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A breathtaking view of Badlands National Park (photo courtesy Crystal Stiles)

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Message From The Interim Director

By Ms. Natalie Umphlett



Welcome back to *The Prairie Post*! It was a productive quarter for the Center between hosting workshops, traveling to conferences, and working on new climate tools. Now, with drought rapidly developing and intensifying across the Northern Plains, our attention has turned to supporting efforts to provide climate and drought monitoring information to those who need it. In fact, the HPRCC has been a long-time partner to the drought community, especially with the National Drought Mitigation Center, also housed at the University of Nebraska-Lincoln. Over the years, we have helped develop drought monitoring tools, like the ACIS Standardized Precipitation Index maps (<https://hprcc.unl.edu/maps.php?map=ACIS-ClimateMaps>), and we have also helped support tools by supplying data that goes into their creation. A few examples include the Drought Risk Atlas (<http://droughtatlas.unl.edu/>), VegDRI (<http://veg dri.unl.edu/>), and the newly operational drought monitoring tool called QuickDRI (<http://quickdri.unl.edu/>).

For the current drought, the Center led the development of a 2-page drought briefing for the Northern Plains, which provided updates on current conditions and outlooks. A second briefing was just released on July 21st and can be found here: [<https://hprcc.unl.edu/pdf/NP-Drought-Briefing-July2017.pdf>].

HPRCC Staff Vital to Operations



HPRCC staff from left to right: Shellie Hanneman, data quality technician; Bill Sorensen, senior applications/systems programmer; Natalie Umphlett, interim director and regional climatologist; Crystal Stiles, applied climatologist and stakeholder engagement specialist; Jamie Lahowetz, Automated Weather Data Network manager; and Warren Pettee, applications programmer. (Photo by Shawna Richter-Ryerson)

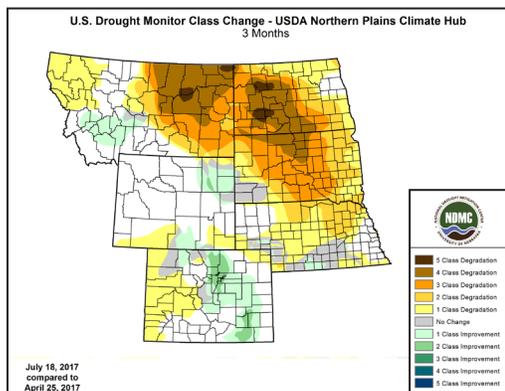
Last week, HPRCC staff gathered for our annual retreat, which is a day full of team building and brainstorming. Part of the day was dedicated to updates on major projects, while the rest was reserved for sketching out research and product ideas for the coming year. Two major themes, agriculture and water resources, will continue to be addressed and we are looking forward to unveiling our new climate-based tools as they are completed. At the retreat, we took a moment to take an obligatory staff photo (see left).

We highly value our staff and the work that they do here at the Center. Our Center boasts more than 60 years of combined experience in climate monitoring and services.

Each staff member is an integral part of our Center; without them, it would be difficult to produce the high-quality climate monitoring and services that we have proudly provided for 30 years.



Northern Plains Drought Update and Available Resources



Drought Develops in the Northern Plains

Dry conditions prevailed across the Dakotas during the spring. Due to the lack of precipitation during critical plant growth stages, crops and pastures began to suffer, and June heat waves dried out topsoil moisture. As a result, drought developed rapidly across the western Dakotas and northeastern Montana. The majority of impacts have been related to agriculture, with the winter and spring wheat crops being hit particularly hard. Pasture conditions have also suffered considerably across the Dakotas, which has led to the culling of herds and the allowance of emergency grazing on Conservation Reserve Program (CRP) lands. Water hauling for livestock has been reported in some areas. The states of Montana, North Dakota, and South Dakota all have ways to connect ranchers in need of hay with those who have hay to sell (see below for more information).

The HPRCC and several partners just released a Drought Impacts and Outlook briefing for the Northern Plains, which provides a climate overview for the last 30 days, a summary of drought impacts, and short- and long-term outlooks for the region. You can get the briefing here: <https://hprcc.unl.edu/pdf/NP-Drought-Briefing-July2017.pdf>

Hay Hotline Information

Montana: <http://agr.mt.gov/Hay-Hotline>

North Dakota: 701-425-8454; <http://arcg.is/2t6sL1Z>

South Dakota: www.facebook.com/groups/560422267324542/

Do you like to receive information through social media? Search for posts that use the hashtag #drought17 to stay up to date on information concerning the current Northern Plains drought!

