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

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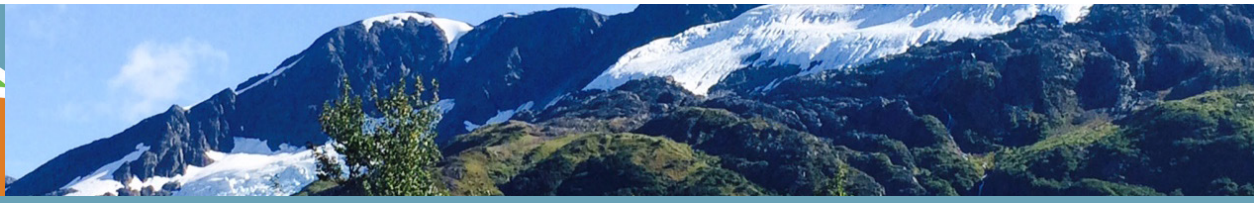

HPRCC

October 2015

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

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A glacier near Anchorage, Alaska
(photo courtesy Martha Shulski)

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Message From The Director

By Dr. Martha Shulski

This newsletter represents number four in our series and rounds out the first year of newsletters for the HPRCC. As usual, it was another busy and productive three months at the Center – a new website, a climate services training, and I was invited to attend a climate workshop in which President Obama gave the closing keynote address.

After months of hard work, the HPRCC rolled out a new website this summer and incorporates a fresh take on our standard products as well as newly constructed products. Users can find a significantly enhanced station search tool, climate averages at the county level, recent climate trends for the Corn Belt region, updated wind rose plots, and much more. Visit page 2 to find out about a few of our new products and as always, stop by our website for the latest news and updates.

Through funding from the NOAA Central Region Collaboration Team, the HPRCC developed and hosted a training session on regional climate services in which Climate Focal Points from the National Weather Service attended. This represented a lively 2.5 days of discussion on climate service activities, monitoring, climate data tools, and stakeholder engagement. We hope this is the first in a series of workshops and results in enhanced collaboration among the individuals and organizations involved.

Finally, I had the good fortune to be extended an invitation to the GLACIER conference in Anchorage, Alaska that took place in August. I gladly accepted and was one of a few hundred U.S. and international participants in which Arctic climate change took center stage. Dramatic changes, and consequentially impacts, are being felt by those living in the high north. Solutions to adaptation measures and increased resiliency bring to light the need for interaction across disciplines and nations. By no coincidence, the University of Nebraska – Lincoln is hosting a workshop in November on the implications of a changing Arctic on the Central U.S. to discuss these very issues. Thank you for stopping at *The Prairie Post*!

Meet Our Weather Network Manager, Glen Roebke

Glen joined the HPRCC as the Automated Weather Data Network (AWDN) manager in 2001. He is responsible for electronic support on all HPRCC projects, including remote sites, communications linkages, and local operations. He is also responsible for maintenance and calibration of various components in the climate network and data collection system. Glen works out in the field in Nebraska and Wyoming and really enjoys the traveling part of his job – the change in landscapes, the interaction with different types of people, and the up close and personal view of a wide range of wildlife across the prairie. His rural upbringing helps him understand the needs of many of the people he comes in contact with, such as cowboys and farmers. Glen has been married for 31 years and has four daughters and two sons-in-law, and in the past year he became a grandpa! Glen and his wife enjoy traveling to Colorado whenever they get a chance to visit their grandson.

