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The Prairie Post Quarterly Newsletter of the High Plains Regional Climate Center- January 2015

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HPRCC

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Inside this issue:

Publisher and cover photo information:

Cover photo:
Ray Lake, Wind River Indian Reservation, Wyoming (photo courtesy Natalie Umphlett)

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Message from the Director

By Dr. Martha Shulski

Hello, and welcome to *The Prairie Post*, the inaugural newsletter for the High Plains Regional Climate Center! If this is your first introduction to the HPRCC, we are one of the six National Oceanic and Atmospheric Administration (NOAA) Regional Climate Centers in the country and have been located at the University of Nebraska-Lincoln since 1987. Our mission is to increase use and availability of climate data and information, and we focus primarily on historical data – what occurred yesterday to what occurred 125 years ago. We also focus our efforts on six states in the High Plains – North Dakota, South Dakota, Nebraska, Kansas, Wyoming, and Colorado. Our Center is fortunate to have a staff of 10, focusing in the areas of climate service delivery and customer engagement, information technology and product development, and climate monitoring and data quality. We operate under a tiered system of climate services, encompassing State Climatologists, our Regional Center, and the National Climatic Data Center. Staff actively engage with our varied stakeholder base, including K-20 education, the public, media, private industry, research, and state/tribal/federal entities, among others. The HPRCC maintains a robust automated weather network in Nebraska and Wyoming – the Automated Weather Data Network – and we partner with other states in the High Plains to gather local data and develop regional climate products. Examples of these products and our other various activities, applied research, and outreach will be featured in this newsletter. We hope that you will find this quarterly snapshot as a useful way to remain up-to-date on the latest happenings in High Plains climate. Thank you for joining us!

Meet our Staff

HPRCC staff from left to right: William (Bill) Sorensen, Jamie Lahowetz, Dr. Jinsheng You, Glen Roebke, Shellie Hanneman, Judson Buescher, Stonie Cooper, Dr. Crystal Stiles, Natalie Umphlett, Dr. Martha Shulski

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Tribal Workshops Highlight HPRCC Stakeholder Engagement Activities During Fall

NIDIS Missouri River Basin Tribal Engagement Workshop

HPRCC director Martha Shulski and staff member Crystal Stiles attended a workshop at the Journey Museum in Rapid City, South Dakota in mid-September regarding the resiliency of tribes to drought and extreme events. The workshop was hosted by the National Integrated Drought Information System (NIDIS), and additionally, there was a side meeting that was coordinated by the InterTribal Buffalo Council. Eighteen Native American tribes, sixteen of which reside within the Missouri River Basin, were represented at the workshop. Scientists and policymakers from several organizations were also present. Topics discussed include buffalo herd management, drought and climate monitoring, water resources management, and the restoration of native ecology on reservations. This workshop is one of many activities that supports the implementation of a NIDIS Regional Drought Early Warning System (RDEWS) in the Missouri River Basin.

NIDIS Missouri River Basin tribal engagement workshop participants. (Photo courtesy museum staff)

A two-page summary of the meeting can be found at this link: http://www.drought.gov/media/pgfiles/MRB/MRB-Tribal-Sept-2014-2-pager-FINAL-v2.pdf. A more detailed report that summarizes the outcomes of the workshop is forthcoming. As for next steps, the HPRCC intends to collaborate with several partners to have a future workshop focused on drought and climate monitoring needs of Native American tribes in the basin.

A rancher talks about tribes needing good measurements to make their own management decisions. (Photo courtesy Natalie Umphlett)

Wind River Indian Reservation Drought and Climate Workshop

HPRCC staff members Crystal Stiles and Natalie Umphlett participated in a drought and climate workshop that was held in late October in Fort Washakie, Wyoming, which is part of the Wind River Indian Reservation. The HPRCC is part of a collaborative effort to enhance climate monitoring and drought management for the reservation. The primary role of the HPRCC in this project is to provide support and expertise regarding climate monitoring on the reservation, as well as to produce a quarterly climate and drought summary focused on the reservation for producers, ranchers, and water managers to use as a decision-support tool. The HPRCC intends to continue supporting climate monitoring and drought management efforts on the reservation.

