HPRCC

January 2019

**The Prairie Post** Quarterly Newsletter of the High Plains Regional Climate Center

***Inside this issue:***



# Message from the Director

*By Dr. Rezaul Mahmood*

Happy New Year from Lincoln, Nebraska! The start of a new year is often a time for reflection. The HPRCC experienced many changes last year – from a new director to new projects to new partners, it was a full year. As a way of highlighting some of that work, we have created a graphic illustrating our services achievements on page 2, and have provided updates to projects and activities throughout this edition of *The Prairie Post*.

As usual, our HPRCC staff remained busy last quarter working on projects and engaging our partners at meetings. One of our NOAA Sectoral Applications Research Program (SARP) projects, *Drought Planning Using Community Threat and Hazard Identification and Risk Assessment*, wrapped up with the unveiling of the drought THIRA toolkit (see page 3). As for engagement, both sides of South Dakota received a visit from staff, with Crystal attending a meeting with the Great Plains Tribal Water Alliance in Rapid City and Natalie traveling to Sioux Falls to attend a meeting hosted by the North Central Climate Collaborative. Staff also visited with the National Weather Service Weather Forecast Office in Hastings, NE and with several partners, including the USDA-RMA, in Kansas City, MO. A real highlight of the quarter was a visit from Dr. Dave DeWitt, Director of NOAA's Climate Prediction Center, in December. During the visit, our staff provided an overview of current activities and discussed potential collaborations. You can read more about this meeting, and others, on page 6.

We are all looking forward to a busy and productive year at the HPRCC. Best wishes for the New Year to all our partners and friends.

***Publisher and cover photo information:***

Cover photo:
Sugar beets covered in snow in eastern North Dakota (photo courtesy Chad Wheeler)

Newsletter editor:
Crystal J. Stiles

Contributors:
Natalie Umphlett, Rezaul Mahmood, Warren Pettee, Gannon Rush, Crystal Stiles

# Meet Our Intern, Gannon Rush

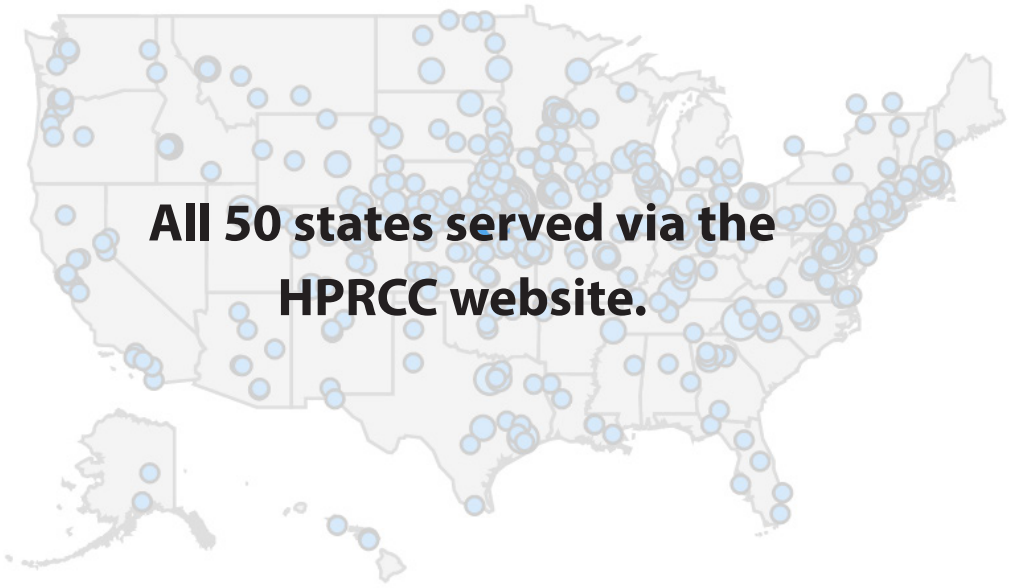
Gannon is a UNL student majoring in Geography and minoring in Meteorology-Climatology. His passion for weather started one day when he was a kid and saw a tornado forming on a nearby hill while on his family farm in western Kansas. This was not new to Gannon, as he and his dad had seen several tornadoes while farming. This time, though, Gannon's dad asked him and his brother if they would like to follow it! So, the three of them followed the tornado and watched it cross fields. Thankfully, it did not destroy any structures. While Gannon was utterly fascinated with the tornado, his brother was cowering in the back of the truck. Gannon remembers this well because his brother is now an offensive lineman for the University of Wyoming football team and thinks that he should not be scared of anything! Gannon enjoys hunting, football, weather, and agriculture. Gannon's favorite part of working for the HPRCC is the people! He said everyone is nice and welcoming, which makes him appreciate what he does.