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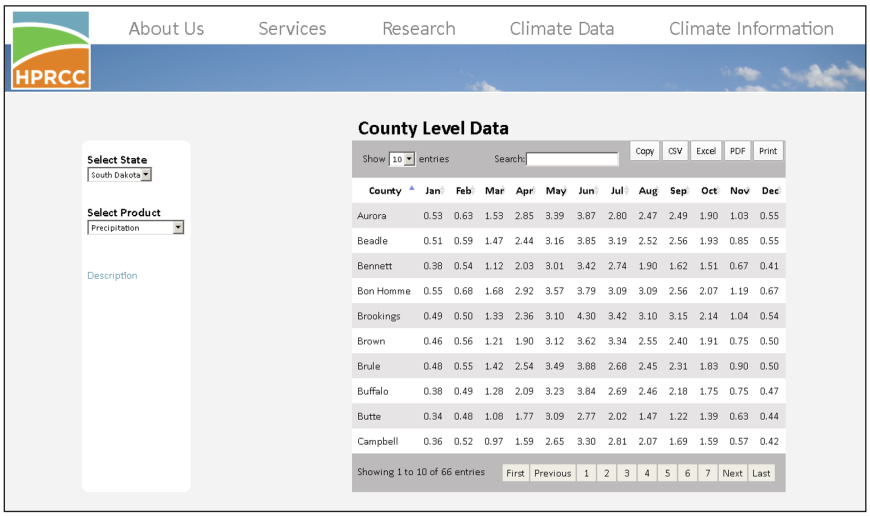
HPRCC Rolls Out New Design For Website

At the end of August, the HPRCC unveiled its new website. Still at hprcc.unl.edu, you will find the site has been streamlined to make it easier to find the data, maps, and information you need. While most of our old products are there, like the Applied Climate Information System (ACIS) maps and the climate summary archive, we also have many new features, such as a tool for finding county-level averages and a new and improved station search tool (both described below). Our new site is also mobile-friendly, so you can stay up-to-date while on the go. We hope that you enjoy the site, can find everything that you are looking for, and decide to try out some of the new features.

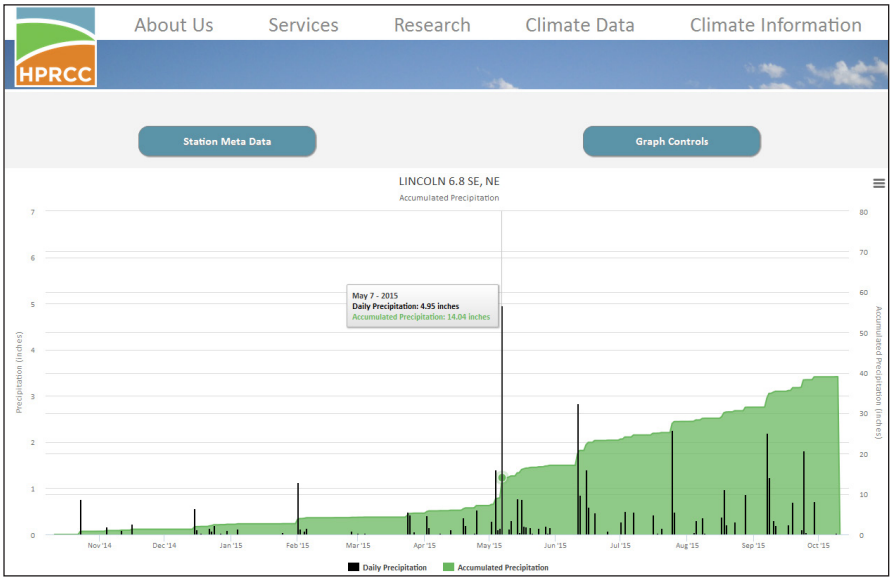


County Level Data

The HPRCC has generated a new dataset that provides 30 year monthly averages for each county in the region: http://www.hprcc.unl.edu/datasets.php?set=CountyData. These values are interpolated from 5 km grids of daily temperature and precipitation and are a spatial representation of the entire county. Spatial averages and the grids themselves are generated using a Natural Neighbors interpolation from all temperature and precipitation data in ACIS. The grids can also be accessed directly by the public using ACIS Web Services: http://www.rcc-acis.org/docs_webservices.html. Climate variables available for counties on a monthly basis are precipitation, maximum temperature, minimum temperature, and average temperature. The example above shows monthly total precipitation by county in South Dakota. This dataset can be compared with other county datasets, such as those often provided for agricultural purposes. County values also give a good estimate for the entire county and are helpful when a long-term station is not available for a specific location. In the future we will add monthly values during the year for climate monitoring and decision support purposes.

