

Nebraska Ag Climate Update

January 8, 2016

State Summary

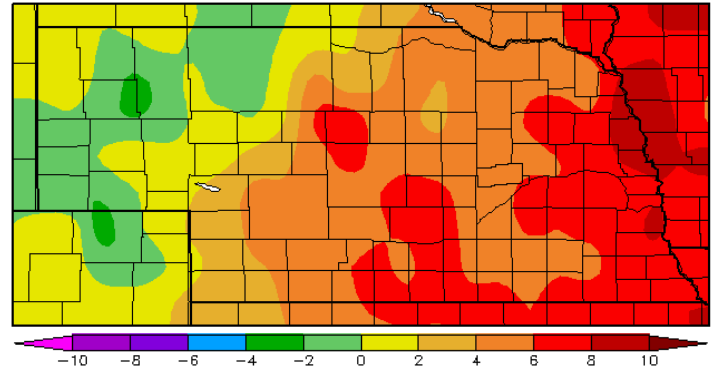
This past month, we again saw above normal temperatures for most of the state, making it the fourth straight month that warm temperatures dominated. Even though we ended the month with cold, snowy weather, most of the month provided much above normal temperatures and record rainfall in southeast Nebraska.

Normal average temperatures in December range from the upper 20s in the south to the lower 20s in the northeast. This past month, average temperatures were in the upper 20s in the northwest/west to upper 30s in the southeast. Eastern Nebraska finished the month 6-10 °F above normal while the Panhandle was near to slightly below normal (*Figure 1*).

The normal total precipitation for December ranges from less than 0.5" in the west to just over an inch in the southeast. Most locations received near to above normal total monthly precipitation amounts (*Figure 1*). The heaviest precipitation fell in eastern and southeastern Nebraska and most of it came in the form of rain instead of snow. Over the last couple weeks of December, snow blanketed much of the state, but primarily remains in the Panhandle and the eastern half of the state. This snow cover may provide some protection to the winter wheat for the upcoming cold temperatures

December 2015

Departure From Normal Temperature (°F)



Departure from Normal Precipitation (in)

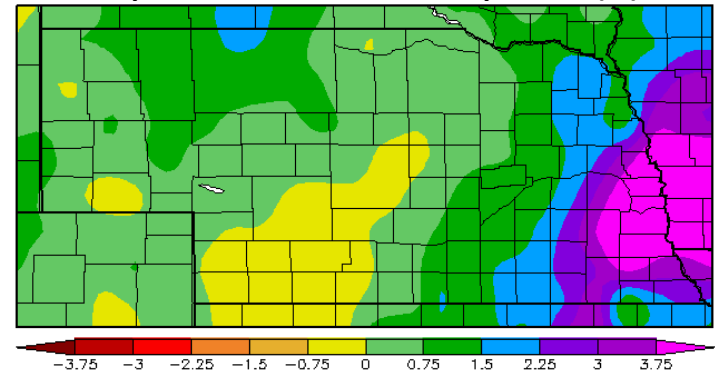


Figure 1. Departure from normal temperature (top) and precipitation (bottom) for December 2015 in Nebraska. Map from the High Plains Regional Climate Center—www.hprcc.unl.edu

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

| Station | Average Temperature | | Temperature Range | | Total Precip | Total Snowfall |
|-----------|---------------------|------|-------------------|-----|--------------|----------------|
| | Max | Min | Max | Min | | |
| Ainsworth | 36.9 | 21.2 | 66 | 4 | 0.67 | 10.0 |
| Alliance | 35.7 | 11.9 | 63 | -8 | 0.49 | 9.9 |
| Ashland | 41.8 | 25.1 | 61 | 7 | 6.23 | 10.2 |
| Auburn | 43.8 | 25.7 | 62 | 12 | 4.28 | 3.8 |
| Benkelman | 47.9 | 22.3 | 69 | 5 | 0.24 | 4.4 |
| Callaway | 40.3 | 22.3 | 67 | 8 | 0.85 | 9.8 |
| Curtis | 49.5 | 25.1 | 71 | 1 | 0.26 | 0.5 |
| Geneva | 55.2 | 34.3 | 79 | 18 | 2.51 | 2.3 |
| Holdrege | 41.1 | 22.5 | 67 | 9 | 0.95 | 2.0 |
| Norfolk | 37.5 | 19.9 | 62 | -4 | 2.05 | 8.1 |
| Ogallala | 39.7 | 18.5 | 68 | 3 | 0.69 | 7.8 |
| Valentine | 40.0 | 23.8 | 64 | 6 | 0.92 | 9.7 |