High Plains Regional Climate Center
713 Hardin Hall
3310 Holdrege Street
Lincoln, NE 68583-0997

Follow us on Twitter!
@HPClimateCenter

Phone: (402) 472-6706
Fax: (402) 472-2946
Web Address: www.hprcc.unl.edu
E-mail: www.hprcc.unl.edu/contact.php

## 2018 Services Overview



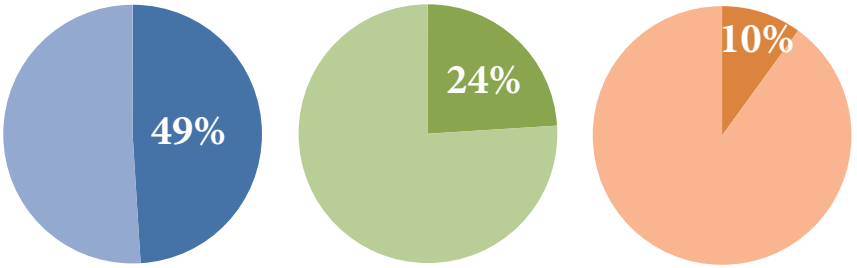

**200+**
Climate requests serving 32 states, Guam, and 7 countries.

**26**
Technical reports produced for climate and drought monitoring.

**22**
Presentations given to our partners and stakeholders.

## Most Popular Products of 2018*

ACIS Climate Summary Maps (49%)
Agro-Climate Tools (24%)
Station Tool (10%)
All Other Products (17%)
*Percent of users, based on web traffic

