Hydrologic and Climate Assessment

November 30, 2018

THE OHIO STATE UNIVERSITY

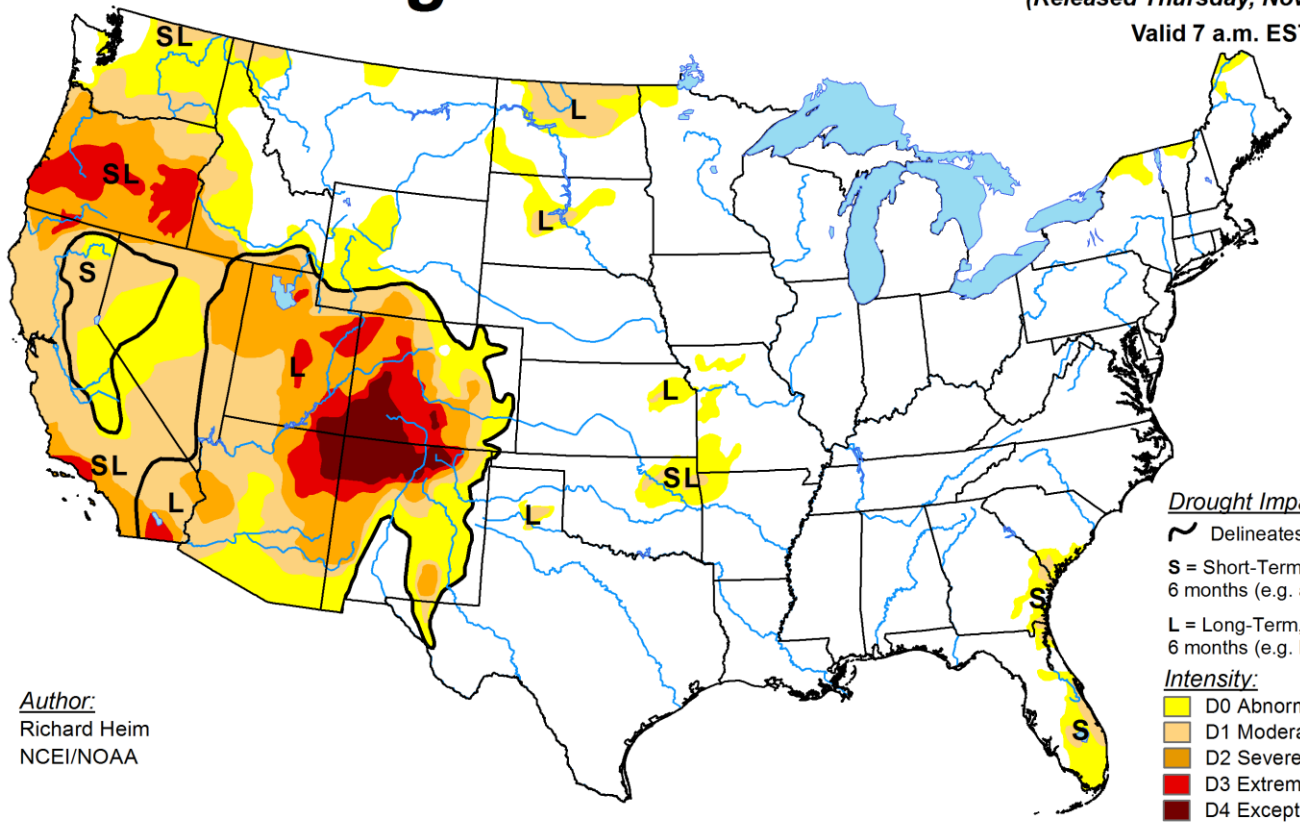
Aaron B. Wilson
STATE CLIMATE OFFICE OF OHIO (SCOO)
DEPARTMENT OF EXTENSION - CFAES
BYRD POLAR & CLIMATE RESEARCH CENTER
DEPARTMENT OF GEOGRAPHY

U.S. Drought Monitor

November 27, 2018

(Released Thursday, Nov. 29, 2018)

Valid 7 a.m. EST



Author:
Richard Heim
NCEI/NOAA

Drought Impact Types:

Delineates dominant impacts

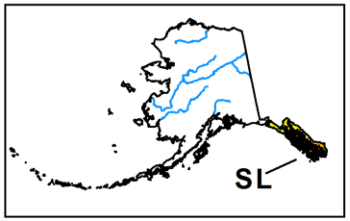
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

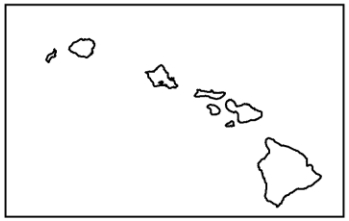
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

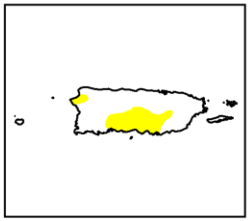
Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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







USDA NDMC NOAA

http://droughtmonitor.unl.edu/

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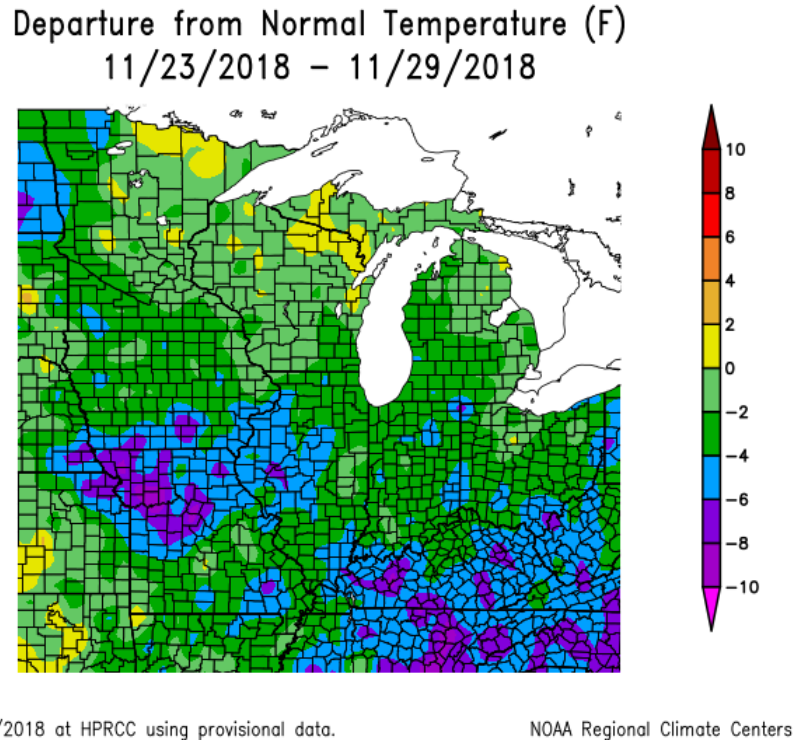
Temperature Differences Compared to Average (1981-2010)

