Issue 4 of the Southwest Climate Hub Newsletter

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What's Happening at The Hub:

- Call for Abstracts for NOAA's 13th Annual CPASW
- Introducing the USFS Institute of Pacific Islands Forestry
- Dreaming of a White Christmas: Will El Niño Bring Snow to the Southwest This Year?
- Listen Up: CLIMAS Climate Podcasts
- Recent News
- Recent Research

Call for Abstracts for NOAA's 13th Annual Climate Prediction Applications Science Workshop (CPASW)

Calling all climatologists, climate extension specialists, and agriculture & rangeland researchers

NOAA is requesting abstracts for presentations, posters, and papers for the next workshop on "Climate and Drought, Information for Food Resilience, Agriculture, and Water Resources." The workshop will be held at the USDA SW Climate Hub located in Wooton Hall on the New Mexico State University Campus on **March 24 - 26**.

Abstracts are due by **November 15th**. Get more information about the requests for abstracts here.

Introducing the USFS Institute of Pacific Islands Forestry

UPCOMING EVENTS

Agriculture in Times of Drought
November 17-20, 2014
Various Locations in Nevada
→ Gardnerville
→ Yerington
→ Fallon
→ Lovelock
Hosted by University of Nevada Cooperative Extension

New Mexico's Water Future: Connecting Stakeholder Needs to Water Information
November 18-19, 2014
Santa Fe, NM
→ Find out more

AGU Fall Meeting
December 15-19, 2014
San Francisco, CA
→ Find out more

impacts and adaptation

Founded in 1967, the Institute of Pacific Islands Forestry (IPIF) is at the forefront of climate change research and science application in the Pacific Region. The Institute's area of responsibility includes the State of Hawaii, the Territory of Guam, the Territory of American Samoa, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau.

The Institute's four fundamental program areas are: Conservation of Biodiversity, Ecosystem Function and Health, Fire and Fuels, and Urban Ecosystems and Social Dynamics.

The Institute partners with local, national, federal, and international entities to produce high quality and real-world applicable research products. Besides research, the Institute has an active outreach component: in 2013 they were awarded "Site of the Year" from Kupu, a nonprofit that promotes character-building, service-learning, and environmental stewardship for Hawaiian youth. The Institute also provides science leadership on regional climate change initiatives. In July 2013, Institute Director Dr. Ric Lopez brought together a consortium of Pacific Region USDA directors to increase collaboration on climate change research and outreach among sister agencies within the USDA and in close collaboration with all USDA partners. This group meets routinely to address the challenges of climate change in the Pacific. IPIF is a founding member of the Pacific Islands Climate Change Cooperative's (PICCC) Executive Committee and the USDA Pacific Islands Climate Science Center's (PI-CSC) Advisory Council. Dr. Lopez currently serves as the PICCC Executive Committee Co-chairman.

We look forward to highlighting IPIF research in future editions of this newsletter. Next month, learn about the history, research and outreach activities at the award-winning Hawaii Experimental Tropical Forest. Through a variety of programs and a strong reliance on partnerships, the HETF provides opportunities for hands on experience in natural resource management and research. Programs target middle, high school, and college level students primarily on Hawai'i Island with an ultimate goal of diversifying the workforce of the USDA Forest Service.

Phoenix, AZ
→ Find out more

Agriculture and Climate Change: Adapting Crops to Increased Uncertainty
February 15-17, 2015
Amsterdam, Netherlands
→ Find out more

Preparing for Wildfires: Moving from Crisis to Opportunity
March 10-12, 2015
Tucson, AZ
→ Find out more

California Climate & Agriculture Summit
March 24-25, 2015
Davis, CA
→ Find out more

National Association of Environmental Professionals Annual Conference
April 13-17, 2015
Honolulu, HI
→ Find out more

Western Snow Conference
April 20-23, 2015
Grass Valley, CA
→ Find out more

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Southwest This Winter?

As winter approaches in New Mexico's Rio Grande Valley, fingers are crossed for El Niño. Snowpack in the southern Rocky Mountains is the source of much of the surface water in the state and El Niño events have been linked with increased winter snowfall in the region. In October, NOAA was predicting a 67% probability that the current ENSO (El Niño Southern Oscillation) conditions will transition from neutral into a weak El Niño. But in their most recent update, the probability has fizzled to 58%. The atmosphere is still not responding to the slightly above-average sea surface temperatures in the eastern equatorial Pacific.