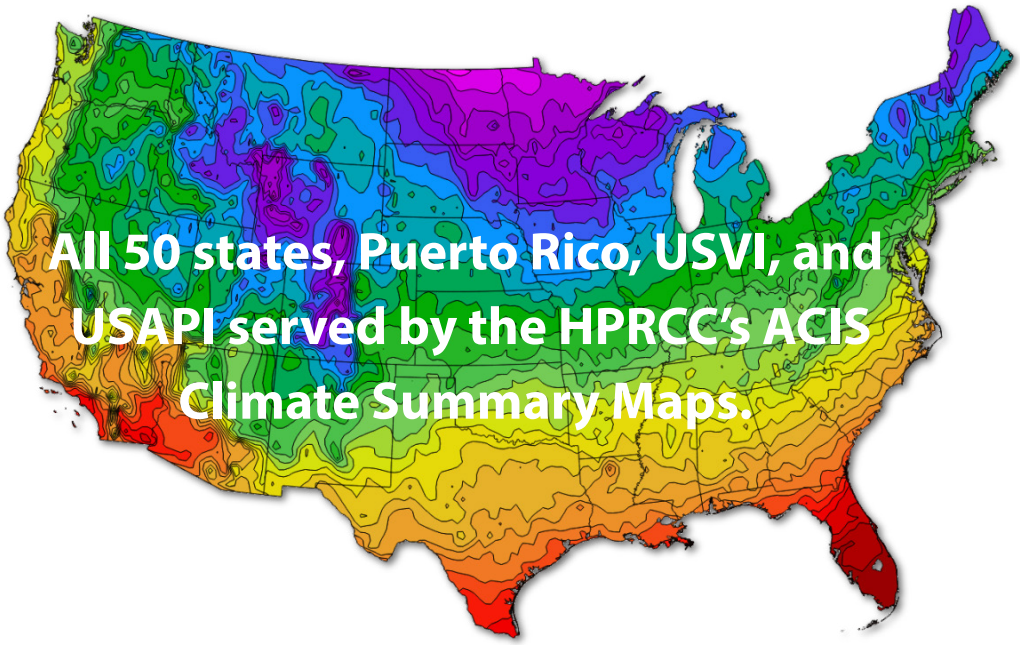



## Applied Climate Information System Updates

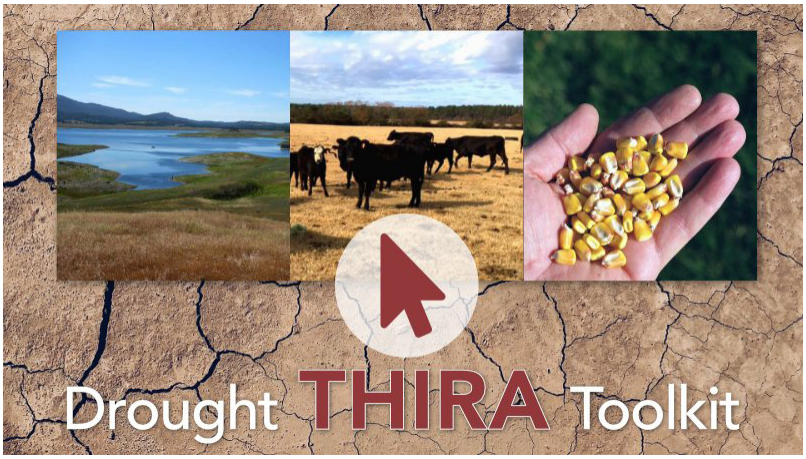
**285,571**
Archived ACIS Climate Summary Maps at the HPRCC website.

**10,000+**
New maps added to the suite of ACIS Climate Summary Maps.

**532**
Map options available in the HPRCC's new ACIS GIS Portal.



# Nebraska Researchers Tailor FEMA Process for Drought




For the first time, emergency managers and community planners have guidance on how to use the federal Threat and Hazard Identification and Risk Assessment (THIRA) process to prepare for drought. Developers of a new online, multi-media Drought THIRA Toolkit introduced it via live webinar on November 29th.

The Federal Emergency Management Agency (FEMA) recommends that communities go through a THIRA process to understand what hazards might affect them, how they would be affected, and how they can prepare. A team led by Denise Bulling, disaster and behavioral health expert with the University of Nebraska Public Policy Center, worked with emergency managers and planners in the Platte River Basin as a pilot region to customize the THIRA process for the drought hazard. The National Drought Mitigation Center and the High Plains Regional Climate Center, also based at Nebraska, provided detailed data on the extent and effects of drought in the basin.

"The virtual toolkit resulting from this project creates a bridge between emergency management and water resource planning," Bulling said. "We featured the THIRA planning process because it is a shared, flexible planning process involving participants from all sectors in the community. We think this webinar will be of particular interest to planners responsible for facility or jurisdictional emergency planning anywhere drought is a possibility."

The toolkit provides guidance and examples for designing and using a THIRA in any community that experiences drought.

"We worked with emergency managers and decision-makers to make sure that the information we're presenting makes sense to them," said Deborah Bathke, drought center climatologist and education coordinator, and co-investigator on the project. "The scenarios we created helped everyone picture effects of drought they hadn't thought of before."

Funding for the two-year project was through the National Oceanic and Atmospheric Administration's Sectoral Applications Research Program (NOAA SARP).

