

Midwest and Great Plains Climate & Drought Outlook 16 November 2017

Jim Angel
IL State Climatologist
University of Illinois
Champaign, IL
jimangel@Illinois.edu
217-333-0729



Harvest underway in Illinois (IL Farm Bureau)



**United States Department of Agriculture
Midwest Climate Hub**

General Information

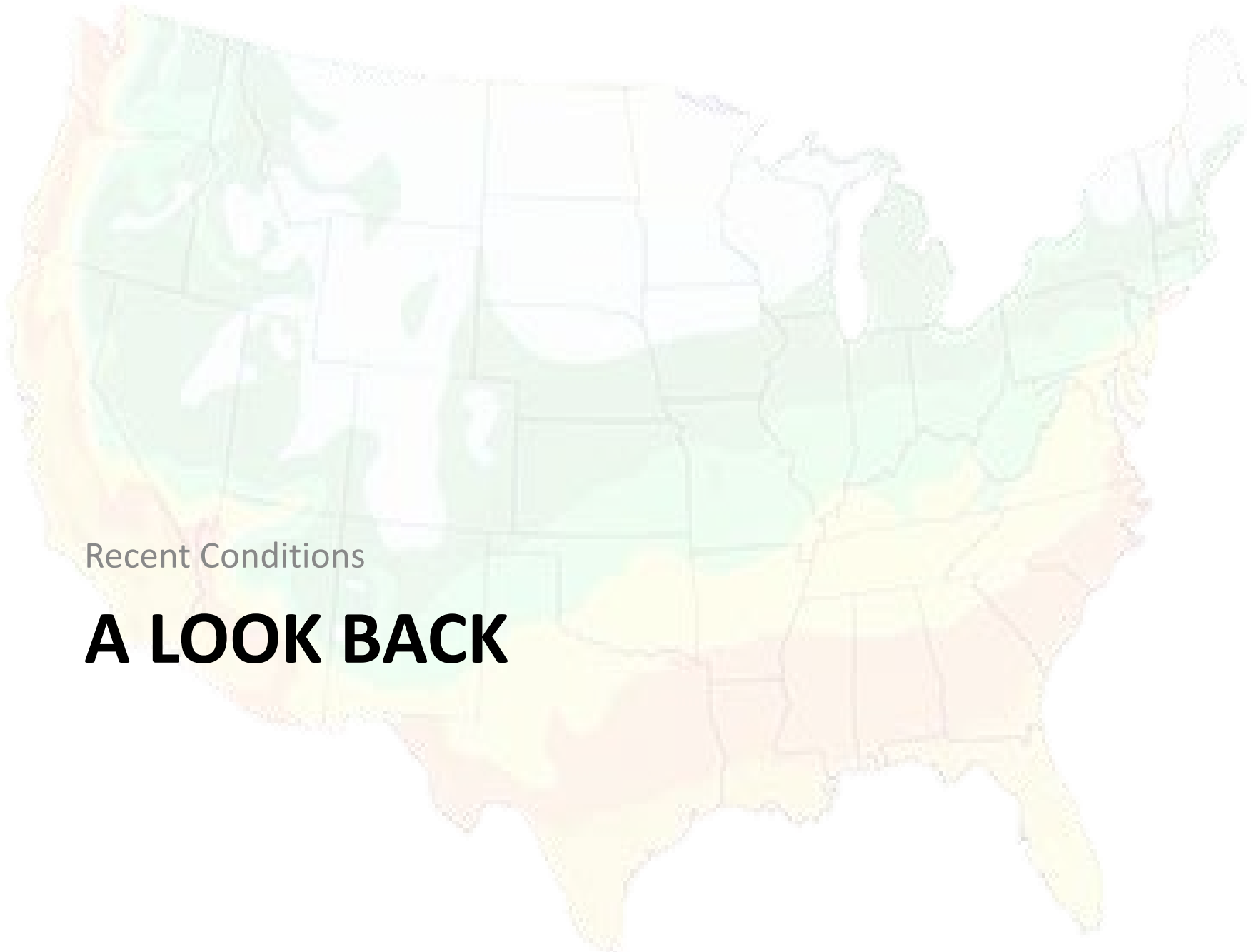
- **Providing climate services to the Central Region**
 - Collaboration Activity Between:
 - State Climatologists/American Association of State Climatologists
 - NOAA NCEI/NWS/OAR/NIDIS/
 - USDA Climate Hubs
 - Midwest and High Plains Regional Climate Centers
 - National Drought Mitigation Center
- **Next Regular Climate/Drought Outlook Webinar**
 - December 20, 2017 (1 PM CST), presenter Becky Bollinger (CSU)
- **Access to Future Climate Webinars and Information**
- <http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu/webinars.php>
- **Open for questions at the end**

Agenda

- **Recent Conditions**
- **Impacts**
- **Outlooks**
 - **La Niña Advisory**
 - **Winter season**



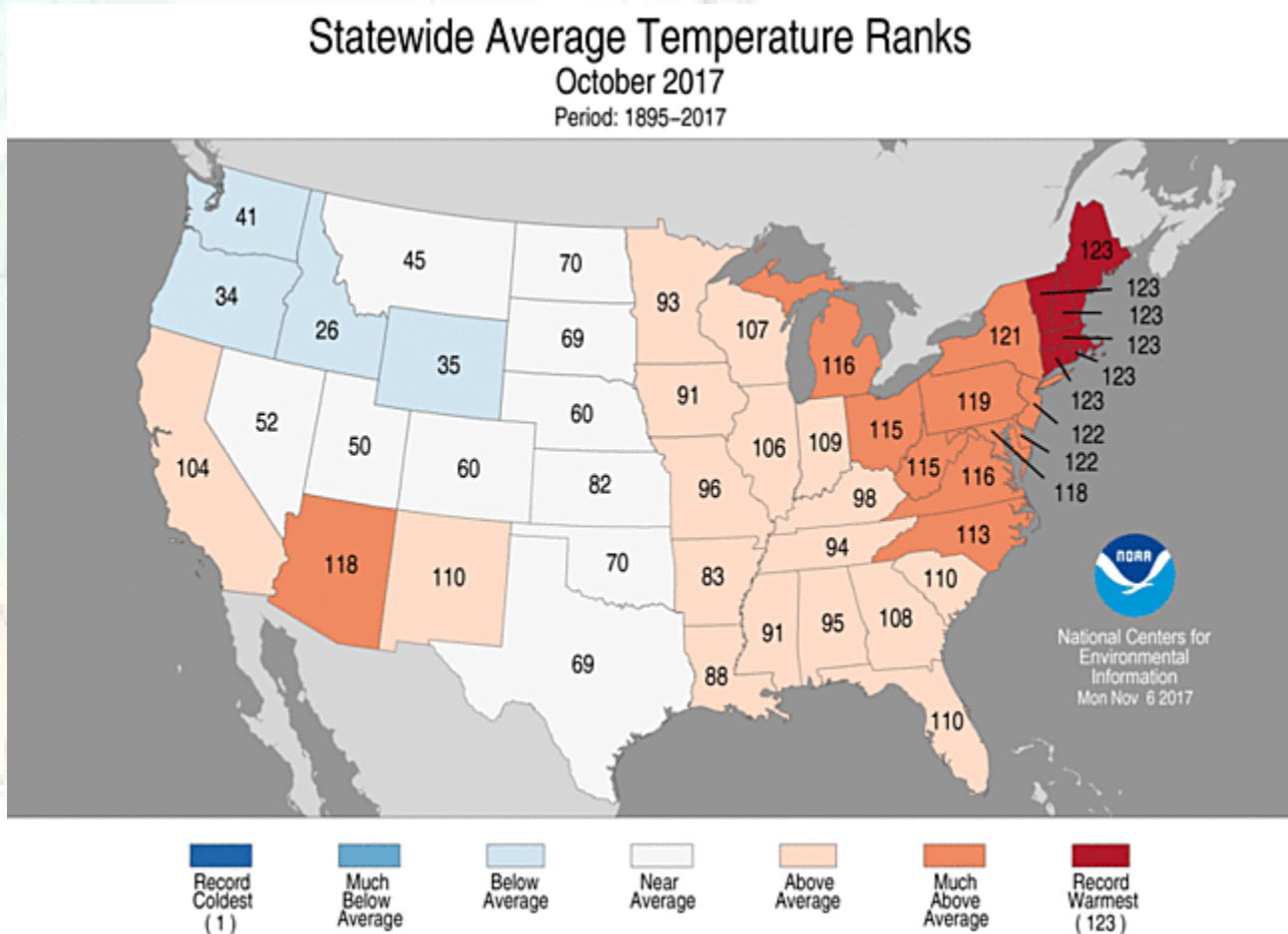
NWS Milwaukee, November 13



Recent Conditions

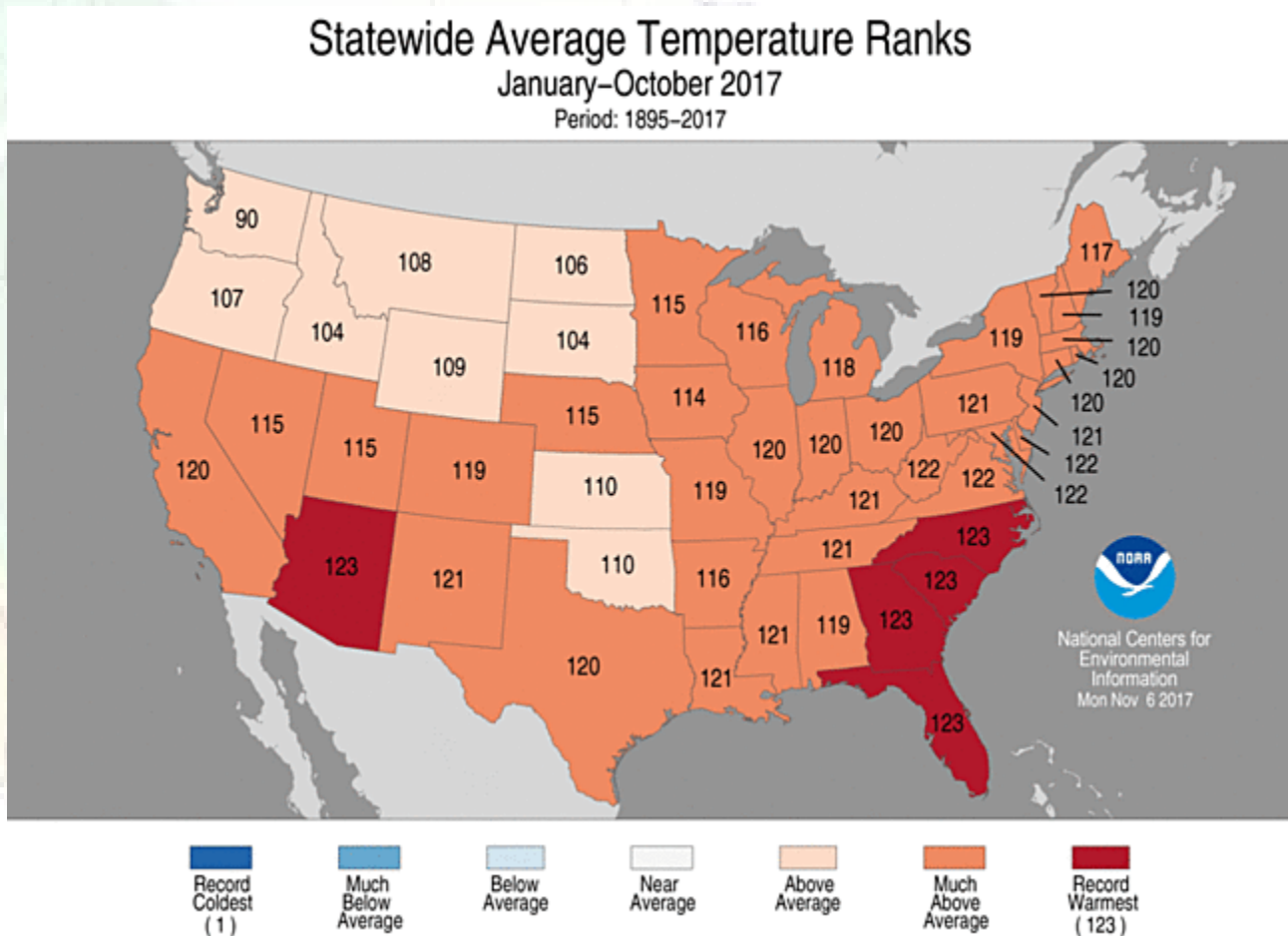
A LOOK BACK

October Temperature Ranks



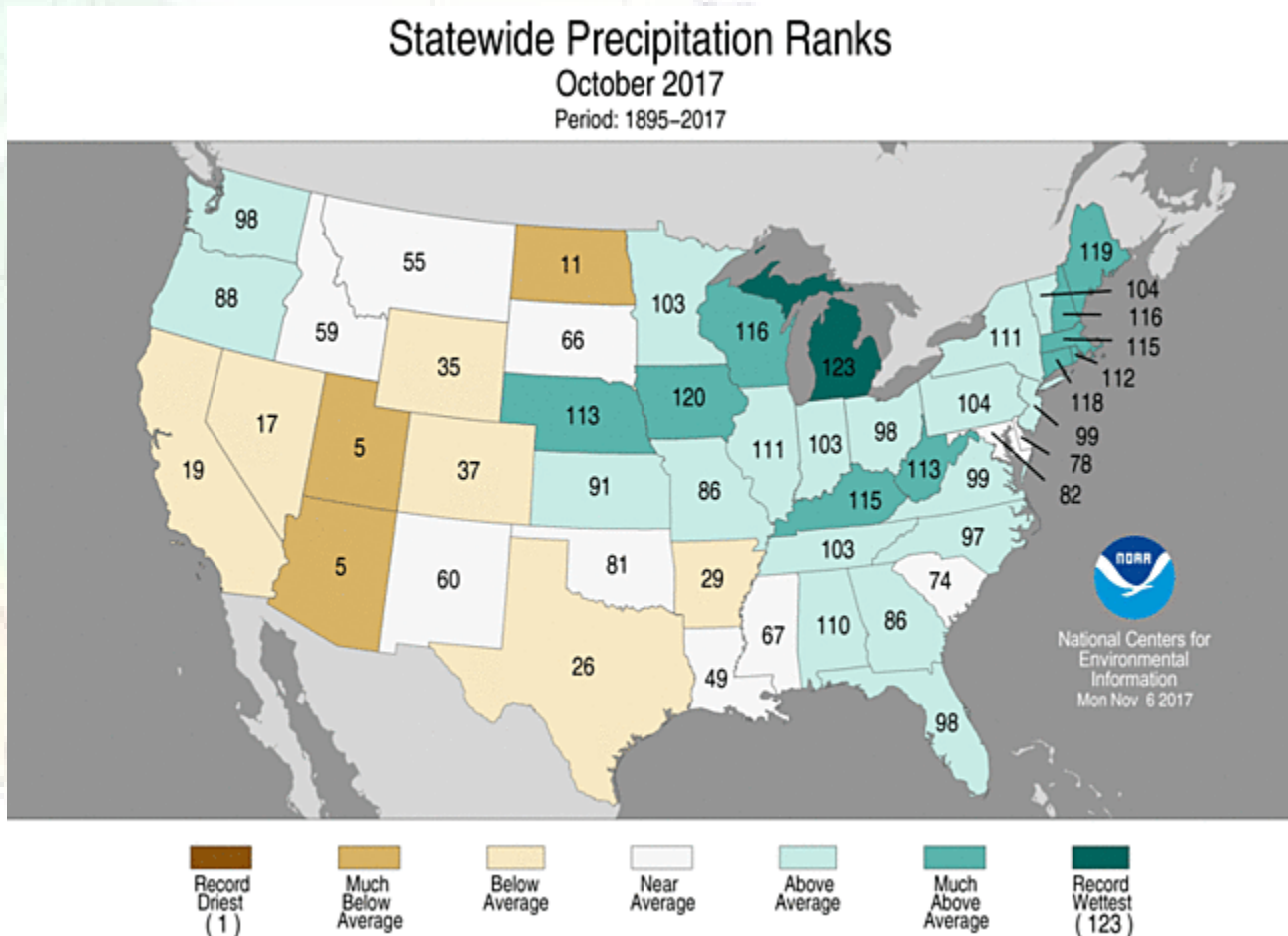
<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

