edu/ClimatePanel/report/>



Sustainable Southwest Beef Project Top 10 Year 2 Achievements

August of 2021 completed Year 2 of the **Sustainable Southwest Beef Project**, a five-year NIFA funded Coordinated Agriculture Project. Despite COVID-19 related challenges, the team had a busy year. The K-12 education team was able to reach collectively 165 students and 27 teachers with science programming. The extension team developed two web-based tools and held a series of webinars, all of which were recorded and are **available on the project's website**. The three research teams made important strides forward in their work. The highlights of all the teams' activities are captured in a **new fact sheet**.

The Joys of Hands-on Science Education

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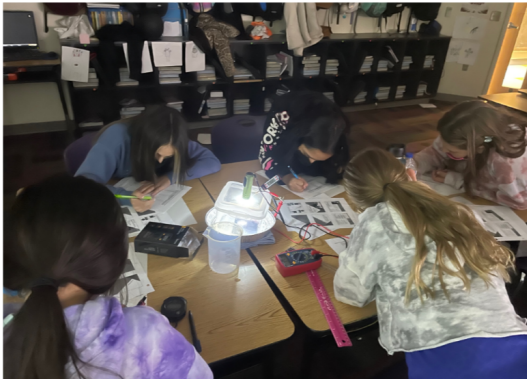
reconnect and get re-inspired. We met up with a few of the K-12 teachers who joined our climate change education workshops this summer and wow, did they deliver on the inspiration. Here are a few of the things we heard from the incredible teachers throughout New Mexico:

The kids went from never having graphed to graphing data on their own in the solar energy lesson. After they tested our solar panels at warm temperatures, of course, they wanted to test them at cold temperatures. Which caused one 6th grader to ask an important question. "If solar panels work better at cold temperatures, and the world is getting warmer, isn't that a problem?"

"As a [12th year] teacher, I wasn't excited to come back this year, but this is so exciting. This is my jam! I've never seen the kids so involved. I couldn't ask for the kids to be more interested. The lessons are put together so well, with the slides and the outlines, this is easy for me. It's super easy to roll out and follow. The kids are so into science, and they have never had this much hands-on. They just want to take it and keep going. "

"The kids are struggling with math this year. We have to take a lot of time on each step, but there are a few who are just loving every minute of it. I'm looking forward to the next lesson."

As teachers return to their classrooms, they take new insight on the latest climate news, updates from the COP26, and stories of great climate education their colleagues are doing. Classroom resources are available at Asombro.org/climate



Come Rain or Shine Podcast

Adaptive Silviculture for Climate Change

In this episode, Linda Nagel and Courtney Peterson tell us about the Adaptive Silviculture for Climate Change (ASCC) network. They share the evolution of this collaborative effort to establish experimental trials of climate change adaptation strategies across different forest ecosystems throughout the United States and Canada. You can also find a listing of our previous episodes [here](#).



Weather and Climate Outlook Survey

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prediction information that is used in management decisions related to farming/ranching operations in the United States Southwest, South, Hawaii, and United States Affiliated Pacific Islands regions. If you farm, ranch, and/or work with/advise farmers or ranchers in the region we would greatly appreciate if you would complete or pass along this short survey: <https://bit.ly/weather-outlook-survey>. The responses from the survey will help the P2P team prioritize what is most relevant to stakeholders and determine the best ways to communicate climate outlook information and make it more understandable.

75th Annual Society for Range Management Meeting

Come join us in Albuquerque, NM on February 6-10, 2022. The Southwest Climate Hub and partners will be collaborating in a few conference sessions and a tour:

- **Transformational Climate Change on Rangeland Ecosystems**
- **From desert pasture to dinner plate: Evaluating the sustainability of supply chains for beef cattle coming from ranches of the Southwest**
- **Building Resilience in Indigenous Natural Resources**
- **Santa Ana Pueblo Rangeland Tour**



For more information, visit the conference website: <http://annualmeeting.rangelands.org>

Remote Sensing Tools and Resources

Learn more about land cover classes and the latest release, National Land Cover Database 2019, on the podcast episode, [Eyes on Earth Episode 54 - National Land Cover Database 2019](#). The Multi-Resolution Land Characteristics (MRLC) consortium is a group of federal agencies who coordinate and generate consistent and relevant land cover information at the national scale for a wide variety of environmental, land management, and modeling applications. View their available tools here: <https://www.mrlc.gov/tools>

To learn more about products and tools related to Rangeland Management, visit the webinar series, [Advances in Remote Sensing-based Products and Tools for Rangeland Management, Monitoring, and Planning Virtual Seminar Series](#).