DID YOU KNOW?

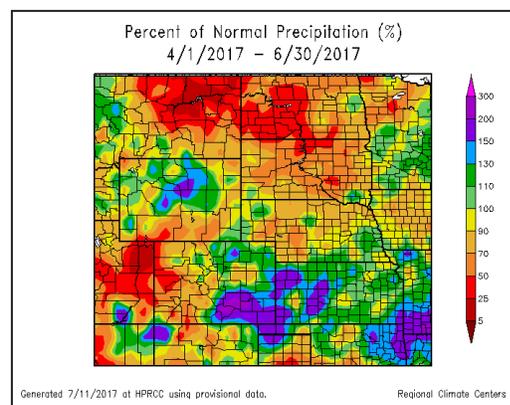
You can report drought impacts using the National Drought Mitigation Center's [Drought Impact Reporter](http://droughtreporter.unl.edu) tool. This information provides important on-the-ground observations that help complement the technical data. Drought impact information is also considered and often incorporated into the weekly U.S. Drought Monitor map. To submit a report, visit this link: <http://droughtreporter.unl.edu/submitreport/>.

Spring Climate Conditions Cause Crop Disease, Flooding from Melting Snowpack

Climate conditions during the spring and early summer were hard on agriculture across the High Plains region. The combination of early spring and late-season winter storms and freezes damaged crops and killed or stressed livestock across Colorado, Kansas, and Nebraska. Much of this region also experienced an extremely wet spring, which caused the development of crop diseases, especially in winter wheat and alfalfa. Severe weather was a common feature across the Plains, as is the case during most springs, with multiple reports of tornadoes, high winds, and large hail in all six states in the High Plains region. Storms of particular interest included a hailstorm in May that struck the Denver, Colorado metro area and caused enough damage to become a Billion-Dollar



A late-season winter storm results in snow blanketing a wheat field in western Kansas in late April. (Photo by Justin Gilpin, Kansas Wheat via Twitter)



Weather Disaster. In June, a tornado touched down on Offutt Air Force Base in southeastern Nebraska, damaging two of America's four E-4B Domsday Planes. In the Rockies of Colorado and Wyoming, snowpack was much above normal this season, and runoff caused flooding along the Wind River and its tributaries in Wyoming, as well as along the North Platte River in Nebraska.

You can read more about climate conditions in the High Plains region in our monthly summaries here: <http://www.hprcc.unl.edu/climatesummaries.php>.

Product Highlight: U2U Tools Transition to Regional Climate Centers

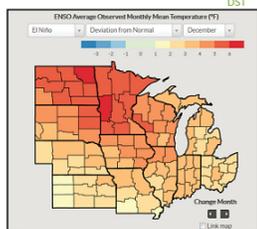
The HPRCC was a part of a USDA NIFA-funded research and extension project called, “Transforming Climate Variability and Change Information for Cereal Crop Producers.” The project included over 50 faculty, staff, and students from nine Midwestern universities, two Regional Climate Centers, and the National Drought Mitigation Center. The vision of the project was three-fold: 1) transform existing climate information into usable knowledge for agricultural decision making, 2) give farmers the resources and training to more effectively manage variable climate conditions, and 3) increase Extension capacity to address agro-climate issues. The team worked with the agricultural community to better understand their concerns regarding climate change, as well as their willingness to use climate information for planning and decision-making. Work was also performed modeling the impact of climate and farm management strategies on crop productivity and profitability under different scenarios. Based on these results, a suite of climate-based decision support tools was created for producers across the Corn Belt. Part of HPRCC’s role in the project was to ensure that these tools would continue to be operational, long after the end of the project. The HPRCC is now hosting the tools, which are available here: <https://hprcc.unl.edu/agroclimate.php>

AgClimate View_{DST}



AgClimate View_{DST}: This tool provides easy-to-use historical climate and crop yield data for the Corn Belt. View graphs of monthly temperature and precipitation, plot corn and soybean yield trends, and compare climate and yields over the past 30 years.