Improved Station Search Tool

The new website has a redesigned station search tool that includes options for graphing temperature and precipitation: http://www.hprcc.unl.edu/stationtool.php. Like the old station search tool, you can still search for stations within a certain radius, but now you can search for stations within a certain network, like COOP or CoCoRaHS, or that record a certain variable, like snowfall. Sometimes, you may only want temperature data and not all stations collect that variable. This filter will allow you to refine your search and saves you from searching through countless stations that do not have the data you need. The graphing portion of the tool allows you to quickly make graphs showing you an historical perspective of the temperatures over the past year, the accumulated precipitation (with deficits and surpluses noted), and the monthly total precipitation. Each graph is interactive and you can hover over individual days to get more information. There is also an option to zoom in and out of each image. If you have a favorite station, like your very own CoCoRaHS station, you can link directly to these graphs and you do not have to perform a new search each time. The image above shows the accumulated precipitation over the past year at our colleague Bill Sorensen's CoCoRaHS station. Notice how you can hover over a day to get the daily precipitation and the accumulated amount up to that point.



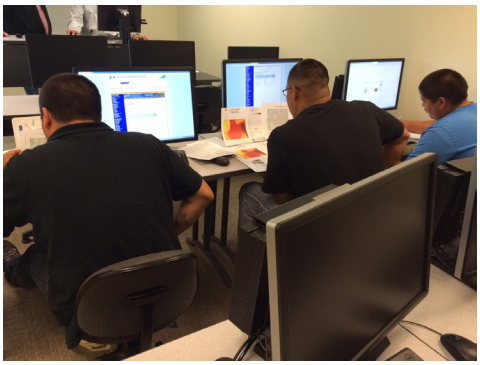
HPRCC Leads Training Workshops For Tribal Water Technicians, NWS Personnel

Wind River Region Climate Summary Development Workshop

Three water technicians from the Tribal Water Engineer's Office on the Wind River Indian Reservation in Wyoming attended a training in Lincoln July 14-16 to learn about how to put together a climate and drought summary for their region. This training was led by the HPRCC and the National Drought Mitigation Center (NDMC), and it was funded by the National Integrated Drought Information System (NIDIS). Al C'Bearing, Kenneth Ferris, and Rollin Ware attended the training, which included a mixture of sessions on basic climate and drought science, demonstrations on how to obtain climate and water data, and opportunities for the technicians to practice interpreting data and writing narratives on climate and water conditions in their region.

Wind River workshop participants and leaders. (Photo courtesy Kelly Smith)

For the past year, the HPRCC has worked with the Wind River tribes and several other project team members to develop a quarterly climate and drought summary for the Wind River Indian Reservation and surrounding area that is intended for irrigators and water managers who make important decisions regarding natural resource management. The purpose of this training was to begin the process of transferring the development of the summary to the tribes. The incorporation of the tribes' local and traditional knowledge into the summary is a valuable component that only the tribes can provide. This process has already begun with the technicians providing valuable water supply impact information for the September 2015 edition of the Wind River Region climate summary. The climate and drought summary is one component of a large interdisciplinary project that is assessing drought vulnerability on the reservation, funding for which is being provided by the North Central Climate Science Center at Colorado State University. For more information on this vulnerability project, please visit the following website: http://revampclimate.colostate.edu/revamp/project/wind-river-drought-preparedness.