Climate reporting for the Southwest

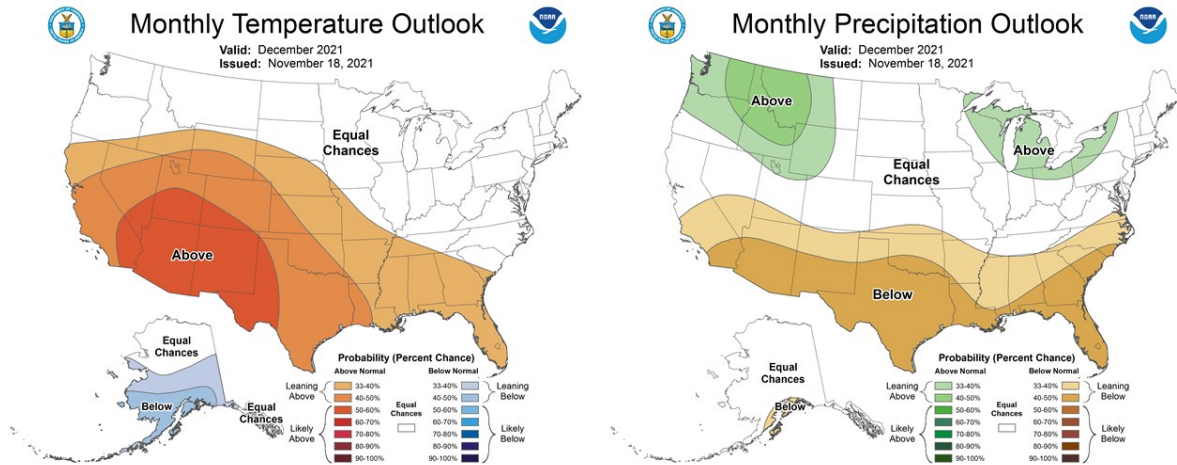
El Niño/Southern Oscillation (ENSO)

As of November 11, 2021, the ENSO alert system status indicates a [La Niña Advisory](#). Forecasters predict a 90% chance of La Niña for the winter and a 50% chance of

National Weather Service Climate Prediction Center Outlooks

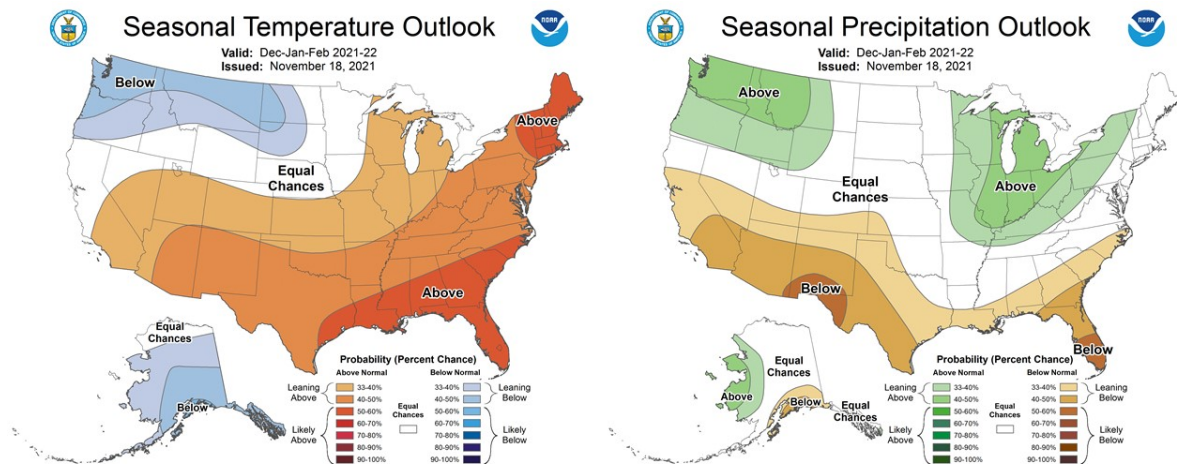
1-month outlook

As of November 18, the **one-month outlook** for December shows a probability of 33-60% chance for above-normal temperature for the southwest region. There will be a probability of 33-50% chance for below-normal precipitation for Arizona and New Mexico and an equal chance for precipitation for parts of Utah and Nevada.