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

Soil temperatures dropped toward the end of December with the cool weather. Temperatures at the 4-inch depth were near to below normal for the southern half of the state and above normal in the northern half. They ranged from the upper 20s in the southwest to the lower to mid 30s in the north and east. Using NRCS SCAN sites, as of January 4, soil temperatures east of Lincoln were 35, 36, 39, 44 and 47 °F at a depth of 2, 4, 8, 20, and 40 inches, respectively. Near Torrington, Wyo., soil temperatures were 28, 27, 32, and 39 °F at depths of 4, 8, 20, and 40 inches, respectively, and in Phillipsburg, KS, temperatures were 31, 32, 34, and 39 °F at depths of 2, 4, 8, and 20 inches, respectively.

2015 Departure from Normal Temperature (°F)

2015 Departure from Normal Precipitation (in)

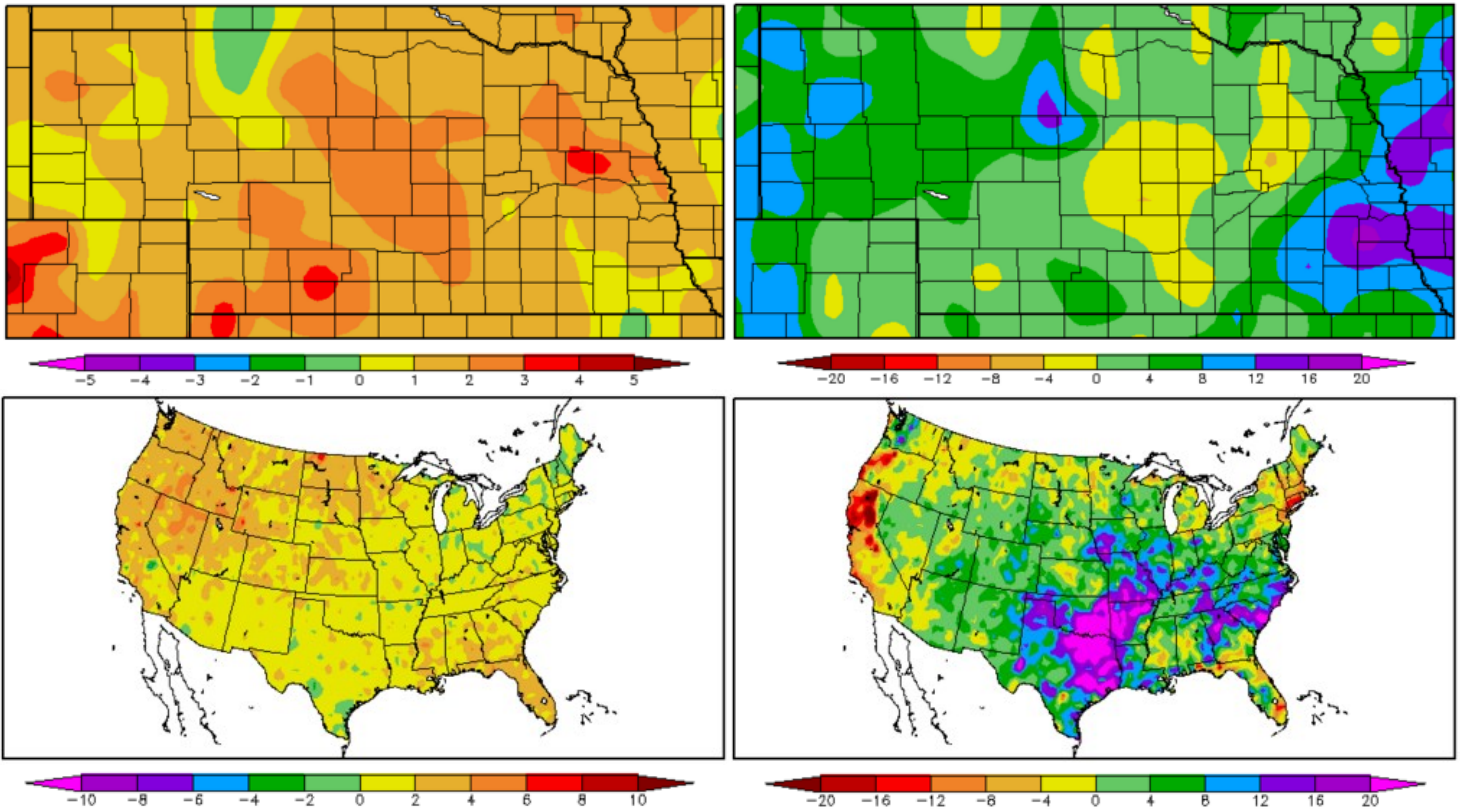


Figure 2. Departure from normal temperature (left) and precipitation (right) for 2015 in Nebraska (top) and the U.S. (bottom). Maps from the High Plains Regional Climate Center—www.hprcc.unl.edu