7-Day



NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM
NIDIS Drought.gov U.S. Drought Portal

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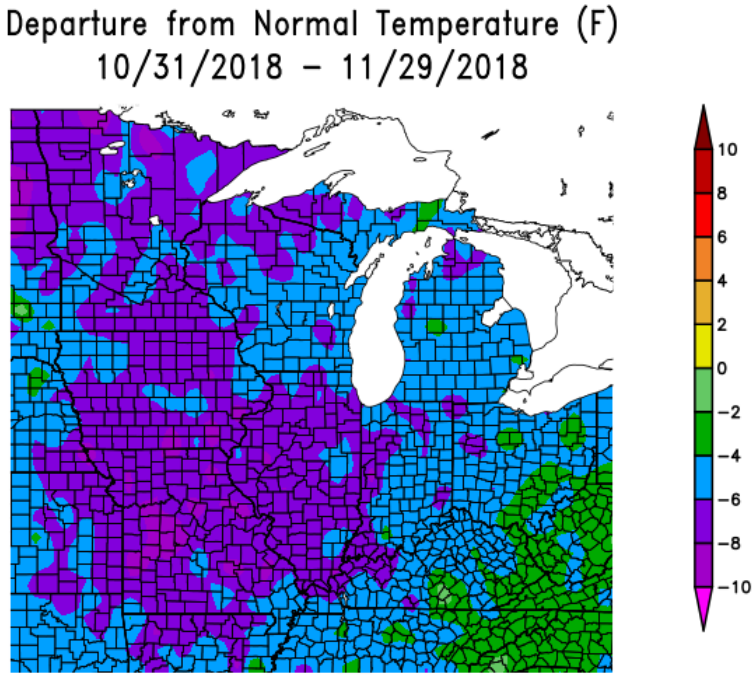
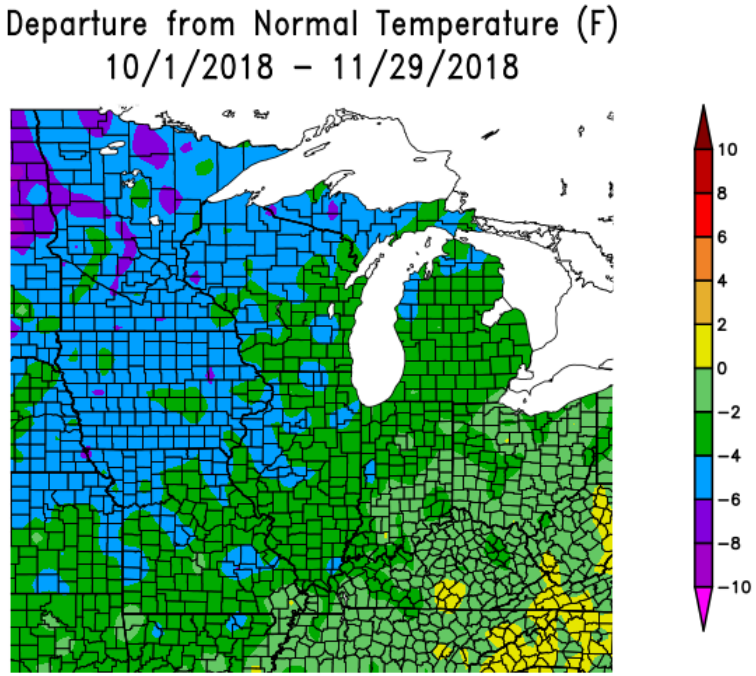
Temperature Differences Compared to Average (1981-2010)