Climate Patterns Viewer_{DST}



Climate Patterns Viewer_{DST}: Connect global climate conditions to local climate impacts. Discover how global climate patterns like the El Niño Southern Oscillation (ENSO) and Arctic Oscillation (AO) have historically affected local climate conditions and crop yields across the U.S. Corn Belt.

Corn GDD_{DST}



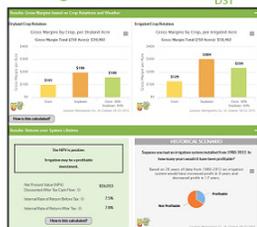
Corn GDD_{DST}: Track real-time and historical GDD accumulations, assess spring and fall frost risk, and guide decisions related to planting, harvest, and seed selection. This innovative tool integrates corn development stages with weather and climate data for location-specific decision support tailored to agricultural production.

Corn Split N_{DST}



Corn Split N_{DST}: Determine the feasibility and profitability of using post-planting nitrogen application for corn production. This product combines historical data on crop growth and fieldwork conditions with economic considerations to determine best/worst/average scenarios of successfully completing nitrogen applications within a user-specified time period. Now available for 12 states in the north central US.

Irrigation Investment_{DST}

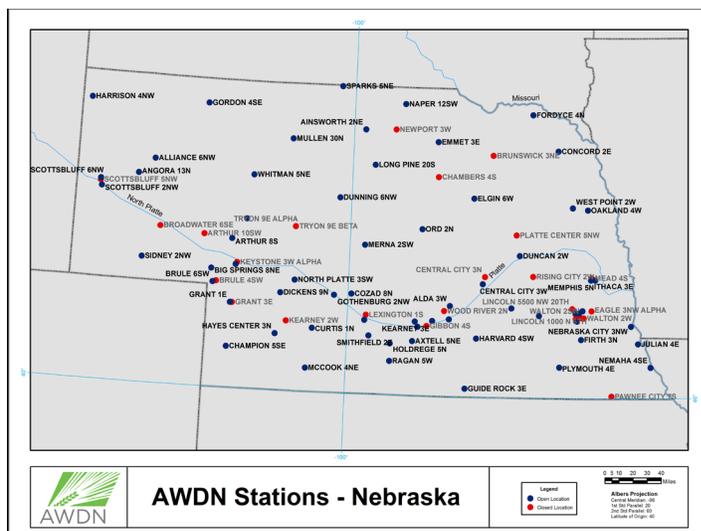


Irrigation Investment_{DST}: This tool lets you explore the potential profitability of installing irrigation equipment at user-selected locations across the Corn Belt. Discover how many years from 1980-2005 irrigation would have been profitable, calculate the net present value of investment, and compare dryland and irrigated corn and soybean yields under different rainfall conditions.

Update from the Nebraska Mesonet

As of early June, all Nebraska Mesonet stations were updated in the Automated Weather Data Network to reflect a large scale name change throughout the network. Although it may take some time to get used to the new station names, this new naming convention will help streamline the process in the future. According to the Nebraska State Climate Office (NSCO), stations will be named according to the following rules described below.

Location name will be the closest village, town, or city, using the closest post office associated with this feature, based upon the United States Board of Geographic Names (BGN) database. An NSCO zip code database will be updated once a year with data from BGN; however, once a name is assigned using the rules outlined here, it will stay fixed as long as the station exists, regardless if a post office is moved or closed. If the station is located more than 0.5 miles from a post office, a distance and direction suffix will be added to the name that will provide the closest whole mile and cardinal direction from the post office to where the station is located. Multiple stations that have the same name by these rules will be given an additional suffix identifier using Greek letters, starting with Alpha. Lincoln and Omaha stations will be named using first the city name, then the block number of the closest North/South street, and then the closest North/South street.



For more information about these name changes, please contact Stonie Cooper, Mesonet Manager, at scooper6@unl.edu.

HPRCC and Partners Receive Climate Adaptation Honorable Mention



Crystal Stiles and Shannon McNealey (second and third from left, respectively) accept the climate adaptation leadership award at the National Adaptation Forum in St. Paul, MN. (Courtesy image)

The Wind River Reservation Drought Preparedness Team recently earned an Honorable Mention Climate Adaptation Leadership Award for its leadership in reducing climate-related threats and promoting adaptation of the nation's natural resources. Recipients were selected from 27 nominations representing activities from individuals and federal, tribal, state, local and non-governmental organizations from around the country. The Climate Adaptation Leadership Award ceremony was part of a National Adaptation Forum on May 9 to 11 in St. Paul, Minnesota. "It was an honor to help accept an award for a project that is near and dear to my heart," Crystal Stiles of HPRCC said after accepting the award for the partnership. "The development of climate summaries for the Wind River Reservation was the first major task assigned to me after starting my position as a postdoc with the HPRCC. It has been a rewarding experience to be a part of the great work that has been done by the tribes and project partners during the past 2 1/2 to 3 years."

