Nebraska Ag Climate Update

April 10, 2015

State Summary

Now that the official growing season is near, everyone's eyes have been on the skies and the soil. Soil temperatures took the usual springtime roller coaster in March with a quick warm-up from March 6-16 that stabilized the latter part of the month (*Figure 1*). With all of the ups and downs, soil temperatures across the state are near to above normal for most locations. Areas of central and western Nebraska have been consistently warmer due to warmer air temperatures and drier soils. For the latest soil temperatures, visit the CropWatch Weather page.

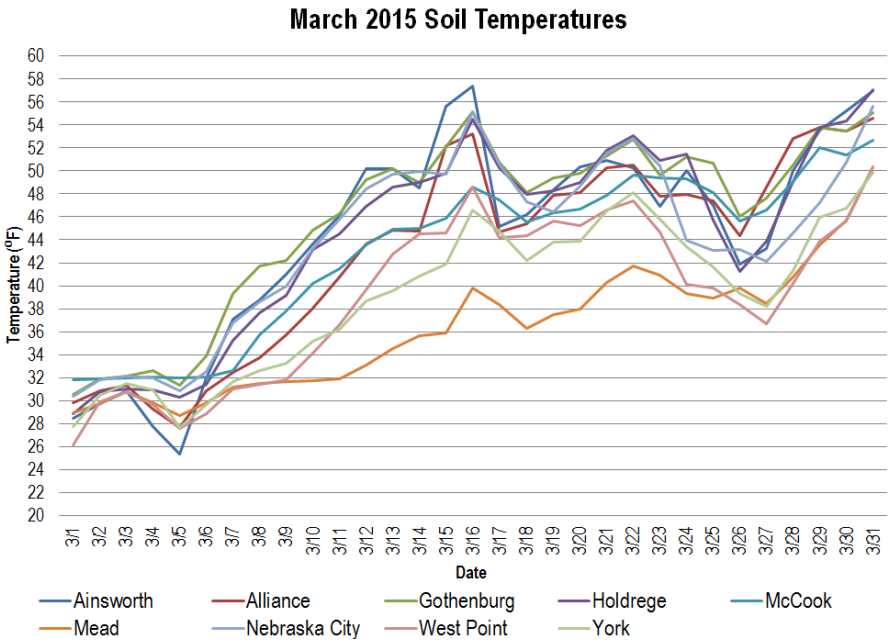

Figure 1. March 2015 daily soil temperatures for nine locations in Nebraska. Measurements are taken at a 4" depth under bare soil. Data from the High Plains Regional Climate Center—www.hprcc.unl.edu

The air temperature fluctuations last month mimicked the soil temperatures. Many locations in the state started the month with temperatures below zero (*Table 1*), but set record high temperatures on March 16. The warm temperatures were welcomed after a cool February, but the unseasonably warm temperatures further depleted a dry soil profile. Average temperatures for March were 2-6 ºF above normal for most of Nebraska (*Figure 2*).

In addition to the warm temperatures, precipitation was lacking in March (*Figure 2*). Central parts of the state did not receive any precipitation and were almost 2 inches below normal for the month, putting them almost 5 inches below normal since October 1. The 30-Day Standardized Precipitation Index (SPI) is often used to track the early on-set of drought conditions. The most current SPI map (*Figure 2*) shows areas of concern in central and northern Nebraska heading into the growing season. Soil profiles are being depleted and the last few Drought Monitor maps have expanded the severity of dry conditions in Nebraska. This scenario is not new to Nebraska in the spring. At this time last year the Drought Monitor showed southwest Nebraska in Extreme Drought and, in 2013, 75% of Nebraska was in the Exceptional Drought category. Eastern Nebraska has received some recent rainfall, but areas west of Grand Island have seen little to no precipitation for the last 60-90

Table 1. Temperature and precipitation overview for March 2015 for nine Nebraska locations

Station	Avg. Max Temp	Max Temp	Avg. Min Temp	Min Temp	Total Precip
AINSWORTH	61	81	30	2	0.02
ALLIANCE	58	82	25	-3	0.03
ASHLAND	57	88	26	1	0.83
CENTRAL CITY	52	73	20	3	T
HASTINGS	61	89	28	2	0.26
MC COOK	64	92	25	4	0.11
NEBRASKA CITY	56	87	27	1	1.38
NORFOLK	57	89	25	-6	0.36
OGALLALA	61	85	25	5	0.14