30-Day



60-Day



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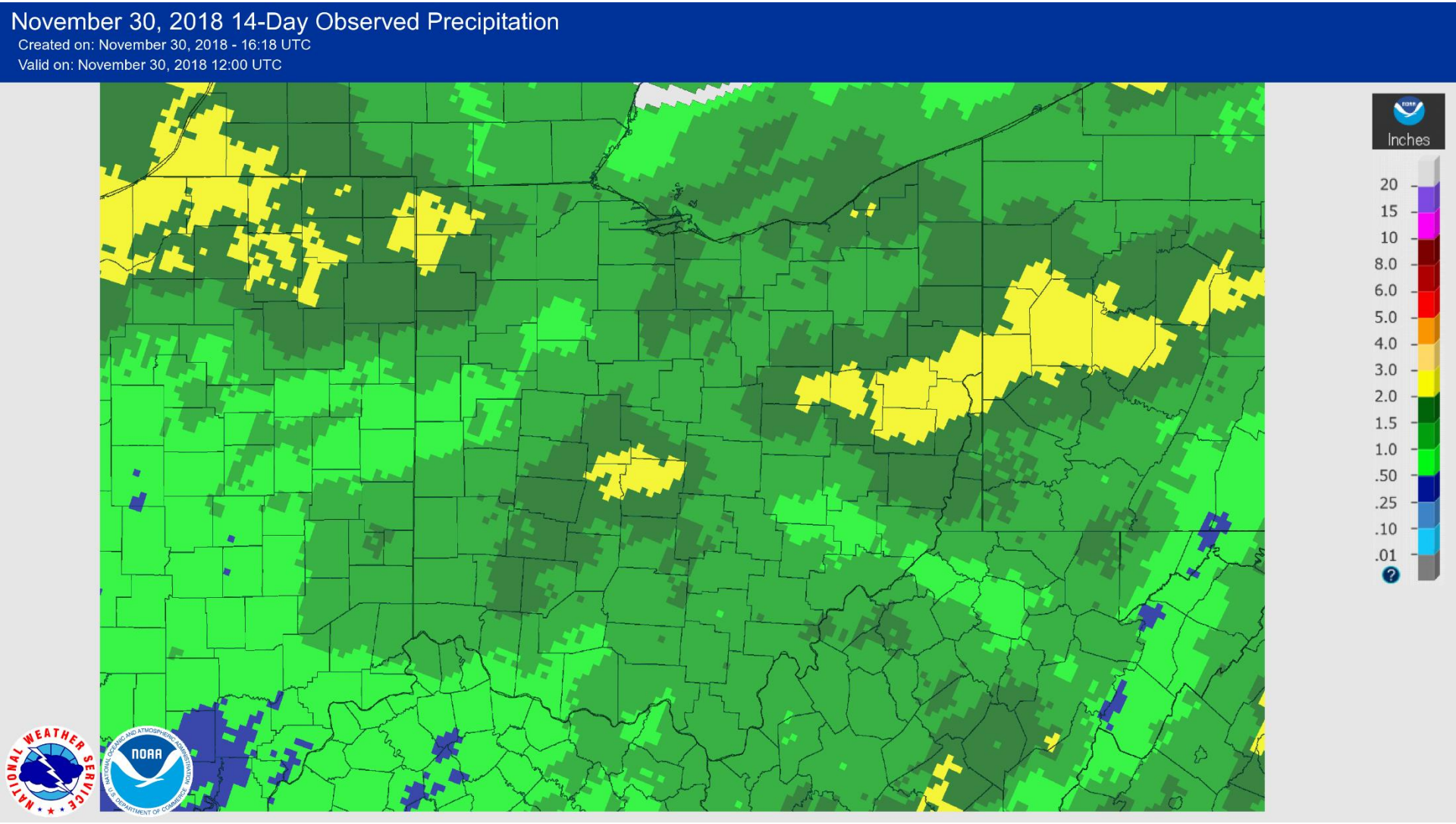
Previous 14-Day Precipitation: Total



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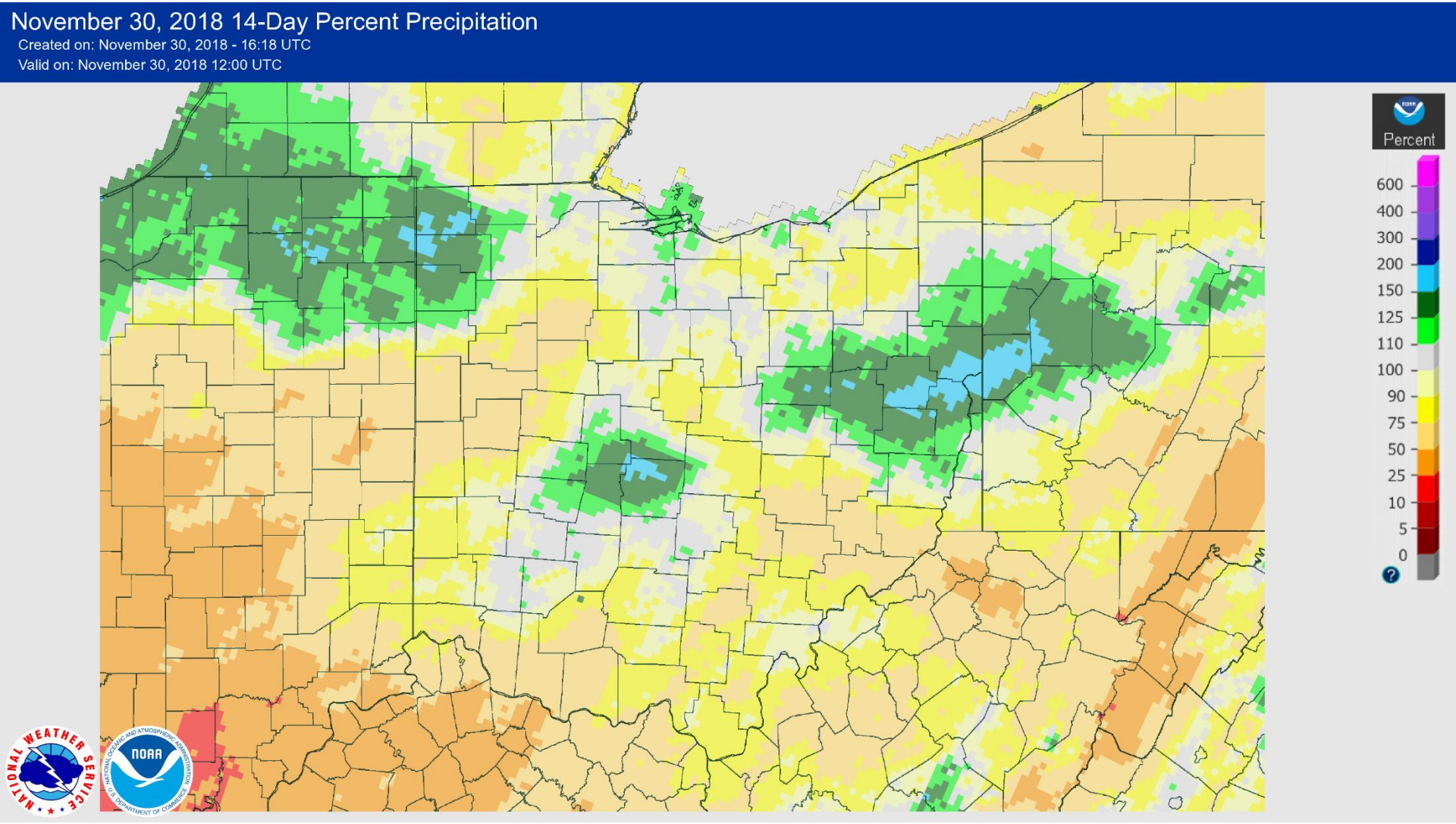
Previous 14-Day Precipitation: Percent of Normal



