

Nebraska Ag Climate Update

July 10, 2015

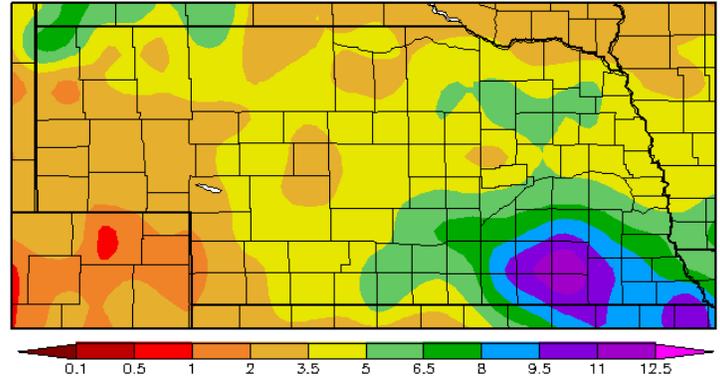
State Summary

The precipitation pattern during May continued into June, especially in southeast Nebraska; however, conditions did dry out in parts of the state. The precipitation gradient from west to east ranged from less than two inches in the Panhandle and southwest Nebraska to more than 11 inches in the southeast (Figure 1). Most of this precipitation came during the first two weeks of the month with a few isolated events to end the month. Even with all of the precipitation received in May and early June, the state began to dry out towards the middle of the month and some areas were beginning to see some drought stress. Northern and eastern portions of Nebraska have seen the bulk of the precipitation the last couple weeks.

The average temperatures in June ended up to be near normal for the state. Western Nebraska saw average temperatures 2-4°F above normal and parts of eastern Nebraska were slightly below normal (Figure 1). These temperatures reflect the rainfall pattern that dominated the month. A trough situated over the Great Lakes kept eastern Nebraska cooler than the west. Even with near normal temperatures, high temperatures did reach the upper 90s and even 100s (Table 1). These very warm temperatures were fairly short-lived as the average daytime high was in the 80s for most locations.

The last three months have posed a number of challenges across the state. Figure 2 shows the percent of normal precipitation during the April through June three-month period. The northeast quadrant of Nebraska was the only area to receive

June 2015 Total Precipitation (in)



June 2015 Departure from Normal Temperature (°F)

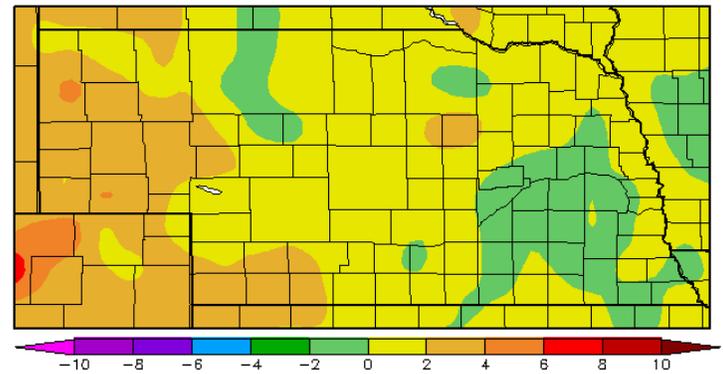


Figure 1. Total Precipitation (top) and Departure from Normal Temperature (bottom) for June 2015 for Nebraska. Maps from the High Plains Regional Climate Center—www.hprcc.unl.edu

April 2015—June 2015
Percent of Normal Precipitation

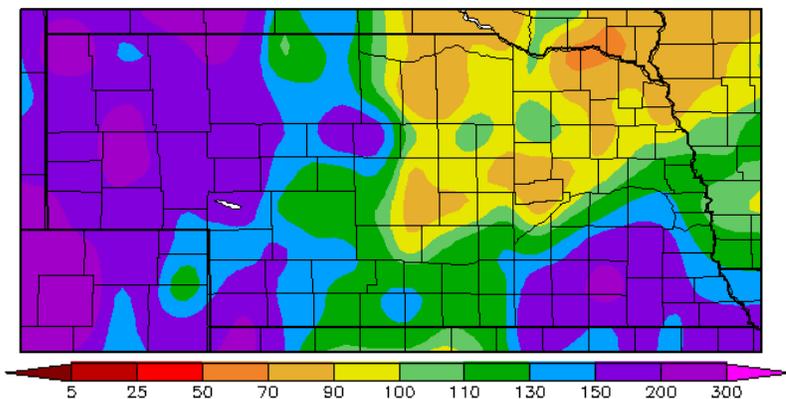


Figure 2. Percent of Normal Precipitation from April 2015 through June 2015 for Nebraska. Map from the High Plains Regional Climate Center—www.hprcc.unl.edu