This project is a collaborative effort between the Wind River Indian Reservation, the HPRCC, NIDIS, the North Central Climate Science Center, and the National Drought Mitigation Center.

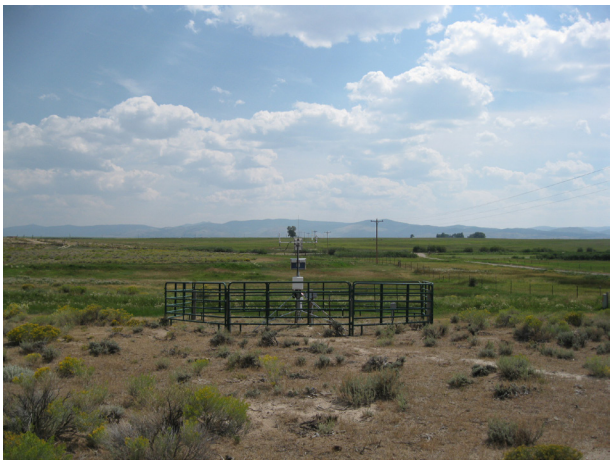
NOAA Kansas Tribes Meeting

A meeting with four Kansas tribes on extreme events and drought resiliency was held in November at the National Weather Service Training Center in Kansas City, Missouri. Martha and Crystal represented the HPRCC. The four Kansas-based tribes represented at the meeting were the Sac and Fox Nation of Missouri in Kansas and Nebraska, the Iowa Tribe of Kansas and Nebraska, the Kickapoo Tribe in Kansas, and the Prairie Band Potawatomi Nation. Key outcomes of the meeting included working with the Federal Emergency Management Agency (FEMA) to develop hazard mitigation plans for tribes, enhancing climate monitoring on reservation lands, and using tribal colleges as resources for climate-related endeavors.

James Rattling Leaf facilitates the Kansas tribes meeting. (Photo courtesy Crystal Stiles)

"Let's put our minds together and see what we can do for our children."
-Sitting Bull (as paraphrased by James Rattling Leaf)

Automated Weather Data Network Provides Climate Monitoring in the High Plains



AWDN site 5 miles northeast of Encampment, Wyoming. (Photo courtesy Glen Roebke)

The High Plains Regional Climate Center manages a mesonet of weather observing stations in Nebraska and southern Wyoming to provide users with near real-time conditions in what is called the Automated Weather Data Network (AWDN). This network began in 1981 with five stations in Nebraska - four in the southern panhandle, and one in the southeast - and has grown over the years where we now have 70 locations in the state (and growing each year) and a further 10 in Wyoming. These stations are made possible through support from individual cooperators, the State of Nebraska, the Nebraska Department of Natural Resources, and various Natural Resource Districts and private companies, as well as Wyoming state support. Observations such as air temperature and humidity, solar radiation, precipitation, wind speed and direction, soil temperature, and soil moisture (Nebraska only) are observed across the area.

The HPRCC also cooperates with states in the region to gather and quality control local weather data. Information is then summarized and disseminated for use in decision-making. The high density of observing stations in the Plains is a significant asset to local, state, and regional entities that rely on up-to-date and reliable monitoring of the weather and climate conditions. There is a wide range of users for AWDN data and products, including University Extension and agricultural producers for crop water use information and irrigation scheduling, the research community for soil moisture observations to run or verify model simulations, and the U.S. Department of Agriculture for soil temperature assessments, just to name a few. Currently, there are more than 650 registered users with many more having direct data feeds and utilizing free online mapped products.

To date, the weather network had not implemented a logo; however, we now have an official AWDN brand (see right). Our logo concept was developed in house and stylized by a local graphic artist. As you can see, it incorporates a wheat head – this is to signify the agricultural 'roots,' so to speak, of the network. The original purpose was to monitor weather and climate conditions for agricultural decision-making. The angular orientation of the grain is representative of the winds that are so common in the region. And finally, the green color indicates the hue of the landscape during the growing season and ties to the green color of the HPRCC logo (discussed below). The tagline – Observing weather on the Plains since 1981 – is a tribute to the longevity of the network. This newsletter will feature the latest AWDN happenings, such as extreme weather events, new stations, and product updates. We hope you will stay tuned to learn what is new with our network.