If an El Niño event does develop, then we might expect above-median precipitation in Southern California and eastwards across the Southwest for November - March. But it is questionable that this winter precipitation will bring much relief to California's exceptional drought, or improve drought conditions in other states. The US Seasonal Drought Outlook predicts improvements to drought conditions in California's northwest and south, as well as in parts of Utah, New Mexico, and most of Arizona. But drought is expected to persist or intensify through much of central California, most of Nevada and almost half of Utah. Even if the ENSO does transition from neutral to El Niño, the benefits may be short-lived. NOAA predicts below average precipitation from April through to July due to decadal trends.

And what about Hawaii? Currently, sea surface temperatures are just over 1°C above normal and are predicted to remain above normal for November. There is a likelihood of warmer monthly average temperatures from November - February. El Niño usually brings below-median precipitation in Hawaii's cool season and so with the exception of Kauai, below-median precipitation for November - April is predicted for Hawaii.
→ Read the forecasts here

Listen Up: CLIMAS Climate Podcasts

In the "El Niño" piece above, we used NOAA reports and the US Drought outlooks. However, we would like to steer you towards a much more fun and informative way to discover what's happening with the weather in our region.

We highly recommend the Climate Podcasts

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→ Have a listen to the most recent podcast here

RECENT NEWS

Spread the Word: The New USDA Climate Hub Website Has Launched

The USDA Climate Hubs now has an official home on the web at http://climatehubs.oce.usda.gov/! The new site provides a portal for farmers, ranchers, forest landowners, and others to find useful, practical information to help cope with the challenges and stressors caused by a changing climate, with a dedicated section for the Southwest Hub here. For Facebook, Twitter, and Instagram users, we welcome you to use hashtag **#climatehubs** when sharing research-related content to better connect our climate community via social media.

READ MORE

NASA Aims to Better Integrate Climate Indicator Work with ROSES-14

NASA's Research Opportunities in Space and Earth Sciences (ROSES) is currently accepting notices of intent in support of the U.S. National Climate Assessment, due December 2, 2014. Project that better integrate climate indicator work with assessment product generation and tools can apply for funding. Contact Lucia Tsaoussi at Lucia.S.Tsaoussi@nasa.gov with questions.

READ MORE

Consider Climate: Keeping it Current

Animal Agriculture in a Changing Climate has recently launched a new website. Their blog, "Consider Climate" has also been updated to national status, having previously been a regional blog for the Midwest.

READ MORE

Drought Impact Assessment

The National Drought Mitigation Center, U.S. Department of Agriculture, National Oceanic and Atmospheric Administration, Food and Agriculture Organization, Environmental Protection Agency, U.S. Geological Survey, and Earth System Research Laboratory have recently released a drought impact assessment for the U.S. This assessment consists of four interactive maps, showing current drought conditions, historical drought score, employment in agriculture, and change in soil moisture.

READ MORE

Energy for Growing and Harvesting Crops is Large Component of Farm Operating Costs

Crop operations consume much more energy than livestock

UCCE University of California Cooperative Extension

University of Hawai'i — Ua Mau Ke Ea O Ka 'Aina I Ka Pono — 1907

University of Nevada Cooperative Extension

UtahStateUniversity COOPERATIVE EXTENSION

LANDSCAPE CONSERVATION COOPERATIVES

NOAA Regional Integrated Sciences and Assessments Program

USGS science for a changing world — Climate Science Centers

WRRI

Center for Climate Adaptation Science and Solutions

Education

Asombro Institute FOR SCIENCE EDUCATION

Communications

energy in production of various crops and mentions ways farmers are using renewable resources to offset energy production costs.

READ MORE

Southwest Climate Summary Released

CLIMAS released a localized climate summary for Arizona and New Mexico in Volume 13, Issue 10 of their Southwest Climate Outlook. It details the precipitation and temperature fluctuations of the past 30 days and discusses the predicted outlook of precipitation and temperature over the next several weeks. An El Niño event may peak by mid-winter and cause wetter and colder-than-average conditions.

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California Legislative Round-Up 2014

Legislators in California took considerable action on issues relevant to agriculture and climate change this year. These issues include water management, waste management, renewable energy, and conservation on private lands.

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Gold Ridge RCD: Using Water Catchment as a Climate Adaptation Strategy

California Climate & Agriculture Network (CalCAN) has recently announced their partnership with the Gold Ridge Resource Conservation District (RCD) to support farmers and ranchers adapting to climate change with a strategy called water catchment.