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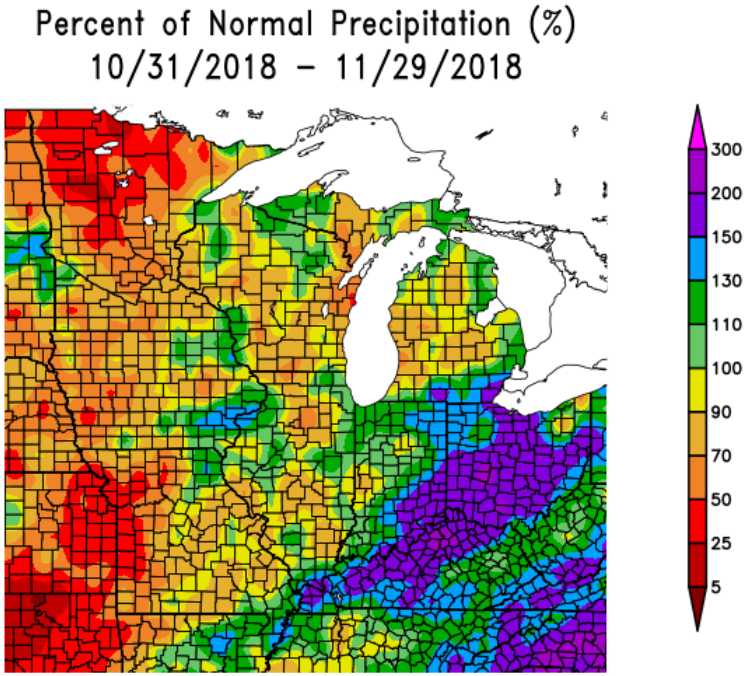
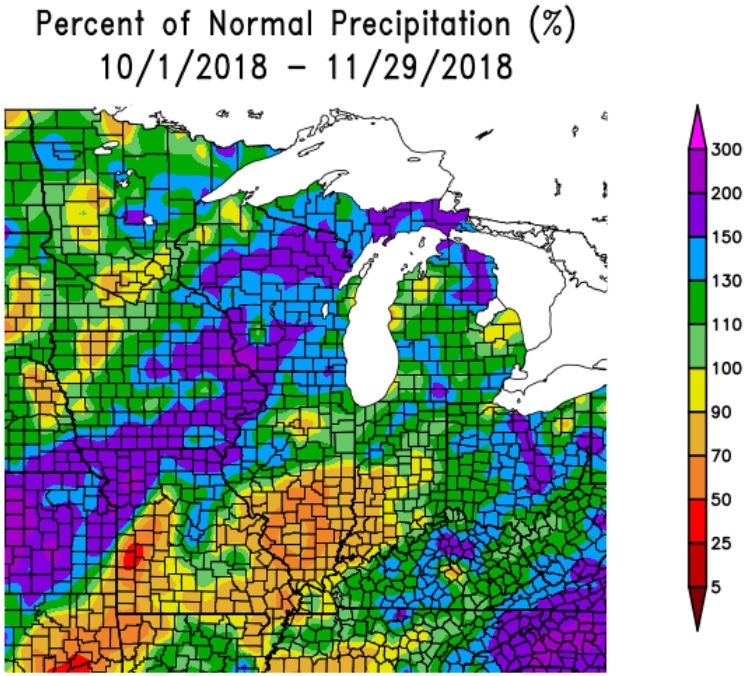
Precipitation Differences Compared to Average (1981-2010)

