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Southwest Climate Hub Bulletin

News and events for the Southwest Hub region

January 2020



Drought Learning Network: Communities learning from Communities

A collaborative group of researchers, end-users and agency leaders are developing a Drought Learning Network (DLN) in the Southwest U.S. The network is intended to support

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communication methods will inform network design. We hope to learn what knowledge was useful in managing past droughts, what information would have been useful had it been available, and looking forward, what knowledge, tools, and other information would be useful in responding to drought. If you would like to participate in the survey, please use the following link: [DLN Needs Assessment Survey](#).

Individual responses are confidential, and participation in the survey is voluntary. The **survey will remain open until January 31, 2020**. We sincerely thank you for sharing your time, knowledge and experience with us!



FireCLIME Vulnerability Assessment Tool

[Megan Friggens](#)

Decision-makers need better methods for identifying critical ecosystem vulnerabilities to changing climate and fire regimes. Climate-wildfire-vegetation interactions are complex and hinder classification and projection necessary for development of management strategies. The recently developed vulnerability assessment (VA) tool, [FireCLIME VA](#), is designed to estimate ecosystem vulnerability to the interactive effects of fire and climate regime change. The FireCLIME VA can also compare management strategies under various climate scenarios and gauge the potential effectiveness of those strategies for reducing undesirable impacts of climate on wildfire regimes and of wildfire on natural ecosystems. FireCLIME is meant to be quick, flexible, and amendable to a range of data inputs (literature review, expert, modeling or monitoring activities) allowing users to easily compare various fire-climate outcomes for one or more ecosystems of interest. Users can use literature, hypothetical scenarios, or quantitative data to implement the FireCLIME VA tool.

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Diné Women in Agriculture and the Importance of Our Water

[Leiloni Begaye](#)

Yá'át'ééh / Greetings, my relatives near and far, my name is Leiloni Begaye. I am from the Coyote Pass Jemez clan. I am born for the Water Flow Together clan. My maternal grandfather is from the Red Running into the Water clan. My paternal grandfather is from the Red Bottom clan. I am from Dinétah in western terms the Navajo Nation from a community of Díwózhii Bii' Tó (Greasewood Springs) in Arizona. This is how I present myself as a Diné woman.

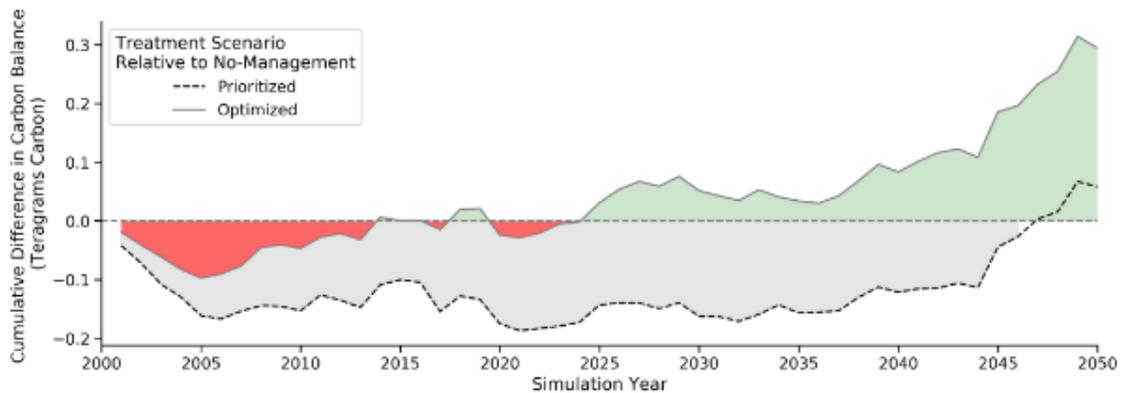
We, as Indigenous communities are connected to all living entities and that includes our to' (water). Water is the sustenance of everything that lives around us, and not only contributes to our bodies, but to our beliefs as well. Our farm and ranch is currently in a recharge zone near the ephemeral Pueblo Colorado Wash and historically the reason why our family chose to farm and ranch in its current location. Through the ever-changing environment, our water source like many Indigenous communities began to change. However, the Pueblo Colorado Wash is an alluvial aquifer that recharges seasonally, that when walking through the rangeland it still has its historical water catchment zones where water will run and bring life to native rangeland plants such as the Blue Grama, Indian Ricegrass, and Sideoats Grama. Our late matriarch was a rancher and farmer who led our family's legacy and passed down her knowledge and wisdom. Matriarchy from Diné perspective is a woman who leads and makes hard decisions for her family, not only determining their diets but also through challenges beyond her control, such as severe droughts and unexpected weather changes impacting the environment and ecosystems around the communities.