READ MORE

RECENT RESEARCH

Hawaii Rainfall and Forage Production Index: An Evaluation Tool for Drought Affected Rangelands

Mark Thorne (1), John Hewlett (2), Glen Fukumoto (3), Matthew Stevenson (4) and Melanie Abran (5)

Sustainable livestock production depends on reliable forage resources that maintain animal health and fecundity. Temporal and spatial variation in forage production is often driven by precipitation timing and amount. Livestock producers often make grazing management decisions based on their knowledge of past or average forage production levels with little certainty that sufficient precipitation will fall in time to produce what is anticipated. Inaccurate grazing management decisions can result in losses to soil fertility, increased erosion, and establishment of weeds. Past research has linked global precipitation patterns with the occurrence of grass, shrub, and forested lands and provided regression functions relating Aboveground Net Primary Production (ANPP) with Mean Annual Precipitation (MAP). These tools have

+POSITIVE

TOOLS & RESOURCES

The following are external tools & resources, not affiliated with the SW Hub.

- **New Site!** Global Climate Change by NASA
- California Climate Data Archive
- Rangelands West
- Tech Resources Pledged to Support Climate Data Initiative
- California Climate & Agriculture Network
- Climate Adaptation Knowledge Exchange (CAKEx)
- NCA Videos
- NCA Impacts - SW
- NCA Impacts - Hawaii
- NCA Impacts - Ag
- Data.gov Food Resilience Theme Datasets
- Climate.gov NCA Teaching Resources
- COMET Climate Variability and Change Course Material
- Climate Change Resource Center

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account for temporal and spatial precipitation patterns that affect forage production at the local level. The University of Hawaii Cooperative Extension Service recently developed a forage production and drought management tool to assist Hawaii Producers in making proactive grazing and drought management decisions. The tool is based on quantified relationships between local precipitation patterns and forage production in major Hawaiian rangeland ecosystems. Producers can forecast forage production, determine suitable stocking rates, and make drought management plans. This ability will be important over the next several decades as drought intensity and frequency will likely increase in Hawaii due to climate change.

→ More information and decision support tool can be found here

Authors are: 1. Range and Livestock Extension Specialist, University of Hawaii-Manoa CES; 2. Extension Economist, University of Wyoming; 3. Livestock Extension Agent, University of Hawaii-Manoa CES; 4. Livestock and Range Extension Agent, University of Hawaii-Manoa CES; 5. Research Technician, University of Hawaii-Manoa CES.

Adapting to More Variable Rainfall on Rangelands

A recent grant to the SW Climate Hub from the USDA Office of Global Change Programs provides support for NRCS and NMSU scientists to investigate how the effects of increasing variability in precipitation will affect rangeland grazing management in the southwest. Most models of climate change predict that the seasonal patterns of precipitation will become increasingly variable. This may be important for livestock grazing operations because producing forage is only one part of the equation. The other, management-driven part is harvesting it with animals in a sustainable manner. More variable forage production means that stocking rates have to be flexible or producers will have to buy supplemental feed in dry years and miss opportunities in good years. Increased forage variability is problematic for the cow/calf producer's common on southwest ranches. The cow herd must be maintained year round and stocking rates often exceed recommended levels during drought periods. More variable production means that turn out and marketing dates may change; calves may be carried over as yearlings, or purchased stocker animals may provide needed grazing flexibility. Making these decisions and discovering optimal adjustments requires realistic economic and business system analysis. The research is intended to identify what critical decision points might be, including rangelands more vulnerable to degradation, and some alternative responses that producers might consider.

Climate Change, Heat Stress, and U.S. Dairy Production

A recent research report by the USDA ERS finds that greater heat stress may lower U.S. milk production 0.6-1.3 percent by 2030.

→ Read more here

REQUEST FOR SUBMISSIONS

Do you have a newly published article you would like to share in the Southwest Climate Hub newsletter? Please send it our way

Many thanks to those who have provided material for this edition!

A project led by George Frisvold, Bonnie Colby, and Todd Gaston examines mechanisms for adapting to climate variability and change that include the use of water markets by agriculture and urban water utilities, the use of weather and climate information by agricultural producers, the adoption of improved irrigation technologies, and agricultural and other policy responses. It is supported by NOAA's Regional Integrated Sciences and Assessments (RISA) program.

Use of an Observation Network in the Great Basin to Evaluate Gridded Climate Data

Predicting sharp hydroclimatic gradients in the complex terrain of the Great Basin can prove to be challenging because of the lack of climate observations that are gradient focused. However, research recently published by Daniel J. McEvoy, John F. Meija, and Justin L. Huntington addresses this issue by highlighting the importance of conducting local analyses of observations and potential measurement errors to gain an understanding of potential gridded products biases (PRISM, Daymet, NLDAS) prior to use in hydroclimatic applications.
