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USDA Southwest Climate Hub Bulletin

Resilient working landscapes

News, research and events for the Southwest Climate Hub (SWCH) region
January 2018

What's happening at the Hub

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“Celebrating 45 years of service with the US Government. Thank you Dr. Al Rango, Southwest Climate Hub Director Emeritus.”

Four years ago, in early 2014, the USDA announced that the new Southwest Climate Hub would be hosted at the Jornada Experimental Range and headed by Al Rango, Senior Scientist. Unbeknownst to many of us here at the Jornada, Al had been working for months with Emile Elias, Kris Havstad and others to make a case for the Jornada to host the Southwest Hub. More of us were to be recruited over the months that followed, but right at the very beginning it was Al, Emile and Kris who guided the Hub’s foundation and development. Recently, some health issues have forced Al to step down from Hub activities, so we would like to take this opportunity to thank him publicly and to recognize him for all the work he has done over the last 4 ½ years on behalf of the hub. Al recognized early on that partnerships with Federal and State organizations, and especially Cooperative Extension, would be essential for the Southwest Climate Hub to succeed in its mission. And it is this spirit of partnership and collaboration pioneered by Al, that has enabled the Southwest Climate Hub to reach more and more agricultural and forest stakeholders with climate change information, support other agencies in their missions, and to conduct research on climate change impacts on agricultural and forestry systems.

Al – thank you for your inspiring and steady leadership. We very much appreciate your insight, thoughtfulness and great sense of humor, and we will miss you at the SW Hub!

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Meet our Natural Resources Conservation Service Liaison

Steve Smarik has been selected as our latest Natural Resources Conservation Service (NRCS) Liaison. Steve comes to the Climate Hub with 37 years of conservation experience with NRCS. He graduated from the University of Arizona with a Bachelor's Degree in Soil and Water Science. He has held a wide variety of positions including: Soil Conservationist, with emphasis in soil and water management on cropland; District Conservationist, managing field office operations; Environmental Coordinator and Biologist, conducting NEPA activities and consultations and managing the Wildlife Habitat Incentives Program; Easement Coordinator, managing USDA's conservation easement programs; Environmental Quality Incentives Program Coordinator, and lastly the State Resource Conservationist, guiding the delivery of technical services in Arizona. At the Southwest Climate Hub, Steve will be focusing on the development of a practitioners' handbook to wind erosion and dust abatement on agricultural lands.

Allen Torell

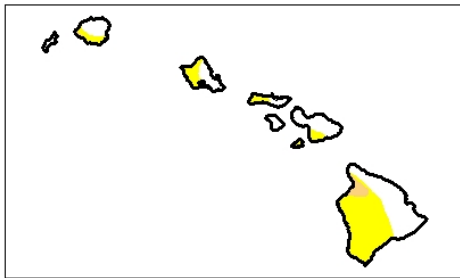
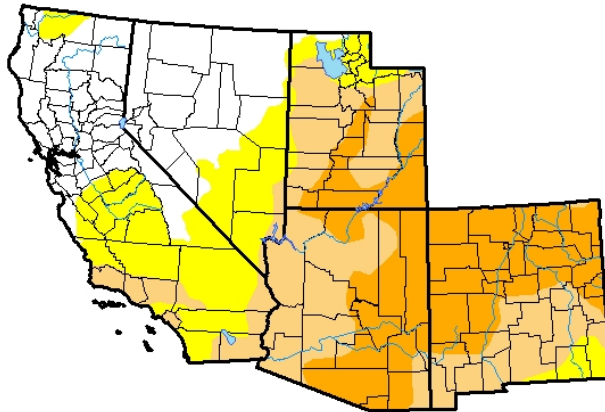
USDA Southwest Climate Hub collaborator, Dr. Allen Torell, passed away on December 30th. Dr. Torell was leading a group of scientists to investigate how the long-term interactions of climate variability and livestock stocking rate affect rangeland forage production and soil health. The group has just published a paper "Broom snakeweed (*Gutierrezia sarothrae*) population change in central New Mexico: implications for management and control" in the journal *Rangeland Ecology and Management*.