Year To Date Temperature Ranks



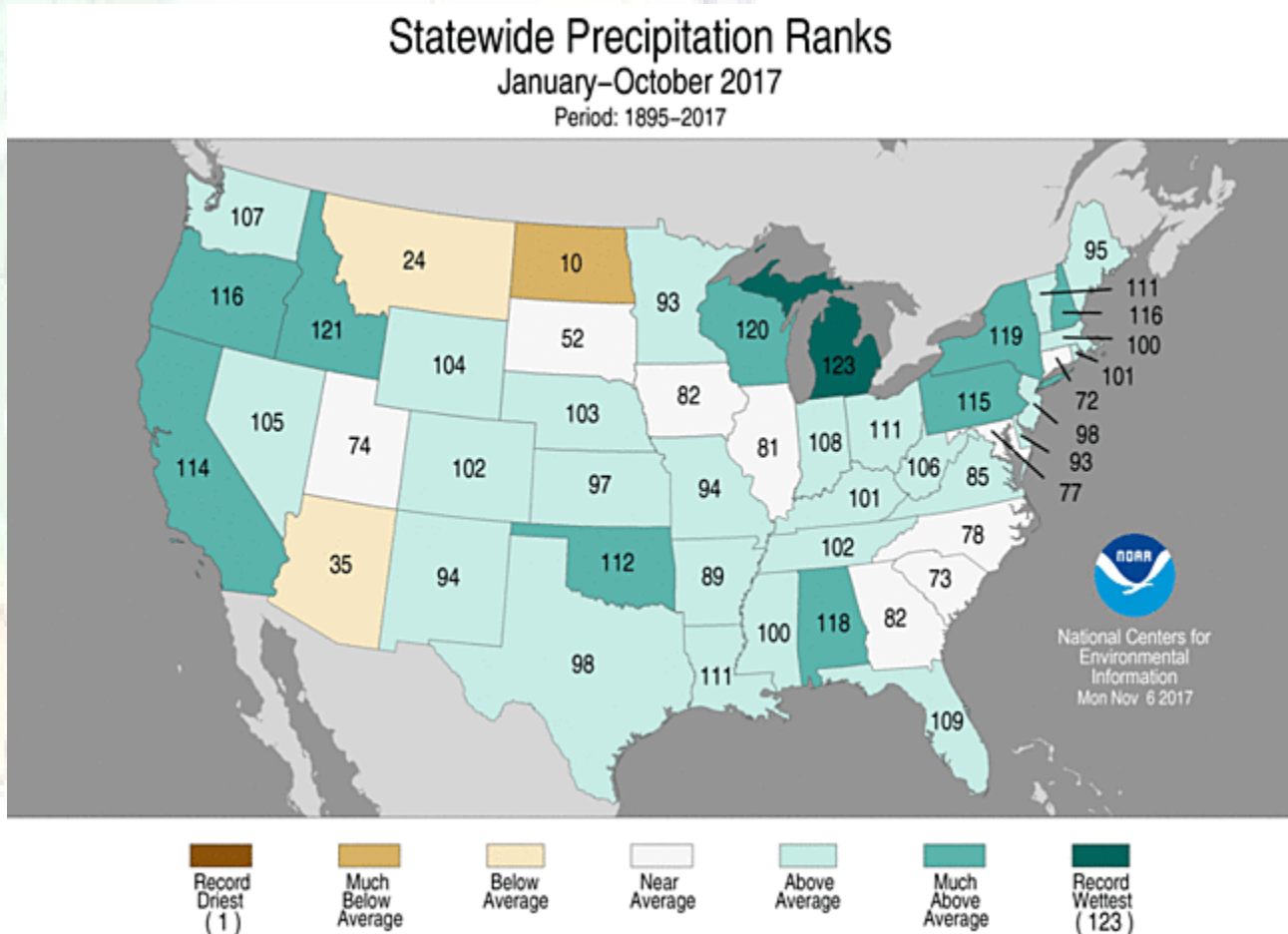
<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

October Precipitation Ranks



<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

Year to Date Precipitation Ranks

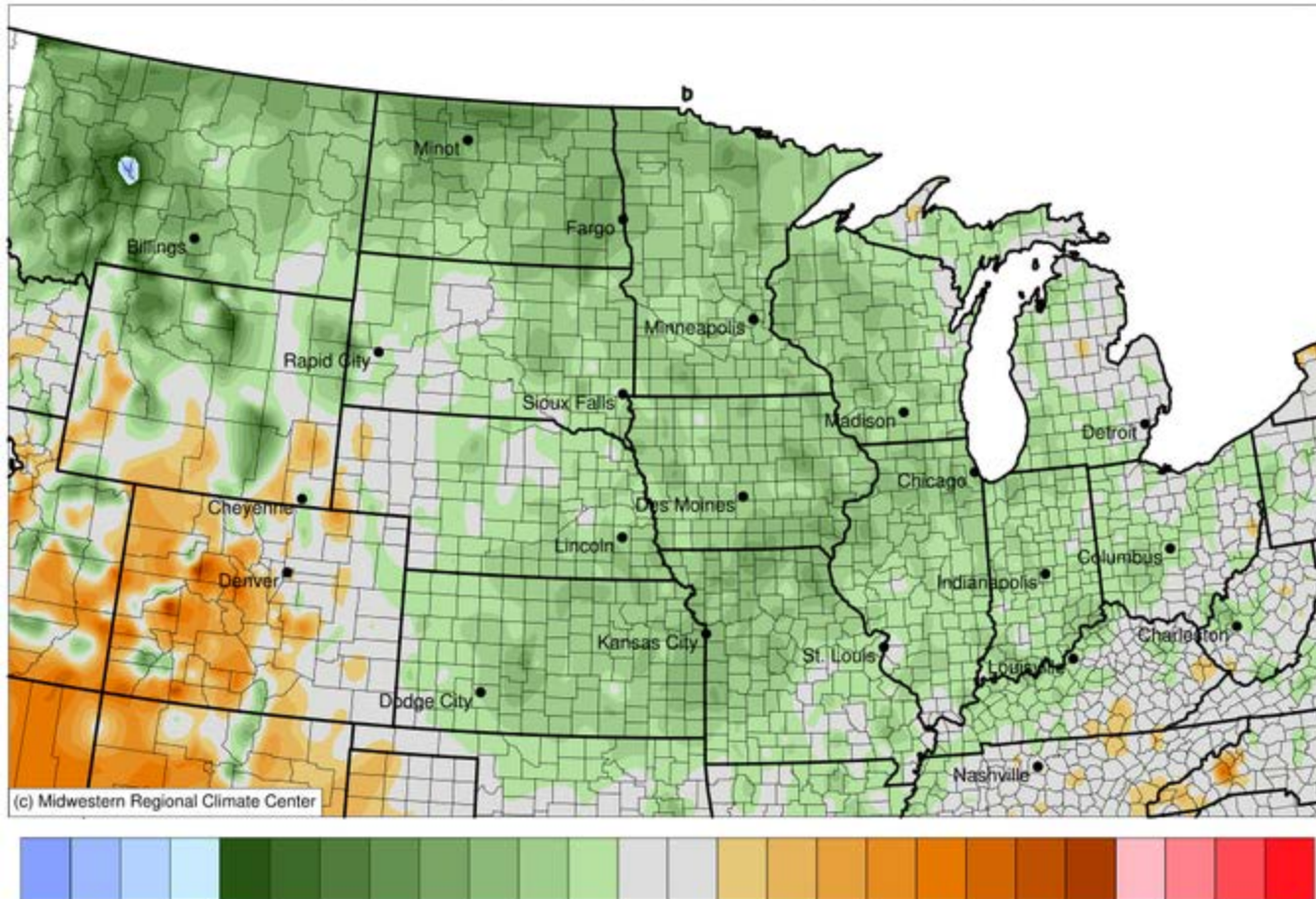


<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

Last 30 Days

Average Temperature (°F): Departure from 1981-2010 Normals

October 18, 2017 to November 15, 2017

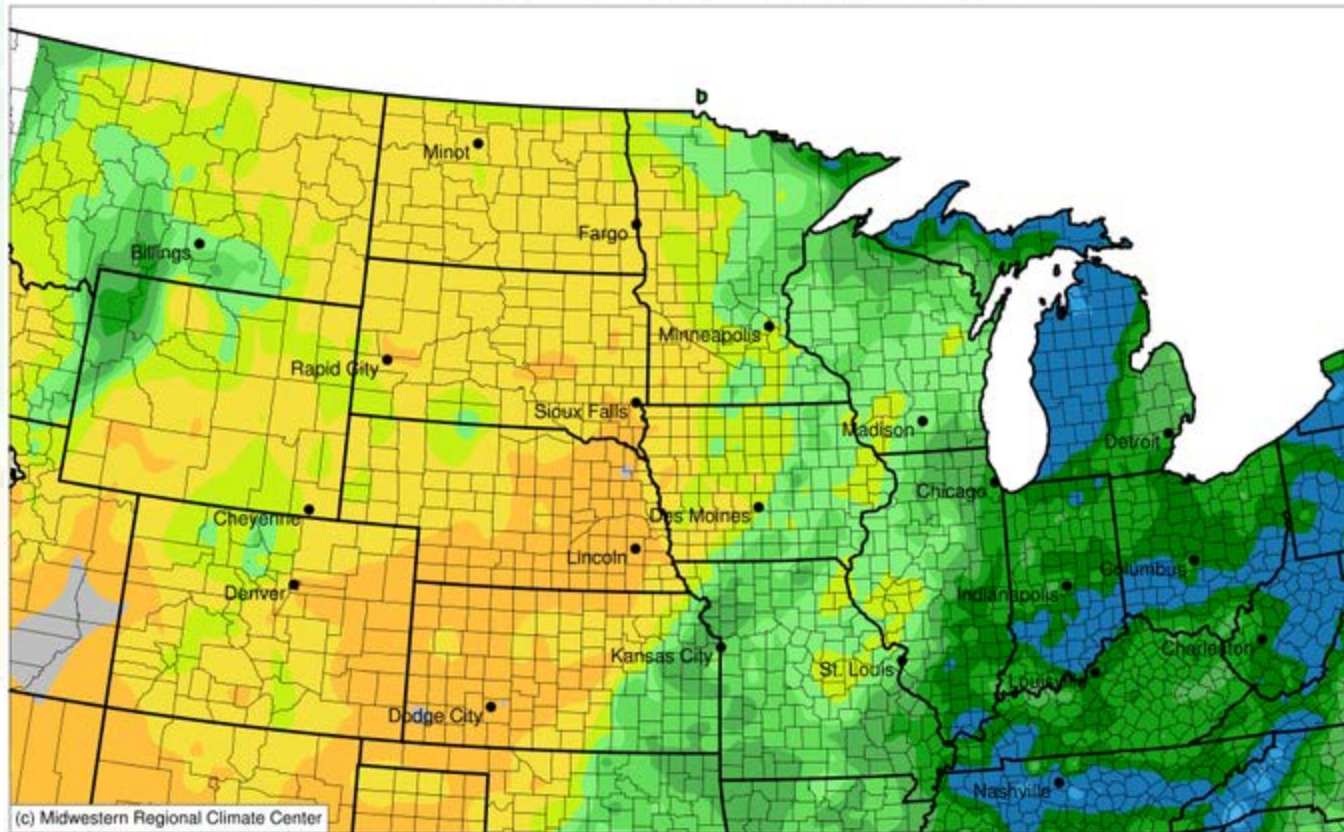


-12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12

Last 30 Days

Accumulated Precipitation (in)