The project is a collaboration with the Eastern Shoshone and Northern Arapaho tribes to reduce the effects of drought and other climate variability on the Wind River Indian Reservation, funded by the North Central Climate Science Center. Over the past two years, the 15 partners have worked closely with the Office of the Tribal Water Engineer and the Wind River Water Resources and Control Board, who are the leadership and decision-making authority on water management on the reservation, to co-produce actionable science for drought preparedness. They have conducted a tribal-driven social-ecological vulnerability assessment; co-produced drought and climate change-related information and decision-support tools; and engaged the community, including youth, on drought and climate science.

-Adapted from Shawna Richter-Ryerson, School of Natural Resources. Full article here: <http://newsroom.unl.edu/announce/snr/6748/38101>

HPRCC Hosts Climate Workshops this Spring



Participant listens during the cities workshop. (Photo courtesy Tarik Abdel-Monem)

Climate centers help cities plan for climate variability, risk

City planning experts from 13 cities across the Midwest gathered in March to talk climate: Climate extremes, variabilities, thresholds, risks and how they should utilize the information. The workshop is part of a two-year project, co-led by Natalie Umphlett, interim director for the HPRCC, and Martha Shulski, Nebraska State Climatologist, to incorporate climate information into long-term municipal planning strategies for cities in Iowa, Kansas, Missouri and Nebraska. During the workshop, each of 13 participating cities received a personalized climate adaptation report that included historical trends for temperature, precipitation and general climate, as well as projections for 50 years into the future. “Locations across the four-state region already experience a wide range of weather and climate conditions,” Umphlett said. “However, for some areas of the region, changes in the frequency of extremes, such as heavy rainfall events, have made those cities more prone to certain hazards.” Projected changes in climate have implications for public planning, utilities, city budgets and for public health, particularly for vulnerable populations such as the young, elderly and poor. The next step for HPRCC and NSCO is to analyze the information collected through the workshop and create usable tools for cities to use in their planning. The ultimate goal is to create a suite of tools available online that provide up-to-date projections.

-Adapted from Shawna Richter-Ryerson, School of Natural Resources. Full article here: <http://newsroom.unl.edu/announce/snr/6748/38100>

An article about the project can be found at this link: <http://netnebraska.org/article/news/1081980/cities-plan-climate-change-resilience>

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HPRCC, partners host drought THIRA workshop

Crystal served as a content expert for a Threat and Hazard Identification and Risk Assessment (THIRA) workshop focused on drought in the Platte River Basin of Nebraska, which took place April 21st in Kearney, Nebraska. Emergency managers, natural resource managers, and others representing key sectors tested 16 of 32 core capabilities identified by FEMA that are needed by a community to respond to and prepare for a hazard. The capabilities were tested using a drought scenario, which was developed by the HPRCC and the National Drought Mitigation Center (NDMC). The project team provided an overview of a 5-year, “worst-case scenario” drought for the Platte River Basin, and then workshop attendees participated in a round-robin session where they chose different capabilities to discuss with respect to the drought scenario. Then the group came together to discuss all the core capabilities and obtain feedback. The purpose of this workshop was to identify the capabilities of communities in the Platte River Basin to handle a long-duration, severe drought. This workshop is part of a larger project led by the University of Nebraska Public Policy Center and also funded by NOAA SARP. For more information on this project, please visit the project website: <http://droughtthira.unl.edu/>.