Dr. Torell had recently retired from the Agricultural Economics Department at New Mexico State University, where he had been a faculty member for 33 years. He was both a prolific and innovative researcher and a supportive mentor to undergraduate and graduate students. His work spanned and connected the straightforward economic analysis of rangeland improvement practices with the complex valuation of land as a provider of ecosystem services. Dr. Torell's

Current Drought Conditions

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

January 23, 2018
(Released Thursday, Jan. 25, 2018)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	25.54	74.46	53.72	26.52	0.00	0.00
Last Week <i>01-16-2018</i>	27.52	72.48	52.48	12.42	0.00	0.00
3 Months Ago <i>10-24-2017</i>	69.02	30.98	8.88	0.13	0.02	0.00
Start of Calendar Year <i>01-02-2018</i>	30.86	69.14	41.51	9.27	0.00	0.00
Start of Water Year <i>09-26-2017</i>	72.24	27.76	6.04	0.16	0.03	0.00
One Year Ago <i>01-24-2017</i>	58.56	41.44	19.76	7.72	0.57	0.00

Intensity:

- 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. See accompanying text summary for forecast statements.

Author:

Richard Heim
NCEI/NOAA



<http://droughtmonitor.unl.edu/>

A weekly map of drought conditions is available at the U.S.Drought Monitor [website](#).

Excerpt from the National Drought Summary for January 23, 2018

"West

A Pacific low and frontal system brought rain and snow to parts of northern California, Washington, Oregon, and the northern Rockies. Amounts were heaviest in favored upslope areas, with some stations along the coast and in the Cascades reporting over 5 inches of precipitation. Six inches to over a foot of new snow was added to several high elevation SNOTEL stations. But this is the wet season when normals are high, so even with the beneficial precipitation, much of the West was drier than normal this week. The Pacific system dried out as it crossed the coastal ranges, and the precipitation largely missed the southern states in the West. Several stations in New Mexico have gone over a hundred days with no measurable precipitation, including Moriarty and Conchas Dam. The Weather Service office at Albuquerque has measured only 0.03 inch since October 5, 2017. Several SNOTEL stations in the Sangre De Cristos were reporting the lowest year on record for snow water equivalent (SWE). The low snowpack in the mountains was impacting the recreation industry (ski resorts), but some parts of New Mexico were beginning to see agricultural impacts, mostly forage. As relayed by the NDMC, agricultural impacts from the drought are being felt in Utah, Kansas, and Oklahoma and include

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dating back to summer 2017. D1 expanded in southeastern New Mexico; D2 grew in southwestern and northern New Mexico and into adjacent southern Colorado, and expanded in central and southern Arizona; and D0 expanded into the Sierra Nevada Mountains of central California. The California D0 expansion reflected low mountain snowpack values; many lakes and reservoir levels were down as part of flood mitigation activities, but water supply was adequate. The low SWE and precipitation values, as well as high evaporative demand due to above-normal temperatures, were widespread across California and Nevada, but no additional changes were made this week due to the Pacific storm and normal to above-normal streamflows.

Alaska, Hawaii, and Puerto Rico

In Hawaii, D1 was removed from the southern portions of the Big Island, a sliver of D1 was added to the western coast where drought impacts were evident, and D0 was contracted in the east. Other than on the Big Island, no changes were made to the USDM depiction in the Hawaiian Islands, Alaska, and Puerto Rico.