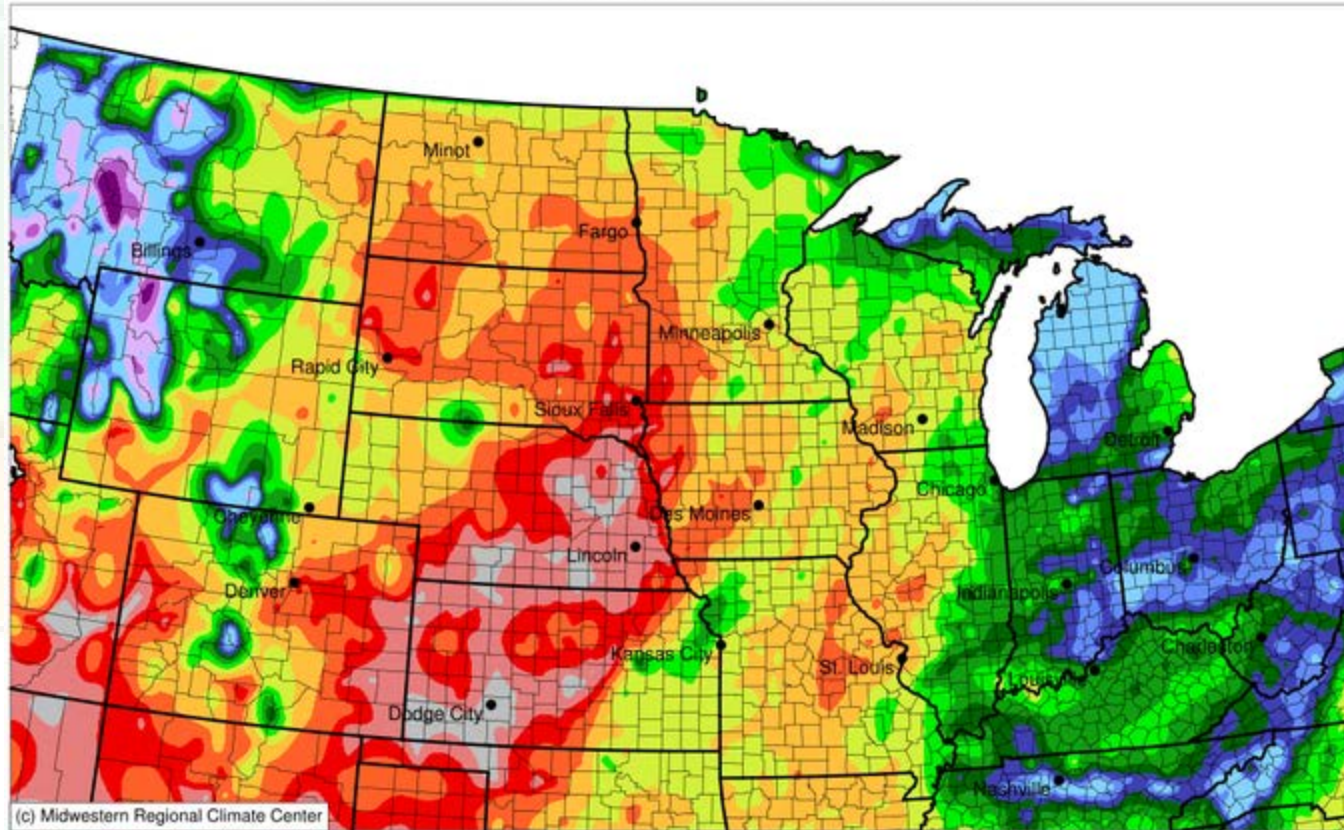
October 18, 2017 to November 16, 2017



Last 30 Days

Accumulated Precipitation (in): Percent of 1981-2010 Normals

October 18, 2017 to November 16, 2017



(c) Midwestern Regional Climate Center



2 5 10 25 50 75 100 125 150 175 200 300 400 500

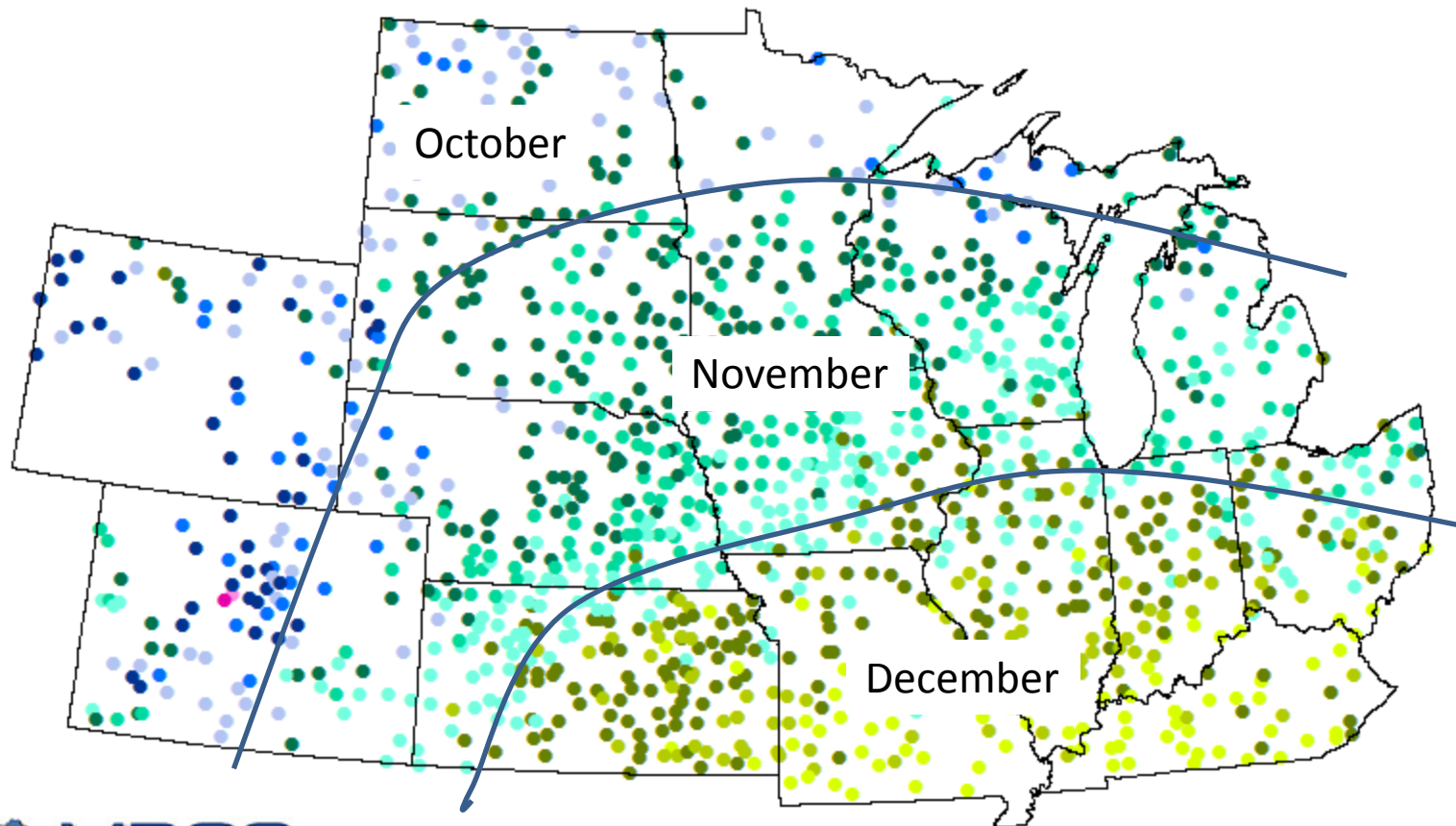
First Measurable Snow

From the years 1981-2010 only

Median Date Of First Measurable Snow

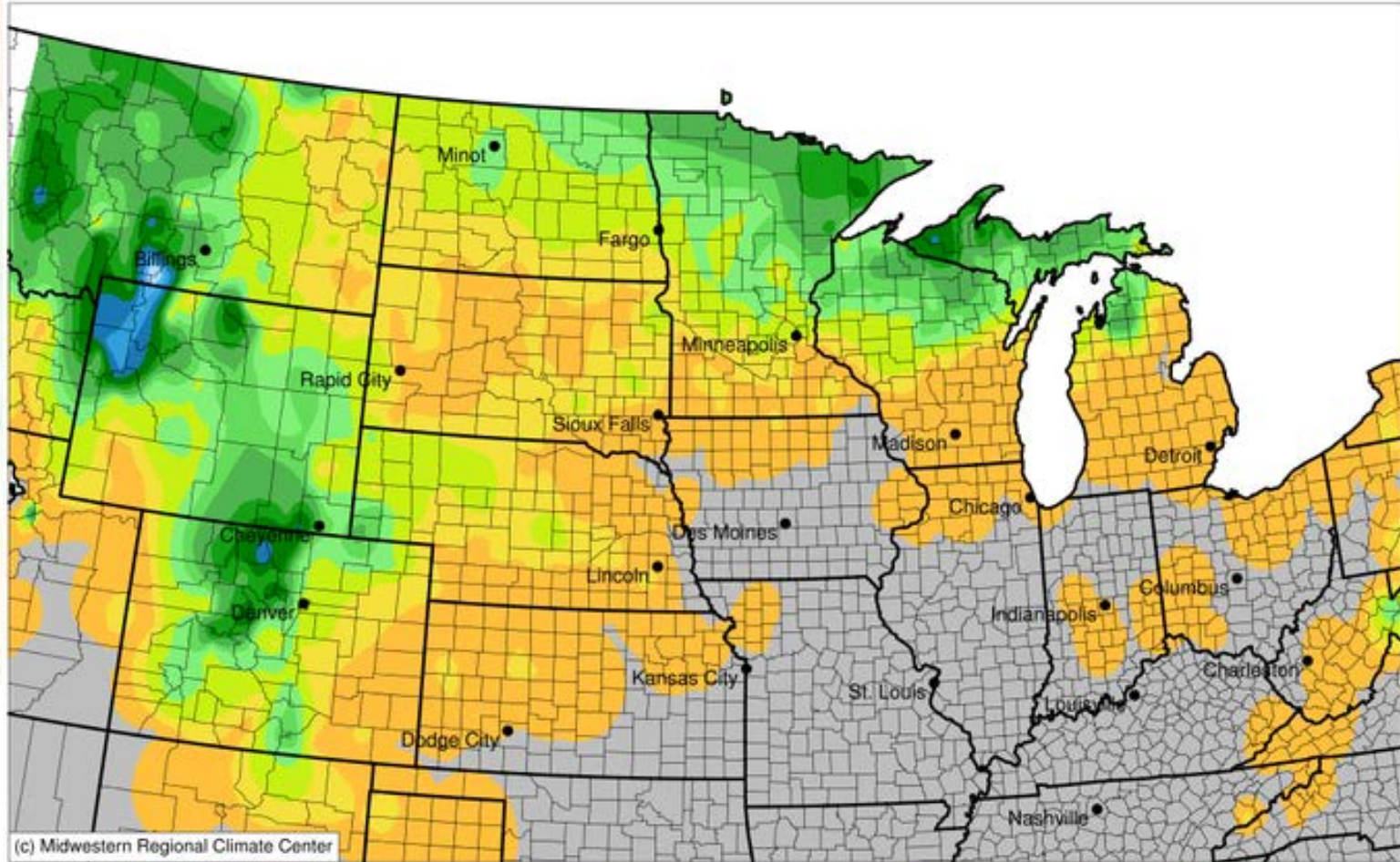
- | | | | |
|---------------------|---------------|---------------|-------------------|
| ● Sep 10 or Earlier | ● Oct 1 - 10 | ● Nov 1 - 10 | ● Dec 1 - 10 |
| ● Sep 11 - 20 | ● Oct 11 - 20 | ● Nov 11 - 20 | ● Dec 11 - 20 |
| ● Sep 21 - 30 | ● Oct 21 - 31 | ● Nov 21 - 30 | ● Dec 21 or Later |

Median date is determined such that half of all years fall before and half fall after the median date.



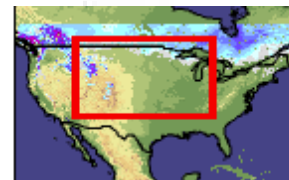
Accumulated Snowfall (in)

July 01, 2017 to November 16, 2017

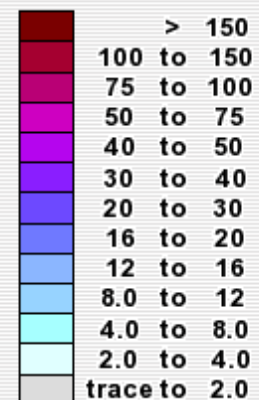


Modeled Snow Depth for 2017 November 16, 6:00 UTC

1306 mi

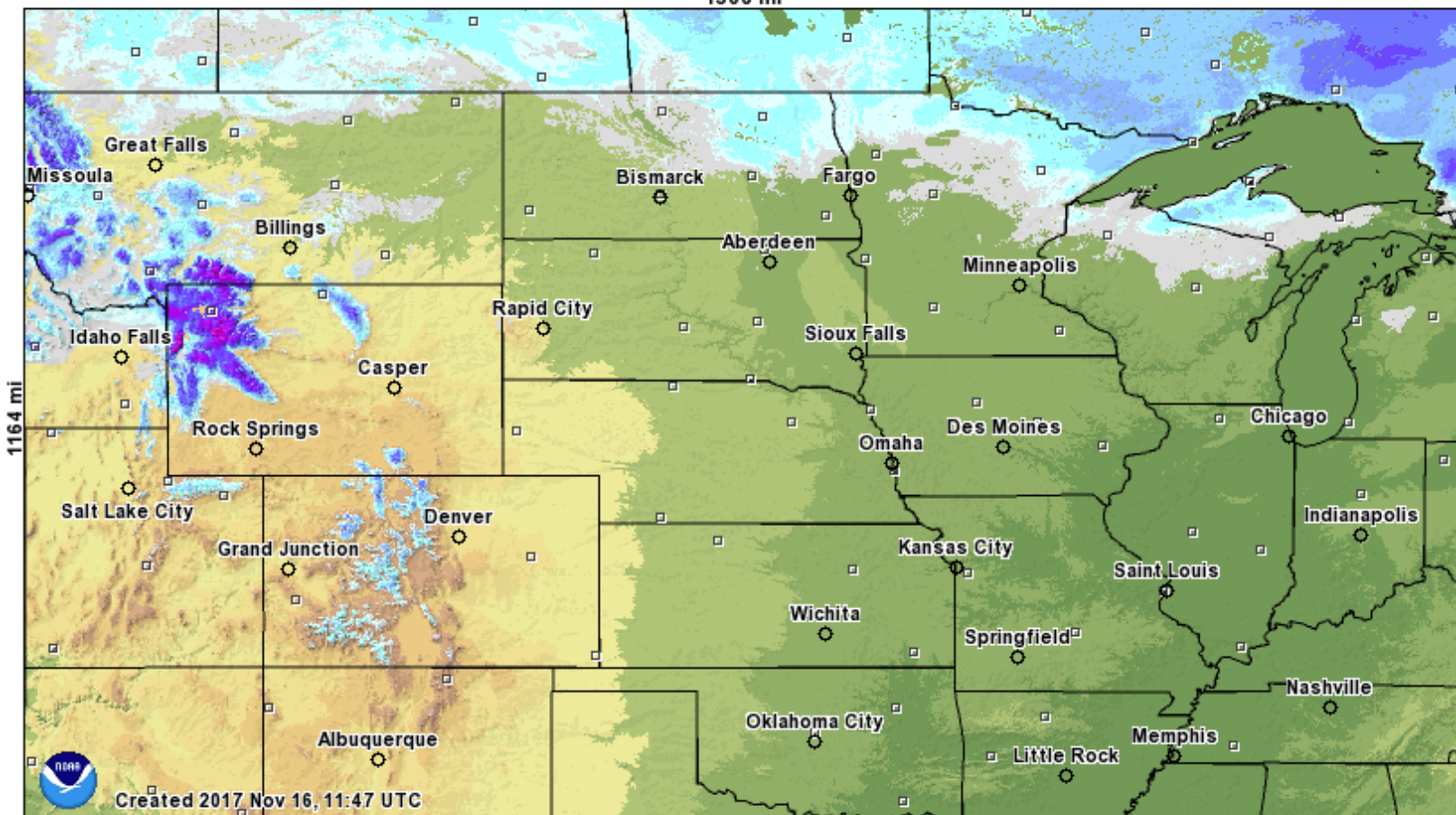
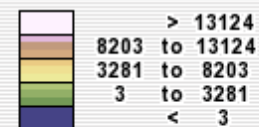


Inches of depth



Not Estimate

Elevation in feet



1164 mi

1164 mi

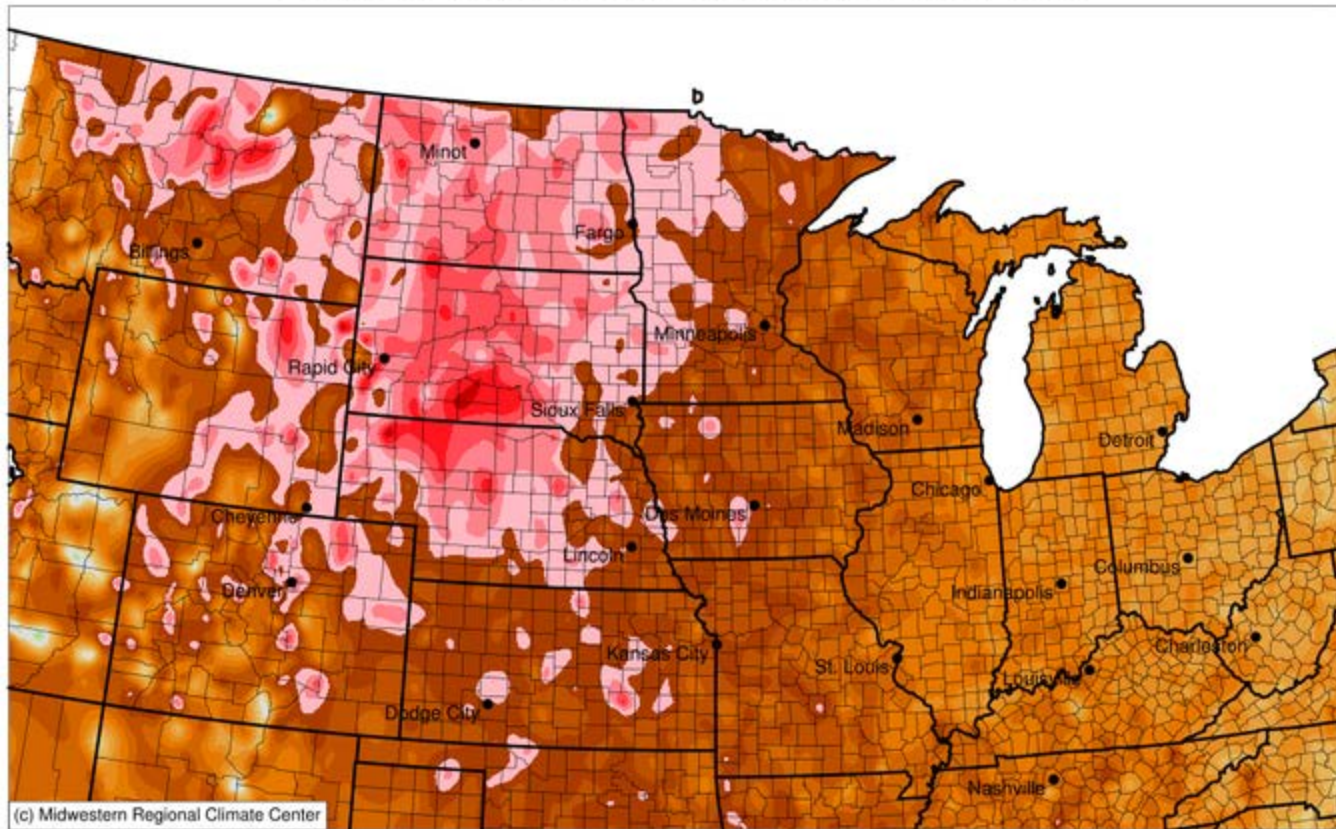
1718 mi



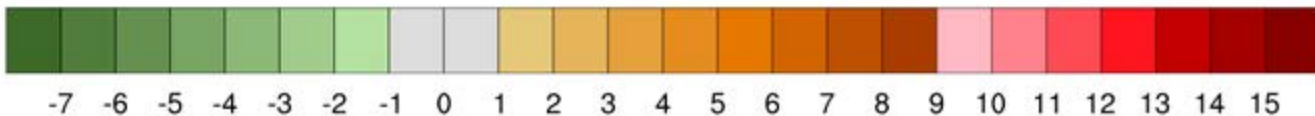
Created 2017 Nov 16, 11:47 UTC

A Year Ago At This Time - HOT

Average Temperature (°F): Departure from 1981-2010 Normals
October 18, 2016 to November 16, 2016