3-month outlook

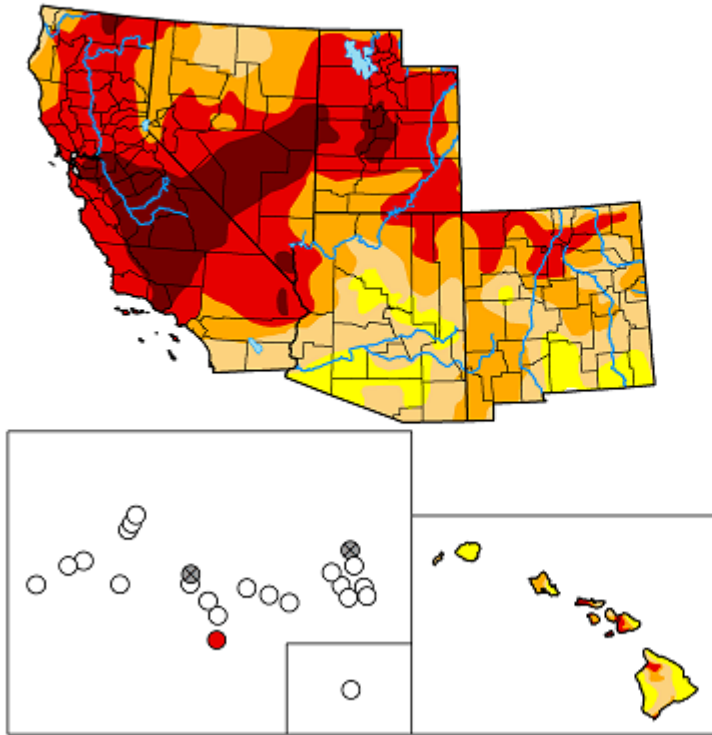
As of November 18, the **three-month outlook** (Dec-Jan-Feb 2021-22) shows a 33-50% chance of above-normal temperatures for the southwest region. There will be a 33-60% chance of below-normal precipitation for the southwest and an equal chance for precipitation for parts of Utah and Nevada. These outlooks are created monthly by NOAA Climate Prediction Center and based on departures from the 1991-2020 base period. To view more short-term outlooks, please visit the [NOAA's National Weather Service Climate Prediction Center](#).



Drought

over a period of time. For a more detailed drought summary, visit the U.S. Drought Monitor [website](#).

U.S. Drought Monitor USDA Southwest Climate Hub



November 23, 2021

(Released Wednesday, Nov. 24, 2021)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.03	99.97	92.76	73.73	47.76	13.55
Last Week <small>11-16-2021</small>	0.10	99.90	91.55	73.71	47.15	16.03
3 Months Ago <small>08-24-2021</small>	3.15	96.85	93.60	79.14	56.31	24.05
Start of Calendar Year <small>12-29-2020</small>	0.67	99.33	97.80	89.82	70.06	39.27
Start of Water Year <small>09-26-2021</small>	2.61	97.39	91.40	74.82	55.03	19.64
One Year Ago <small>11-24-2020</small>	1.27	98.73	92.49	80.89	64.49	33.99

Note: Statistics do not include areas represented by points.

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>

U.S. and Puerto Rico Author:

Richard Heim
NCEI/NOAA

Pacific Islands and Virgin Islands Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu

Announcements

Job Opportunity - Research Scientist

The Jornada Experimental Range/New Mexico State University seeks a Research Scientist to develop spatial/telecoupling models of agricultural supply chains to test hypotheses about agricultural sustainability and resilience with multi-scale and multi-factor perspectives. The scientist will collaborate with other researchers, extension specialists, and producers as part of the Sustainable Southwest Beef Coordinated Agricultural Project. Apply through **December 23, 2021**: <https://southwestbeef.org/job-opportunities>.

Job Opportunity - Tribal Climate Resilience Liaison

The **American Indian Higher Education Consortium** is looking for a Tribal Climate Resilience Liaison, to be housed at the SW CASC. This full-time, professional position will provide direct extension support to tribes and tribal colleges & universities located in California, Nevada, Utah, and Arizona, the states comprising the service area of the SW CASC, located on the campus of the University of Arizona in Tucson, AZ. The position will draw upon the SW CASC Tribal Engagement Strategy and work with the SW CASC to develop and implement communication,

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activities to be supported by the climate science liaison include outreach/engagement, education, and research associated with mobilizing community response to anticipated environmental, health, and safety impacts of climate change. More information [here](#).