30-Day



60-Day



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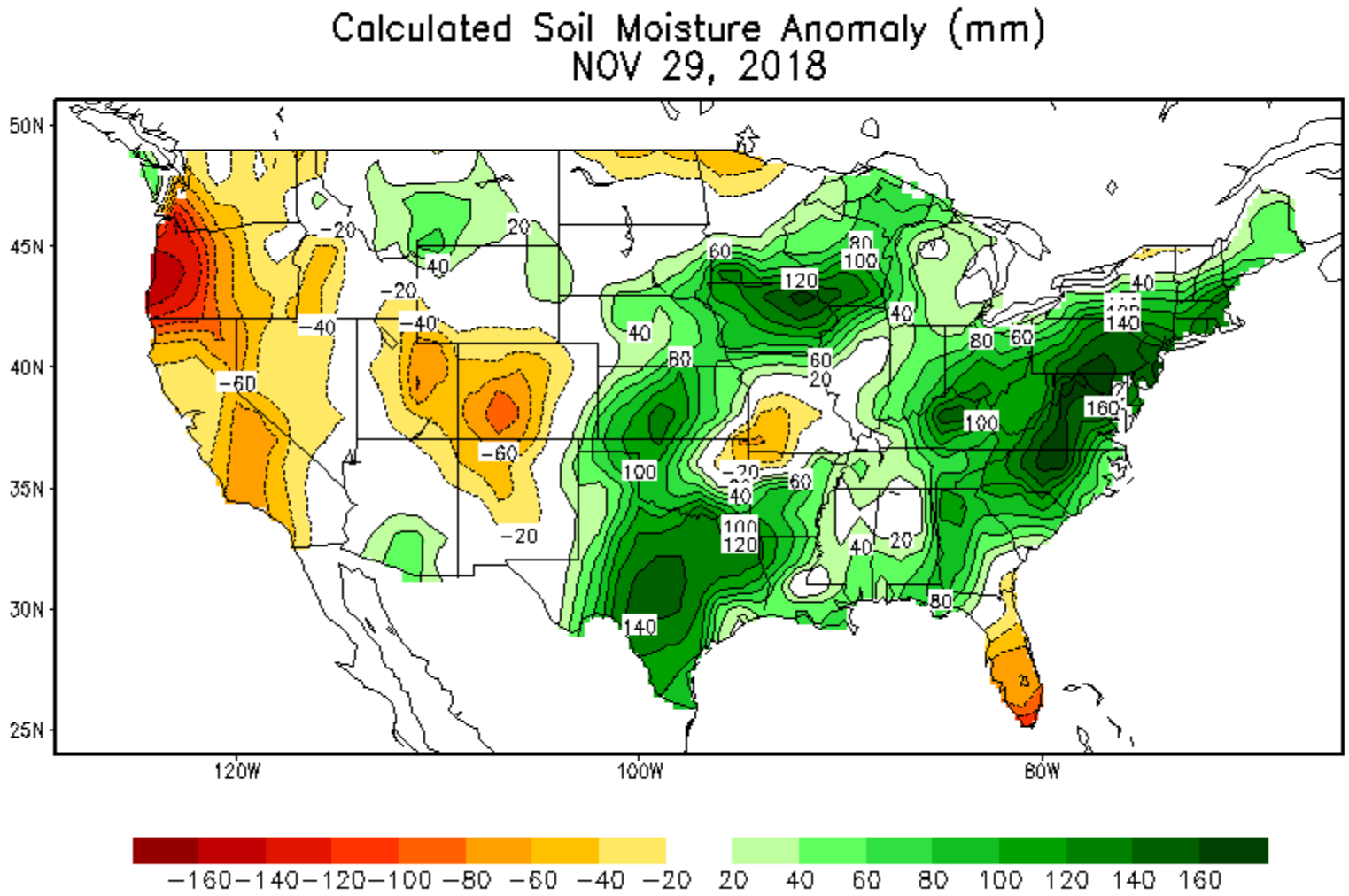
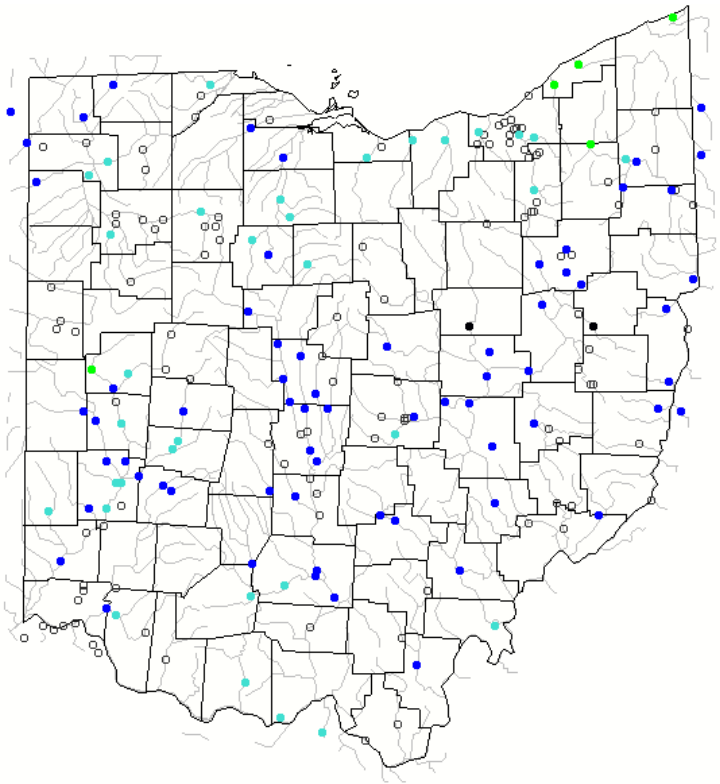
Soil Moisture