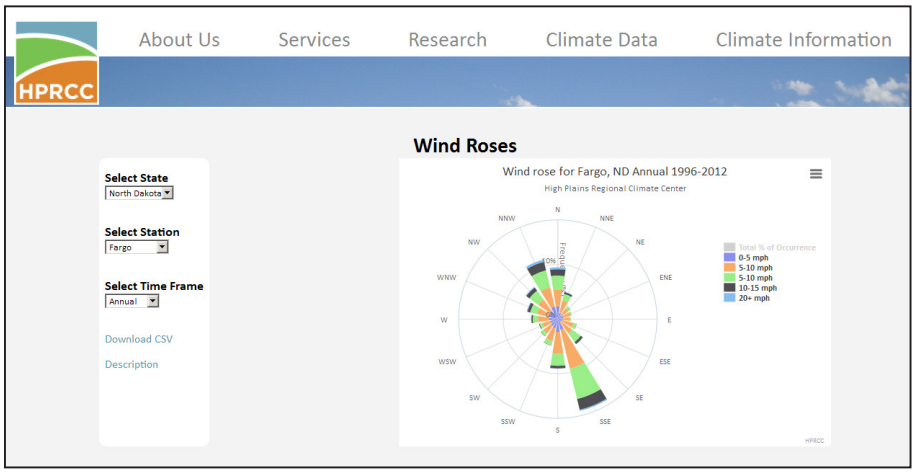
Kenneth, Al, and Rollin practice writing a summary of drought conditions. (Photo courtesy Crystal Stiles)

National Weather Service (NWS) Regional Climate Services Workshop

The NWS Regional Climate Services workshop took place in Lincoln September 22-24. The workshop included NWS personnel who are active in their climate programs, staff from both the HPRCC and NDMC, and representatives from the National Oceanic and Atmospheric Administration (NOAA) and the Nebraska State Climate Office. Attendees were from Colorado, Iowa, Missouri, Nebraska, South Dakota, and Wisconsin. This workshop was organized by the HPRCC and made possible by a grant from the NOAA Central Region Collaboration Team. The primary objectives of the workshop were to 1) establish and build a collaboration among the group through interaction at the workshop, 2) strengthen the relationship between Regional Climate Centers and NWS Weather Forecast Offices, and 3) educate participants on available climate products and tools and encourage participants to reach out to the HPRCC and the NDMC when they have questions. The workshop was a mix of presentations, roundtable discussions, hands-on training, and a field trip. HPRCC and NDMC staff highlighted some of their tools and services, and HPRCC conducted a hands-on training with the Applied Climate Information System Web Services (ACIS-WS), which allows users to create custom climate data requests. NWS participants shared their experiences working in climate services through roundtable discussions, discussing climate decision support services in particular. Participants visited an Automated Weather Data Network (AWDN) station on campus and enjoyed ice cream at the Dairy Store. In the end, everyone walked away with deeper connections to one another and many ideas for further collaboration between the NWS, HPRCC, and NDMC. The HPRCC would like to continue building relationships with its climate partners in the region, so staff have applied for funding to expand next year's workshop to include participants from other offices in states such as North Dakota, Wyoming, and Montana.

NWS workshop participants visit an AWDN station. (Photo courtesy Martha Shulski)

Automated Weather Data Network Product Highlight: Wind Roses



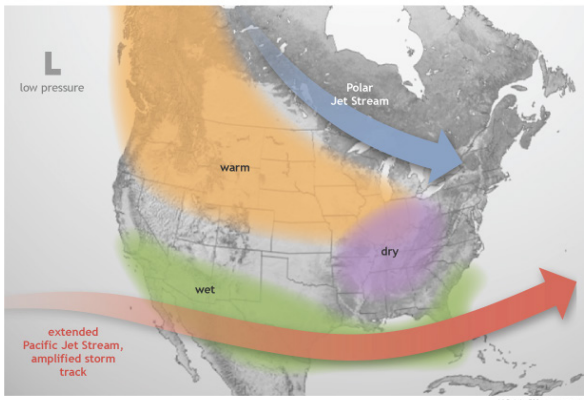
The new website not only brings a new look and feel to our online presence, but it also brings improved products. Take the AWDN wind roses for example. What used to be a static graphic is now interactive. Instead of looking at a chart to determine the percent of total occurrence for each wind direction, you can now hover over the image to get that information. If you would like to use the static image for a presentation or article, you can download the image by clicking on the three bars in the upper right hand corner of the image. There, you can print or download the image in several different formats. If you would like the data behind the image, you can download that in CSV format as well. Wind roses are available for many of the AWDN sites across the region for the time period of 1996-2012 on monthly and annual time frames. If you are unfamiliar with a wind rose, it is a plot that shows the distribution of wind speed and direction at a given location. The length of the spoke relates to the amount of time the wind blows from that particular direction, i.e. the longer the spoke, the more time that the wind blows from that direction.