The Forest Service Research and Development SCIENCEEx webinar series bring together scientists and land management experts from across U.S. Forest Service and beyond to explore the latest science and best practices for addressing large natural resource challenges across the country. These webinars will be primarily land management focused, but with applicability for participants from across sectors. For more information, visit the [SCIENCEEx webinar page](#).

The USDA 1994 Tribal Scholars Program was established in 2008 in partnership between USDA and 1994 land-grant institutions, tribally controlled colleges, and universities with land-grant status. The program provides full tuition, fees, books, and workforce training to students pursuing degrees in agriculture, food, natural resource sciences, or related academic disciplines. When the student has completed the academic and summer work requirements of the scholarship, USDA may convert the student to a permanent employee without further competition. The USDA 1994 Tribal Scholars program is available to graduating high school seniors, full-time students currently enrolled at a 1994 land grant tribal college or university, or recent graduates of one of these schools. Additional requirements are outlined in the application package. The application deadline is **January 31, 2022**. See the [2022 Application](#) (PDF, 452 KB) and email 1994@usda.gov for further information.

Sheep and shepherds in the 21st Century

The University of California Division of Agriculture and Natural Resources (UCANR) is leading a survey of sheep producers to identify opportunities and challenges associated with raising sheep on rangelands in the 21st Century. This work is a collaboration with the USDA-ARS US Sheep Experiment Station. We invite you to participate in this study. https://ucdavis.co1.qualtrics.com/jfe/form/SV_e3XjvAvyXsE73PE

Online Climate Course: Climate Change and Society

In Spring 2022, the South Central Climate Adaptation Science Center (SC CASC) at the University of Oklahoma will offer two short courses that will dive into the impacts of climate change and adaptation strategies. The courses are free and online, so anyone from anywhere may participate! You will have the opportunity to learn from climate experts at OU and SC CASC partner institutions. Upon successful completion of the short course, you will receive a personalized certificate. This course will be live from **February 1st - March 1st, 2022**. [Register here](#).

Online Climate Course: Climate Change Impacts and Adaptation

In Spring 2022, the South Central Climate Adaptation Science Center (SC CASC) at the University of Oklahoma will offer two short courses that will dive into the impacts of climate change and adaptation strategies. The courses are free and online, so anyone from anywhere may participate! You will have the opportunity to learn from climate experts at OU and SC CASC

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Funding Opportunities

Specialty Crop Multi-State Program

Deadline: December 06, 2021

Award Ceiling: \$1,000,000

Agriculture and Food Research Initiative - Foundational and Applied Science

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.

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

Community Forest Program

Deadline: January 10, 2022

Award Ceiling: \$600,000

Farm to School Grant

Deadline: January 10, 2022

Award Ceiling: \$500,000

Forest Service Cohesive Wildland Fire Management Strategy RFA 2022

Deadline: January 14, 2022

Award Ceiling: \$300,000

Hispanic-Serving Institutions Education Grants Program

Deadline: January 28, 2022

Award Ceiling: \$1,000,000

Tribal Colleges Education Equity Grants Program

Deadline: March 15, 2022

Award Ceiling: \$130,000

Events

- December 2, 2021, 10 am MT - **Building a network for drought monitoring in Arizona**
- December 2, 2021, 1 pm MT - **Harnessing Satellites for Rangeland Vegetation Monitoring on the Pacific Northwest Bunchgrass Prairie and Beyond: The RangeSAT Story**
- December 7-9, 2021 - **Intertribal Agriculture Council Annual Conference**
- December 8, 2021, 11 am MT - **2021 Tribal Energy Webinar Series: Utility-Scale Solar Development on Tribal Lands**

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- December 16, 2021, 1 pm MT - [Remote sensing-based decision support system for climate resilient ranches and rangelands in California](#)
- January 18, 2022, 10 am MT - [National Climate Assessment: Indigenous Peoples Engagement Workshop](#)
- January 23-27, 2022 - [American Meteorological Society Annual Meeting](#)
- February 1 - March 1, 2022 - [Online Climate Course: Climate Change and Society](#)
- February 4, 2022, 11 am MT - [National Climate Assessment: Southwest Chapter Engagement Workshop](#)
- February 6-10, 2022 - [Society for Range Management Annual Meeting](#)
- February 7, 2022, 3 pm MT - [National Climate Assessment: Hawai'i & USAPI Chapter Engagement Workshop](#)
- April 1-29, 2022 - [Online Climate Course: Climate Change Impacts and Adaptation](#)

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