HPRCC Gets a New Look, Improves Services

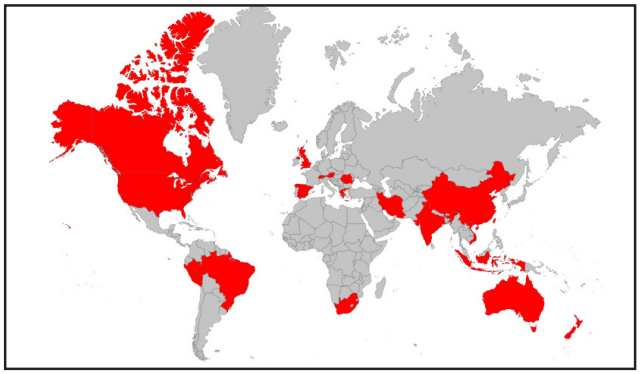
Here at the Center, a new website is in the works and will soon be unveiled. Be prepared for a fresh and modern look and feel when searching for climate data, maps, and information. You will still be able to access all of our popular products, such as climate summary maps, as before. However, we hope that our new site will make it easier for you to find what you are looking for and easier to understand the products and services we offer, and the research and outreach activities we engage in, throughout the year.

The HPRCC is pleased to unveil our new logo in this inaugural newsletter (see left). Although it may look simple, there is meaning behind the look and coloration for our new brand. Martha and Natalie met with a local graphic artist to explain who we are at the Center and the services we provide. We explained that we wanted to incorporate the look and color hues of a prairie landscape. We also wanted three components to the logo to signify our three primary activities: monitoring, services, and information. This number also represents our tiered approach to climate services with local (State Climatologist), regional (Regional Climate Centers), and national (National Climatic Data Center) components. We feel that the logo you see here incorporates each of these components beautifully. The earthtones signify the colorful hills of the Plains, while the blue signifies the sky. The three components signify our in-house areas of focus as well as climate service operations across spatial scales. Whenever you see the earthtone hills and blue sky, you'll know it's the HPRCC.

The HPRCC revived its Twitter account in September and is now providing updates on drought conditions, notifications of climate publications (such as our monthly regional climate summaries), and information on climate extremes and anomalies throughout the High Plains region. We also post similar information to our Facebook page. You can follow us on Facebook (the name of our page is "High Plains Regional Climate Center") and on Twitter (our handle is @HPClimateCenter).

HPRCC Provides Climate Services and Information to Diverse Groups

Climate information is necessary to address many requests from users whose work involves soil and water conservation, sustainable agriculture systems, agricultural competitiveness and profitability, and natural resources and environmental management.

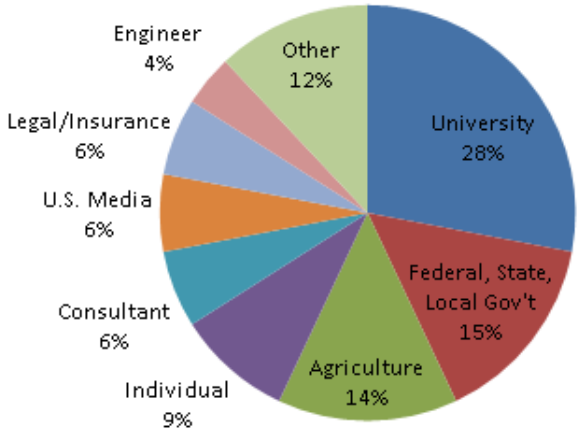


Countries served by HPRCC since 2008. (Map courtesy Natalie Umphlett)