USGS Streamflow

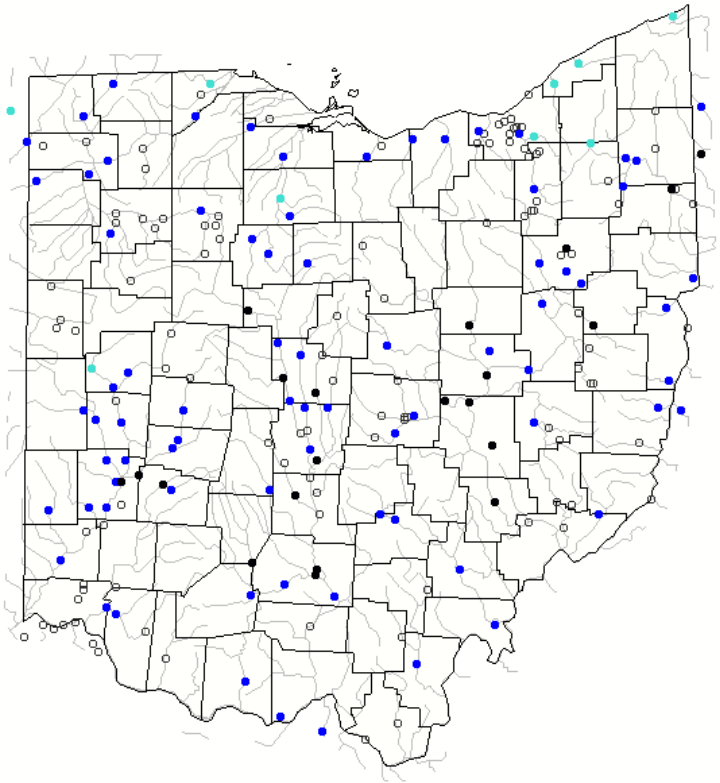
7-DAY



USGS

Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

28-DAY



USGS

Average streamflow compared to historical streamflow for the day of the year

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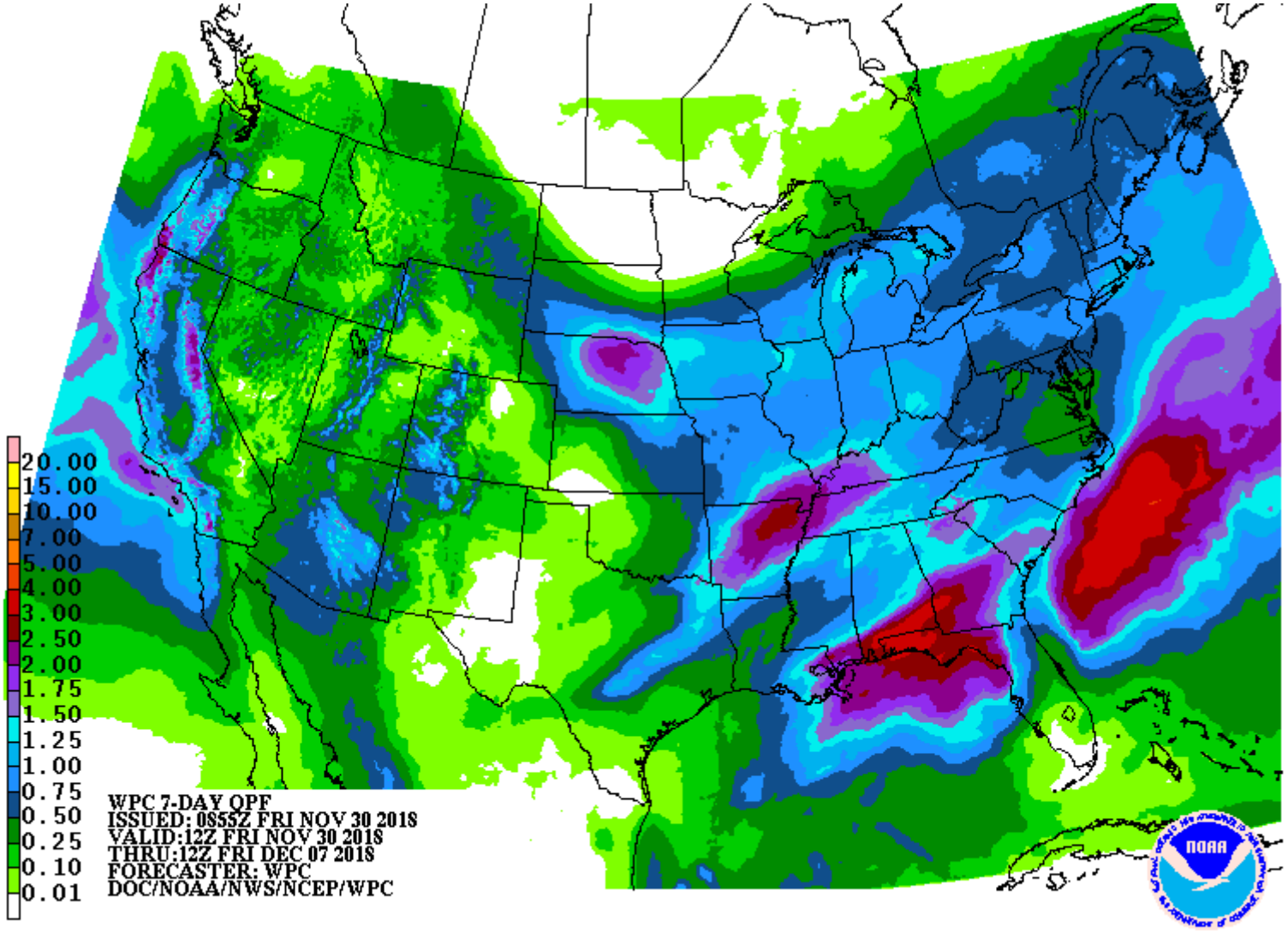
Weather for the Week Ahead



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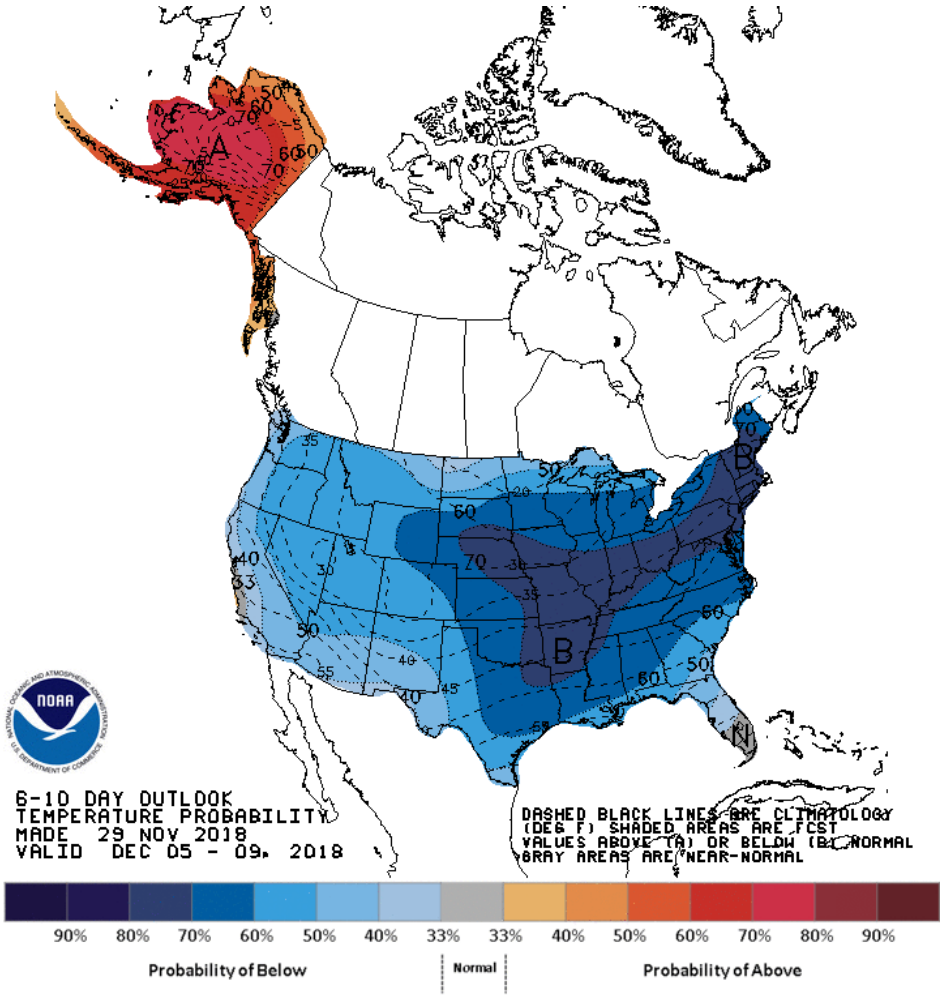
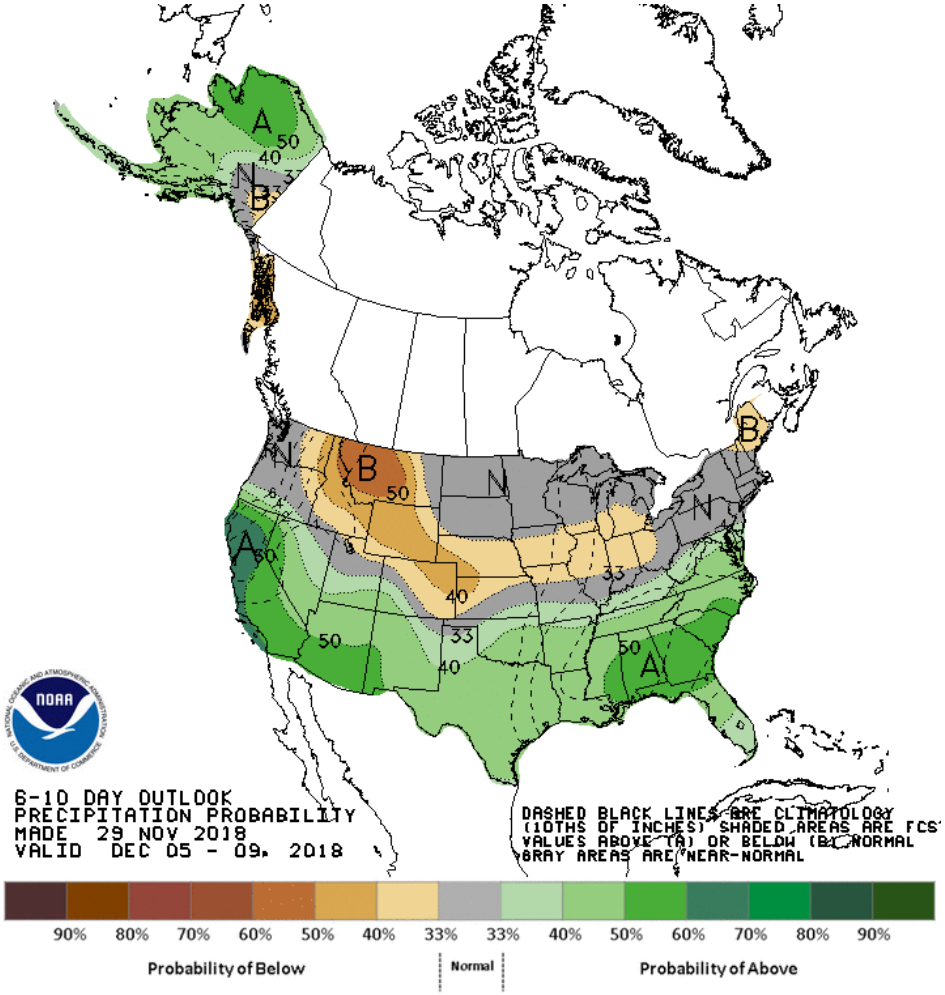
6-10 Day Outlook