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with a good healthy life. My traditional upbringing instilled a great appreciation for my culture, language and how we, as Diné people, utilize To'. As a Diné woman who is inspired by my elders, my focus is not only depended on food resiliency or rotational grazing methods but also includes the environmental impacts, and being a part of the dialogue of improving our watersheds which are the veins of mother earth.

In August 2019, our family installed a rain gauge after attending a presentation and training provided by Helena Deswood, Tribal Coordinator for Southwest Climate Hub. We are now observers in the [CoCoRaHS Network](#). We have been entering our daily precipitation data which is important in regards to filling the data gap for our community. Our observed data has been utilized by [U.S. Drought Monitor](#) maps, National Weather Service, and others. Furthermore, the precipitation data gathered from our gauge will continue to help us in the long-term decision making and in our efforts to conserve natural resources. Today, we are still utilizing our Diné protocols and philosophy as land stewards and conservationists.

Ahé'héé / Thank You!



Optimizing Forest Management Stabilizes Carbon Under Projected Climate and Wildfire

[Matthew Hurteau](#)

Hotter, larger wildfires are becoming commonplace in the Western US and the area burned is likely to increase with additional climate warming. This is exacerbating the forest conditions that have resulted from a century of fire suppression. Restoring regular surface fires often requires first implementing expensive mechanical treatments. Given the size of the area in need of restoration treatments, optimally allocating treatments is a necessity. We ran simulations of the Santa Fe Fireshed to understand how [optimizing mechanical treatment](#) placement based on the risk of high-severity wildfire could reduce the frequency of high-severity wildfire and carbon losses under projected climate change and more severe fire weather.

We found that mechanically treating areas with the highest risk of high-severity wildfire and using prescribed fire to treat the unthinned areas (optimized scenario), we could reduce the area mechanically treated when all operable areas were thinned (prioritized scenario) by 54%. This outcome required a 27% increase in the area treated with prescribed burning. Both scenarios reduced high-severity wildfire when compared to the no-management scenario, as well as a significant reduction in wildfire carbon emissions. However, the optimized scenario did so at a considerable carbon savings in the short term, yielding a significant reduction in carbon lost from the system (see figure). Both of our scenarios achieved a reduction in high-severity fire and stabilized the remaining carbon. However, in both the management scenarios, maintaining carbon stability under changing climate and increasingly severe fire weather was contingent on the regular application of prescribed fire at return intervals that are consistent with historic fire regimes.

Cumulative net ecosystem carbon balance (NECB) of the prioritized (dashed black) and

prescribed fire and wildfire.



Community Forest Adaptation Training

Emile Elias, Courtney Peterson, and Imogen Ainsworth

In early December, community forestry stakeholders and natural resource managers participated in a workshop exploring climate change impacts and adaptation strategies for municipal community forests. This workshop was designed to identify climate change impacts and potential adaptation actions for Durango, Colorado's community forest to be integrated into real-world, on-the-ground forest management projects.

The goals of the workshop were to:

- Identify current and anticipated effects of climate change on the City of Durango community forest;
- Describe resources and tools that can be used to integrate climate change into management;
- Outline adaptation concepts and strategies in the context of sustainable forest management; and
- Identify actions that enhance the ability of forests and other ecosystems to adapt to changing conditions.