To serve the public in such areas, the HPRCC has offered consultation, web-based access to products and data, and a monthly regional climate summary. More than 600 climate requests are answered each year by HPRCC staff. The HPRCC even has international impact, serving over 20 countries across the world (see right). Data from over 200 automated weather stations (collecting hourly and daily measurements), all National Weather Service daily reporting stations, and additional mesonets and community networks are used to support HPRCC products and data access. HPRCC's Classic Online System provides access to most of the data resources of the HPRCC and averages nearly 50,000 accesses per month. In addition to weather observations, the System includes crop water use and crop performance for major crops, pest development, livestock conditions, soil water, and heat indices. The System offers an autopilot with independent delivery, which frees the user from logging on every day while delivering the desired information by email or ftp. HPRCC also provides access to the Applied Climate Information System (ACIS) Web Services, which allows external clients to build their own products and support their own activities. ACIS Web Services allows access to all data in ACIS and to do basic analysis and summarizations of the data. See Page 5 for more information on ACIS.

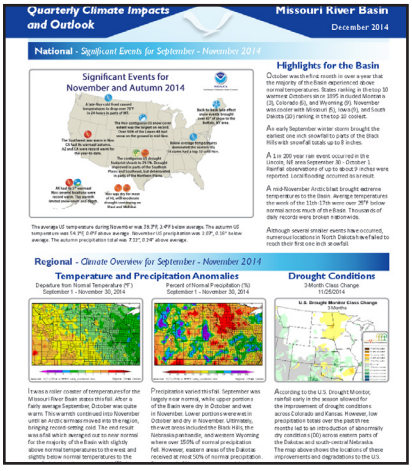
DID YOU KNOW?

All raw AWDN data are available for free via the Classic Online system! Both daily and hourly data are available for the following variables: air temperature, precipitation, relative humidity, wind speed and direction, solar radiation, and soil temperature. Soil moisture data are only available by special request. You can request a Classic Online account by using our contact form: www.hprcc.unl.edu/contact.php



Our Stakeholders

The pie chart to the left breaks down the proportions of stakeholder groups we serve. Over one-quarter of the people we serve are affiliated with a university, which includes extension personnel and researchers. The second-largest group of stakeholders we serve constitutes federal, state, and local government agencies and personnel. In particular, we serve the National Weather Service offices in our region. The third-largest group we serve is our stakeholders in agriculture, which primarily includes producers.


Quarterly Climate Impacts and Outlook
Missouri River Basin
December 2014
National - Significant Events for September - November 2014
Significant Events for November and Autumn 2014
Highlights for the Basin
Regional - Climate Overview for September - November 2014
Temperature and Precipitation Anomalies
Drought Conditions

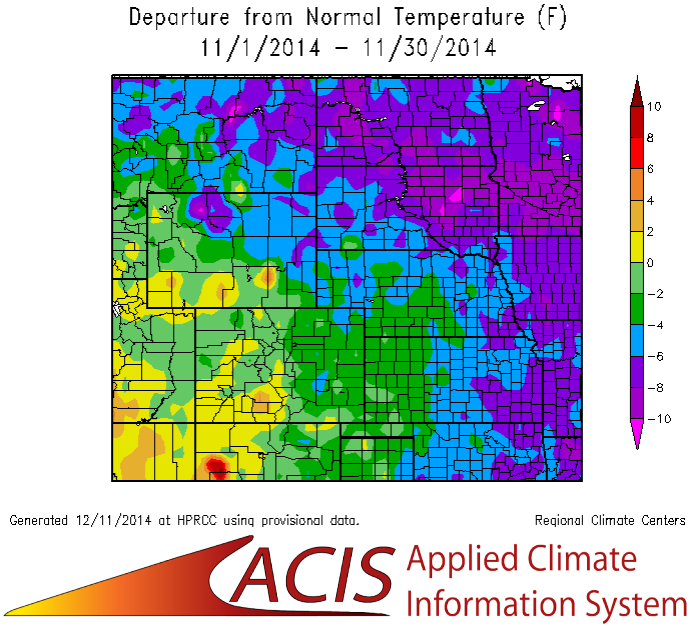
The HPRCC produces a couple of publications on climate conditions and impacts that are region-specific. The first is a monthly climate summary that focuses on the High Plains region. Regional climatologists at the Regional Climate Centers produce a monthly climate summary for their respective regions. The summaries provide a recap of the previous month's climate conditions and subsequent impacts, as well as climate data for each state in the region. They are written for a general audience and are published on our website. You can also find an archive of High Plains monthly climate summaries on our website.