Looking Ahead

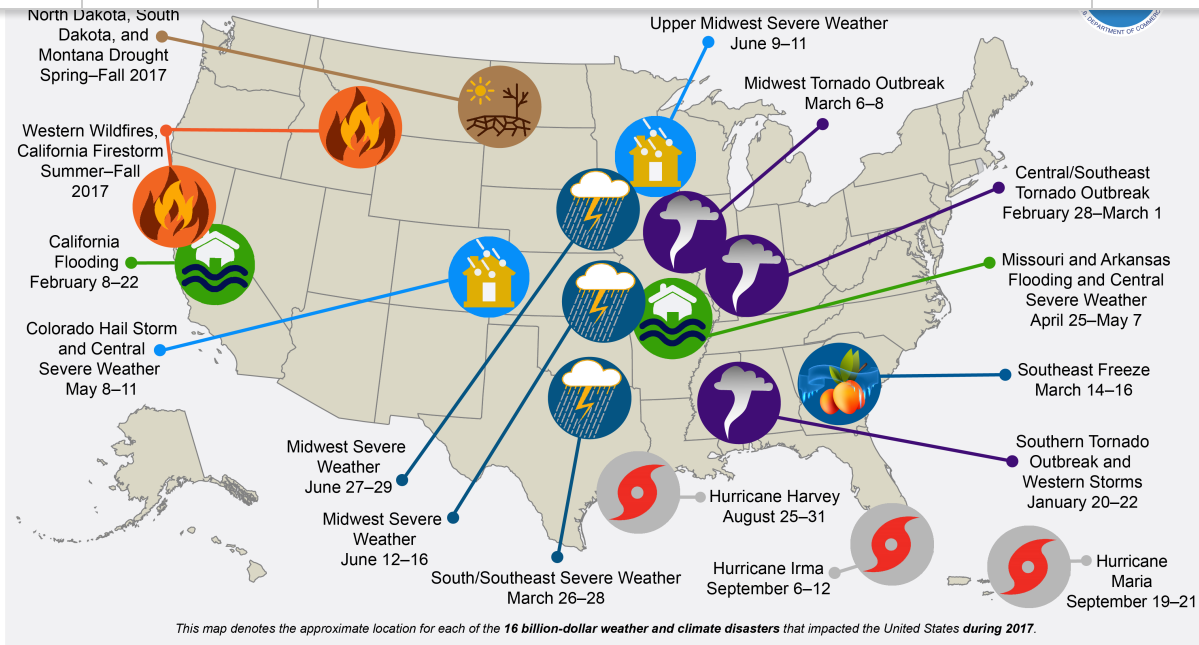
In the 2 days since the Tuesday morning cutoff time of this week's USDM, one storm system moved across the Northeast and exited the CONUS while another Pacific low and frontal system was moving into the Northwest. The Pacific system will dry out as it crosses the Rockies, then pick up Gulf of Mexico moisture when it moves across the eastern half of the country. For January 23-30, 5+ inches of precipitation is forecast for the coastal regions from northern California to Washington and up to 5 inches for northern Idaho, with lesser amounts from central California to Montana. When the system crosses the Plains, another region of precipitation will develop with amounts ranging from half an inch to locally over an inch along a line from eastern Texas to the eastern Great Lakes, then eastward from that line to the East Coast. Little to no precipitation is forecast for southern California and the Southwest, much of the Plains, and most of the Upper Midwest. Temperatures are predicted to be above normal across most of the CONUS. For January 30-February 7, precipitation is expected to be below normal for Alaska and much of the West to southern Plains, but above normal from Montana to the Great Lakes and from the Mississippi Valley to the East Coast. Odds favor above-normal temperatures across the Southwest and along the East Coast, and below-normal temperatures in southeastern Alaska and from Washington State to the northern Plains. Projections suggest that the central Plains will begin the period warmer than normal, but that colder-than-normal air masses will plunge south and east into the southern Plains and Great Lakes by the end of the period."

News

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In 2017, 16 [weather and climate disaster events](#) caused more than \$1 billion *each* in losses.

How do ranchers use the U.S. Drought Monitor and other environmental information? Watch this video from NOAA to learn more.



