**2008 Nebraska State Climate Office Activities**

During 2008, I handled 724 data requests for climate information by users from 31 states and the District of Columbia. Totals revenues generated were $3482.07. Of these requests, 252 were direct media inquiries for climatic data and/or explanations of climatic events and their impacts on diverse subjects including water supplies, agriculture, drought, flooding, and tornado outbreaks. During the May-July period, I handled the majority of data requests for the High Plains Regional Climate Center until the vacated Climate Service position was filled. The Nebraska Climate Office was hired by Adams Cattle Company, Broken Bow, to provide an analysis of the November 2006 central Nebraska blizzard that resulted in an 8 million dollar loss to their cattle herd. The result of this analysis allowed for an out of court settlement between litigating parties.

The Nebraska Climate Office gained official American Association of State Climatologists Recognized State Climate Office (ARSCO) status in June 2008. ARSCO status allows the Nebraska Climate Office to continue its relationship with the National Climatic Data Center and High Plains Regional Climate Center in terms of climate data acquisition and quality control. In order to maintain ARSCO status, the State Climate office provided the AASC with an annual report of climate office activities including a breakdown of climate services provided. The Nebraska State Climate Office was selected by the American Association of State Climatologists to provide a monthly update of climatic trends for Nebraska to the High Plains Regional Climate Center as part of their regional monitoring directive.

In addition, I attended the annual AASC meeting in Burlington, VT as a representative of the Nebraska State Climate Office and director of the High Plains Regional Climate Center. At the Burlington meetings, I was appointed to the membership committee which is responsible for establishing nominating procedures and guidelines for membership. The committee has already had two teleconference calls (September and October) to propose and develop changes in the AASC constitution that specifically address criteria for members, associate members, and honorary members.

I gave no less than 25 talks during 2009 on a diverse range of topics including the climate of Nebraska, irrigation issues, spring flooding, spring planting delays, fall wheat planting establishment, freeze risk, and harvest weather. Attendance counts indicated that at least 2440 people attended one or more of these talks. Most of the spring talks focused on the high risk of spring flooding and planting delays due to high soil moisture content across the eastern 2/3 of the state. Probability risk analysis was provided on past growing seasons that exhibited similar La Nina trends experienced during the 2007-08 winter. Summer talks focused on the impacts of planting delays with special emphasis on estimated time of pollination and the potential of freeze risk to late maturing crops. Fall talks focused on current soil moisture status, winter wheat establishment, reservoir recharge, harvest weather, and winter weather outlooks. It is difficult to estimate the financial impacts of my talks on participants, but in discussions immediately following my talks, many participants indicated a desire to adjust their crop insurance coverage, modify the quantity and types of hybrids they would plant, and reassess how they would market their grain.

The Nebraska State Climate office worked with the editor of CropWatch, a University of Nebraska agricultural production newsletter, to provide daily updates on site specific soil temperatures, growing degree day accumulations, and evapotranspiration (ET) estimates. These files are the most frequently downloaded information from the CropWatch web-site. During June 2008, 32,000 unique visitors accessed the CropWatch.web-site and if only 1000 of these visitors were able to reduce their center pivot application by one rotation at an estimated cost of $500, one half million dollars in cost savings would have been realized. In addition, I provided nine article submissions to CropWatch covering diverse topics including reservoir status and projections, spring flooding coverage, crop maturity projects, harvest weather forecasts, and seasonal outlooks.

In addition, a weekly U.S. weather forecast was provided to the World Wide Ag Network and Market Journal, as well as, a two-week weather outlook for Heartland Express’s Farm and Ranch Magazine. Heartland Express reaches over 50,000 households each printing cycle, while Market Journal reaches over 10,000 households (2006 Nielsen rating). If only five percent of the viewers were able to reduce their irrigation by one application due an accurate weather forecast, a savings of 1.5 million dollars would have been realized. Minimum estimated irrigation savings based on weather forecasts provided to media entities are in excess of two million dollars.

I provided weekly updates of insect development estimates for corn flea beetles and alfalfa weevil using degree day from March through mid-May to Entomology Department personnel. This information was relayed through news releases to crop consultants and extension educators in order to facilitate accurate scouting . Without this information, numerous field trips might be required to track insect numbers and development. With this data scouting becomes more efficient, since thermal models can pinpoint when insect development has reached the stage where economic damage could occur. The estimated financial savings is unknown, since treatments are dependent on over-wintering capacity, insect density, and use of genetically modified crops.