Highs: 43-47°F; **Lows:** 28-32°F; **Precip:** 0.90-1.00” (per week)

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El Niño/Seasonal Update

National Weather Service
Central Region Climate Outlook

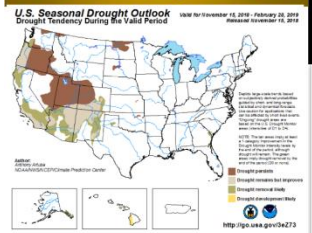
Dec 2018 – Feb 2019

Friday, November 16, 2018 4:14 AM

Important Messages:

- ENSO neutral conditions remain across the Tropical Pacific, but the odds have increased to an 85% chance of an El Niño developing in the DJF period as warm subsurface waters are continuing to expand eastward.
- A weak El Niño remains the most likely scenario this winter, with classic El Niño relationships expected to be heavily impacted by other teleconnection patterns such as the Arctic Oscillation (AO) and Madden-Julian Oscillation (MJO).

Seasonal Drought Outlook



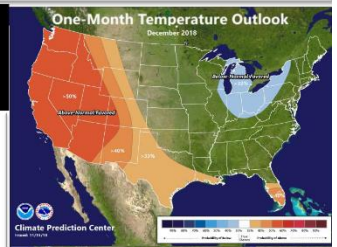
Status quo is expected for much of Central Region. Some improvement remains possible near the four corners region of Colorado where increased precipitation associated with El Niño could provide some relief. A few small pockets of drought elsewhere across the region look to persist.

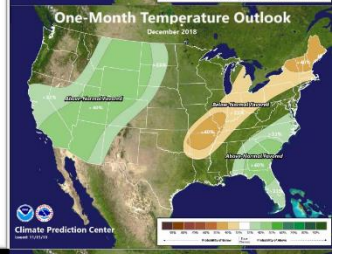
December 2018 Temperature & Precipitation Outlooks

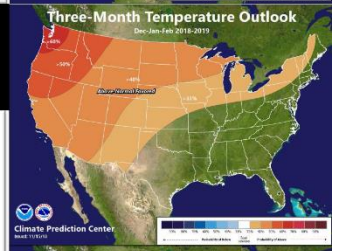
- Above normal temperatures are favored across the far western portions of Central Region during the month of December as a strong –AO and the MJO are expected to have an impact over the first half of the month. There is some indication for the patterns to flip over the second half of December. The Great Lakes Region has the highest potential for below normal temperatures next month.
- For December, El Niño has a good signal for an increased dry potential from the Ozarks to the SE Great Lakes region. This signal should be enhanced by a strong –AO this December. The western portions of the region could see some upslope enhanced precipitation next month with the remainder of Central Region in an area of equal chances for above, near or below normal precipitation.