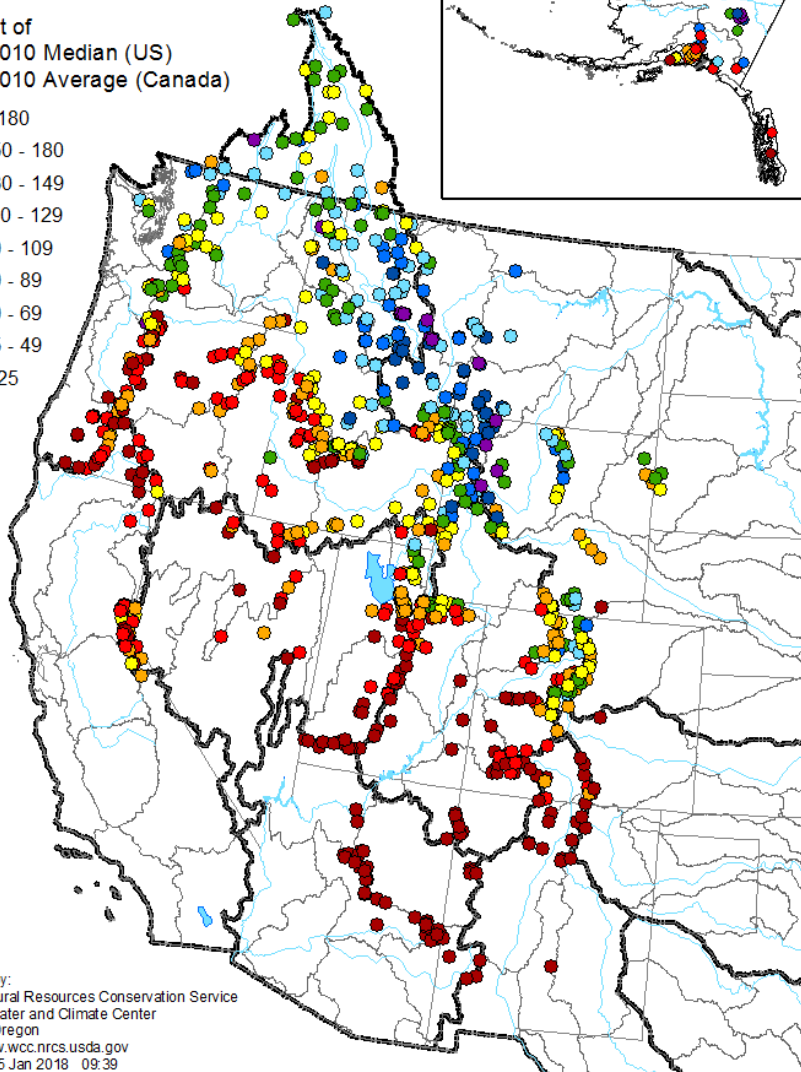
January 2018 [Western Snowpack and Water Supply Conditions Report](#)

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Mountain Snowpack as of January 1, 2018

Percent of
1981-2010 Median (US)
1981-2010 Average (Canada)

- > 180
- 150 - 180
- 130 - 149
- 110 - 129
- 90 - 109
- 70 - 89
- 50 - 69
- 25 - 49
- < 25



[Atmospheric rivers](#) are both beneficial and detrimental in managing water in the West.

Read this [great overview about the work that the Central Plains Experimental Range \(CPER\)](#) is doing to develop science-based approaches to maintaining the health and productivity of semi-arid rangeland areas in the Great Plains.

New Mexico State University San Juan County Extension are hosting the [35th annual San Juan Basin Beef Cattle Symposium](#) on Wednesday, Feb. 7, in Farmington, NM. Cattlemen in the Four

Research

[How do year-to-year differences in precipitation affect our response to short- and long-term drought?](#)

A new study in Water Resources Research found that changing patterns in rainfall may actually decrease human use of groundwater during times of drought. This research demonstrates the importance of both short and long-term responses to drought.

