

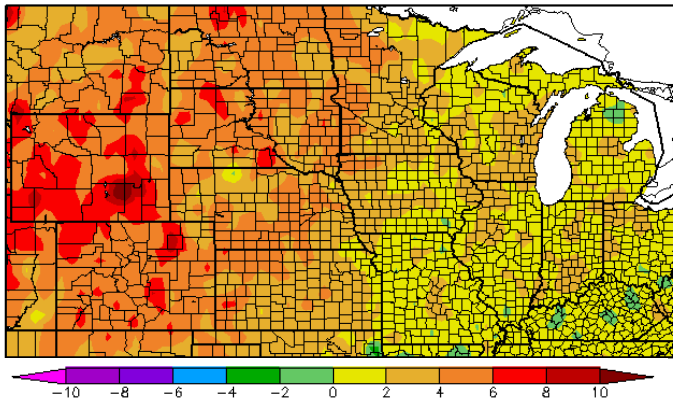
Nebraska Ag Climate Update

November 6, 2015

State Summary

Warm temperatures last month, and most of this fall, made for a very pleasant start to the season. Temperatures were slightly above normal for the eastern Corn Belt and much above normal for the western and northern plains (Figure 1). The warm temperatures were accompanied by a lack of rainfall, as most of the U.S. Central Region received less than 2 inches of

October 2015 Dept. From Normal Temperature (°F)



October 2015 Total Precipitation (in)

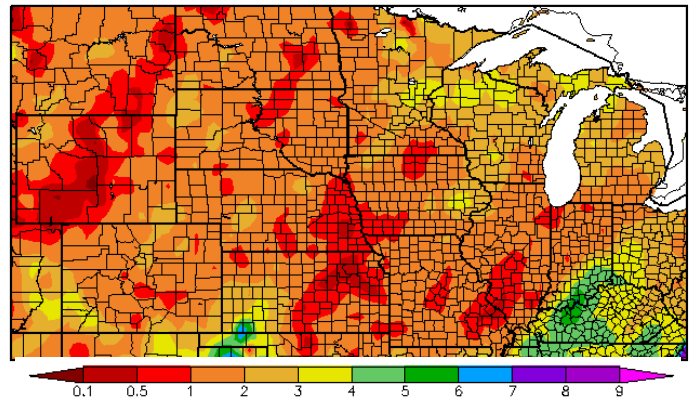


Figure 1. Departure from normal temperature (left) and total precipitation (right) for October 2015 for the U.S. Central Region. Maps from the High Plains Regional Climate Center—www.hprcc.unl.edu

precipitation. Even though this provided excellent harvest weather, the warm dry conditions created some soil moisture issues for wheat planting and fall cover crop growth. Locations in southern and western Nebraska received less than 2 inches of precipitation over the last 60 days and portions of southeast Nebraska are 4-6 inches below normal since the beginning of August. This prolonged lack of precipitation has led to the expansion of “Abnormally Dry” and “Moderate Drought” categories in southeast Nebraska in the latest Drought Monitor (Figure 2). Parts of west central and southwest Nebraska did, however, receive some very beneficial moisture (Table 1).

U.S. Drought Monitor Nebraska

November 3, 2015
(Released Thursday November 5, 2015)
Valid 7 a.m. EST

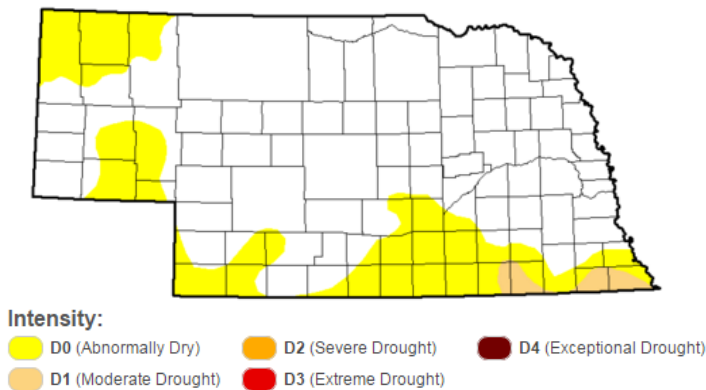


Figure 2. U.S. Drought Monitor for Nebraska released on November 5, 2015. The Drought Monitor map is produced by the National Drought Mitigation Center—<http://droughtmonitor.unl.edu/>

7-Day Average Soil Temperature (11/5)