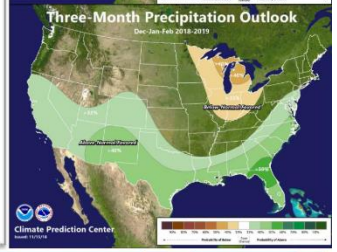
December through February Temperature & Precipitation Outlooks

- Above normal temperatures are favored across all but the southeastern portions of Central Region this winter. This is supported by ensemble model forecasts with the expanded area of above, near or below normal temperatures across the southeastern US supported by a typical ENSO signal as well as the potential continuation of the –AO.
- Below normal precipitation is forecast for the Great Lakes region into the Ohio River Valley over the next 3 months. Above normal precipitation extends from the southwest and southern plains into Colorado and parts of southwestern Kansas and southern Wyoming. This is largely based on model guidance and an expect wet southern jet stream associated with typical El Niño conditions.









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National Weather Service
Central Region Climate Outlook

Dec 2018 – Feb 2019

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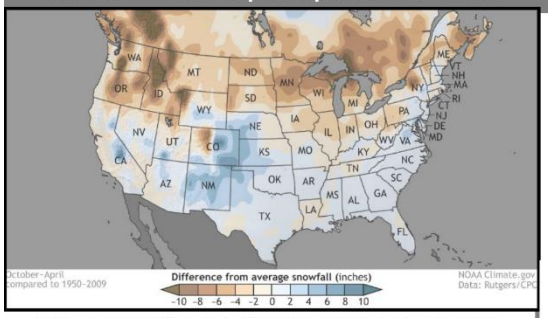
Inputs into the Outlooks

ENSO Status: El Niño Watch

Snowfall deviation map from past El Niño winters

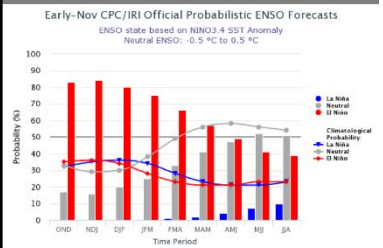


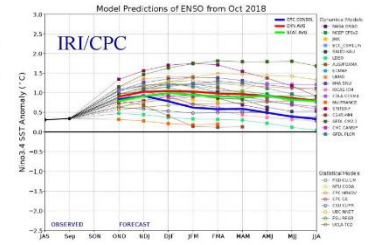
(While no single El Niño event is alike, when averaged together, the past 21 El Niño cold seasons have seen below normal snowfall across most of the Northern Plains and Great Lakes areas, with above normal snowfall across parts of the Central and High Plains.)

Typically, El Niño winters do tip the odds towards:

- Above-normal temperatures from the Pacific Northwest into the Great Lakes Region
- Cooler than normal temperatures across the southeastern U.S.
- Above-normal precipitation across the southern States
- Below-normal precipitation across the Ohio Valley

IRI/CPC Probabilistic ENSO Forecast/Plumes





- The official CPC/IRI ENSO probability forecast calls for a 85 percent for EL Niño conditions to develop over the next couple of months and persist through spring when ENSO neutral conditions become favored.
- Model consensus continues to point towards a weak El Niño with sea surface temperature anomalies across the Tropical Pacific peaking around +1.0°C.

Useful Links/Info:

- NOAA's Winter Outlook
- Latest ENSO Blog from Climate.gov
- Sea Surface Temperatures from the Climate Prediction Center
- Latest ENSO Discussion from the Climate Prediction Center
- Drought Information from the US Drought Monitor
- Interactive GIS Mapping from NCEI (Anomalies/Rankings)
- Local Climate Analysis Tool (LCAT) – Account registration required
- NWS Forecast Maps from Western Region

Other Teleconnection Effects

- Because of the weak El Niño conditions forecast for this winter, other teleconnection patterns such as the MJO (which can contribute to heavy precipitation across the west) the PNA and the AO (which can result in Artic air masses moving south) will likely have significant impacts on actual weather conditions this winter.

Building a Weather-Ready Nation

For more info, contact: **ray.wolf@noaa.gov**

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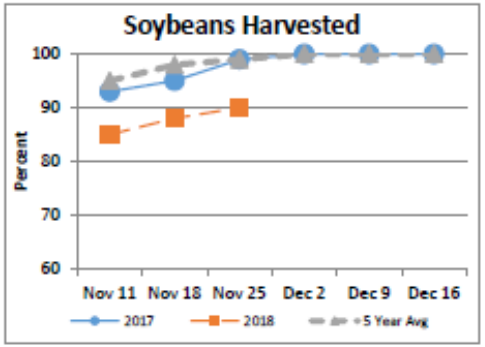
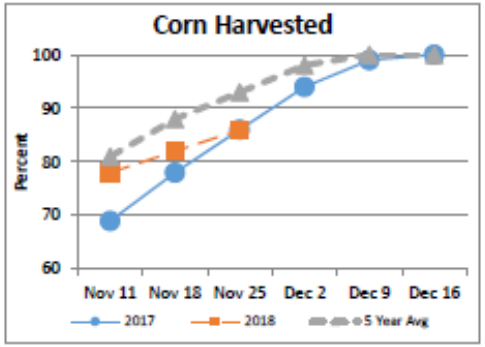
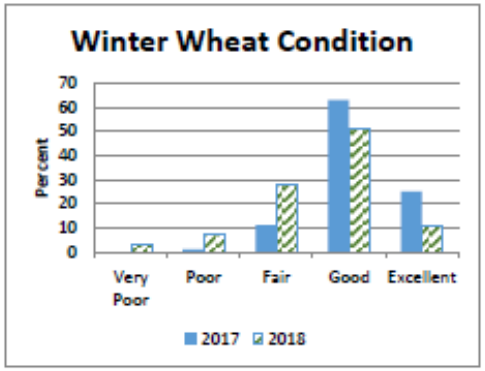
Ag Highlights

- 2.1 days suitable for work (through Nov. 25)
- Corn and soybean harvest stalled due to excess moisture
- Most operators were waiting for the ground to freeze in order to harvest remaining corn and soybeans







NASS: Cheryl Turner –
https://www.nass.usda.gov/Statistics_by_State/Ohio/Publications/Crop_Progress_&_Condition/2017/cw3017oh.pdf

Summary of Conditions

Front and Back Photo Credits: Dan Keck (@Flickr)

Drought Monitor: No drought - saturated

Climate Recap: Cold and wet; soils are saturated and streams are running high

The week ahead: Variable weather pattern continues; warmer weekend with yet more rain then cooler and drier weather next week

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