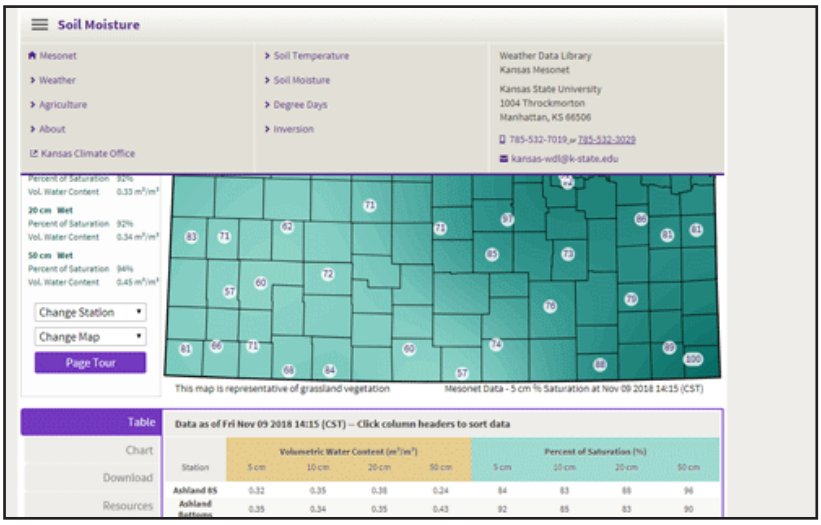
The toolkit is free and likely to be of interest to policymakers, planners, natural resource and emergency managers, and others with an interest in planning for drought.

The webinar is archived on the project web page: http://droughtthira.unl.edu/.

Check out the toolkit here: http://droughtthira.unl.edu/drought-thira-toolkit/.

This news article was adapted from Nebraska Today, released on November 20th. The original article can be found here: https://news.unl.edu/newsrooms/today/article/nebraska-researchers-tailor-fema-process-for-drought/.

## Product Highlight: Kansas Mesonet Soil Moisture Tool




The Kansas Mesonet has launched a new tool: soil moisture monitoring. Soil moisture is important for many field decisions. The Mesonet Soil Moisture page provides a general overview of the conditions across the state and by each station. This article gives a description of how soil moisture is monitored and reported.

Users can access this new tool from either the main Mesonet page by selecting from the drop down menu, Agriculture, then Soil Moisture (see figure at right); or directly from this link: http://mesonet.k-state.edu/agriculture/soilmoist/.

*Soil Moisture*

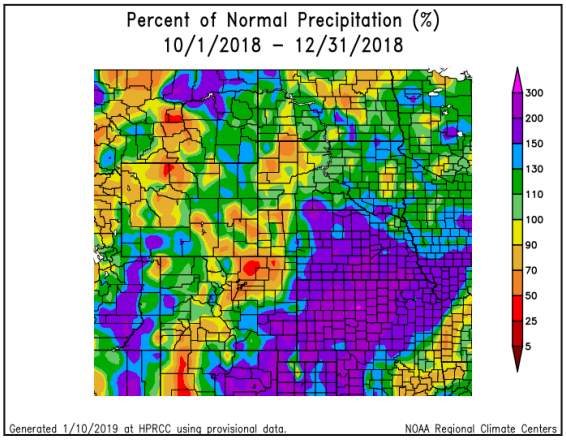
All Kansas Mesonet tower stations measure soil moisture at four depths. They utilize a time differential reflectometer probe (TDR) by Campbell Scientific, the CS655 model. Installation of current sensors began in mid-2017 and were completed in early 2018. Data beyond 365 days is not currently available online but can be obtained by emailing the Mesonet (kansas-wdl@ksu.edu).

*Soil Depths and Location*

•Standardized depths consist of: 5, 10, 20, and 50 cm (approximately 2, 4, 8, and 20 inches).
•Locations of the sensors are also standardized at all stations with all soil sensors placed four feet south of the station.

This article was adapted from the Kansas State University Extension Agronomy eUpdate Issue 719, released on November 9th, 2018. Here is the link to the full article: https://webapp.agron.ksu.edu/agr_social/eu_article.throck?article_id=2034.