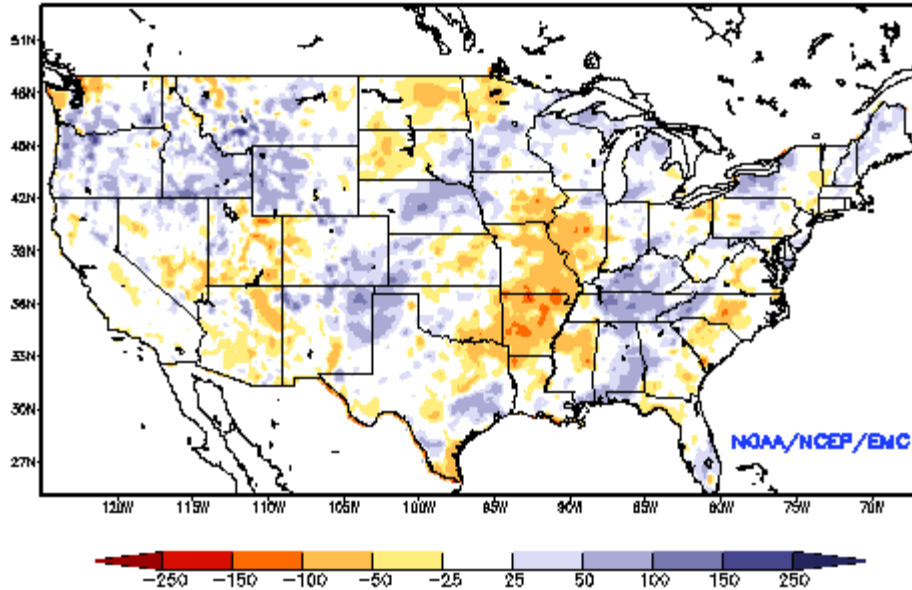


(c) Midwestern Regional Climate Center

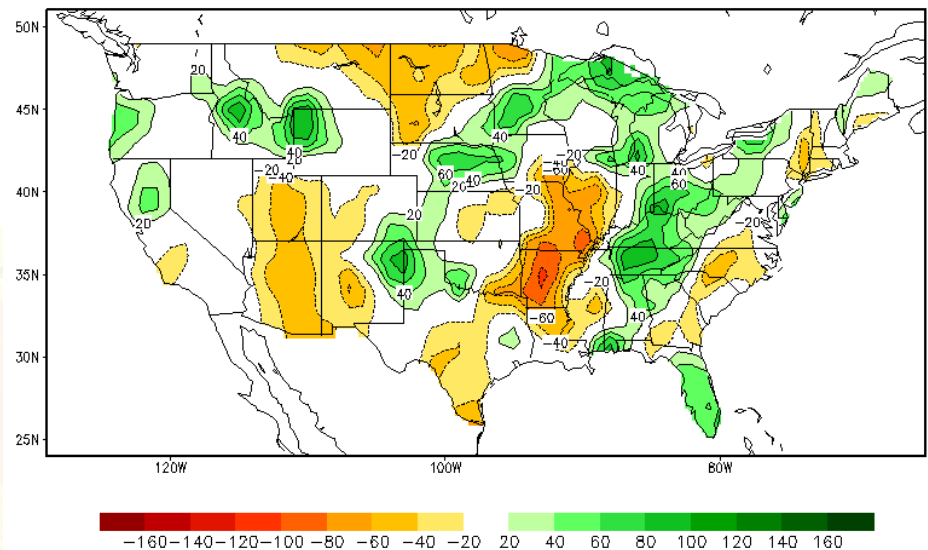


Modeled Soil Moisture

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: NOV 11, 2017

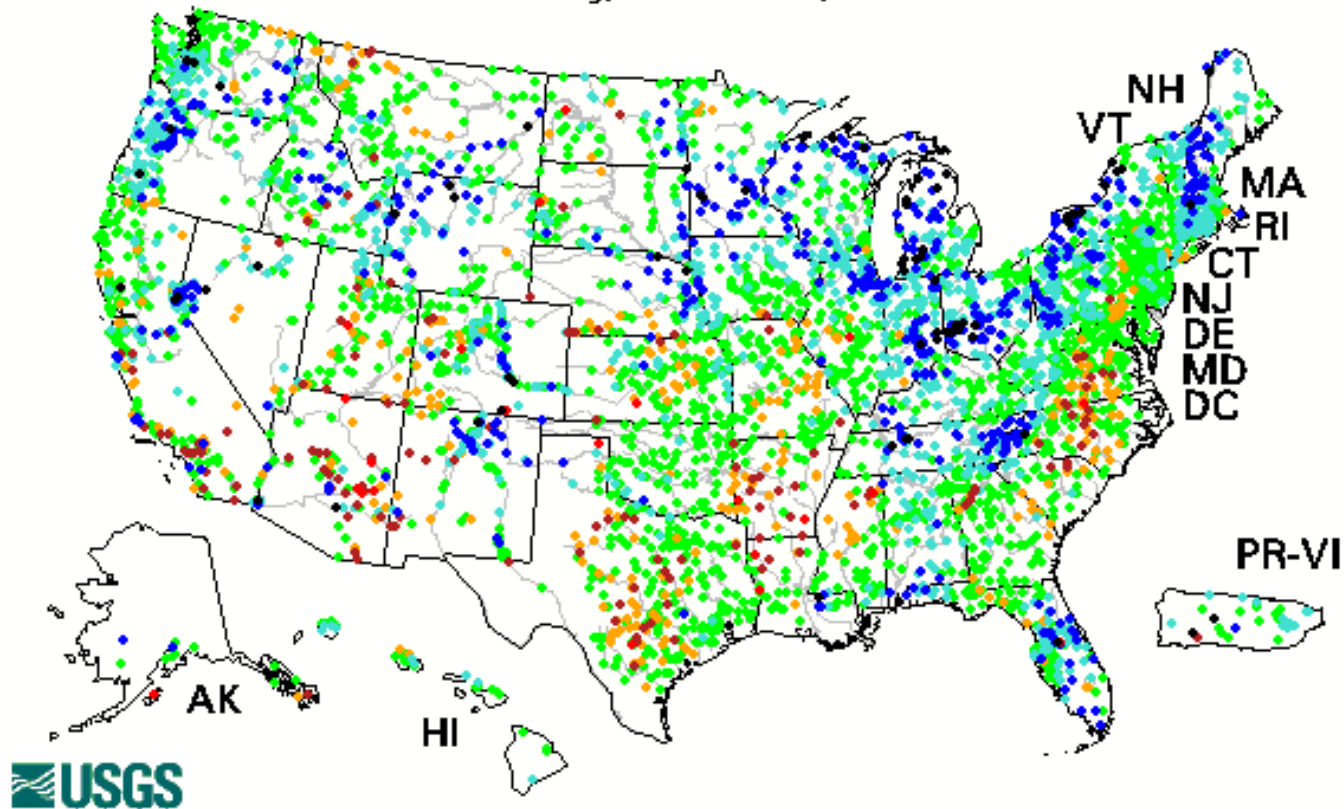


Calculated Soil Moisture Anomaly (mm)
NOV 14, 2017



28-Day Average Streamflow

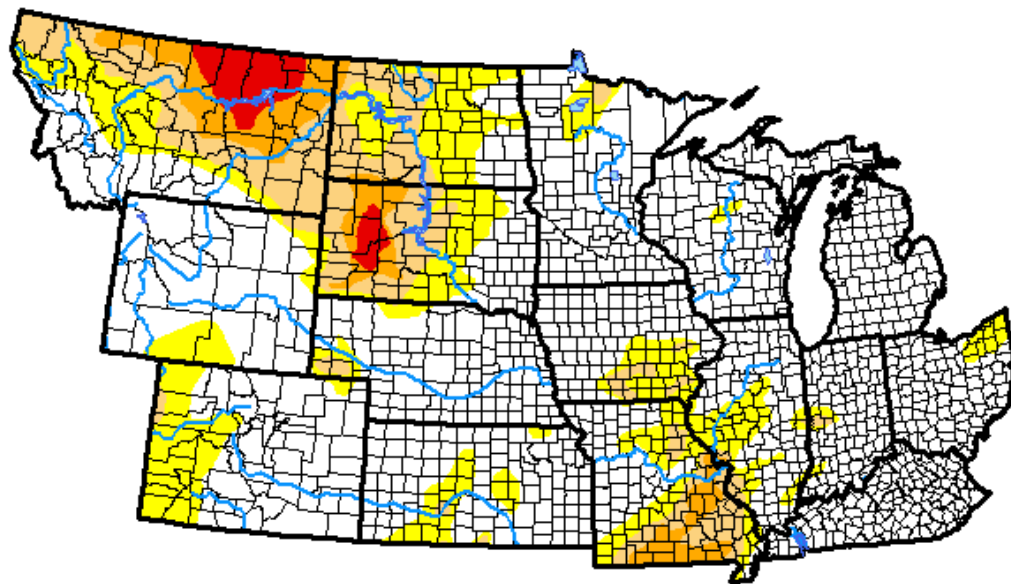
Wednesday, November 15, 2017



Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

U.S. Drought Monitor NWS Central Region

November 14, 2017
(Released Thursday, Nov. 16, 2017)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	67.00	33.00	16.30	6.32	1.96	0.00
Last Week <i>11-07-2017</i>	66.91	33.09	16.38	5.82	1.96	0.00
3 Months Ago <i>08-15-2017</i>	56.08	43.92	25.38	13.82	6.39	1.82
Start of Calendar Year <i>01-03-2017</i>	65.79	34.21	12.04	1.70	0.00	0.00
Start of Water Year <i>09-26-2017</i>	50.80	49.20	24.09	12.89	6.13	2.26
One Year Ago <i>11-15-2016</i>	64.78	35.22	14.35	3.43	0.01	0.00

Intensity:

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

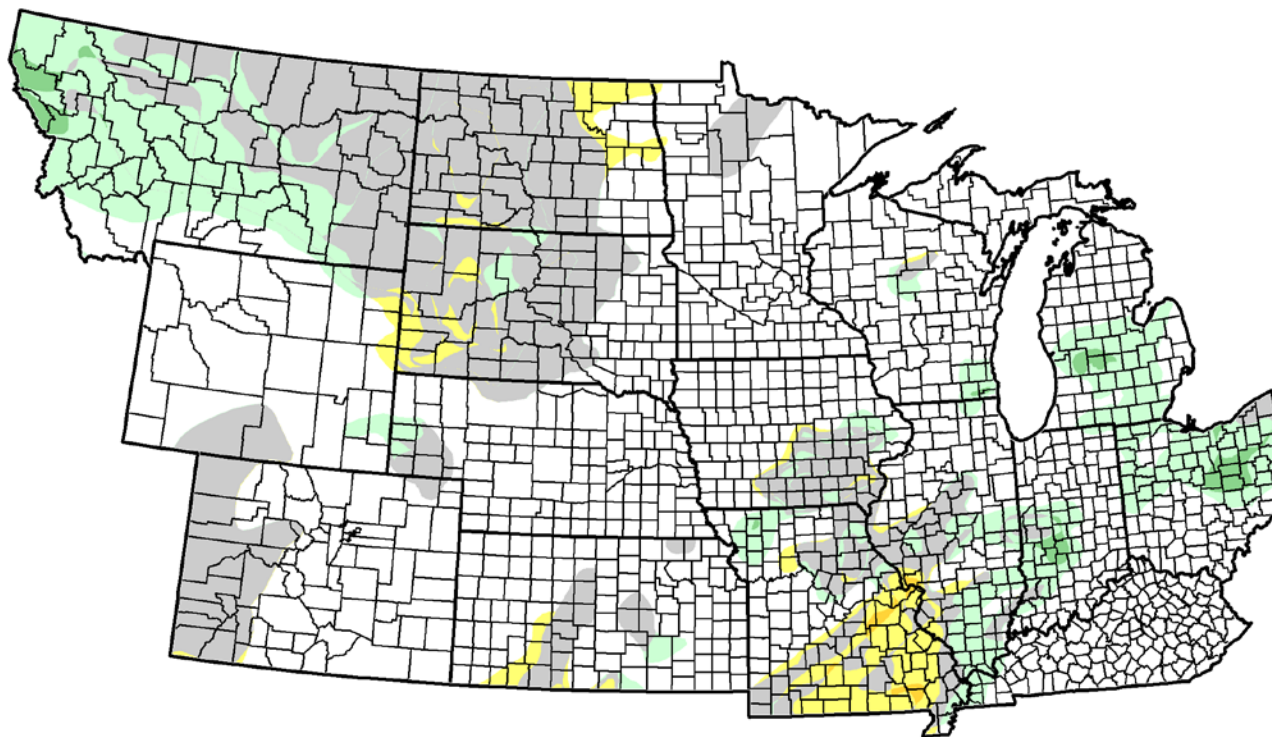
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