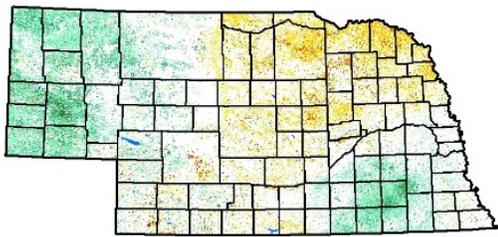
Table 1. Temperature (°F) and precipitation (inches) overview for June 2015 for 13 Nebraska locations.

Station	Avg. Max Temp	Max Temp	Avg. Min Temp	Min Temp	Total Precip
Ainsworth	80.0	93	58.7	52	3.05
Alliance	80.3	91	56.2	50	2.43
Ashland	82.2	95	60.5	45	4.82
Auburn	83.3	99	62.0	53	6.13
Benkelman	87.5	100	60.9	55	3.12
Callaway	81.2	94	59.0	51	4.19
Central City	82.1	97	59.9	43	5.07
Curtis	85.8	99	61.6	45	5.19
Geneva	82.9	96	62.5	55	10.41
Holdrege	81.6	93	58.3	46	6.66
Norfolk	80.2	95	59.6	52	4.95
Ogallala	82.5	93	59.0	50	3.35
Valentine	80.9	93	58.4	52	3.74

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

Vegetation Drought Response Index
Complete: Nebraska

June 29, 2015



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water



Figure 3. Vegetation Drought Response Index (VegDRI) is a depiction of vegetation (crops and rangeland) stress based on remote sensing data. Map is from National Drought Mitigation Center—<http://drought.unl.edu/>

below normal precipitation during this time period. This has led to pre-drought conditions for some crops in this area. The Panhandle and the southeast received 150-200% of normal precipitation. The Vegetation Drought Response Index (Figure 3) and current soil moisture values (Figure 4) reflect this precipitation pattern. Most of the moisture received during this three-month period came in May and early June, after a fairly dry April. The most recent Drought Monitor (Figure 5) has just 14% of the High Plains abnormally dry and less than 1% in Moderate Drought. According to the USDA Crop Progress and Condition report on June 6, more than 80% of the state reported adequate or surplus surface and subsoil moisture.

Even though the heavy rain events have subsided recently, there will be a lasting impact across the state. Nutrient deficiencies, shallow roots, saturated soils and eroded seed have and will continue to be a problem. Many of these problems are easily visible, but nutrient deficiencies and root-depth issues may start to show as we progress through the season. As the surface begins to dry out, shallow rooted plants will more easily show drought stress and increase the potential for lodging.

Looking ahead

The weather will really heat up this weekend with temperatures reaching the upper 90s and even the 100s by Sunday. A ridge will build in from the south and move the jet stream north into Canada. This will allow temperatures to really heat up with high dewpoint temperatures. This will make for some stressful conditions for livestock and humans. It will be important to check on livestock and provide adequate water, especially to 4-H animals or livestock that do not have shade. These high temperatures will also be accompanied by dry conditions. Keep a close eye on irrigated crops, as this is a critical growing period and these conditions can deplete soil moisture rather quickly. The models are being fairly progressive with

Ensemble-Mean – Current Total Column Soil Moisture Percentile
NCEP NLDAS Products Valid: JUL 04, 2015