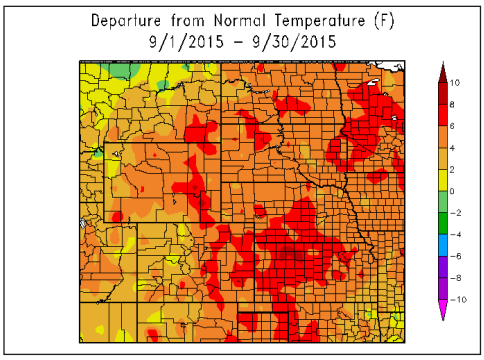
El Niño Information And Summary Of Recent Climate Conditions Across The Region

How could El Niño impact the Missouri River Basin region this winter?

As the current El Niño strengthens and indicators point toward the possibility that the El Niño could become the strongest on record, many people are wondering just how it will impact our region. In order to help answer that question, the HPRCC led the development of a 2-page document containing such information for NOAA to inform decision makers and the general public about how the current El Niño may influence climate conditions across the Missouri Basin region this winter. In general, the typical El Niño winter pattern brings above normal temperatures to much of the Missouri Basin region (see image at right). As of early October, the Climate Prediction Center winter season outlooks indicated above normal temperatures for most of the basin. Below normal precipitation is predicted in the Upper Basin, while above normal precipitation can be expected across much of the southern part of the basin. Elsewhere in the region, there are equal chances for above, near, or below normal precipitation. A direct link to the summary can be found here: http://www.drought.gov/media/pgfiles/ENSO-MOBasin-2015-Final.pdf.

Wintertime El Niño pattern



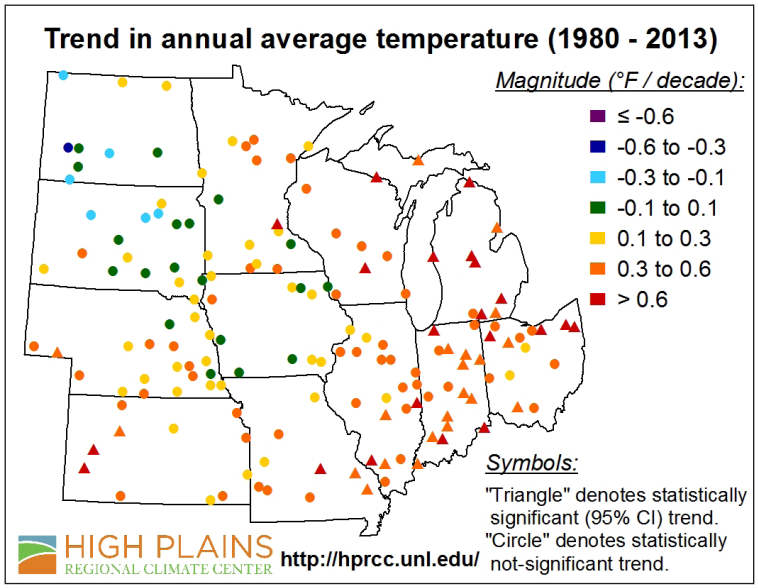


Smoky skies during summer, warm start to fall

One persistent feature this summer was smoke from wildfires in Alaska, Canada, and the Pacific Northwest. This reduced daytime high temperatures and increased nighttime low temperatures, but also led to picturesque sunrises and sunsets. At times, the smoke was so thick that air quality was impacted for sensitive groups. Overall, average temperatures were within a few degrees of normal this summer. Meanwhile, precipitation varied across the region, which is expected for this time of the year. Rains were lacking in upper portions of the Missouri River Basin, while central and lower parts of the basin generally received above-normal precipitation. Isolated locations received heavy precipitation and urban and rural flooding was an issue. Due to the wet spring and summer, many locations have already surpassed their average annual precipitation totals, including Pueblo, CO, Lincoln, NE, and Rapid City, SD. By the end of September, this year's precipitation already ranked as the 4th wettest year on record for Rapid City. Fall started off quite warm, with all states in the region ranking in the top 6 warmest Septembers on record. Outlooks indicate that above-normal temperatures are favored for most of the region through the end of winter. If you want more information like this for the High Plains region, be sure to check out the full reports here: http://www.hprcc.unl.edu/climatesummaries.php. You can also find similar information in the 2-page Missouri River Basin Quarterly Climate Impacts and Outlook that we help produce. See the latest report here: http://www.drought.gov/drought/content/resources/reports.