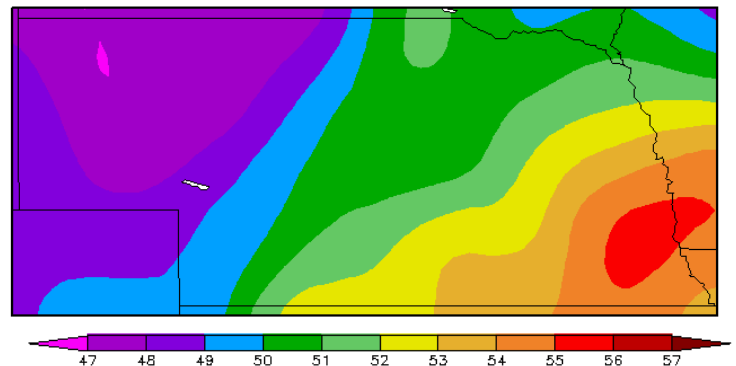


Figure 3. Seven-Day Average Soil Temperature map for Oct. 30 – Nov. 5. Map from the High Plains Regional Climate Center via UNL CropWatch—<http://cropwatch.unl.edu/cropwatchsoiltemperature>

October also provided its typical wide range of temperatures. Many locations in Nebraska had maximum temperatures in the mid to upper 90s with minimum temperatures in the low 20s. These swings in temperatures have started to make an impact on soil temperatures. Cool nights and fewer daylight hours have decreased soil temperatures across the state, with many sites nearing the 50° F critical temperature for anhydrous applications. Soil temperatures range from the low 50s in the southeast to mid 40s in the northwest (Figure 3). Soil temperatures are slightly above normal for this time of year, which is to be expected with the recent warm temperatures.

Most locations saw their first 32° F freeze and 28° F freeze this past month. Figure 4 shows the date of the first fall 28° F for 2015. Most locations in the northwestern half of Nebraska saw their first “hard” freeze between Oct. 11 and Oct. 20 and the southeastern half reached 28°F between Oct. 21 and Oct. 30.

These freezing temperatures arrived about 7-10 days later than normal. Table 1 also shows the season length (days between last spring 32° F freeze and first fall 32° F freeze) for 12 locations in Nebraska for 2015, 2014, and the station average. For the stations listed, Holdrege was the only station to have a shorter-than-average growing season. All other locations were above their station average, as well as higher than or equal to (Curtis) 2014. The extra season length this year is primarily due to the warm temperatures this past month, as our last spring freeze was near normal.

Table 1. Temperature (°F) and precipitation (inches) overview for October 2015.

Station	Average Temperature		Temperature Range		Total Precip	Season Length (days between spr./ fall 32°F freeze)	
	Max	Min	Max	Min		2015 (2014)	Avg.
	Ainsworth	66.9	43.5	92		23	1.61
Alliance	64.8	36.1	86	8	2.14	144 (119)	122
Ashland	68.1	44.5	91	28	0.53	188 (N/A)	164
Auburn	70.8	42.1	90	27	0.65	176 (119)	163
Benkelman	71.7	41.8	94	24	1.46	157 (144)	153
Callaway	68.6	40.7	96	22	1.36	156 (118)	150
Curtis	72.6	43.9	97	28	1.71	169 (169)	140
Geneva	69.7	45.3	93	28	0.85	189 (164)	168
Holdrege	68.6	42.6	94	23	1.24	155 (140)	163
Norfolk	67.4	42.8	95	26	0.98	175 (139)	157
Ogallala	67.5	40.1	92	24	1.94	156 (142)	148
Valentine	68.2	42.7	93	21	2.01	155 (138)	139

Data from NOAA Applied Climate Information System NWS COOP stations- <http://drought.rcc-acis.org/>. Period of record varies between locations.

November Climatology

Climate Normals are based on the average conditions for 30 years and are often used to describe the climate of an area. The Normals for November in Nebraska usually reveal our first real glimpse of winter-like weather. The “averages” that I refer to are based on the 1981-2010, 30-year Climate Normals.

For most of Nebraska, the average first snowfall happens in November, but there is a wide range of dates. For the Panhandle, the average first measurable snow happens in mid to late October. This slowly progresses southeast across the state and the average first snowfall for southeast Nebraska happens the last week in November. The monthly average maximum temperature ranges from the low 50s in the south to the mid 40s in northeast Nebraska. There is a slightly different pattern for the average minimum temperature. It ranges from the upper 20s in the southeast to the upper teens in the northwest Panhandle. Precipitation is pretty light during winter and the average total precipitation ranges from near 1.5 inches in the southeast to near 0.5 inch in the west.