Data from NOAA Applied Climate Information System - http://drought.rcc-acis.org/

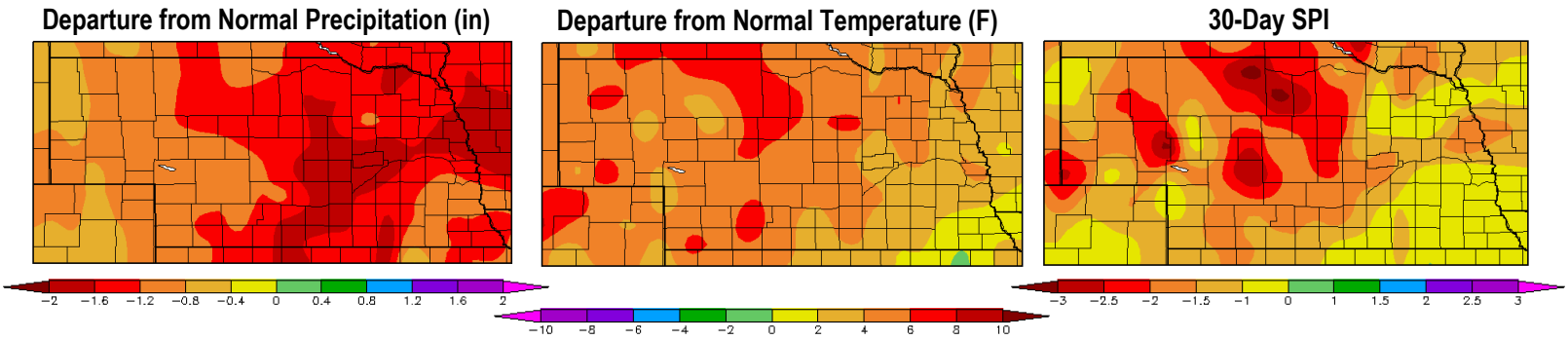

Figure 2. March 2015 Departure From Normal Precipitation (left), Departure from Normal Temperature (middle), and 30-Day Standardized Precipitation Index (SPI) (right) for Nebraska. The 30-Day SPI is a ratio (positive values are wet, negative values are dry) that is often used as an early indicator for drought conditions during the growing season. Maps are from the High Plains Regional Climate Center—hprcc.unl.edu

days.

Nebraska isn't the only area that is concerned about drought conditions. The April 7 Drought Monitor (*Figure 3*) shows areas in the U.S. experiencing drought conditions. The most severe areas are in California and Nevada, as well as northern Texas and western Oklahoma. An area of concern not depicted in the current drought monitor consists of the mountain regions of Montana, Wyoming, and northern Colorado. As of April 1, the snowpack in the Missouri River Basin areas in northern Colorado and central Wyoming are 70-90% of median snowpack, while some areas of the basin in western Wyoming and Montana are at 25-50% of median (*Figure 4*). This has an impact on Nebraska as the snowmelt runoff flows into the Platte River system. The current water level at Lake McConaughy is around 11 feet above this time a year ago and 0.2 feet lower than a month ago. Inflows into the lake are currently (as of April 7) at 820 cubic feet per second (cfs), which is 50 cfs higher than this time a year ago, but is nearly 500 cfs below the long-term average at this date.

Looking Ahead

Now that planting season is here, forecasts can play an integral part in the planning of your field operations. Even though we experienced warm and dry conditions in March, the start of April has been cloudy and cooler. This has stalled soil warming, but has brought some much needed precipitation to some parts of the state. The cool, damp weather will give way to sunshine and drier conditions this weekend and into next week.

A low will deepen over the Rockies and will allow warming in the Central Plains ahead of strong dip in the jet stream. Temperatures will warm this weekend and be in the 70s by the beginning of the week, but will change by the end of the week.