Research Highlight: Corn Belt Climate Trends Tool

Martha's PhD student, Juliana Dai, is putting the finishing touches on her dissertation and one product she developed for the HPRCC stemmed from one of her journal publications. The product details recent climate trends for the U.S. Corn Belt and the reason she chose this area to study is that it dovetails the Useful to Usable (U2U) project region. Juliana is a member of the U2U project team and is focusing her work on climate variability and trends in the U.S. Corn Belt and impact on grain yields. (For more information on the U2U project, you can visit the project website at: http://agclimate4U.org.)



With this new tool, users can find out on a monthly, seasonal, or annual basis how the temperature and precipitation has changed in the last three decades. The example to the right shows the trend in annual average temperature for the period 1980-2013 by individual station, generated using the Corn Belt climate trends tool. Many of the U2U tools cover the same time period so now one can view and download historical climate trends as well. The climate trends tool can be found at: http://www.hprcc.unl.edu/climatetrends.php.

Fall Outreach Events Increase Public Interaction With HPRCC

Martha and Al discuss potential impacts of El Niño on the Great Plains this winter and spring with President Bounds at Husker Harvest Days. (Photo courtesy Crystal Stiles)

Husker Harvest Days, Grand Island, NE

In September, Martha, Natalie, Crystal, and Eric participated in Husker Harvest Days, which is an annual farm show that features state-of-the-art information and technology available to agricultural producers. Thousands of people from around the region, the U.S., and even other countries attend this event. HPRCC staff and Nebraska State Climatologist Al Dutcher had a booth in the Nebraska Extension exhibit. The theme of the Nebraska Extension exhibit this year was "Successfully Weathering Extremes," so booths within the exhibit focused on topics such as adapting agricultural practices to accommodate a changing climate. Our booth focused on the current El Niño situation and how it might impact agriculture in the Great Plains this upcoming winter and spring. Special visitors to our booth included University of Nebraska President Hank Bounds and Nebraska Lieutenant Governor Mike Foley. For more information on Husker Harvest Days, please visit: http://huskerharvestdays.com/.

NaturePalooza, Lincoln, NE

NaturePalooza was held in late September on UNL's East Campus. NaturePalooza is an annual outreach event sponsored by UNL's School of Natural Resources that has exhibits with a nature theme. It includes opportunities for kids to participate in various activities, such as exploring a snake pit and holding giant insects, and outdoor activities such as backyard casting, making turkey calls, playing in the squirt gun range, and making fishing lures. Natalie, Crystal, and HPRCC intern Judson Buescher showcased the mobile weather station and talked to participants about the various instruments. Children had the opportunity to use the instruments and learn how they work. They especially enjoy the relative humidity sensor because they can hold it in their hand and watch the humidity increase on the graph right before their eyes.

Judson shows a family an anemometer on our weather station at NaturePalooza. (Photo courtesy Mekita Rivas)

Recent And Upcoming Travel And Activities

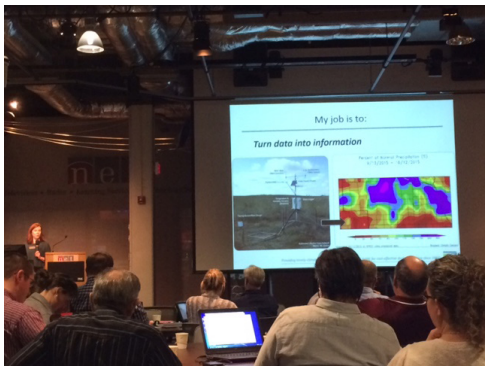
President Obama addresses the need for Arctic nations to act on climate at the GLACIER conference. (Photo courtesy Martha Shulski)

