

MAINTENANCE ON TRACK FOR MESONET

NEBRASKA STATE CLIMATE OFFICE

Twenty-five stations down. Forty-two stations and hundreds of miles left to go.

Glen Roebke, senior mesonet technician, is in the thick of the Nebraska Mesonet's maintenance schedule. So far, he's completed maintenance and scheduled updates on all stations within 80 to 90 miles of Lincoln. Each week, he will drive further and further until all stations are up-to-date.

In addition to performing regular maintenance — cutting back vegetation, replacing

instruments with freshly calibrated ones, testing power supplies — Roebke will replace all wind sensors with an updated model, the RM Young anemometer, a more robust instrument that will perform better under potential icing conditions. This update will bring the weather network in line with neighboring states, where identical or similar anemometers already have been installed.

This update means Roebke is spending more time at each station, which likely will lengthen the maintenance schedule by as

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TOP: The Arthur 8S station had its maintenance check completed in May. Photo by Glen Roebke.

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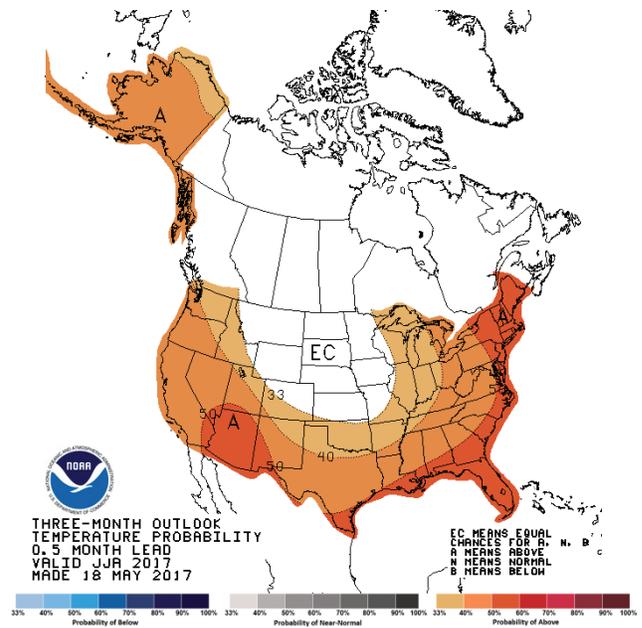
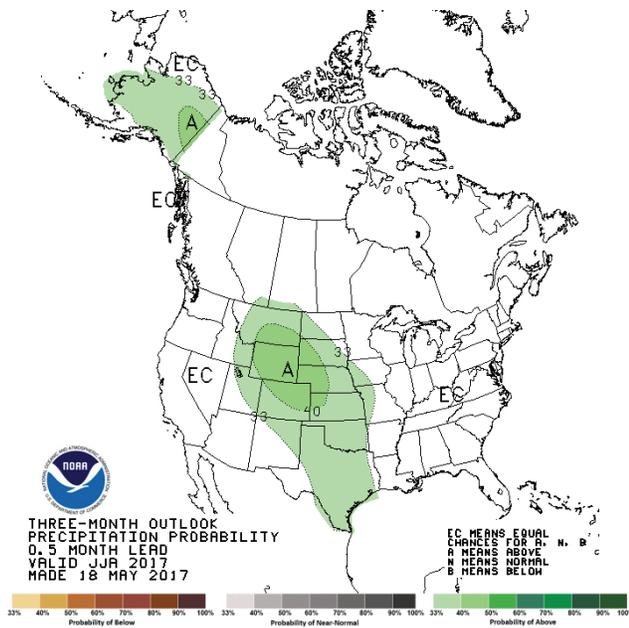
much as six weeks and into October this year. Helping him hit that goal is Mesonet Manager Stonie Cooper, who will perform maintenance on all stations in the panhandle.

Mesonet staff also will be installing

firmware updates on all IP modems, which act as the communications connection between stations and the climate office. All weather observations collected are sent in real time to the office and stored in a master database. These data are what the office uses to produce usable products, such as Growing Degree Day and Cattle

Comfort maps – for its stakeholders. Those real-time maps and more are available on our website, mesonet.unl.edu.