Climate vulnerability is defined by impacts and adaptive capacity. Workshop participants identified the top climate impacts to community forests as:

1. Warmer annual and seasonal temperatures (24 points)
2. Variable to decreased annual average precipitation (18 points)
3. More days with extreme heat (18 points)
4. Reduced summer soil moisture (11 points)
5. Potential for early spring thaw / late frosts (6 points)

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The impacts of climate change are only half of the equation when determining vulnerability. Workshop participants also discussed which factors have the greatest influence on adaptive capacity. Generally, groups estimate Durango's near-term adaptive capacity is high thanks to a strong baseline of forest management, including existing community forest diversity, a knowledgeable, engaged community of agencies, non-profits and residents, and flexibility in existing policies. However, adaptive capacity within the City's community forest could be limited by a lack of support for controlling invasive species and lack of support or knowledge about green stormwater and low impact development.

Recommended local climate management strategies and approaches from the [NIACS Urban Forests Menu](#) include selecting trees to match current and future site conditions, retaining biological legacies and improving the ability of forests to resist pests and pathogens.

Workshop participants found that business-as-usual management practices are inconsistent with existing Community Forest Management Plan objectives given projected future climate conditions. There is potential to work with local partners to begin adaptation now to improve long-term adaptive capacity of Durango's urban forest.

Participant next steps include:

- Revising Durango's ~10 year old Tree and Shrub Guide to include species adapted to warmer future climates.
- Presenting key takeaways on climate change impacts and adaptation strategies to the City Parks and Recreation boards.
- Reviewing the Botanical Society's list of trees for future planting efforts.
- Working with City parks and schools to test the suitability of future-adapted tree species from southern seed sources.
- Developing guidelines and outreach around green stormwater and low impact development options;
- Integrating climate change projections and adaptation considerations into upcoming large planning developments.
- Exploring opportunities for citizen science and student projects to implement and monitor urban forests.
- Maintaining and increasing connectivity to riparian forests to help sustain wildlife populations, mitigate greenhouse gas emissions, and improve downstream water quality in the Oxbow Preserve.

The training provides a framework for similar climate adaptation trainings in the Southwest U.S. For more information, see [this article](#) by the County Extension specialist on the training or this [workshop summary](#).

This active, hands-on training was organized by the City of Durango Sustainability Division and Parks and Recreation Department, Colorado State University, the Northern Institute of Applied Climate Science, and the USDA Southwest Climate Hub, with funding from the U.S. Department of Agriculture Office of the Chief Economist.

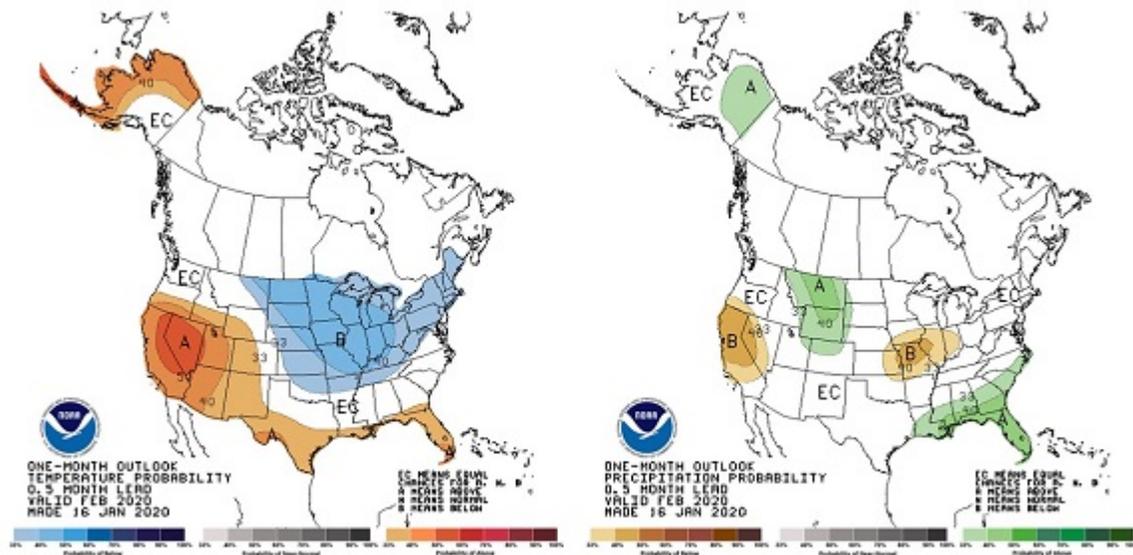
Climate reporting for the Southwest

We are currently in an [ENSO-neutral status](#) and forecasters estimate there will be about a 60% chance of an ENSO-neutral outlook for spring 2020 and to continue into summer 2020. Read more about [ENSO Tracker - January 2020](#), an analysis by [CLIMAS](#) (Climate Assessment for the Southwest).