Tribes learn about climate and drought data, tools for decision-making

On May 31-June 1, the HPRCC led a climate training workshop in Lincoln for Dakotas-based tribes that are part of the Great Plains Tribal Water Alliance. Environmental professionals from the Rosebud Sioux Tribe, Oglala Sioux Tribe, Standing Rock Sioux Tribe, and Flandreau Santee Sioux Tribe attended this two-day training to learn about basic climate and drought concepts, historical climate and trends on their tribal lands, and tools that enhance climate monitoring and aid in basic climate data analysis. Participants learned about climate tools and products such as sc-ACIS; the Community Collaborative Rain, Hail, and Snow (CoCoRaHS) network; NCEP’s Climate at a Glance; and climate summaries and webinars. Staff from the NDMC provided a demonstration of the U.S. Drought Monitor, the Drought Impact Reporter, and the Drought Risk Atlas. This climate training workshop will prepare the tribal teams for training on climate summary development; part of this Bureau of Indian Affairs-funded project involves developing climate summaries for each of the four reservations and training tribal environmental professionals on how to put them together. This workshop will take place during the fall, so stay tuned for updates!



Participants of the climate data training workshop for tribes in the Dakotas pose for a group photo. (Photo courtesy Shawna Richter-Ryerson)

Recent And Upcoming Travel And Activities



WERA 1012 conference attendees experienced a 3-foot snowfall in Estes Park. (Photo courtesy Tony Bergantino)

National Adaptation Forum, St. Paul, MN (May 9-11)

Natalie and Crystal attended and presented at the National Adaptation Forum, which focused on current and emerging climate adaptation issues around the country. Natalie presented on her work on municipal climate adaptation, while Crystal presented on her work with tribes in the region. If you would like more information about the forum, plenary sessions were recorded and are available here: <http://www.nationaladaptationforum.org/program/remote-participation>.

WERA 1012 Conference, Estes Park, CO (May 17-19)

Bill attended the WERA 1012 conference, which once again gathered individuals in Estes Park to discuss the collection and use of precipitation data. This year's meeting provided an additional experience in making accurate snow measurements, as Estes Park was hit with a strong spring snowstorm that dropped 36.2 inches of snow on attendees!

Missouri River Basin User Forum: Drought Early Warning for the Upper Basin, Rapid City, SD (May 23-25)

At this meeting, Natalie participated in a Tools Café session where stakeholders could get one-on-one help with available drought and climate tools, while Crystal presented on her work developing decision support tools for tribes. The Tools Café session, as well as the workshop, provided an opportunity to connect with a wide variety of stakeholders across the Upper Missouri River Basin.

Intermountain West Drought Early Warning System (DEWS) Information Providers Meeting, Boulder, CO (June 14)

Crystal attended this meeting remotely to learn more about National Integrated Drought Information System (NIDIS) activities in that region and to provide an update on HPRCC's work with the Wind River tribes in Wyoming.

Big Red Summer Camp and 4H Clover College, Lincoln, NE (June 15 and 21)

Crystal assisted with two outreach events during June, the Big Red Summer Camp and the 4H Clover College. Activities included participants learning about the differences between weather and climate, visiting a weather station, and taking the temperature of different materials in the sun and the shade to demonstrate land use/land cover change.

American Meteorological Society Conference on Applied Climatology and American Association of State Climatologists Annual Meeting, Asheville, NC (June 26-30)

Natalie and Crystal attended these two meetings that were co-located in Asheville, NC. Crystal gave a presentation on the THIRA project (see page 5 for details), and both ladies took the opportunity to network with the applied climate community. One such event included a dinner with staff from their companion Regional Climate Centers!



A 4H Clover College participant takes the temperature of a tree on a hot day. (Photo courtesy Crystal Stiles)

National Weather Service Webinar (July 11)

This summer, the Regional Climate Center program was invited to provide a series of presentations to the Climate Focal Points of the National Weather Service. During the July webinar, the HPRCC and SRCC presented on the latest climate projects and tools of each Center. A recording is available for those Climate Focal Points missing the live webinar.

Upcoming: Great Plains Tribal Water Alliance Workshop, Rapid City, SD (August)

A workshop focusing on developing drought vulnerability assessments for four tribes in the Dakotas will be tentatively held in August in Rapid City, SD. Crystal will be obtaining feedback from the tribes on climate summary templates developed by the HPRCC. Another workshop will be tentatively held in October in Lincoln to train tribal personnel on how to write climate summaries. Stay tuned for more details!

Upcoming: Montana Climate Mini-Summit, Missoula, MT (September)

In September, Natalie will be attending the Montana Climate Mini-Summit at the University of Montana in Missoula. The event is co-hosted by the Montana State Climate Office and the National Weather Service, and will focus on coordinating climate partners in the region. More information about the summit may be found here: <http://climate.umt.edu/summit/>.