“So far, the stations have generally been in good condition,” Roebke said in early June. “They’ve been very reliable, with only minor issues that have been easy to take care of.”



FARMERS SHOULD EXPECT WET CYCLE

It has been a difficult spring season across most of the United States east of the Rockies. Unusually warm weather during March quickly gave way to cold air intrusions during April and May, making row crop planting a challenge at best. Heavy rains, several unusually late snow events, and severe temperature oscillations have producers wondering what conditions will develop during this upcoming summer.

The official outlook by the Climate Prediction Center indicates their target area for above-normal precipitation is centered on the western High Plains and Rocky Mountain states. In fact, CPC points toward a wet pattern for the central High Plains in each three-month period starting from June to August and running through the August to October time frame. Temperatures for our region are expected to

be near normal until a weak tendency for above-normal temperatures develops in the August to October period.

At this point in time, I can find little disagreement with CPC’s depiction for the western United States. Sea Surface Temperature departures from normal continue to depict an anomalously cold pool in the Gulf of Alaska that has persisted since late last summer. Upper air lows continue to shoot energy into the western U.S., and we have seen strong surface low formation the past two months in the southern High Plains. I would expect this trend to lift northward over the next 45 days, putting Nebraska and the Dakota’s in the cross-hairs of the active pattern experienced south of us the last two months.

Another cold pool recently has developed in the western Atlantic basin and

will bear watching for development into the eastern Atlantic. Currently the Atlantic is considered to be in its warm phase and when coupled with the cold phase of the Pacific, precipitation tendencies for Nebraska are weighted toward the wetter side of normal. If the Atlantic moves into a cold phase and the Pacific remains cold, precipitation tendencies move toward a drier pattern for the central High Plains.

At the current evolution pace of the Atlantic toward colder conditions, it will be the end of this summer or early this fall before the Pacific and Atlantic are both in a cold phase. Therefore, the warm pool in the eastern Equatorial Pacific likely will continue to supply an abundance of atmospheric moisture into the southwestern and south central U.S. This will likely be a major

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contributor to an aggressive Monsoon moisture season during July and August, with spill over into the western half of the High Plains region.

The remaining cold pocket in the central Equatorial Pacific has dissipated over the past 90 days, but there are a few small pockets of cold that appeared recently in the eastern part of this basin. It is too early to tell whether this area will grow and expand westward, as it may be simply a function of increased convective activity cooling ocean surfaces. If this pocket were to develop, it is likely that the development will be slow and shouldn't impede the Monsoon moisture feed during the summer months.

Based upon the current evolution of ocean anomalies in both the Atlantic and Pacific, I would expect that the current moisture pattern for the western Corn Belt will continue through the first half of the summer. Climatology would suggest that moisture pattern will shift northward from the southern Plains to the north Plains, increasing the likelihood that rainfall will alleviate short-term dryness across the western half of the Dakota's.

Areas of the central and eastern Corn Belt are a more difficult call. Much of the

persistent cold that has created havoc in regards to planting, emergence, and delays in growth of warm-season crops can be tied directly to upper air lows stalling over the northwestern Great Lakes after they eject of the western U.S. If this pattern persists, periodic heavy rainfall will continue for areas that have battled wet conditions all summer.

A second scenario would be that these upper air lows will weaken as we progress into the heart of the summer season. These upper air lows would lose their strength the further they move east of the High Plains. Being weaker, these lows would not be able to draw as much moisture northward from the Gulf of Mexico and heavy precipitation events would subsequently decline. This would not likely occur until we move past the month of June.

Tornadic activity across Nebraska has been very limited, with the major outbreaks remaining south and east of the region. At present, only three confirmed tornadoes have occurred through the end of May, according to the Storm Prediction Center. We have yet to consistently see dew point temperatures above 60 F, which has limited the amount of energy available for convective outbreaks across the state.

With the abundance of moisture that fell across the state from mid-April through

the end of May, humidity levels should increase as crops begin to actively grow and surface temperatures increase. There continues to be a regular sequence of upper air lows ejecting out of the western U.S. and coupled with cold air aloft, the necessary ingredients for active severe weather through June appear to be in place.