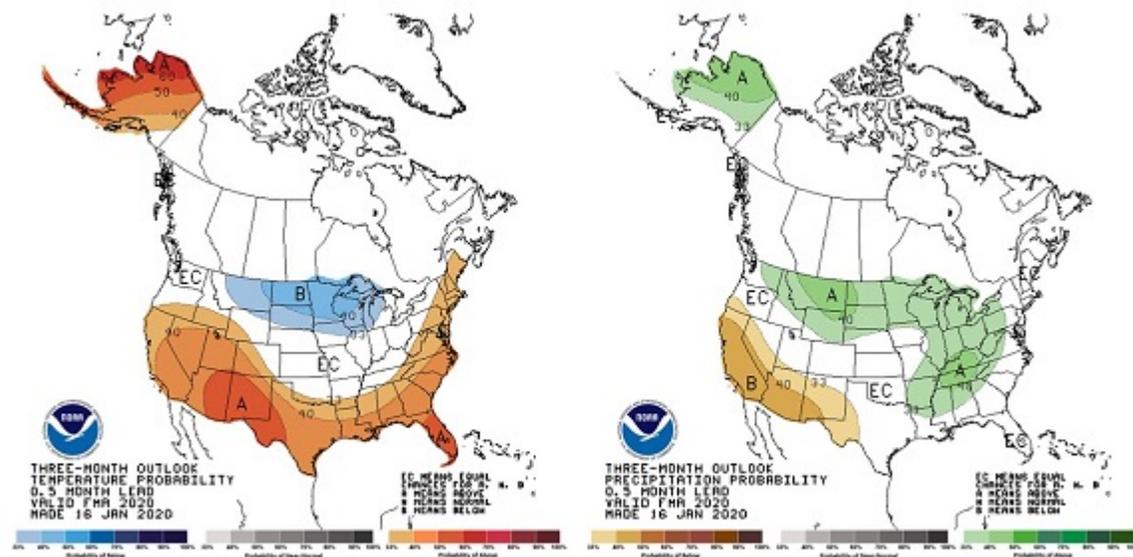
As of January 16, the [one-month outlook](#) for February shows a 50% chance for above-normal temperature for the Great Basin region and a 33-50% chance for above-normal temperatures for the rest of the southwestern U.S. There will be a 33% chance of below-normal precipitation for western Nevada and an equal chance for precipitation for Utah, Arizona, and New Mexico. The southern portions of Arizona and New Mexico will have 33-40% above-normal precipitation. As of January 16, the [three-month outlook](#) (Feb-Mar-Apr 2020) shows a 33-50% chance of above-normal temperatures for the southwestern U.S. There will be a 33-

2010 base period. To view more short-term outlooks, please visit the [NOAA's National Weather Service Climate Prediction Center](#).

1-month outlook



3-month outlook



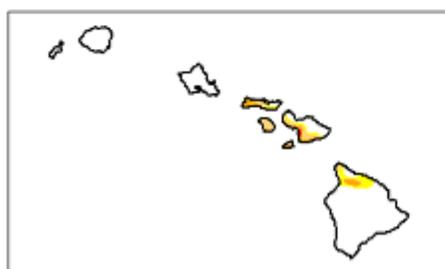
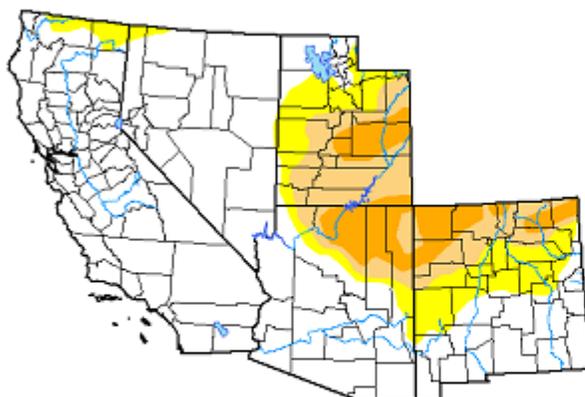
Drought

Drought conditions remain in northern New Mexico, northeastern Arizona, and Utah with widespread coverage of drought conditions of D0-D2. In Hawai'i, drought conditions have improved when compared to a month ago using the [U.S. Drought Monitor Map Comparison Slider](#). For a more detailed drought summary, visit the U.S. Drought Monitor [website](#).