The Climate Normals are not static and there may be increasing or decreasing trends within the Normals. Based on the Corn

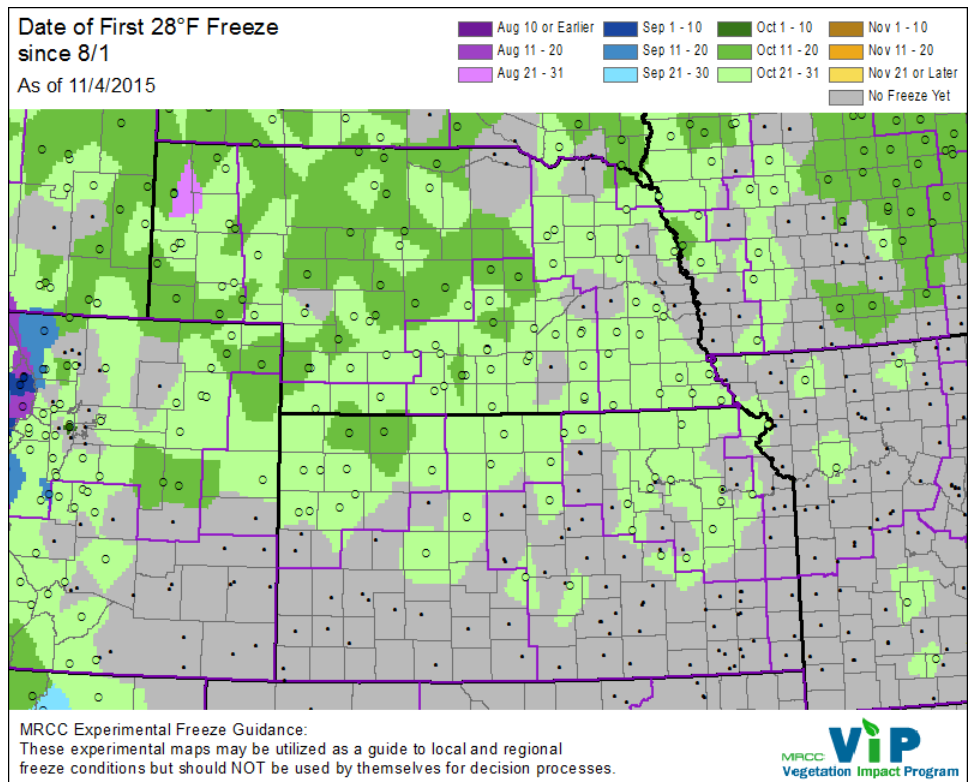


Figure 4. The map shows the date of the first fall 2015 28° F freeze in the Central Plains. Locations in gray had not recorded a temperature below this threshold as of Nov. 4. Map from the Midwest Regional Climate Center—mrcc.isws.illinois.edu/

Belt Climate Trends (1980-2013) from the High Plains Regional Climate Center, November precipitation is in a decreasing trend. Northwest and south-east Nebraska are not showing a trend, but the southwest through northeast parts of Nebraska have been decreasing at a rate of 0.1 to 0.4 inch per decade with some locations decreasing up to 0.8 inch per decade. November temperatures are also seeing a trend with much higher confidence. *Figure 5* shows the maximum temperature trends for the North Central Region and it is evident that November is on a warming trend for most of the central and western Corn Belt, including Nebraska. Maximum temperatures are increasing more than 0.6° F per decade at most locations. This increase is also evident in average temperatures, but minimum temperatures are quite variable. This trend may be due to the decrease in precipitation, which allows for wide daily temperature ranges.

Trend in Nov maximum temperature (1980 - 2013)