If the current pattern holds, Nebraska will likely see active severe weather during June, with occasional bouts of heavy rainfall. Western Nebraska will likely be in a beneficial location to tap into the Monsoon moisture during July and August. Further east, precipitation during the second half of the summer will depend on whether this Monsoon moisture can ignite convective complexes that can hold together and reach the eastern half of the state.

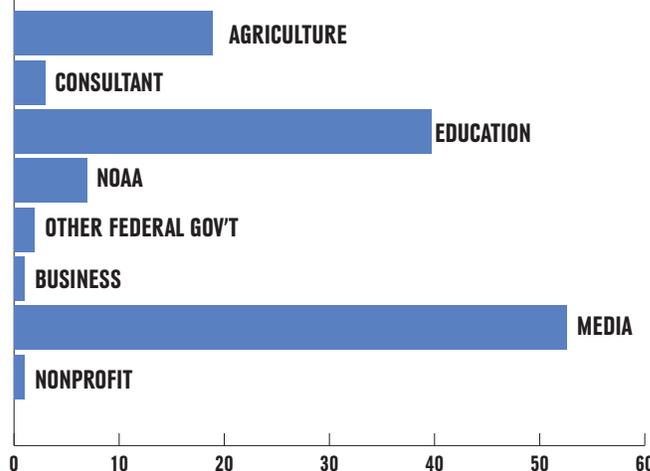
If we are to see drier conditions, the most likely scenario is for it to develop as we enter the second half of this summer, with the highest odds placed for the eastern half of the state. It appears to me that the real wild card in U.S. corn and soybean production will be whether cool and rainy conditions will continue for areas severely impacted the past 60 days or whether warmer and drier conditions develop. Both scenarios place a higher weather premium on the central and eastern corn belt than the western corn belt.

NSCO SERVICES BY THE NUMBERS

MARCH-MAY



CLIMATE SERVICE CONTACTS BY SECTOR



YEAR TO DATE





TARIK ABDEL-MONEM/NEBRASKA PUBLIC POLICY CENTER

Participants in the March climate and city planning workshop were from 13 cities in the Midwest.

HELPING CITIES PLAN FOR CLIMATE RISKS

City planning experts from 13 cities across the Midwest recently gathered to talk climate: Climate extremes, variabilities, thresholds, risks and how they should utilize the information.

The two-day workshop brought together experts from the Nebraska State Climate Office and the High Plains Regional Climate Center, both at the School of Natural Resources, and the Public Policy Center, all based at the University of Nebraska-Lincoln. The workshop is part of a two-year project, co-led by Martha Shulski, Nebraska State Climatologist, and Natalie Umphlett, interim director for the HPRCC, to incorporate climate information into long-term municipal planning strategies for cities in Iowa, Kansas, Missouri and Nebraska.

A common thread from participants was the difficulty in getting climate change projections included in future planning projects. To justify long-term projects, local officials and engineers need hard data on climate trends, which is what this project intends to deliver.

“The goal is to bring together the scientists and stakeholders so that useful climate information is presented in a meaningful way, and ultimately reduces risk of municipalities across the region to future weather and climate events,” Shulski said.

During the workshop, each of the 13 participating cities – which included Lincoln, Grand Island and McCook – 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.

For example, historical data shows Lincoln has warmed an average of 2 degrees during the past 44 years. It also shows a 5 percent increase in annual precipitation, though spring and autumn have been drier, and summer and winter have been much wetter. Projections show those trends will continue.

“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

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certain hazards.”

Projected changes have implications for public planning, utilities, city budgets and public health.

“The minimum we have to do is make sure people are aware what we have today may not be the same tomorrow,” said Glenn Johnson, of the Lower Platte South Natural Resources District. “We can’t change the protection level (of floodplain projects), but we can inform the public.”

Swaying cities to plan further than five to 10 years into the future will be the challenge, participants agreed. But, with the adaptation plans in hand, they felt they had a useful tool available to help

sway decisions on everything from waterways to building codes to snow removal.

Now, researchers at the two climate centers are analyzing information collected through the workshops and using it to develop tools for cities to use for planning purposes. The ultimate goal is to create a suite of online tools that provide up-to-date projections.