USDA Southwest Climate Hub

(Released Thursday, Jan. 16, 2020)

Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	70.04	29.96	18.26	7.57	0.00	0.00
Last Week <i>01-07-2020</i>	70.51	29.49	18.31	7.58	0.00	0.00
3 Months Ago <i>10-15-2019</i>	48.41	51.59	25.69	10.61	0.01	0.00
Start of Calendar Year <i>12-01-2019</i>	70.92	29.08	18.32	10.73	0.01	0.00
Start of Water Year <i>10-01-2019</i>	57.55	42.45	27.33	6.37	0.02	0.00
One Year Ago <i>01-15-2019</i>	13.88	86.12	69.89	26.33	7.38	3.78

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:

Curtis Riganti
National Drought Mitigation Center

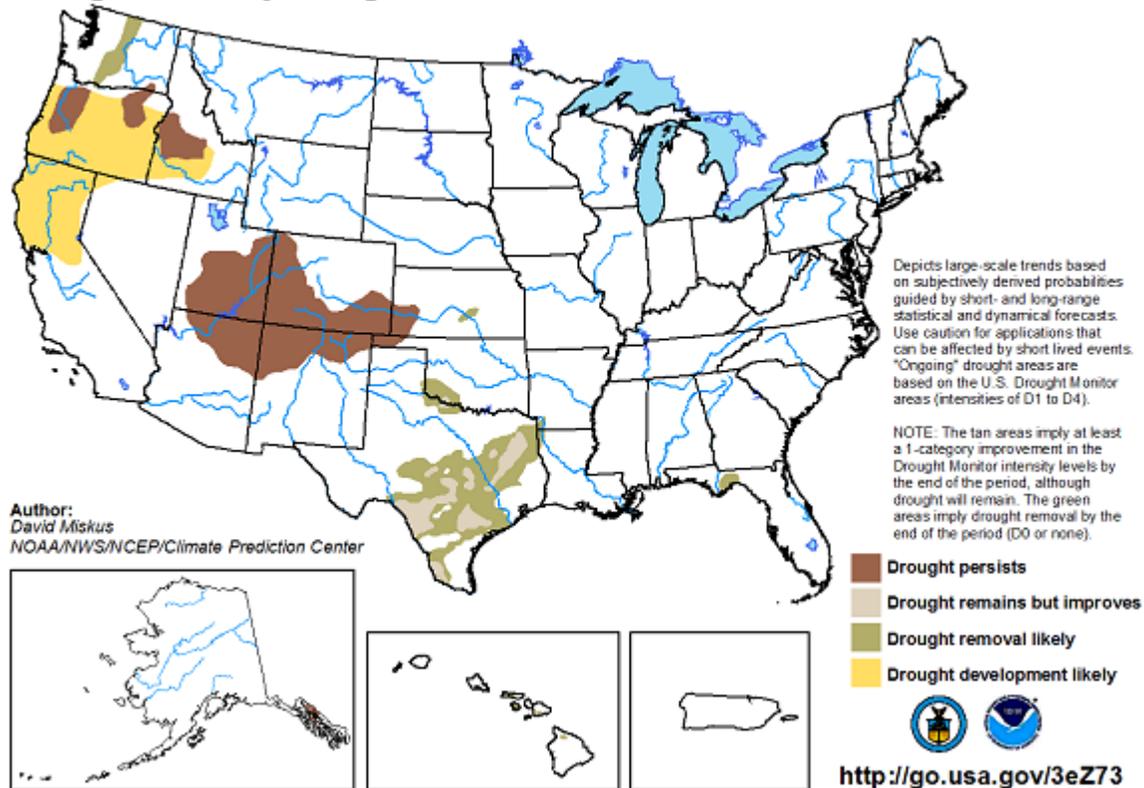


droughtmonitor.unl.edu

For the seasonal drought outlook (January 16 - April 30, 2020), drought will persist in the Four Corners region and up into Utah. The outlook predicts drought will remain but improve in Hawaii.