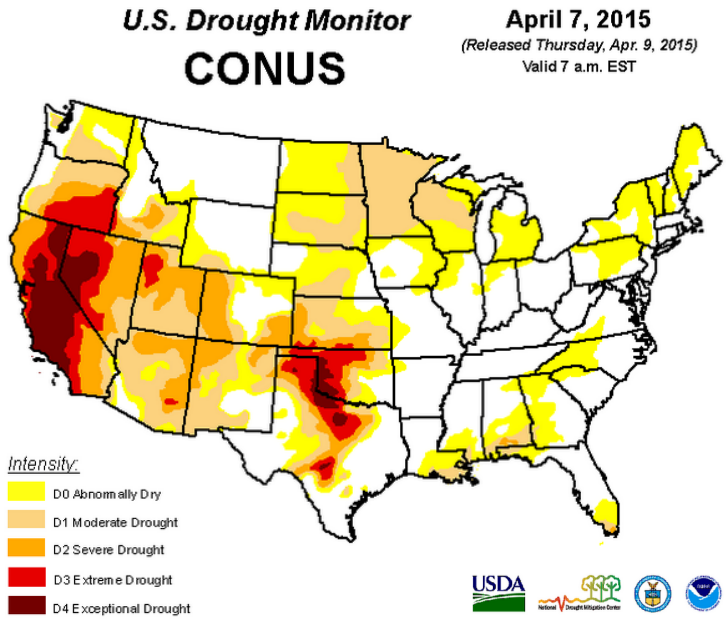

Figure 3. U.S. Drought Monitor on April 7, 2015 for the U.S. Map from the National Drought Mitigation Center—http://droughtmonitor.unl.edu/

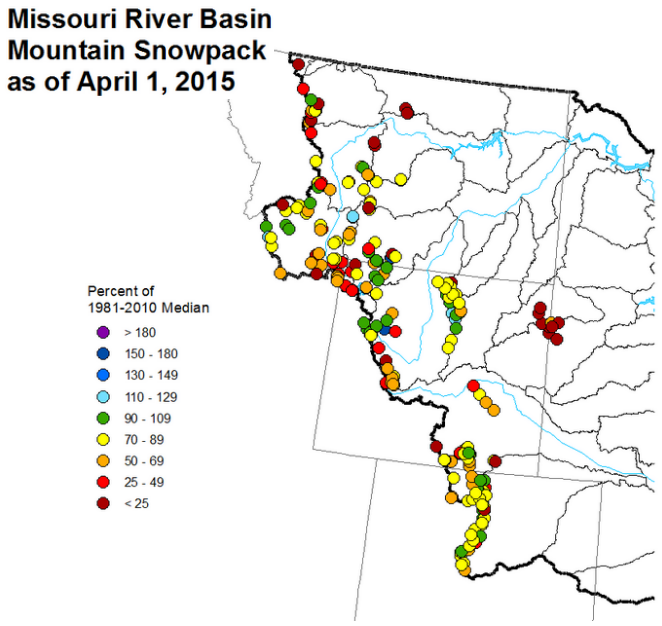

Figure 4. Missouri River Basin Mountain Snowpack as of April 1, 2015. Map from the USDA Natural Resources and Conservation Service National Water and Climate Center—www.wcc.nrcs.usda.gov

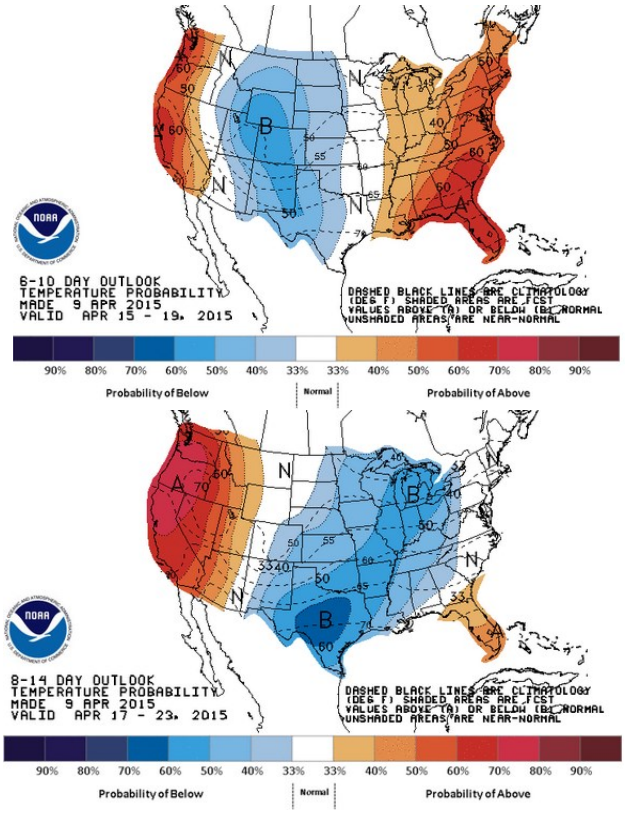

Figure 5. 6-10 Day (April 15-19) (top) and 8-14 Day (April 17-23) (bottom) Temperature Outlooks from the Climate Prediction Center released April 9. Source: Climate Prediction Center—www.cpc.ncep.noaa.gov