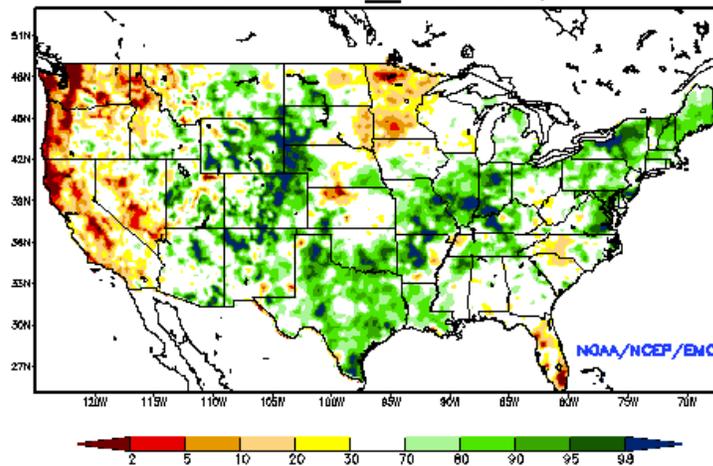
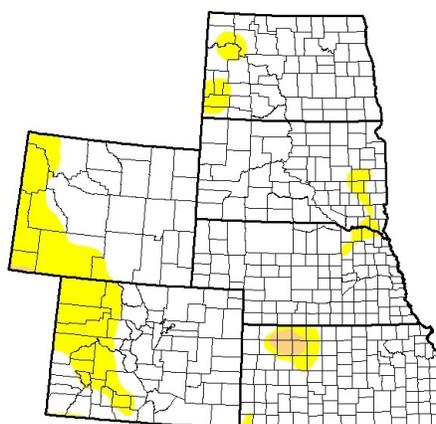


Figure 4. The Soil Moisture Percentile map is derived from near real-time soil moisture output models that are compared to 1980-2007 climatological values. Map from NLDAS Drought Monitor—<http://www.emc.ncep.noaa.gov/mmb/nldas/drought/>

U.S. Drought Monitor
High Plains

July 7, 2015
(Released Thursday, Jul. 9, 2015)
Valid 8 a.m. EDT



	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	85.54	14.46	0.67	0.00	0.00	0.00
Last Week 6/30/2015	82.60	17.40	1.38	0.00	0.00	0.00
3 Months Ago 4/2/2015	25.24	74.76	35.96	12.74	0.79	0.00
Start of Calendar Year 1/25/2014	59.44	40.56	11.28	5.46	0.36	0.00
Start of Water Year 9/5/2014	78.99	21.01	12.14	5.98	0.86	0.00
One Year Ago 7/6/2014	65.69	34.31	22.28	11.20	3.65	0.25

Intensity:
■ D0 Abnormally Dry ■ D3 Extreme Drought
■ D1 Moderate Drought ■ D4 Exceptional Drought
■ D2 Severe Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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Figure 5. U.S. Drought Monitor on July 7, 2015 for the High Plains. Map from the National Drought Mitigation Center—<http://droughtmonitor.unl.edu/>



Figure 6. Struggling soybean plants after flooding rains in southeast Nebraska.

the movement of the trough in the western U.S., which is currently amplifying the ridge of high pressure of the central U.S. The movement of the trough doesn't look to impact our area, but it will allow the jet stream to move back south and moderate our temperatures the middle of next week. Even though temperatures may moderate, you can still expect highs in the 90s. There is a chance of precipitation the middle of next week, but the confidence in timing or amount is low. The models are showing the "moderate" temperatures to hang around a couple days, but will pick back up by the end of next week and into the weekend.

The long-term forecast for next weekend and the following week is showing above normal temperatures for the Central and Northern Plains, including Nebraska. The chances of precipitation for July 17-23 (Figure 7) remain near normal with the best odds east of Nebraska. Dry conditions are expected for the Southern Plains, which puts Nebraska in the area of equal chances for above or below normal precipitation.

We continue to be in an El Niño and it is predicted to continue for a while. The forecast released from the Climate Prediction Center (Figure 8) on July 9 has a 90% chance that the El Niño will continue through the 2015-2016 winter and an 80% chance it will last into early spring 2016. The typical pattern for an El Niño in Nebraska is slightly below normal temps through the summer and fall with a warming trend in the winter months. The precipitation signal is quite low, but does trend towards slightly above normal precipitation in August in eastern Nebraska.

In review, be ready for the summer heat. The duration of the very warm temperatures is unknown, but it will definitely be felt over the next few days. These above normal temperatures may dominate our weather over the next two weeks. Crop water use values will be very high over the next few days, so don't get behind on those fields with low capacity irrigation systems.