## Wet End to the Year

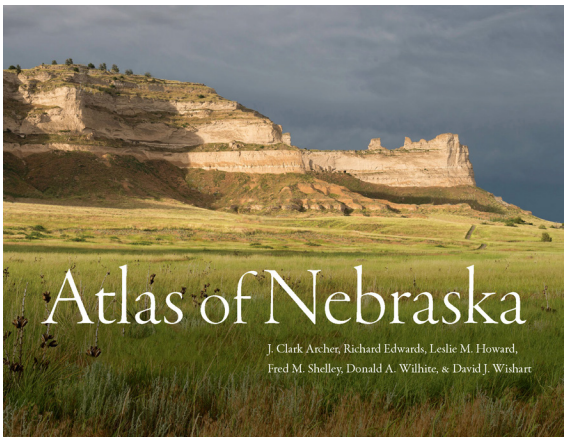



The last three months of 2018 were quite wet for the High Plains, especially across portions of Nebraska and Kansas where October-December precipitation exceeded 200 percent of normal. The wet conditions vastly improved drought conditions in northeastern Kansas, which was drought-free by December. However, the persistent wetness created issues for the fall harvest throughout the region, as muddy conditions prevented producers from getting out into the fields. In fact, nationwide, it was the slowest soybean harvest on record in the U.S., dating back to 1995.

The snow season got off to a good start for much of the region. This was especially welcome in Colorado, as the western part of the state continued to contend with drought conditions. Thanks to a plentiful mountain snowpack, ski resorts were able to open early this year in Colorado, which has been a rarity in recent years. Cold temperatures in October brought early snow to much of the Plains areas, which contributed to the delayed harvest issue. However, December was quite warm, causing the Plains snowpack to melt and hindering mountain snowpack from building quickly.

El Niño is expected to form this winter with a 65 percent chance that it will continue through spring. Wondering how El Niño conditions might impact the Missouri Basin region? Check out this briefing: https://hprcc.unl.edu/pdf/ENSO-MOBasin-2018-Final.pdf. To learn more about climate conditions in the High Plains, check out our monthly, quarterly, and annual climate summaries here: https://hprcc.unl.edu/climatesummaries.php.

# 'Atlas of Nebraska' Earns Nebraska Book Award




The "Atlas of Nebraska," a book years in the making by School of Natural Resources and Geography faculty and staff, has earned a 2018 Nebraska Book Award for nonfiction reference.

The book was written and illustrated by Clark Archer, Richard Edwards, Leslie Howard, Fred Shelley, Donald Wilhite, and David Wishart, all with the University of Nebraska-Lincoln, and was published by University of Nebraska Press.

The books and its authors were presented with their award at a ceremony, Celebration of Nebraska Books, on Dec. 1 at the Nebraska History Museum, 131 Centennial Mall North, in downtown Lincoln. Winners read or presented on their books during the ceremony. The event was free and open to the public.

To earn a Nebraska Book Award, books must have a connection to the state and must be published in the year prior.

The Celebration of Nebraska Books is sponsored by Nebraska Center for the Book and Nebraska Library Commission, with support from History Nebraska's Nebraska History Museum. Humanities Nebraska provides support for One Book One Nebraska. The Nebraska Center for the Book is housed at the Nebraska Library Commission and brings together the state's readers, writers, booksellers, librarians, publishers, printers, educators, and scholars to build the community of the book, supporting programs to celebrate and stimulate public interest in books, reading, and the written word. The Nebraska Center for the Book is supported by the national Center for the Book in the Library of Congress and the Nebraska Library Commission.

**Buy the book**

The "Atlas of Nebraska" is for sale in the Nebraska Maps and More Store (Hardin Hall, 3310 Holdrege St., Lincoln), or online from the store: https://marketplace.unl.edu/nemaps/atlas-of-nebraska-mp-126.html. The book is also available for purchase from Nebraska Press: https://www.nebraskapress.unl.edu/bison/9780803249394/.

*-Courtesy Nebraska Library Commission*

This story was adapted from the Nebraska Today article, published on October 12, 2018. Click here for the original story: https://newsroom.unl.edu/announce/snr/8544/49731. The HPRCC is a proud contributor to the "Atlas of Nebraska."