GLACIER Conference, Anchorage, AK (August 30-31)

Martha had the good fortune to be invited by the U.S. State Department to attend the Conference on Global Leadership in the Arctic: Cooperation, Innovation, Engagement and Resilience (GLACIER). Martha is no stranger to Alaska, having spent seven years living and working in the subarctic regional hub of Fairbanks, AK. The meeting purpose was to bring together key individuals working on Arctic issues to discuss action on climate change, raise visibility of impacts on Arctic communities and ecosystems, and share ideas for preparedness in response to a changing Arctic. We know that what happens in the Arctic does not necessarily stay in the Arctic and there are worldwide implications. Many high level officials were in attendance, including U.S. Secretary of State John Kerry, head of the White House Office of Science and Technology Policy John Holdren, Administrator for the National Oceanic and Atmospheric Administration Kathryn Sullivan, and President Obama, who gave the keynote closing address. The President spoke about the imminent need for action on climate change and calling on all Arctic nations to come to the table to address the issue. After the workshop, the President spent time visiting various locations around Alaska and was in fact the first U.S. president to travel above the Arctic Circle. More about the GLACIER conference can be found at: http://www.state.gov/e/oes/glacier/index.htm.

Resiliency of Nebraska Agriculture and Communities to a Changing Climate Workshop, Lincoln, NE (October 12-13)

Martha co-hosted and Crystal attended a workshop primarily for Nebraska Extension faculty on climate resiliency for Nebraska agriculture and communities. Attendees learned about the science of climate change and variability, as well as the implications for Nebraska. Extension personnel are particularly interested in learning how to effectively communicate such information to their clients. The next step is for workshop participants to identify best practices and educational curriculum relating to climate resiliency that can be utilized in the field.



Martha talks to extension workshop participants about agricultural climate tools. (Photo courtesy Crystal Stiles)

Upcoming: Implications of a Changing Arctic on Water Resources and Agriculture in the Central U.S. Workshop, Lincoln, NE (November)

Martha is one of the organizers of this workshop that focuses on how climate and environmental changes occurring in the Arctic could affect several sectors in the Great Plains and Midwest regions of the U.S. The workshop coincides with the U.S. assuming chairmanship of the Arctic Council earlier this year. A primary objective of the workshop is to identify regional adaptation and mitigation strategies for practitioners in various sectors affected by Arctic change.

Upcoming: Joslyn Institute for Sustainable Communities - Urban Thinkers Campus, Omaha, NE (November)

The Urban Thinkers Campus is a United Nations-Habitat initiative, which brings together partners to address challenges in the urban environment. Twenty-eight cities world-wide have been selected for the Urban Thinkers Campus and Omaha, NE has been chosen as one of only three campuses in North America. This campus will be the only one that will have a focus on small and medium sized cities. At this event, Natalie will be giving a short presentation on the Center's work with municipal climate adaptation planning.

Upcoming: Great Plains Tribal Water Alliance Annual Conference, Fort Pierre, SD (December)

Crystal is planning to attend this conference and present information on climate summaries for tribal regions, such as the one that is developed for the Wind River tribes in Wyoming, as several tribes in South Dakota have expressed interest in them. The alliance is comprised of the Rosebud Sioux Tribe, the Standing Rock Sioux Tribe, the Oglala Sioux Tribe, and the Flandreau Santee Sioux Tribe.

Upcoming: American Meteorological Society Annual Meeting, New Orleans, LA (January)

Natalie and Crystal will be attending and presenting at the next AMS annual meeting in New Orleans, LA. Crystal will be presenting on ways to inform natural resource management decisions among Native American communities. Natalie will be presenting on the 2012 Central Region Drought Assessment, as well as municipal climate adaptation planning in the Missouri River Basin. If you are planning on attending the AMS annual meeting, come find us!