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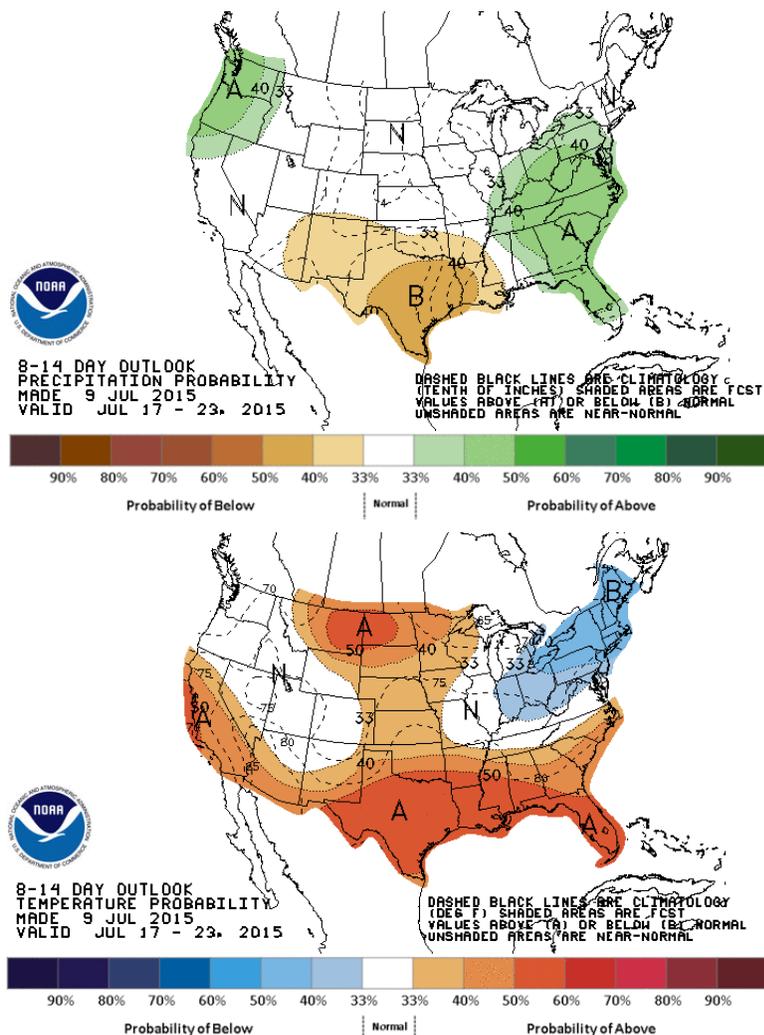


Figure 7. Precipitation (top) and Temperature (bottom) Outlooks for July (left) and July (right) from the Climate Prediction Center. Source: Climate Prediction Center—www.cpc.ncep.noaa.gov

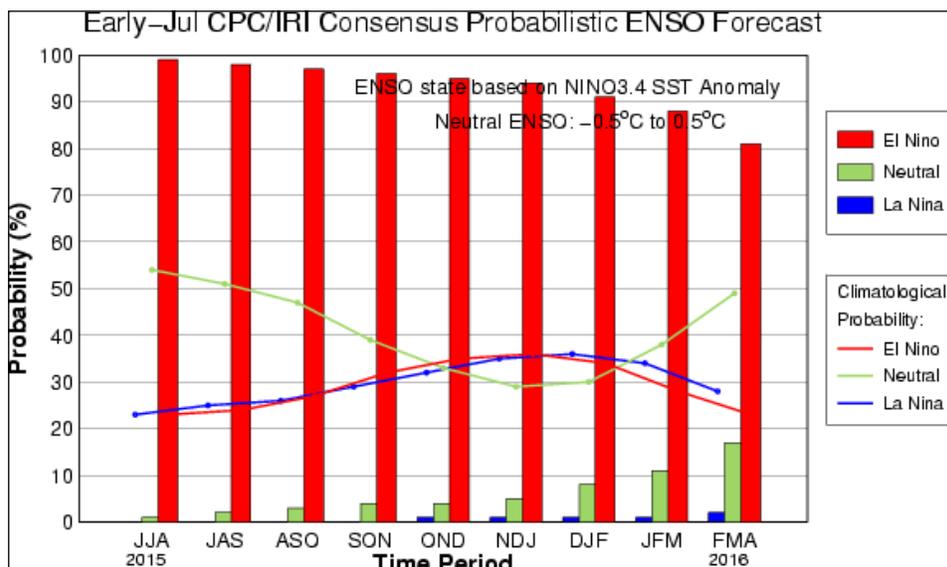


Figure 8. Probabilistic ENSO Forecast released on July 9. Bars indicate probability of future conditions based on forecast. Lines indicate probability based on climatology. Graph from International Research Institute, Columbia University and the Climate Prediction Center—www.cpc.ncep.noaa.gov/