The second publication is a quarterly climate impacts and outlook that is published for the Missouri River Basin region (see left). This "2-pager" condenses climate data and information from the previous season and provides an outlook for the upcoming season. This publication is also written for a general audience and is published for other regions in the U.S. as well. The archive of these 2-pagers is housed on NIDIS's website at http://www.drought.gov/drought/content/resources/reports.

If you would like to get live updates on weather and climate in the region, sign up for monthly webinars on climate and drought conditions in the Great Plains and Midwest here: https://www1.gotomeeting.com/register/897036880. This is a NIDIS activity that has been implemented in the Missouri Basin region and is a collaborative effort among several institutions, including the HPRCC. The HPRCC houses the archive of webinars on its website: http://www.hprcc.unl.edu/webinars.php.

HPRCC Product Highlight: ACIS Climate Summary Maps

The HPRCC has developed multiple products to assist climate data users and decision-makers. Perhaps our most popular product is our current climate summary maps. The climate summary maps are produced daily using data from the Applied Climate Information System (ACIS). Data managed by ACIS come from several networks, such as the National Weather Service Cooperative Observer Network (COOP) and the HPRCC's Automated Weather Data Network (AWDN) (see below for more information on ACIS). A user can create a number of custom maps by choosing from different products, time periods/date ranges, and regions. Within the High Plains region, a user can drill down by state. For example, the map to the left was created by choosing the departure from normal temperature product for the month of November 2014 across the High Plains region. This map highlights the anomalously cold temperatures experienced by much of the region during November. Our climate summary maps are used by a number of different clients. For example, authors of the weekly U.S. Drought Monitor use them to help assess conditions that may warrant improvements or degradations in drought conditions. Create your own custom maps from our website by following this link: http://www.hprcc.unl.edu/maps/current/.



In spring 2014, the NOAA Regional Climate Centers (RCCs) released a new website for ACIS: www.rcc-acis.org. ACIS is a system architecture developed, maintained, and operated by the RCCs. It manages the complex flow of climate information from climate data collectors to end users of climate data information. ACIS is not designed to be a historical data archive. It is a system that delivers operational information derived from historical archives and near real-time climate data. ACIS includes an integrated metadata system for data and observation discovery; national, regional, and local datasets; is used as a data source for RCC websites; and delivers climate data products to supply information to partners and other end users. In addition to descriptions of ACIS and sources of data it contains, the website gives examples of how ACIS is being used by the RCCs and external groups. Projects and websites developed using ACIS are included, as well as documentation and tutorials on how ACIS can be accessed by external clients using Web Services.

Outreach Events and Research Highlights

Omaha Nation Summer Youth Camp

In August, Natalie and Crystal took the HPRCC's portable weather station up to the Omaha reservation to display at a summer youth camp, sponsored by the Nebraska Indian Community College in Macy, Nebraska. The youth received hands-on experience with the weather instruments and learned about how they work.

Lincoln Public Schools Science Focus Program

Natalie and Crystal also took the weather station to the Lincoln Children's Zoo to demonstrate to a high school Environmental Science class. Natalie and Crystal also spent time talking to students about careers in climatology.

NaturePalooza

Natalie, Crystal, and HPRCC intern Judson Buescher also demonstrated the weather station at NaturePalooza, an annual event for children that is hosted by the School of Natural Resources at the University of Nebraska-Lincoln.

Nebraska Climate Change Report

HPRCC staff contributed to "Understanding and Assessing Climate Change: Implications for Nebraska," a report that was released in September to support decision-making and natural resources management in a changing climate. Read more about the report and download it here: http://go.unl.edu/climatechange.