U.S. Drought Monitor Class Change - NWS Central Region 1 Month



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

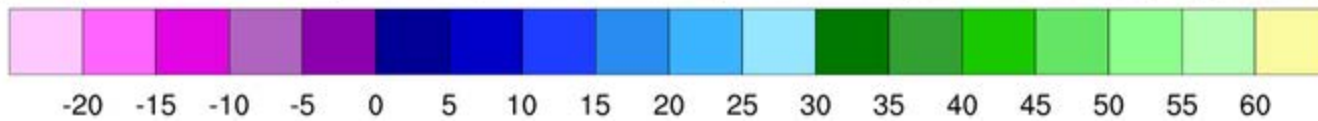
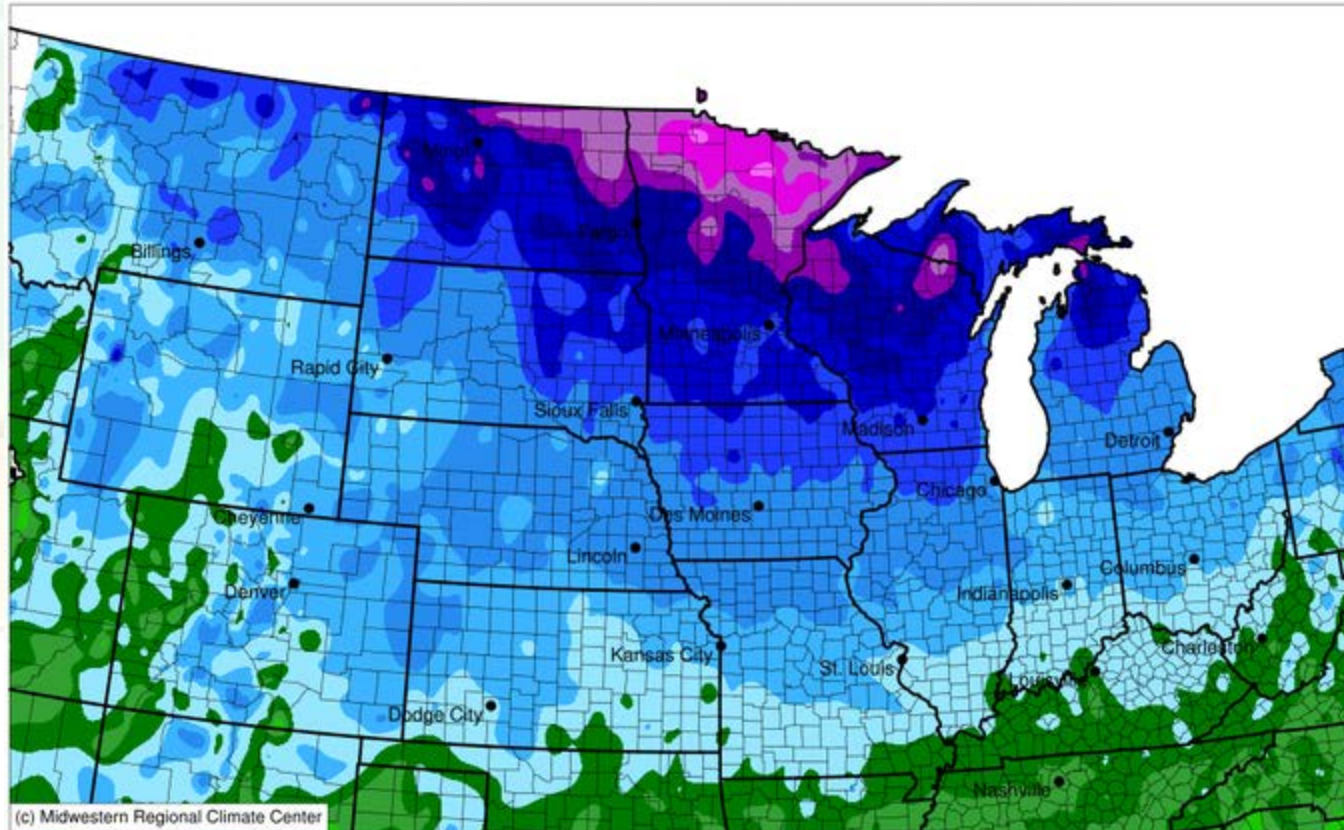
November 14, 2017
compared to
October 17, 2017

<http://droughtmonitor.unl.edu>

Shots of Cold Air

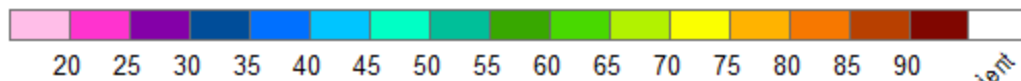
Average Minimum Temperature (°F)

November 10, 2017 to November 10, 2017



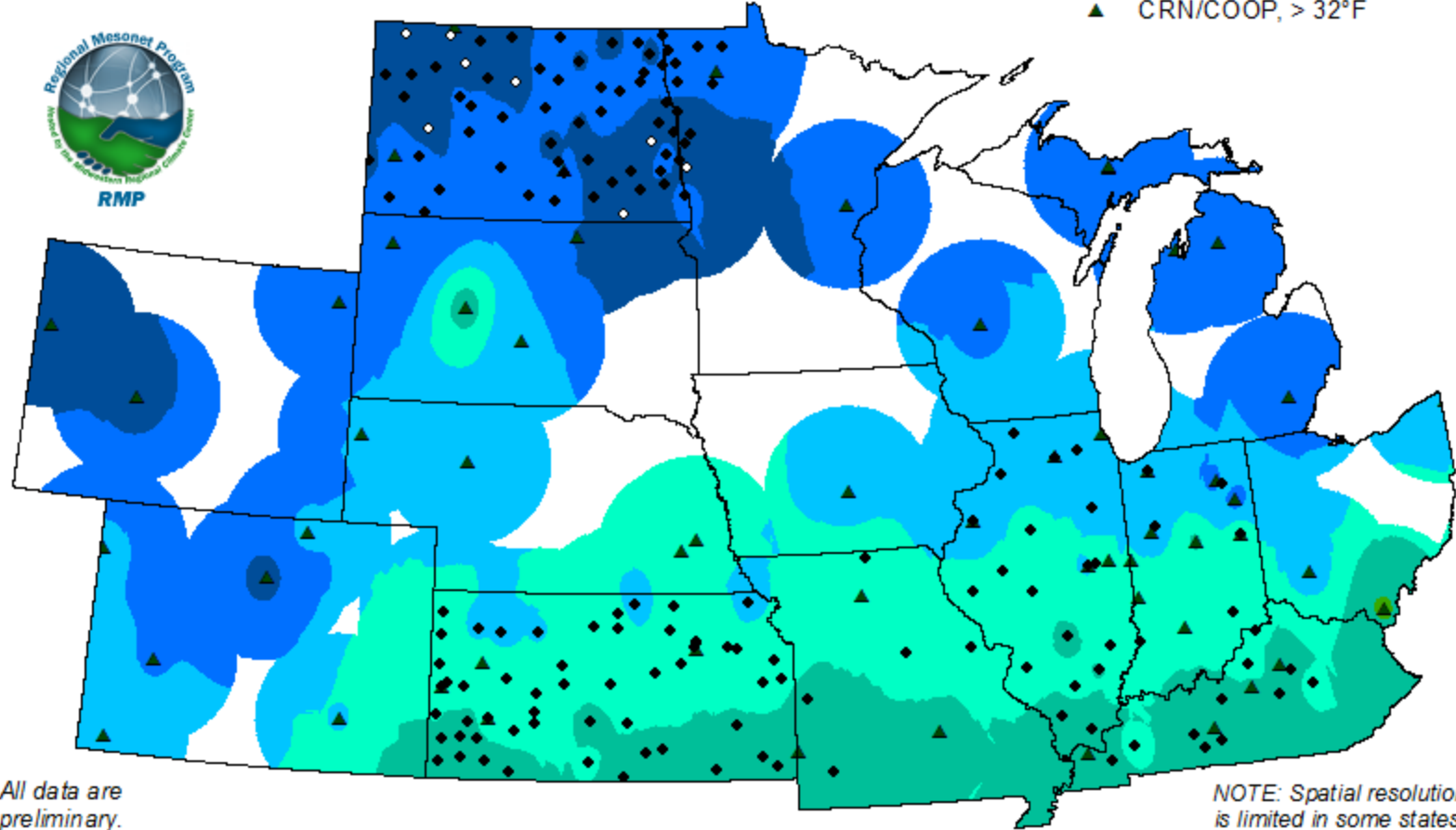
4" Soil Temperature (°F) (Sod)

24-Hour Period Through 11/14/2017



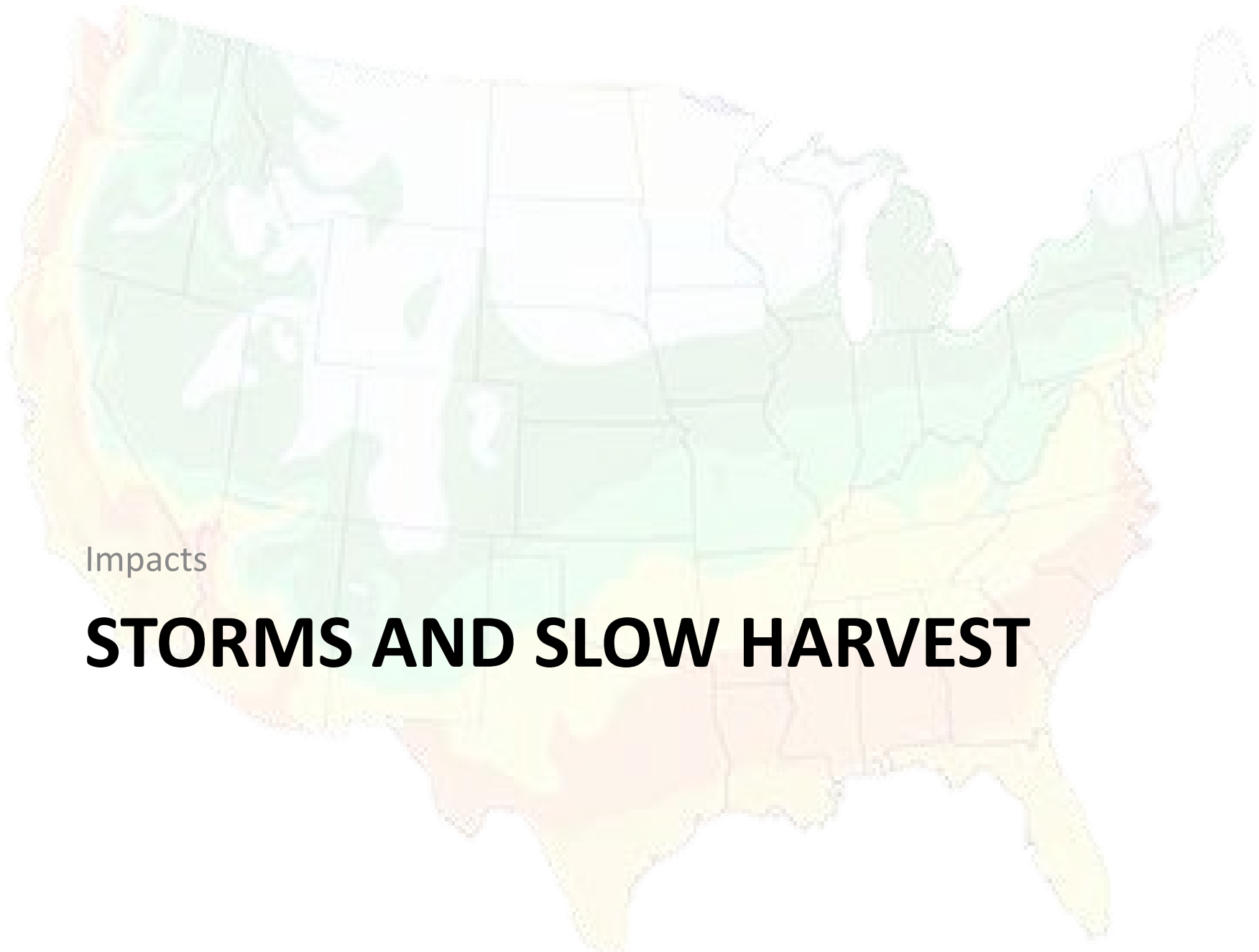
Insufficient Data

- ◇ Mesonets, $\leq 32^\circ\text{F}$
- ◆ Mesonets, $> 32^\circ\text{F}$
- △ CRN/COOP, $\leq 32^\circ\text{F}$
- ▲ CRN/COOP, $> 32^\circ\text{F}$



All data are preliminary.

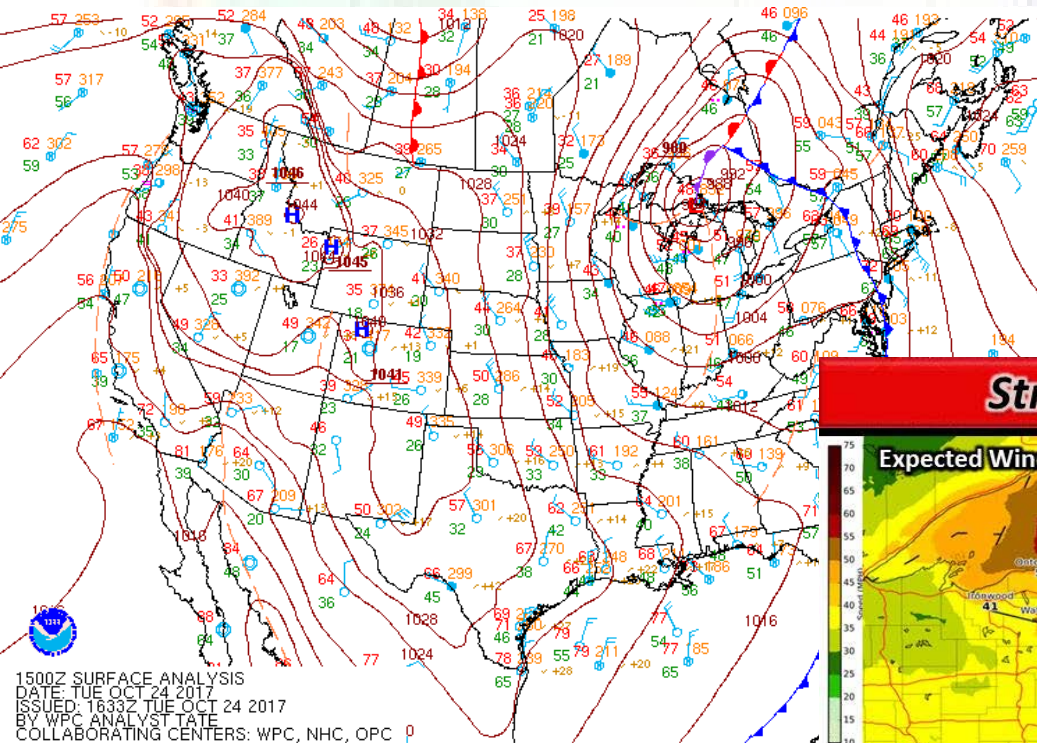
NOTE: Spatial resolution is limited in some states.