Year in Review

This past year was an eventful one in regards to weather. Overall, 2015 was wet and warm for most of Nebraska and the continental U.S. (Figure 2). The U.S. had its second warmest year on record and Nebraska was tied for its 8th warmest year since 1895. Nebraska had its 11th wettest and the U.S. had its 3rd wettest year on record. Most of the precipitation that set records in Nebraska, as well as in Oklahoma, Texas, and Missouri fell in late spring and early winter. The late-spring moisture caused some crop production issues for folks in southeast Nebraska, but provided adequate moisture for pasture growth and rainfed crop production for many farmers and ranchers across the state.

Nebraska set a number of daily weather records in 2015 (Table 2). These included 1,190 “warm” records (combined high maximum and high minimum temperatures) and 525 “cool” records, which is not surprising since we ended the year with above normal temperatures. Table 2 features a month-by-month breakdown of the records. Analyzing the table shows the shift from “warm” records last January, February, and March to “cool” records April through August and then a shift back to “warm” records September through December. The precipitation records were fairly steady throughout the year with a spike in the late spring and late fall to early winter, and fairly representative of the wet year we saw in 2015.

Table 2. Number of daily records set across Nebraska in 2015 by month.

| | Highest Max Temp | Highest Min Temp | Lowest Max Temp | Lowest Min Temp | Highest Precipitation | Highest Snowfall | Highest Snow Depth |
|--------------|------------------------|------------------|-----------------|-----------------|-----------------------|------------------|--------------------|
| | — # of Daily Records — | | | | | | |
| January | 132 | 71 | 0 | 2 | 23 | 15 | 43 |
| February | 37 | 54 | 18 | 19 | 55 | 64 | 30 |
| March | 208 | 66 | 0 | 7 | 4 | 4 | 2 |
| April | 2 | 15 | 0 | 2 | 44 | 3 | 5 |
| May | 7 | 9 | 163 | 56 | 75 | 36 | 25 |
| June | 5 | 24 | 6 | 1 | 62 | 0 | 0 |
| July | 2 | 15 | 63 | 33 | 49 | 0 | 0 |
| August | 9 | 16 | 70 | 76 | 45 | 0 | 0 |
| September | 51 | 103 | 0 | 0 | 52 | 0 | 0 |
| October | 110 | 67 | 1 | 1 | 47 | 1 | 0 |
| November | 37 | 55 | 0 | 1 | 89 | 38 | 19 |
| December | 29 | 66 | 5 | 1 | 114 | 71 | 29 |
| Total | 629 | 561 | 326 | 199 | 659 | 232 | 153 |

Data from National Center for Environmental Information Global Historical Climatological Network—<http://www.ncdc.noaa.gov/cdo-web/datatools/records>

Looking Forward

The first very cold temperatures of the season have arrived. Temperatures this weekend will be lucky to get out of the teens, while minimum temperatures will be near to below zero. The bitter cold air will stick around through the beginning of next

week, but will gradually warm back up to near normal temperatures with highs in the 30s. The forecast through next weekend and the following week does not show much of a change in temperature. As of right now, the models are showing consistently cold temperatures through late January, with only small fluctuations.

The precipitation forecast is also quite uneventful. There is a chance of snow this weekend, but high pressure will then build in, keeping most of the moisture away from Nebraska for the next couple weeks. The 6-10 day outlook from the Climate Prediction Center (CPC) (Figure 3) shows dry areas in the middle of the U.S. and above normal moisture in the western U.S., with cool temperatures dominating most of the region.

The long-term outlook for the rest of the winter and the beginning of spring is much more interesting and challenging. Using the current conditions and models, it looks like January will end with temperatures near to below normal. The CPC three-month outlook (Figure 4) is predicting higher probabilities for above normal temperatures for Nebraska and areas to the north, with increased odds for above normal precipitation for Nebraska and areas to the south. These projections are still heavily dependent on El Niño conditions. The current El Niño is expected to decline this winter and the rate of that decline will play a role in the accuracy of these predictions. I think the three-month outlooks will be very challenging as we get closer to spring because of the unknown El Niño and potential development of the La Niña.

Looking further out, we can be somewhat confident that we will start the spring with decent soil moisture due to the late fall and early winter precipitation events. Most of this moisture will remain in the soil and hopefully will be sufficient to last until planting, if we end up having an early spring warm-up.