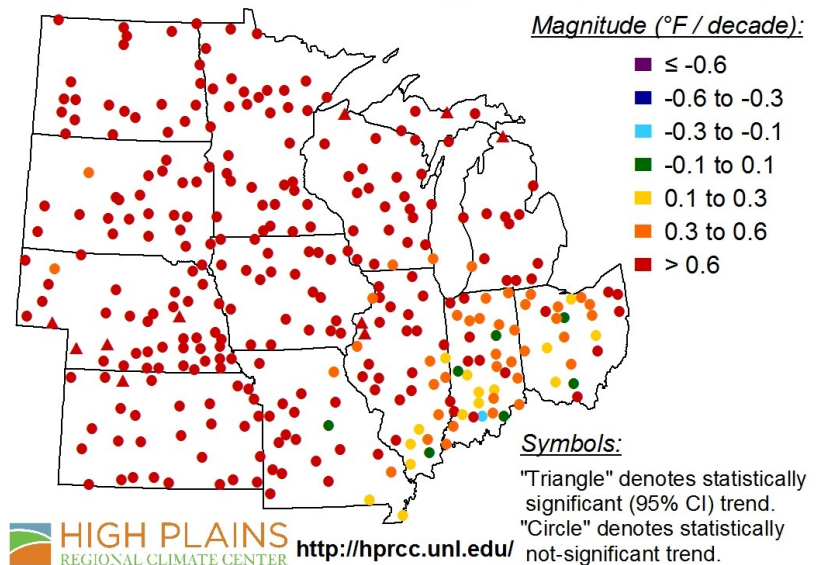


Figure 5. 1980-2013 maximum temperature trend for the North Central Region. Map from the Corn Belt Climate Trends from the High Plains Regional Climate Center—hprcc.unl.edu/climatetrends.php

Looking Forward

It appears that recent much-above-normal temperatures will be replaced with more November-like weather. We all knew the 80s would go away, but we don't necessarily like it. This weekend will be seasonably cool with the passing of a cold front. Highs will be in the upper 50s/low 60s and lows will be in the upper 20s to low 30s. Temperatures will warm back up the beginning of next week, as the next big storm system deepens over the western U.S. This will allow warm air and moisture to migrate to us from the south. We should remain dry until the next big system moves into the plains on Wednesday or Thursday. These troughs have been forming over the western U.S. the last few weeks, which is the main reason we have been seeing warmer than normal temperatures. The system moving through next week probably won't bring bitterly cold temperatures, but may bring significant moisture. The amount of precipitation will depend on how fast the system moves through and the models don't agree on that at the moment.

This trend of low pressure systems moving in from the west is forecasted to continue for a while. This will bring in numerous opportunities for precipitation and frequent temperature fluctuations. The current 8-14 day outlook (*Figure 6*) from the Climate Prediction Center (CPC) has increased odds for above normal temperatures for areas east of the Rockies, including Nebraska, through November 20. I think we will have numerous temperature swings that will bring cold temperatures shortly followed by warm temperatures. These may average out to be warmer than normal, but it won't consistently be T-shirt weather. The precipitation forecast is hit or miss depending on the location and speed of these deep, low-pressure systems.

The long-term forecasts from the CPC for December through February are still predicting higher chances for above normal temperatures for the west coast and northern plains with above normal precipitation in the southern U.S and central plains. This temperature prediction is quite different than the current pattern, so I would suspect that some changes may be made to the winter outlooks moving forward.

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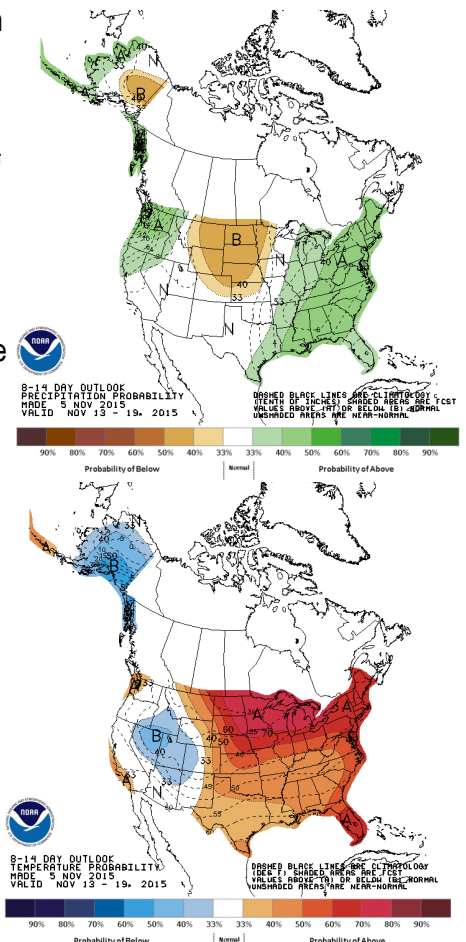


Figure 6. 8-14 Day Temperature and Precipitation Outlooks for Nov. 14-20 from the Climate Prediction Center - www.cpc.ncep.noaa.gov/