(Water Resources Research)

[What are the feedbacks between stream levels and drought?](#)

Recent research from the University of California Merced has found four mechanisms that control runoff during drought. Using measurements from the Sierra Nevada forests, researchers also found that tree mortality caused by drought actually increased runoff. While this may reduce the overall impact of drought, long-term legacy effects of forest dieback and wildfire are still unknown.

(Scientific Reports)

[How does climate change contribute to water woes between cities and agriculture?](#)

A recent article in Nature Sustainability describes the future of water availability and demand. By 2050, 233 million people will demand more water than what is available. Almost one-fifth of the cities studied will have conflicts related to urban and agricultural water use.

(Scientific Reports)

[Will warmer temperatures bring almonds to Oregon?](#)

Combining field observations and modeled temperatures researchers looked at future almond growing conditions. The Willamette Valley of Oregon will also have "thermally suitable" conditions for almonds by the 2050s; however, the authors note temperature is just one condition for successful almond cultivation.

(Climatic Change)

Funding Opportunity

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The overall goal of the Organic Transitions Program (ORG) is to support the development and implementation of research, extension and higher education programs to improve the competitiveness of organic livestock and crop producers, as well as those who are adopting organic practices. NIFA administers the ORG program by determining priorities in U.S. agriculture through Agency stakeholder input processes in consultation with the NAREEEAB. ORG will continue to prioritize environmental services provided by organic farming systems in the area of soil conservation, pollinator health, and climate change mitigation, including greenhouse gases (GHG), as well as the development of educational tools for Cooperative Extension personnel and other agricultural professionals who advise producers on organic practices, and development of cultural practices and other allowable alternatives to substances recommended for removal from the National Organic Program's National List of Allowed and Prohibited Substances. It is expected that all projects will integrate research, education and extension activities, as appropriate to project goals, although some projects may be weighted more heavily than others in one or more of these areas. However, all proposals should have activities and impact in research and at least one of the other areas: education and extension.

[Request for Applications](#)

[Apply for Grant](#)

Closing Date: Thursday, March 29, 2018

USDA Tribal Scholars Program Accepting Applications

Deadline: February 9, 2018

The U.S. Department of Agriculture (USDA) [1994 Tribal Scholars Program](#) is an employment program that offers a combination of work experience and academic study leading to career positions within USDA. The program is designed to integrate classroom study with paid work experience.

The program is conducted in accordance with a planned schedule and a working agreement between USDA agencies, student, and the 1994 Tribal Colleges and Universities. The USDA 1994 Tribal Scholars Program is designed to strengthen the long-term partnership between USDA and the 1994 Land-Grant Institutions; to increase the number of students studying and graduating in food, agriculture, natural resources, and other related fields of study; and to develop the pool of scientists and professionals to annually fill 50,000 jobs in the food, agricultural, and natural resources system.

Meetings

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- [New Mexico Pueblo Beginning Farmer and Rancher Agricultural Conference](#), February 8-9
 - [New Mexico Organic Farming Conference](#), February 16-17
 - [16th Biennial Symposium on Managed Aquifer Recharge](#), March 6-7
 - [California Tribal Water Summit](#), April 4-5
 - [Great Plains Grassland Summit](#), April 10-11
 - [Western Snow Conference](#), April 16-19
 - [NOAA's 16th Annual Climate Prediction Applications Science Workshop](#), May 22-24
 - [Climate Resilience - A course for Farmers](#), May 30- July 10
 - [Universities Council on Water Resources & National Institutes of Water Resources Conference](#), June 26-28

Webinars

- [Vulnerability Assessments for Species and Ecosystems in the Four Corners Region and Upper Rio Grande](#), January 30
- [Academic Research Perspective I—Challenges Leading to Proposed CIRC](#), February 1
- [Mapping Vulnerability to Support Identification of Conservation Opportunities in the Green River Basin](#), February 6
- [Forest Management and Warming Effects on southwestern US river flow](#), February 15
- [Academic Research Perspective II—Practical Application of a CIRC Framework](#), March 1
- [California-Nevada Drought & Climate Outlook](#), March 26

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