Temperatures will start to cool in the Panhandle and move south and east, as the trough moves through by the middle to the end of the week. Chances of precipitation will come back the middle of next week as the trough passes, but may be followed by cooler temperatures. This strong trough in the west will bring some variable weather over the next week to 10 days. This is quite a pattern shift compared to the eastern U.S. trough that dominated our weather for the past few months. Right now, it doesn't look like a deep polar plunge is expected over the next couple weeks; however, the Climate Prediction Center (CPC) is projecting enhanced chances for below normal temperatures April 15-23 (*Figure 5*).

The forecast through the rest of April and into May and June is again uncertain for Nebraska. The CPC's April Outlook (*Figure 6*) released 10 days ago has Nebraska in the area for high chances for above normal temperatures and below normal precipitation. Looking at the recent trends and the current forecast, it looks like we could easily end the month cooler than normal with below normal precipitation, but the deep trough moving in may provide decent amounts of precipitation. We will receive much more precipitation than in March, however, average April precipitation amounts range from 3-3.5 inches in eastern Nebraska to 1.5-2 inches in the Panhandle.

May and June are still up in the air. We are currently in an El Niño, but late spring trends in our area during an El Niño are weak. On average during May and June, we receive 9-10 inches of precipitation in southeast Nebraska and it decreases to around 5 inches in the Panhandle. The current soil moisture and trends would lead us to believe that we may be heading into another dry season, but the forecasts don't necessarily back that up.

In review, next week looks like a good week for many areas of Nebraska to begin planting. Temperatures will warm and some parts may even have some soil moisture to work with. The end of next week may also bring in some much needed moisture, but will cool daily temperatures. The timing of the trough may play havoc with our forecast, as some models have the system slowing down and sitting over the Central Plains.

Planting is all about finding that window of opportunity and it looks like the beginning of the week may provide that. As that trough progresses through our area next weekend, temperatures should warm up behind it and bring in another window of opportunity toward the third full week of April.

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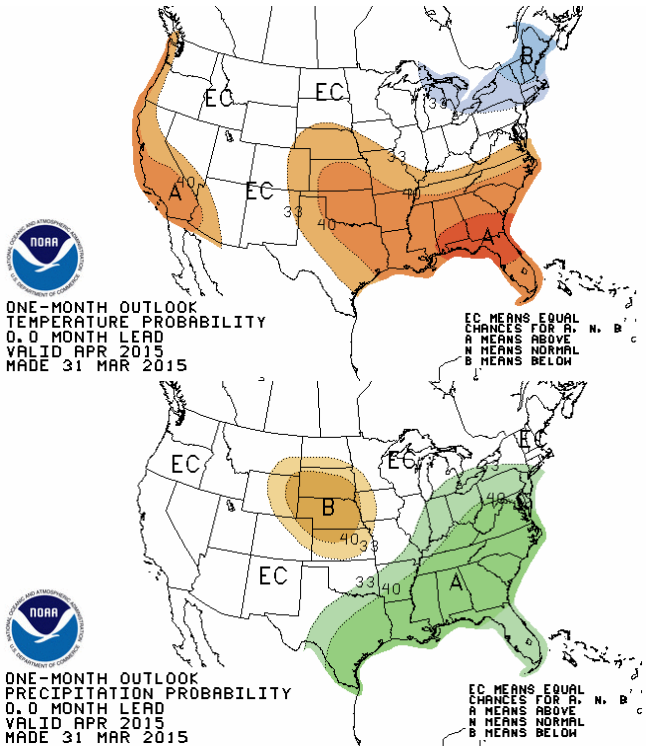

Figure 6. Three-month temperature (top) and precipitation (bottom) outlooks from the Climate Prediction Center released on March 31. Source: Climate Prediction Center—www.cpc.ncep.noaa.gov