Impacts

STORMS AND SLOW HARVEST

October 24, 2017

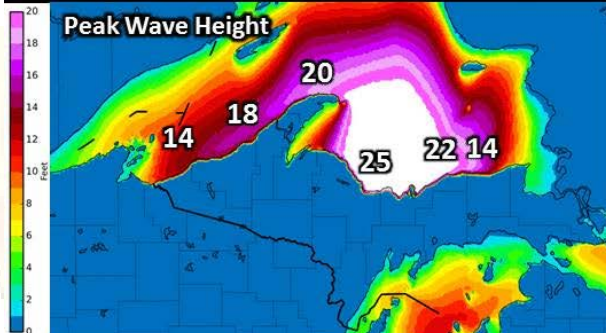


1500Z SURFACE ANALYSIS
 DATE: TUE OCT 24 2017
 ISSUED: 1833Z TUE OCT 24 2017
 BY WPC ANALYST IAT
 COLLABORATING CENTERS: WPC, NHC, OPC

Strong Winds and Giant Waves Today



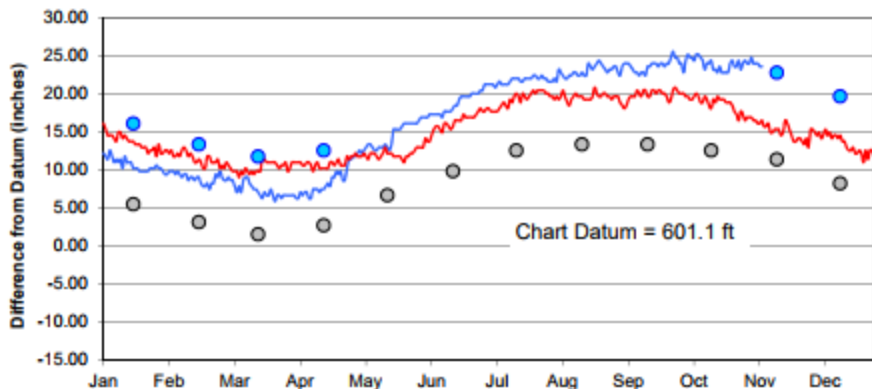
Winds Today
Gusts 60-70mph possible along portions of Lake Superior
 Sporadic power outages
 35-55mph inland



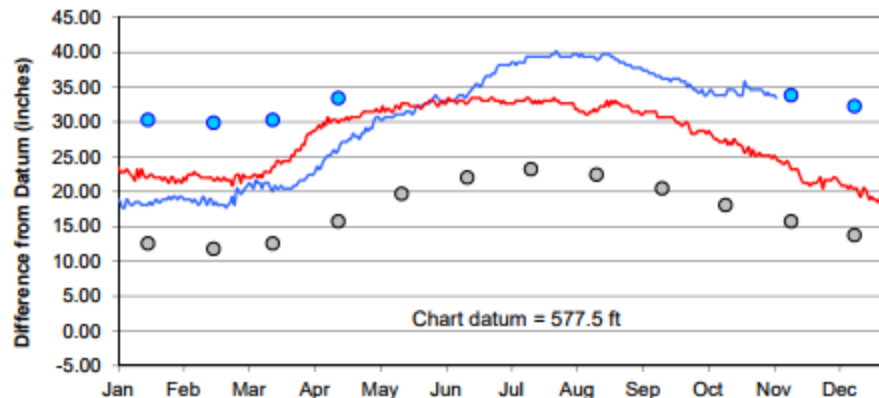
Waves Today
Waves up to 25 feet will lead to significant lakeshore flooding and beach erosion

Shoreline Erosion
 Damage to Facilities
 Loss of Power

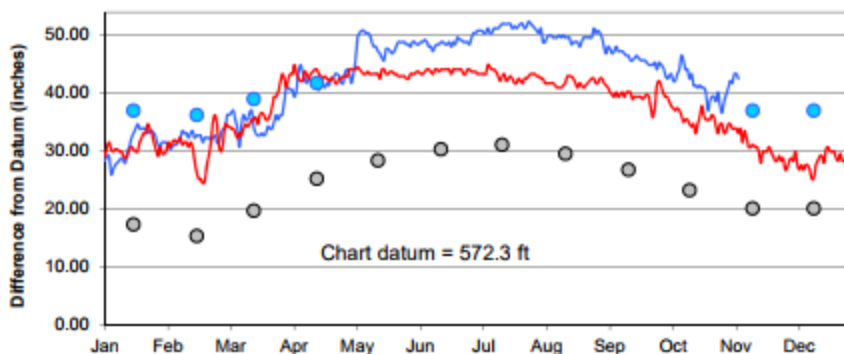
Lake Superior



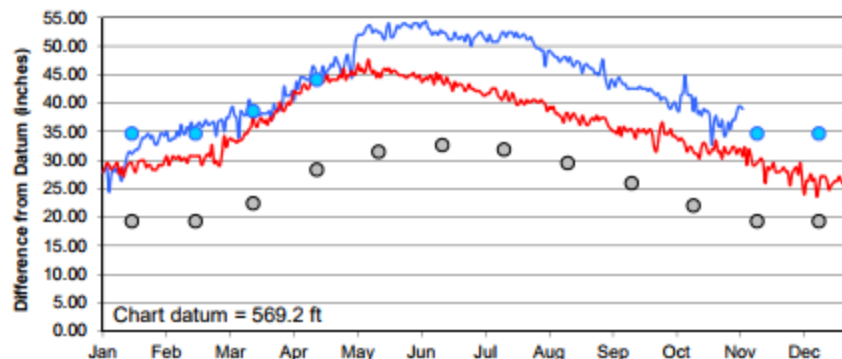
Lake Michigan-Huron



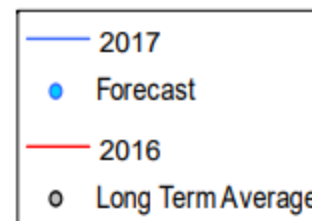
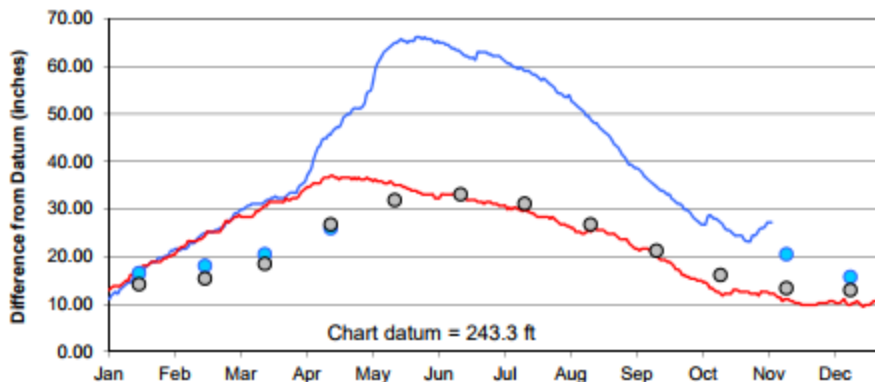
Lake St. Clair



Lake Erie



Lake Ontario

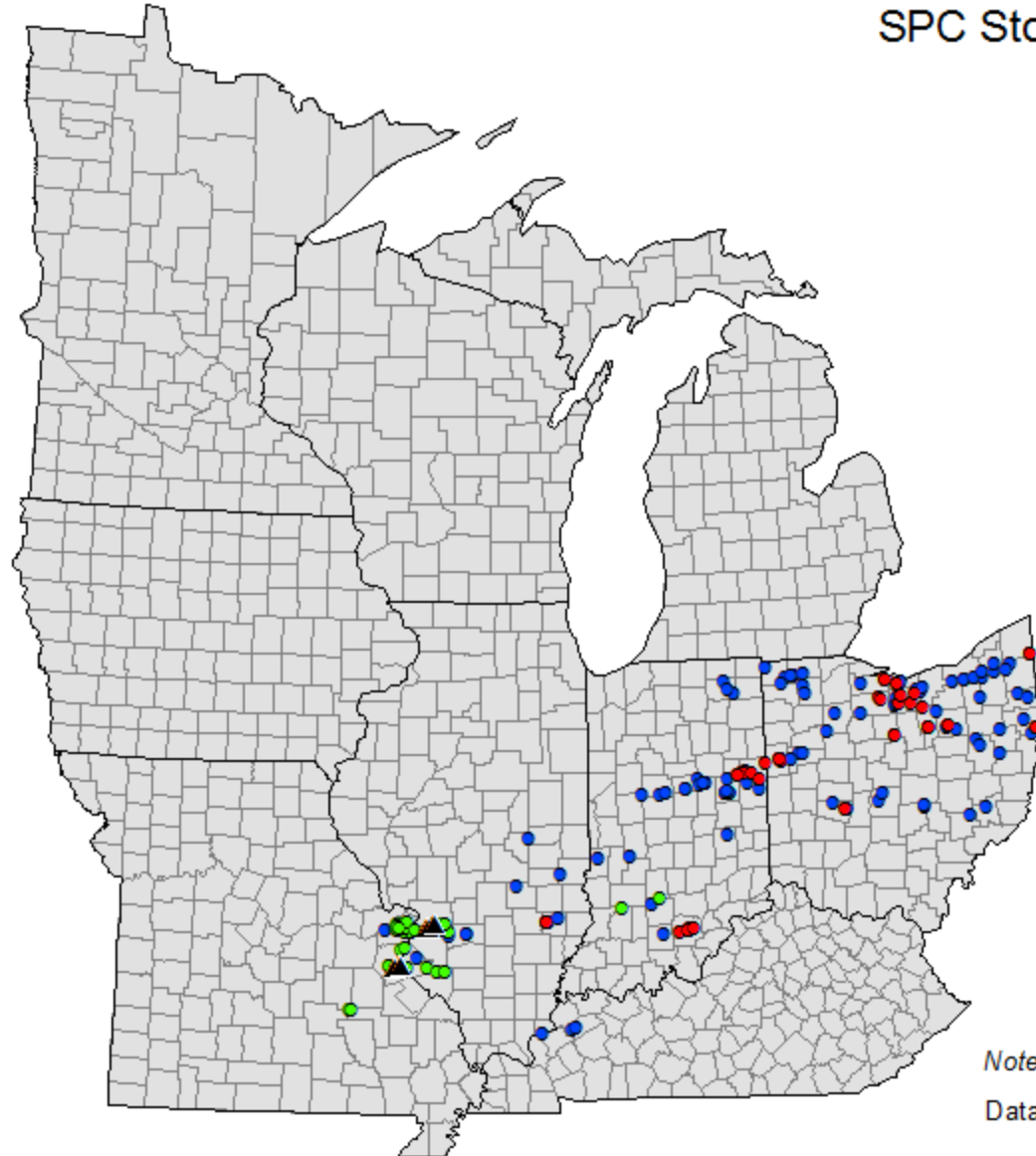


SPC Storm Reports for 11/5/2017

Reports shown for MRCC states

Report Type:

- Tornado
- Hail (min 1.0")
- ▲ Large Hail: 2.0" +
- Wind
- High Wind: 65 KT+



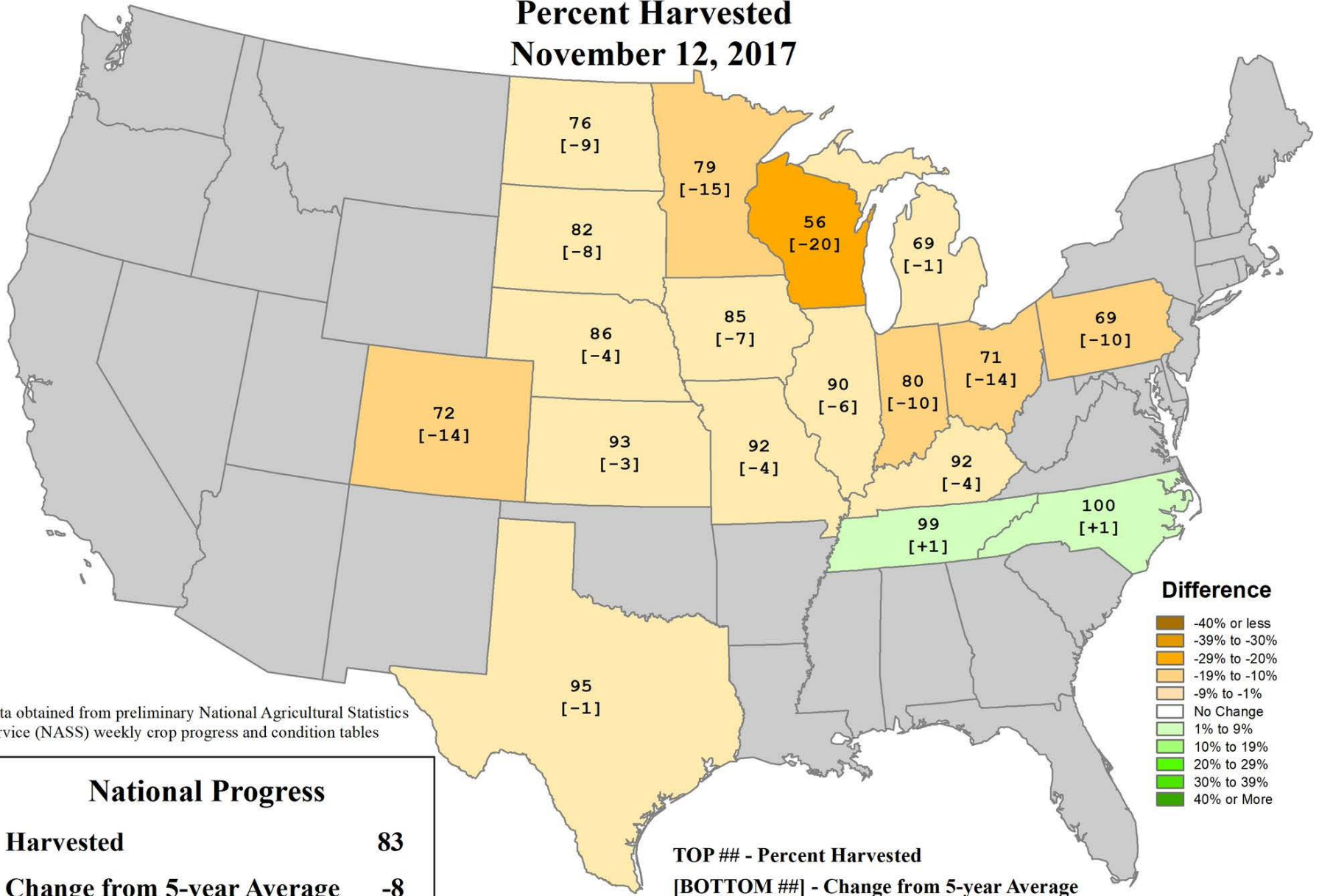
Note: All Reports Are Considered Preliminary

Data from the NWS Storm Prediction Center:
<http://www.spc.noaa.gov/climo/online>

21 confirmed tornadoes, five were rated EF-2

U.S. Corn Progress

Percent Harvested
November 12, 2017



Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

Difference

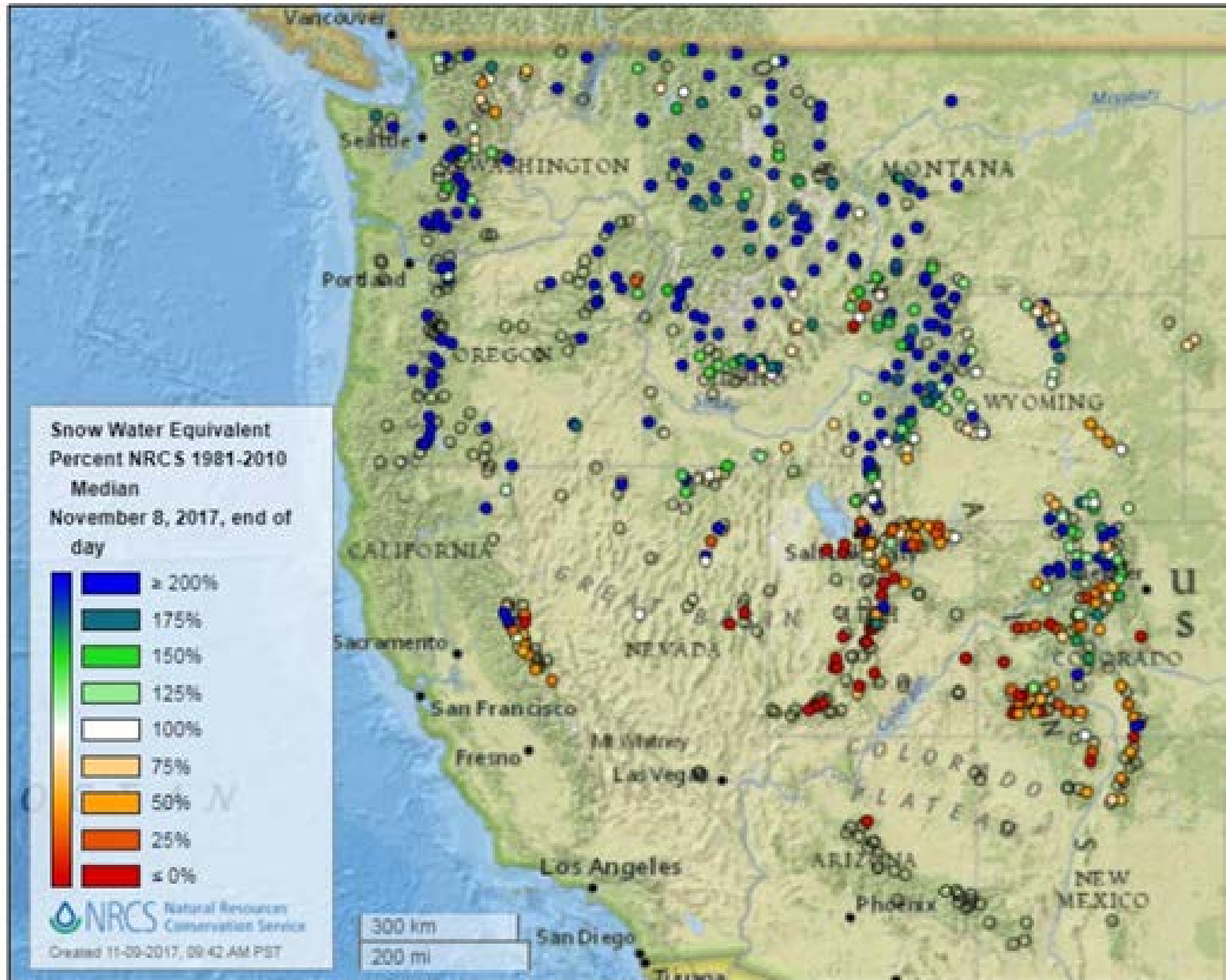
- 40% or less
- 39% to -30%
- 29% to -20%
- 19% to -10%
- 9% to -1%
- No Change
- 1% to 9%
- 10% to 19%
- 20% to 29%
- 30% to 39%
- 40% or More