A monthly analysis of the 220 Nebraska cooperative weather observer forms was preformed to identify outlier observations. Typical errors included incorrect observations in wrong entry columns, shifting of observations to prior days, incorrect maximum and/or minimum temperatures in relation to “at observation” temperatures, invalid summation of precipitation variables, and failure to record “at observation” temperatures. After manual inspection of data, observations were manually entered into digital archives for analysis by summary programs. Ran summary programs on temperature and precipitation variables to identify outlier stations. Identified errors relayed to local National Weather Service offices so their personnel could contact and re-train weather observers.

The Nebraska State Climate Office provided the Nebraska Agricultural Statistics Service (NASS) daily updates through tabular and graphical files of precipitation trends for defined periods, soil temperature summaries, growing degree day accumulations, and temperature extremes. This information is critical for the department to track crop development, planting delays, and unusual weather events. Monthly summaries are used by NASS as inputs into their yield forecast models. In addition, I provided a year-in-review summary of temperatures and precipitation trends that was included in their annual wheat yield estimate publication.

I worked with the University of Nebraska’s Center for Information Technology to produce five radio programs in 2008 addressing the weather outlook for each of the seasons, as well the subject of spring planting. Each 4 minute, 15 second radio taping would summarize current climate conditions and focus on relevant issues facing Nebraska such as reservoir status, snow pack, flooding potential, crop maturity delays, freeze risk, and potential harvest delays. CIT releases these radio spots to all media outlets servicing the state of Nebraska for follow-up interviews if media entities so desire.

The development of the Nebraska Climate Office web-site has been delayed due in part to my additional climate services work for the High Plains Climate Center during the May-July period and serving on two search committees for their Service Climatologist and Regional Climatologist positions. To date, nearly 22,000 graphical and tabular files have been developed that analyze monthly climate trends, freeze probabilities, climate normals, and period of record summaries for temperature and precipitation variables. The framework for the new web-site has been developed and I am currently working to bring the Nebraska Climate Office web-site on-line by the end of this summer.

I served as the chair of the Water Availability and Outlook Committee (WAOC) of the governors Climate Assessment and Response Committee. Worked with other WAOC members to summarize climate assessments for the state and present those findings to CARC during the spring meeting. Outlook scenarios of climate trends were presented to the committee so that appropriate recommendations could be made to the governor in terms of drought aid, water policy, and mitigation strategies. The findings/recommendations were compiled in a report that can be accessed through the CARC web-site.

Participated in the university Crops Teleconference phone bridge. The phone bridge meets monthly from September through March, then weekly from April through August. Provided the conference call participants updates on soil moisture, crop status, climatic risks to crops during the upcoming forecast period, unusual climate trends, expected precipitation and/or severe temperature events, and additional crop concerns from other regions of the country when necessary.

The Nebraska State Climate office provided the U.S. Drought Monitor group recommendations for drought classification with the boundaries of Nebraska. This included conducting an analysis of precipitation trends, soil moisture, crop water use, streamflow summaries, and reservoir levels to effectively portray drought categories within Nebraska.

I was one of two state climatologists that participated in a national teleconference call on the risk of spring flooding and planting delays that was hosted by the Environmental Working Group in Washington, D.C. Over 50 major media outlets participated in this teleconference call and the emphasis was on acreage impacted by flooding, short/long term weather outlooks, and crop vulnerability to below normal growing season temperatures.

I was involved in 8 of the 12 School of Natural Resources (SNR) faculty meetings during 2008. Of the four missed meetings, three were due to speaking engagement conflicts and one conflicted with annual leave. Worked with SNR Appplied Climate Systems (ACS) faculty to identify a wish list of potential faculty positions for SNR and developed the job description for an Air Dispersion Modeler . Participated in the 5-year SNR review listening sessions, with particular emphasis on the working group for Climate Change and Climate Variability.

I worked with several ACS graduate students to review their research proposals and thesis submissions. Met with the Omaha LEGO team (home school science competition group) to identify emerging climate issues as part of their national science competition. Completed a one hour climate change oral survey by a Texas A&M graduate student as part of her doctorate research. Met with a Iowa State graduate student on potential options for graduate studies within the SNR ACS group. Finally, I assisted a Denver, Colorado high school student on her senior class project which examined hydrological issues within the Platte river basin.