Natalie shows a weather station to youth attending the Omaha Nation summer youth camp. (Photo courtesy Crystal Stiles)

DID YOU KNOW?

The HPRCC is part of a large multidisciplinary research project that is funded by the U.S. Department of Agriculture to develop new climate-related decision-support tools for crop production in the Midwest U.S.! See the Useful to Usable website for all the details: http://AgClimate4U.org

Recent and Upcoming Travel and Activities

John Campanius Holm Award Ceremony – Topeka, KS (Oct. 28)
This past year, 11 Cooperative Observers from the National Weather Service (NWS) Central Region were presented with prestigious awards. One received the Thomas Jefferson Award and ten received the John Campanius Holm Award for their outstanding service. Natalie attended the John Campanius Holm Award Ceremony for Maurice Heiman, who has been taking measurements for the NWS Topeka office since 1981. NWS Central Region Director Chris Strager presented the award to Maurice for his dedicated service over the past 33 years.


Martha and Natalie, attending the Heartland Climate Adaptation Meeting, posing with one of Iowa City's "sweater trees." (Photo courtesy Natalie Umphlett)

Community Capitals Framework Institute – Lincoln, NE (Nov. 5-7)
Crystal attended the Community Capitals Framework Institute that was held at UNL's campus. The institute had sessions discussing how the community capitals framework can be used for drought, natural resources planning, and hazard resiliency. The audience was broad, as social scientists from several disciplines were represented. The institute was hosted this year by the National Drought Mitigation Center.

Heartland Climate Adaptation Meeting – Iowa City, IA (Nov. 6-7)
Martha and Natalie participated in a regional workshop in November that brought together municipal sustainability staff from cities across a five-state region with state and regional climatologists. The group discussed information needs for municipal uses on the topic of future climate change and adaptation.


Martha in attendance of the climate resilient agriculture workshop. (Photo courtesy Martha Shulski)

The Future of Big Data Conference – Lincoln, NE (Nov. 6-7)
HPRCC staff member Bill Sorensen attended a conference on "The Future of Big Data," hosted by UNL at the Nebraska Innovation Campus Conference Center. A wide variety of disciplines showcased how they analyze and utilize Big Data. Several HPRCC clients presented on management of big climate datasets and their use in precision agriculture and decision-making.

Climate Resilient Agriculture Workshop – Holdrege, NE (Nov. 19)
University of Nebraska Extension hosted a one-day workshop in south-central Nebraska that brought together local producers and University researchers to discuss the various climate resources that are available to the agricultural community. Martha provided an overview of HPRCC and AWDN to the crowd of 80 in attendance.

American Geophysical Union Fall Meeting – San Francisco, CA (Dec. 15-19)
In December, Natalie traveled to San Francisco, CA to present at the American Geophysical Union Fall Meeting. Natalie presented on HPRCC's Climate Impact Project and the outreach program called Climate Masters of Nebraska.

American Meteorological Society Annual Meeting – Phoenix, AZ (Jan. 4-8)
Martha delivered a presentation in January at the AMS meeting on the topic of developing partnerships to enhance climate services and local capacity of the Wind River tribal nations.

Climate Masters of Nebraska - Lincoln, NE (Jan. 15-Mar. 19)
The Climate Masters of Nebraska course began Thursday, January 15 and will run for 10 weeks. Climate Masters is an adult education program in which participants learn about climate change, how it is impacting Nebraska, and how to reduce their carbon footprints. This program is a collaboration between the High Plains Regional Climate Center, the National Drought Mitigation Center, and UNL Extension. Current funding is provided by the Nebraska Department of Environmental Quality.

NOAA Annual Climate Prediction Applications Science Workshop – Las Cruces, NM (Mar. 24-26)
Crystal will be attending NOAA's 13th Annual Climate Prediction Applications Science Workshop in March 2015, which will be held in Las Cruces, NM. The theme of the meeting is "Climate and Drought Information for Food Resilience, Agriculture, and Water Resources." Crystal will be presenting on the HPRCC's role in climate monitoring and drought planning for the Wind River Indian Reservation.