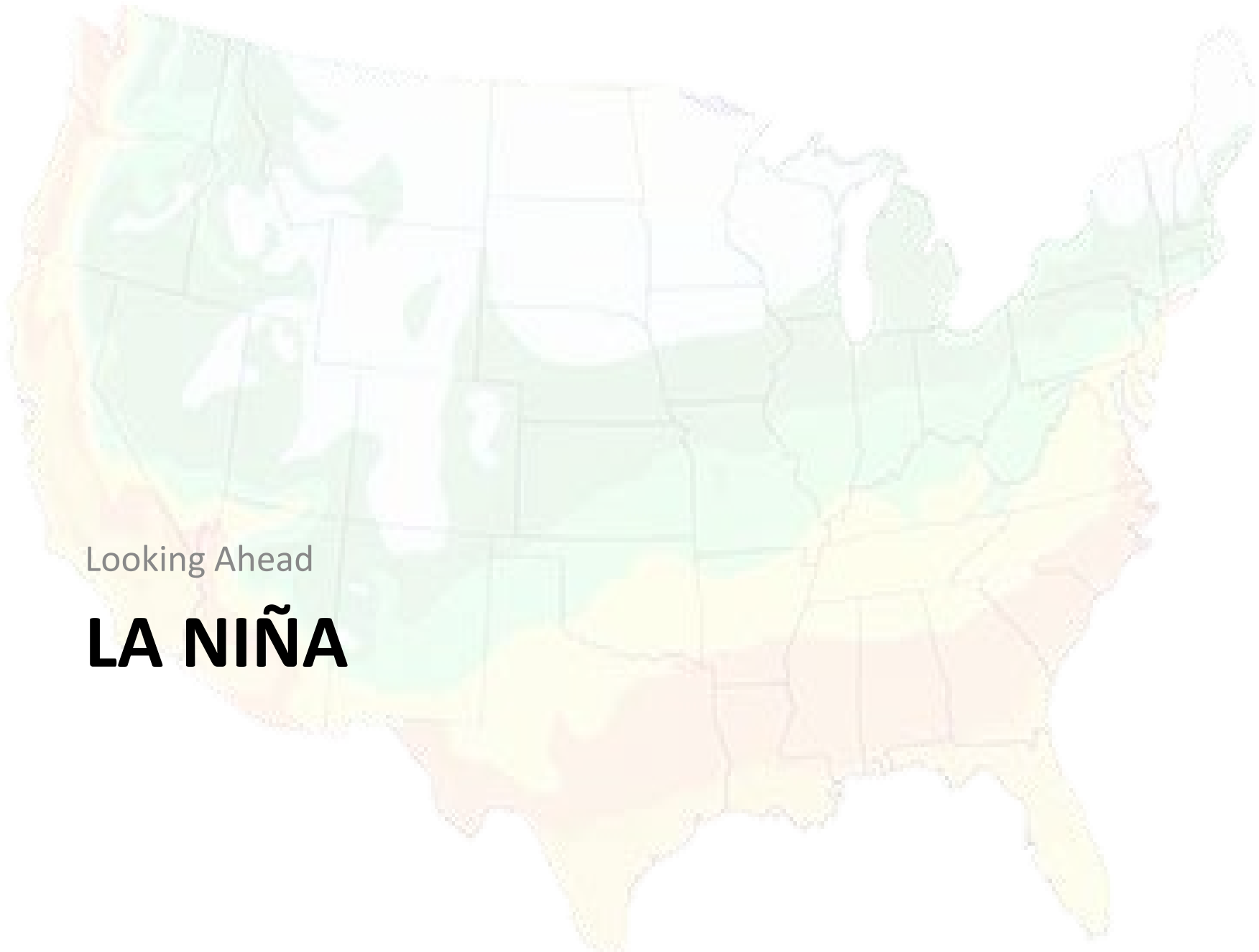
Hydrologically Speaking



- **Missouri Basin** – no major flooding, lower basin in good shape, the upper basin was dry but getting better
- **Mississippi Basin** – recent rains have erased earlier low-flow issues
- **Ohio Basin** – flooding issues in MI, IN, OH, KY, and TN, some related to Harvey

Current Snow Water Equivalent, NRCS SNOTEL Network





Looking Ahead

LA NIÑA

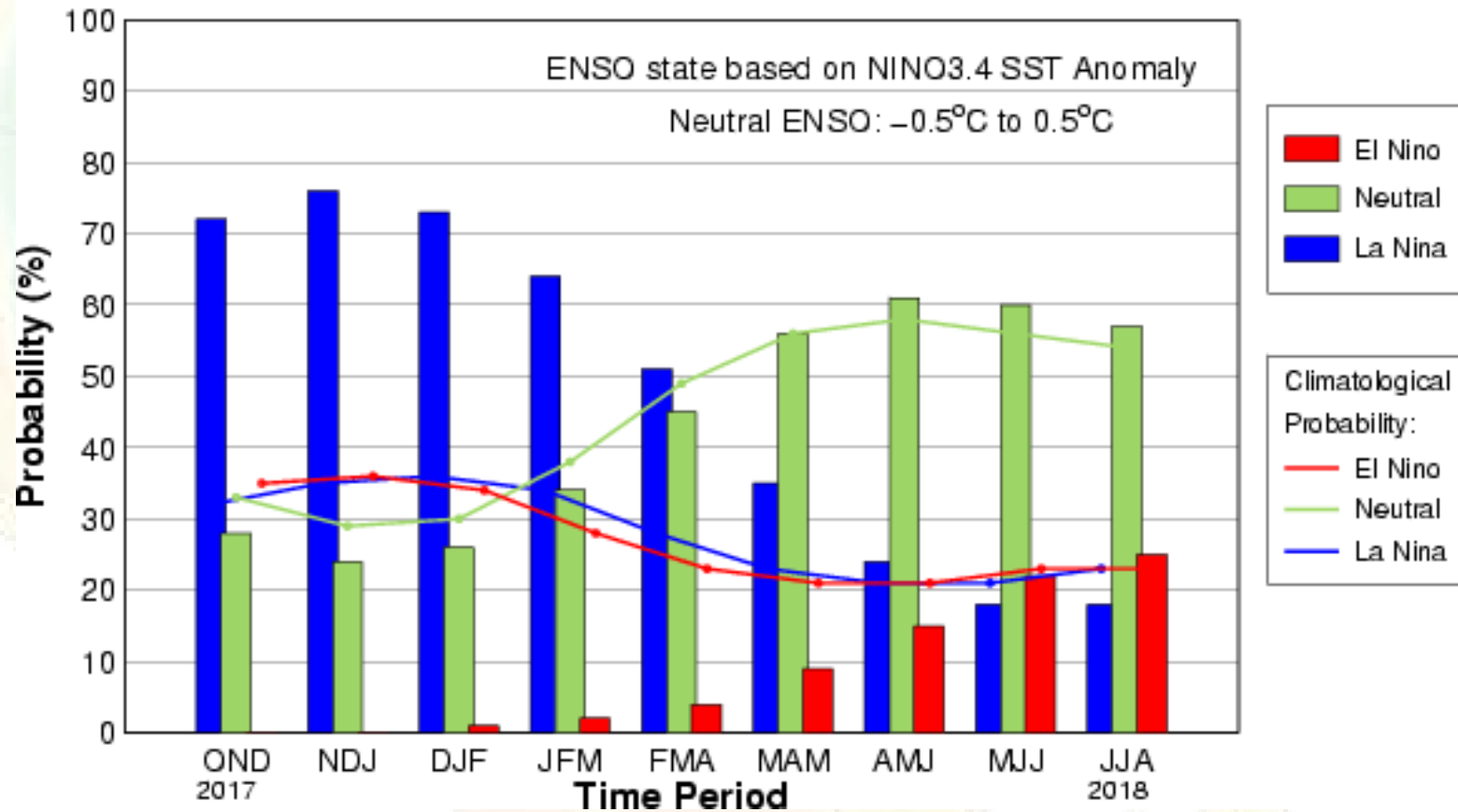
La Niña Has Arrived

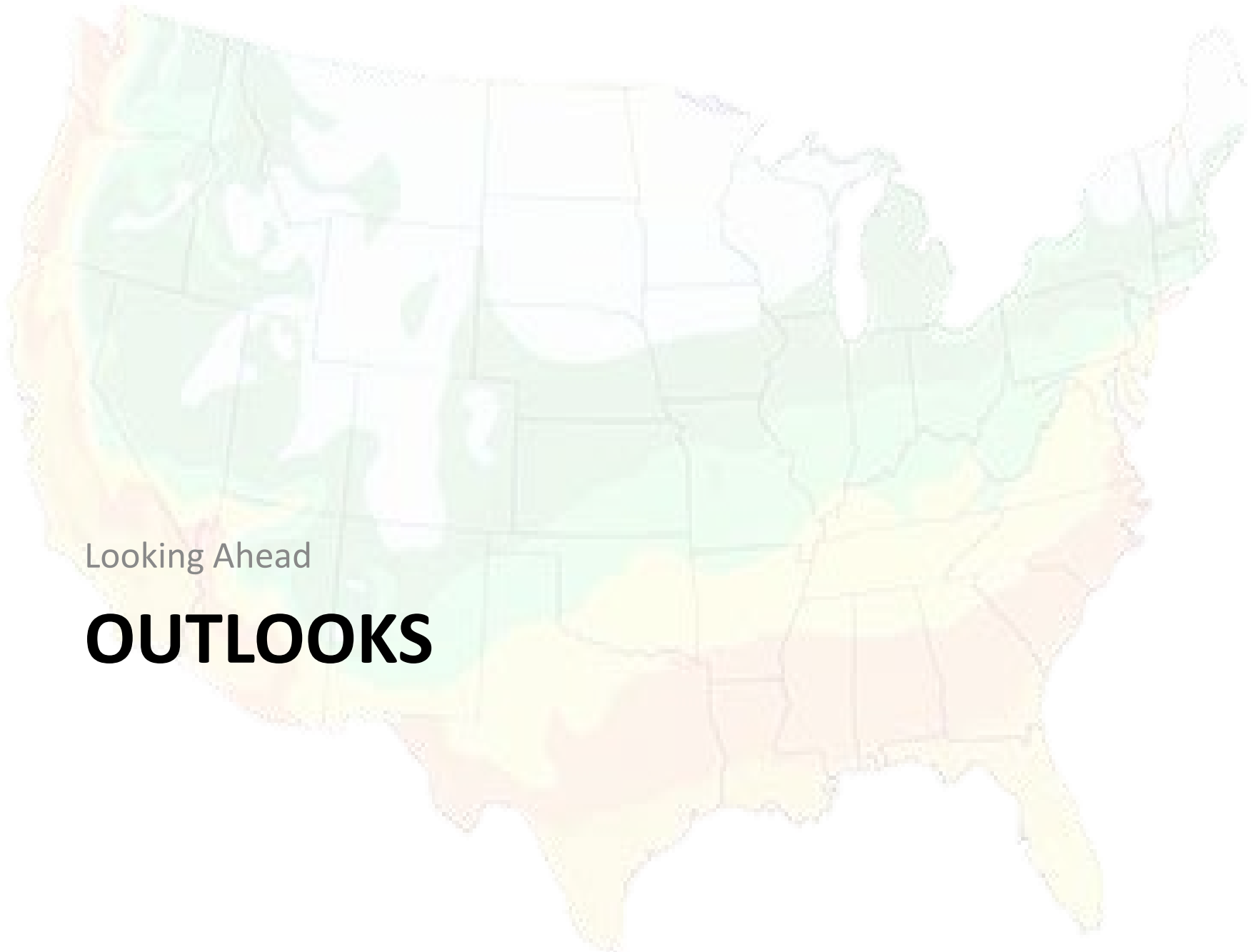
- According to NOAA, a weak La Niña event has developed in the Pacific since October
- There is a 65-75% chance that it will persist through at least winter



La Niña Probabilities

Early–Nov CPC/IRI Official Probabilistic ENSO Forecast





Looking Ahead

OUTLOOKS

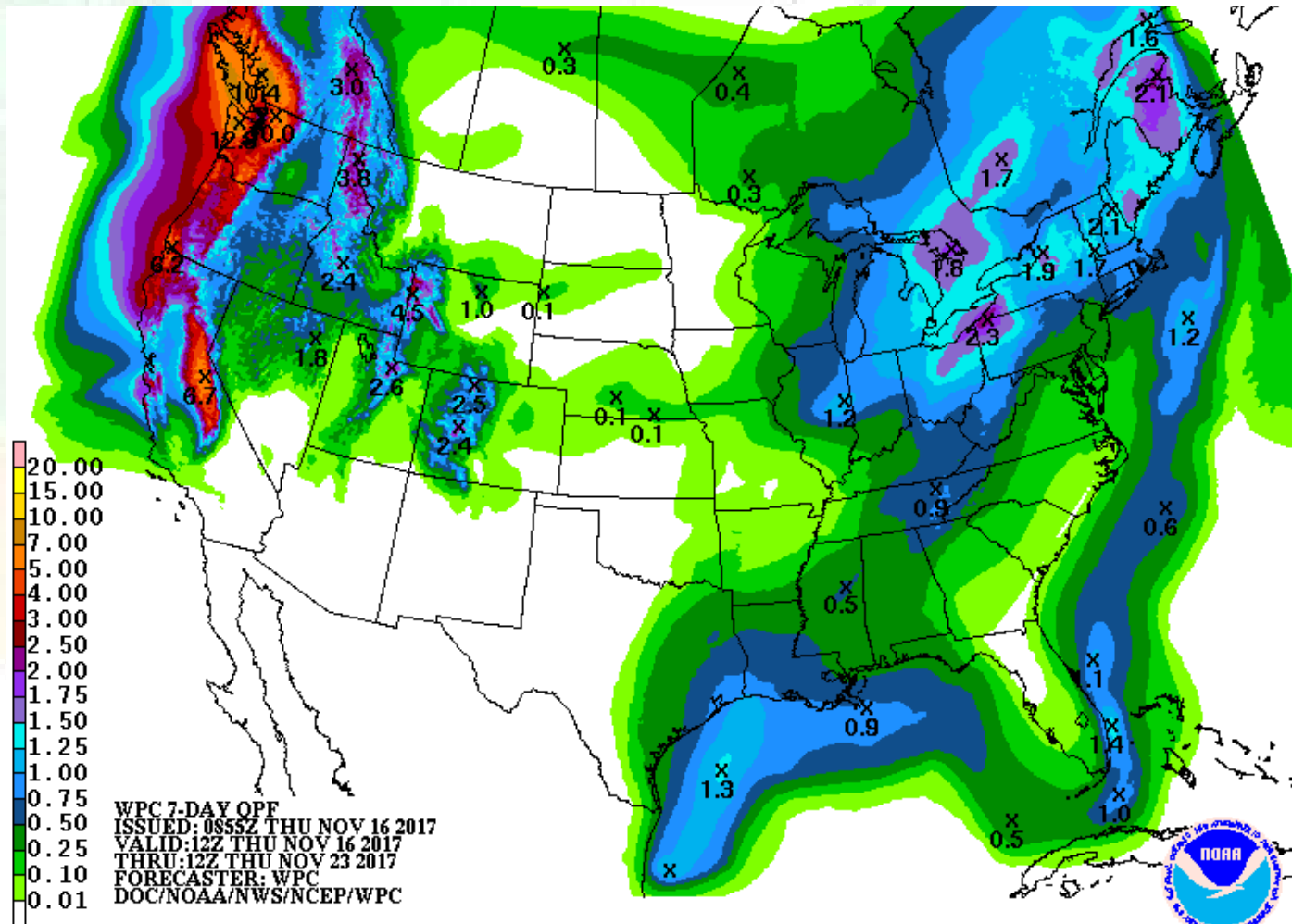
Climate Outlooks



- 7-day precipitation forecast
- 8-14 day outlook
- **December** temperature and precipitation
- **Winter** and **Spring** season temperature and precipitation