In review, we can expect typical January weather for the next couple weeks with cool temperatures and relatively dry conditions. The models aren't showing much fluctuation in temperature or precipitation chances until the latter part of the month. It is a long way out, but the "January thaw" may end up happening in February.

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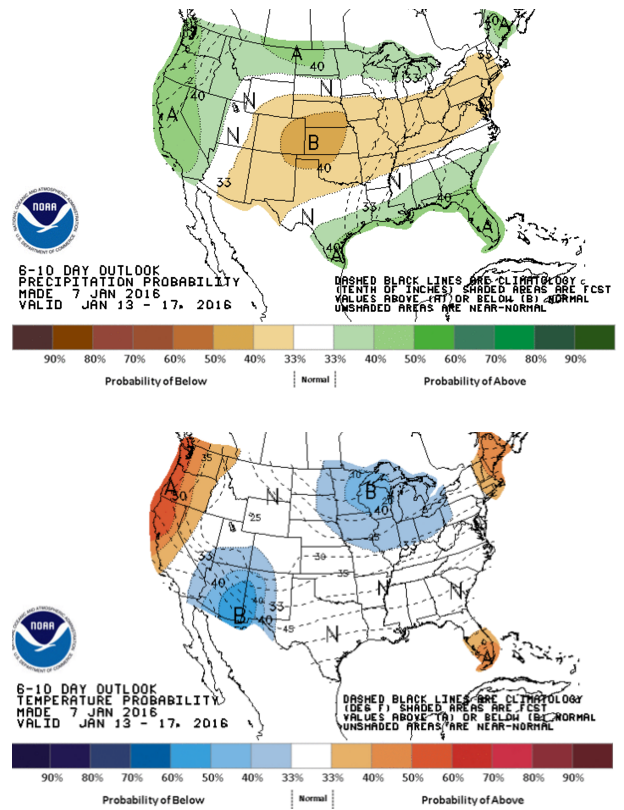


Figure 3. 6-10 Day Outlook for January 13-17 from the Climate Prediction Center—cpc.ncep.noaa.gov

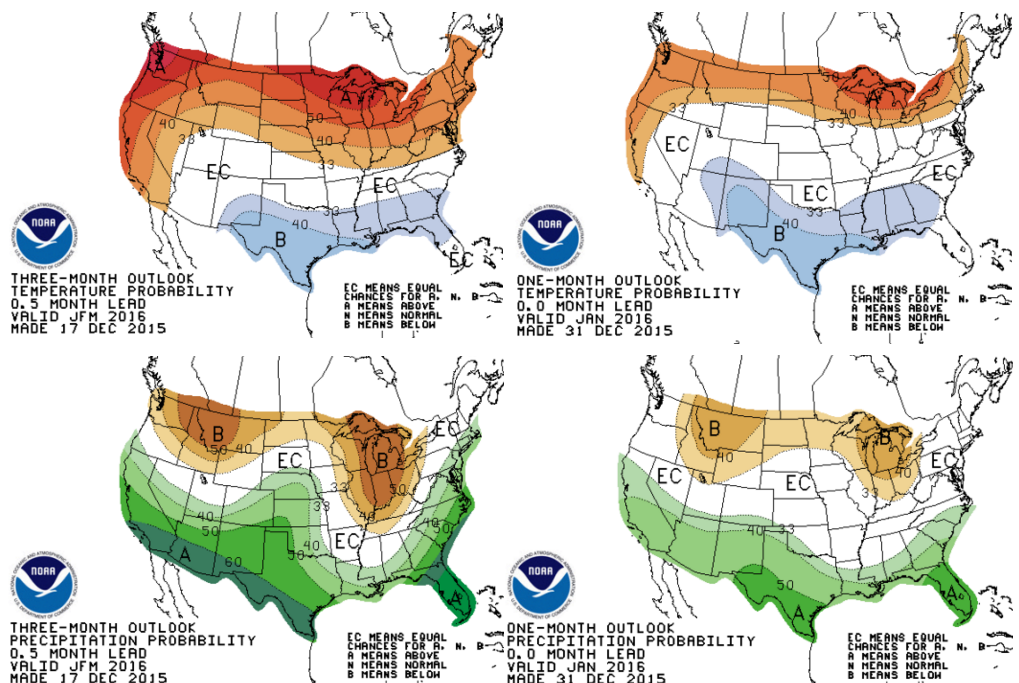


Figure 4. Three-Month (left) and One-Month (right) Outlooks for January for temperature (top) and precipitation (bottom) from the Climate Prediction Center - www.cpc.ncep.noaa.gov/