# ACIS Web Services Now Available in Siphon

HPRCC developers have designed a new way for gaining direct access to ACIS Web Services (http://www.rcc-acis.org/docs_webservices.html). Unidata's Siphon package now has an interface that researchers can use to communicate with ACIS Web Services, without having knowledge of web connections in Python. To use the interface, you simply prepare a request string like the web services documentation describes, and send it through a function in Siphon. Documentation is available on the Siphon web page (https://unidata.github.io/siphon/latest/), and tutorials will soon be there too! Questions and feedback can be sent through the Siphon GitHub page (https://github.com/Unidata/siphon).

UCAR COMMUNITY PROGRAMS

Powered By unidata

Siphon

# Recent and Upcoming Travel and Activities


A slide from the presentation Natalie gave at Milford High. (Slide courtesy Natalie Umphlett)

**Milford High Class Visit, Milford, NE (October 18)**
In October, Natalie spent a day with high school biology students at Milford High School who were learning about climate and its impacts on ecosystems. In addition to discussing some of the latest research on these impacts, she shared her path to becoming an applied climatologist and got to describe the ways in which people in the field help others in need of climate data and information for their own applications.

**Nebraska Climate Meeting, Lincoln, NE (October 30)**
The HPRCC was pleased to host the Nebraska Climate Meeting in October. This meeting, led by the National Weather Service Weather Forecast Office in Omaha, pulled together partners interested in coordinating statewide efforts for enhanced climate and drought monitoring. Please stay tuned for exciting updates from Nebraska!

**Guest Lecture - Living with our Changing Climate, Lincoln, NE (November 1)**
In November, Natalie had the opportunity to provide a guest lecture for UNL students taking a course called, "Living with our Changing Climate." In the lecture, she discussed how the Center engages different communities to help improve climate and drought monitoring across the region.

**USDA Risk Management Agency (RMA) Meeting, Kansas City, MO (December 4-5)**
Rezaul participated in this meeting hosted by the RMA that was attended by several of our partners, including the Climate Prediction Center, National Weather Service, Central Region Climate Services Director, and National Drought Mitigation Center. Participants discussed a variety of climate decision tools, as well as exchanged ideas about potential improvements to these tools and development of new products.

**Meeting with Dave DeWitt, Lincoln, NE (December 7)**
Dr. Dave DeWitt, Director of the NOAA Climate Prediction Center, visited with HPRCC staff in Lincoln. Staff provided an overview of the Center's activities and discussed new and current projects with Dave, as well as potential future opportunities for collaboration.

**NWS Hastings Visit, Hastings, NE (December 13)**
Natalie had the opportunity to spend an afternoon with the forecasters at the National Weather Service Weather Forecast Office in Hastings, NE. After touring the facility and meeting the staff, she shared updates on recent and upcoming projects and product enhancements.

**Regional Climate Services Showcase Webinar (December 17)**
The NOAA Central Region Collaboration Team hosted a webinar for National Weather Service Climate Focal Points in mid-December. The webinar provided an opportunity to learn about new climate-related resources and share ideas for collaboration. Topics for this webinar included the HPRCC GIS Portal, the coordination of drought monitoring in Nebraska, and a brief overview of the newly released Fourth National Climate Assessment. The next webinar is tentatively planned for March 2019.


Natalie talks about writing climate reports as part of the NOAA SARP cities project during a guest lecture. (Photo courtesy Ken Dewey)

**American Meteorological Society Annual Meeting, Phoenix, AZ (January 6-10)**
The HPRCC had a large showing at AMS this year, as four of our staff members attended. Presentations included using Python to generate HPRCC products, as well as demonstrating the drought THIRA toolkit and the HPRCC GIS portal. Staff also enjoyed mild Arizona weather before returning to winter conditions!

**Upcoming: NOAA Central Region Collaboration Team Annual Meeting, Baton Rouge, LA (April)**
This year, the annual meeting of the NOAA Central Region Collaboration Team will take place in April in Baton Rouge, LA. While there, the team will be meeting with members of the NOAA Gulf of Mexico Collaboration Team in order to explore opportunities to work together on cross-border issues. Natalie looks forward to building relationships with colleagues in this region!