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Released January 16



Funding Opportunities

[WaterSMART Drought Response Program: Drought Contingency Planning Grants for Fiscal Years 2020 and 2021](#), DOI

Award Ceiling: \$200,000

Deadline: February 5, 2020

[Women and Minorities in STEM Fields](#), NIFA

Estimated Total Program Funding: \$400,000

Deadline: February 24, 2020

[2020 Preservation Technology and Training Grants](#), DOI

Award Ceiling: \$20,000

Deadline: February 24, 2020

[Integrated Research, Education, and Extension Competitive Grants Program – Organic Transitions](#), NIFA

Award Ceiling: \$500,000

Deadline: February 27, 2020

[Tribal Resilience Program Grants](#), BIA

Award Ceiling: \$150,000

Deadline: March 2, 2020

[FY 2020 Beginning Farmer & Rancher Development Program](#), NIFA

Award Ceiling: \$500,000

Deadline: March 19, 2020

[Agriculture and Food Research Initiative - Foundational and Applied Science](#), NIFA

Estimated Total Program Funding: \$192,600,000

Deadline: Multiple deadlines for Letter of Intent, November 18, 2020

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Job Opportunity

[Assistant Specialist - Forestry and Climate Coordination and Communication](#)

The Specialist stays apprised of emerging issues and problems and maintains technical competence in the designed areas of specialization to carry out facilitation/coordination activities, develop science communication outputs and products and support, outreach and extension efforts related to climate enabling decisions in supporting California forest management.

Deadline: January 31, 2020

Announcements

[USDA 1994 Tribal Scholars Program](#)

Applications are due February 9, 2020. The program aims to increase the number of tribal college and university students studying agriculture, food, natural resource sciences, and other agriculture-related disciplines. The program is available through the USDA Office of Partnerships and Public Engagement.

[Udall Undergraduate Scholarship](#)

Applications are due March 5, 2020. The Udall Foundation awards scholarships to college sophomores and juniors for leadership, public service, and commitment to issues related to Native American nations or to the environment.

[The 2020 Native Youth in Food and Agriculture Leadership Summit](#)

Applications are due March 6, 2020. The summit is open to American Indian, Alaska Native, and Native Hawaiian youth, ages 18-24, and will be held on July 7-14th, 2020, in Fayetteville, Arkansas, at the University of Arkansas. If you have any questions regarding the summit application, please contact Josiah Griffin at jwg012@uark.edu.

Events

- **January 29** - [Redesigning Desert Agriculture for Climate Change: Biomimicry, Nurse Plant Ecology & Succulent Plants](#) Las Cruces, NM
- **February 14-15** - [Introduction, Assessments, Farm Design and Crop Planning](#) Hesperus, CO
- **February 16** - [Bison Tour - SRM Technical Tour](#) Strasburg, CO
- **February 16-20** - [Society for Range Management Annual Meeting](#) Denver, CO
- **February 21-22** - [New Mexico Organic Conference](#) Albuquerque, NM
- **April 14-16** - [Climate Prediction Applications Science Workshop](#) Phoenix, AZ
- **May 4-8** - [Native American Fish and Wildlife Society](#) Miami, FL
- **May 27-29** - [National Tribal Forum on Air Quality](#) Tulsa, OK
- **June 9-11** - [University Council On Water Resources](#) Minneapolis, MN
- **July 26-29** - [Soil and Water Conservation Society Conference](#) Des Moines, IA

Webinars

- **January 30, 2:00 pm CT** - [Certifying Organic Food Products with USDA](#)

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- **March 10, 2:00 pm ET** - [What It Takes to Build a Weather-Ready Nation](#)
- **March 23, 11:00 am PT** - [California-Nevada Drought & Climate Outlook](#)
- **May 26, 11:00 am PT** - [California-Nevada Drought & Climate Outlook](#)

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