This is the second such project conducted by Umphlett and Shulski in the Midwest. The first provided city-specific climate projections for planning purposes to Lincoln; Iowa City, Iowa; Columbia, Missouri; Lawrence, Kansas; and Oklahoma City, Oklahoma. This project targeted smaller cities in the same four-state region and also is funded by the National Oceanic and Atmospheric Administration

Climate Program Office Sectoral Applications Research Program.

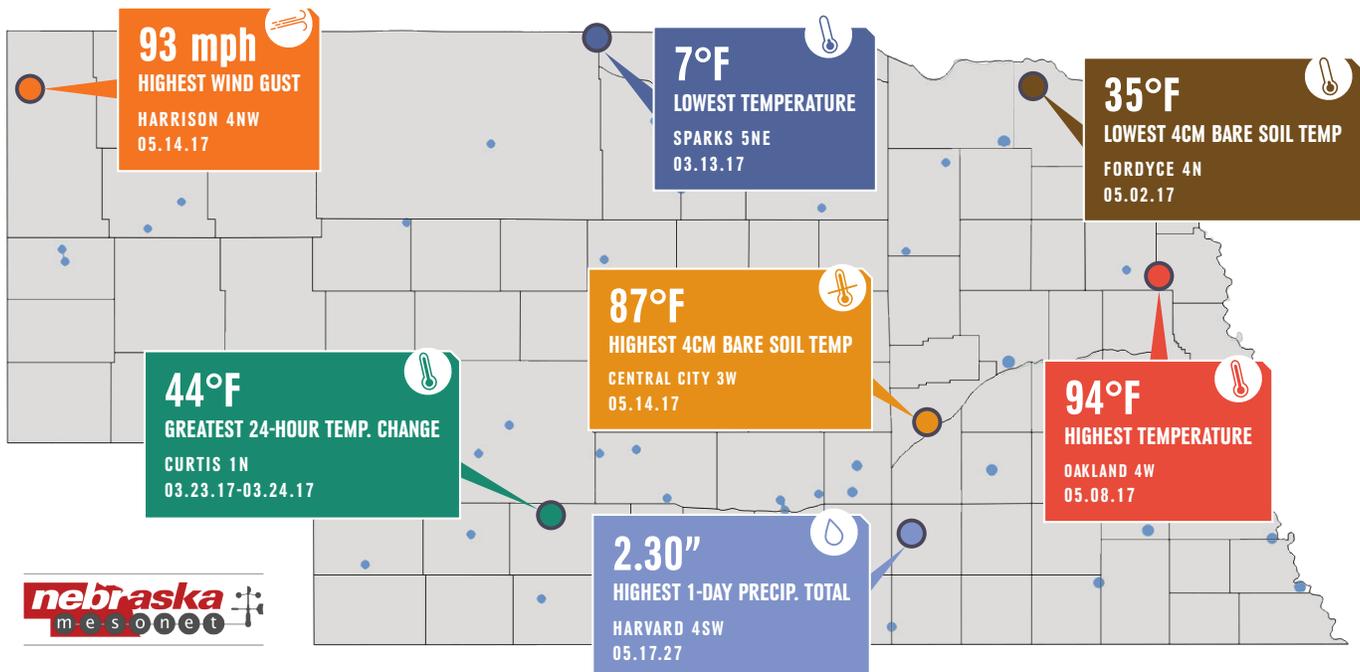
Aiding in the project are Tarik Abdel-Monem, research specialist with the University of Nebraska Public Policy Center; Zhenghong Tang, Community and Regional Planning Program associate professor; and Frank Uhlarik, Lincoln Public Works and Utilities compliance administrator.

It will conclude with an evaluation by the Bureau of Sociological Research at the University of Nebraska-Lincoln that will help the climate centers and policy institute shape templates that additional municipalities can use as a guide to planning for climate issues.

— Shawna Richter-Ryerson,
Natural Resources

NEBRASKA EXTREMES

MARCH TO MAY 2017



» GET REAL-TIME DATA

View real-time data collected by the Nebraska Mesonet on its website: mesonet.unl.edu