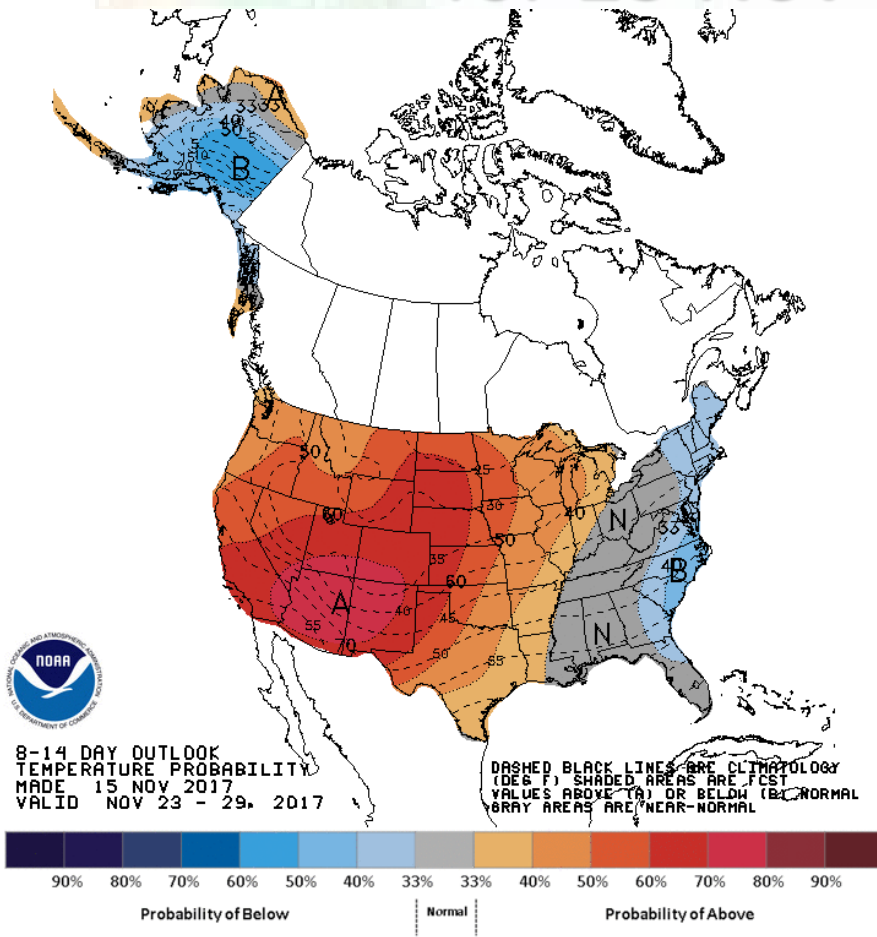
7-day Quantitative Precipitation Forecast

Valid: Thu 16 Nov – Thu 23 Nov

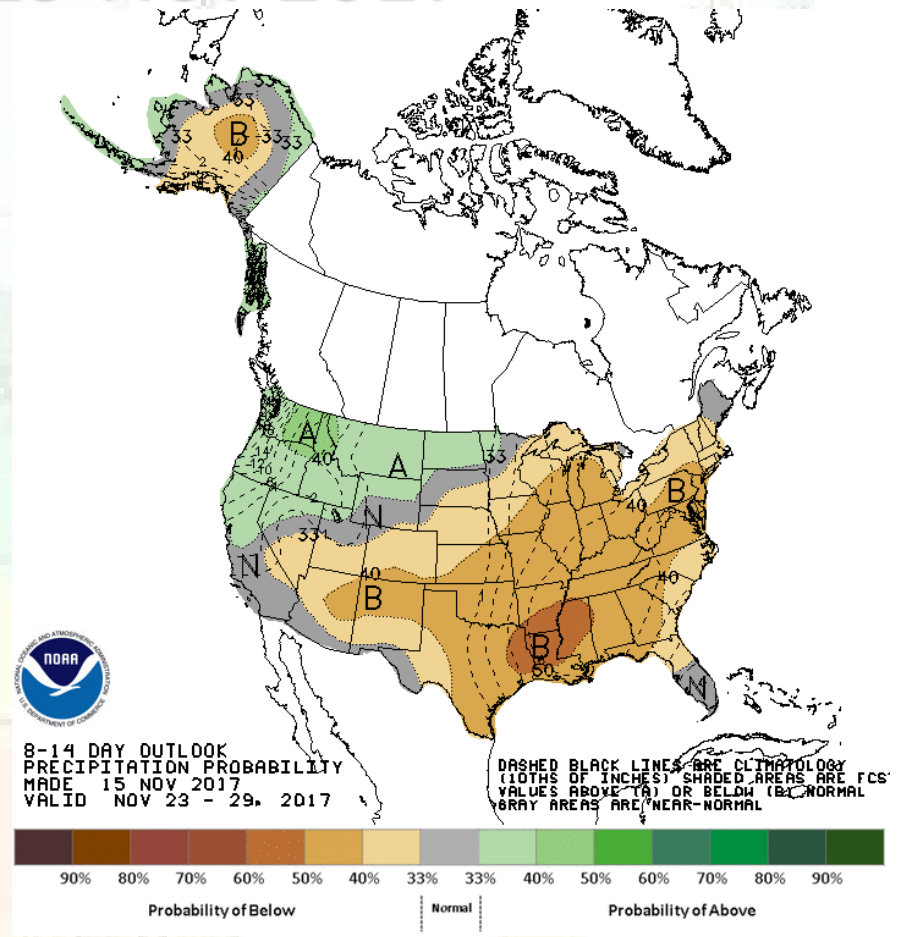


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

Temperature and Precipitation Probabilities for 23 Nov - 29 Nov 2017

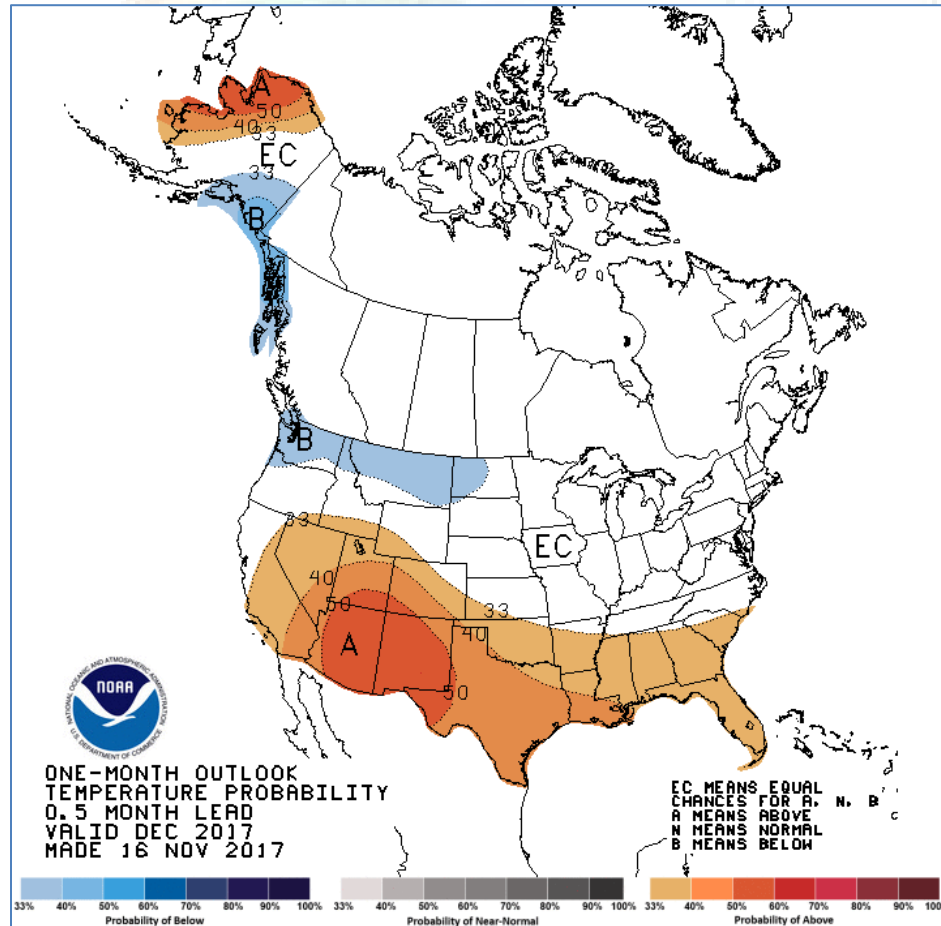


Temperature

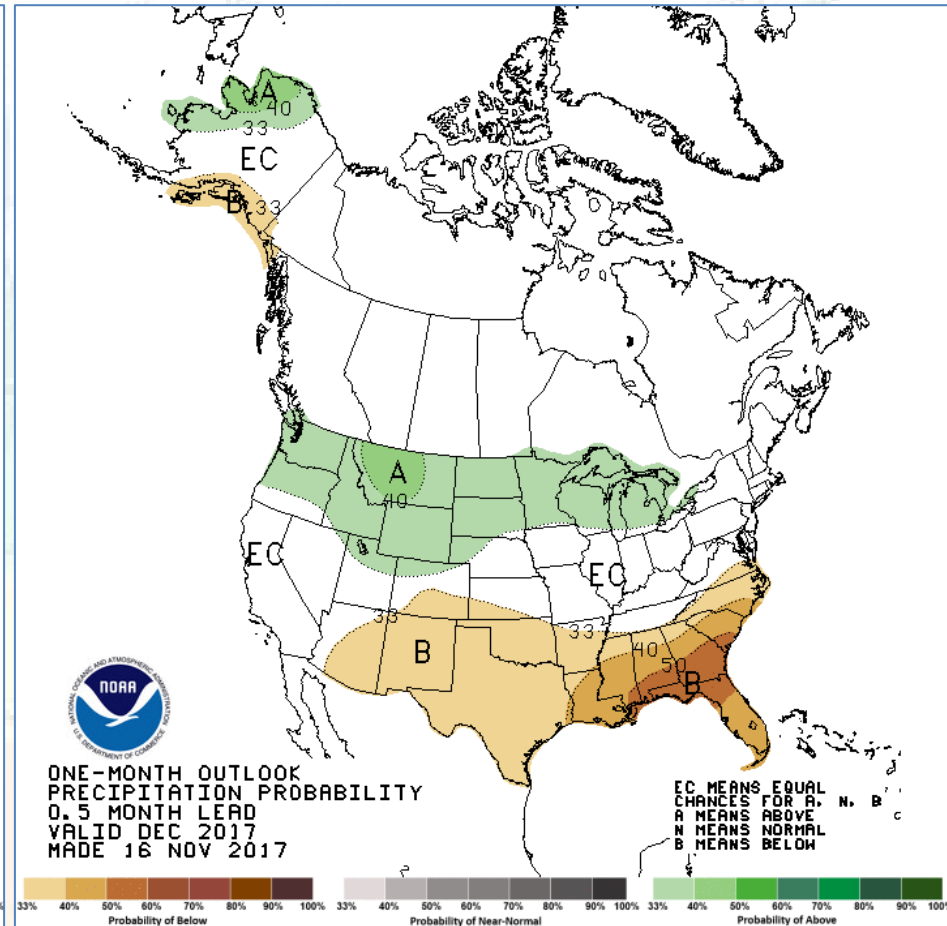


Precipitation

December Temperature and Precipitation Outlooks



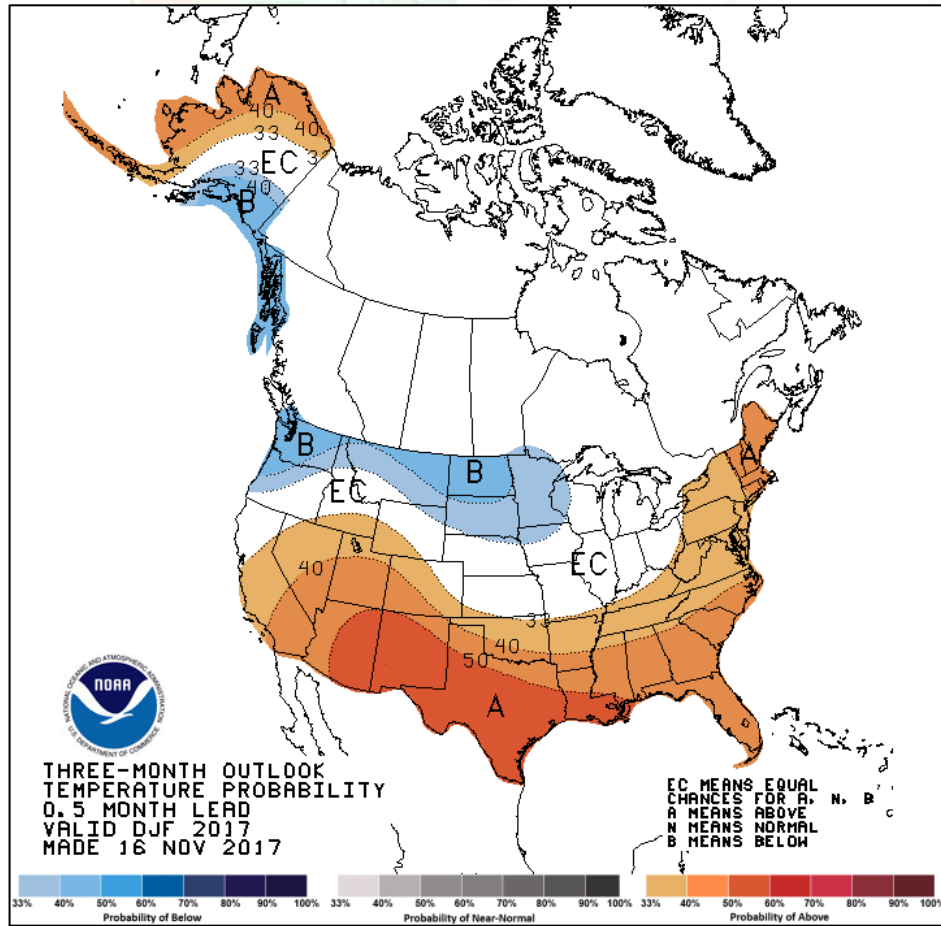
Temperature



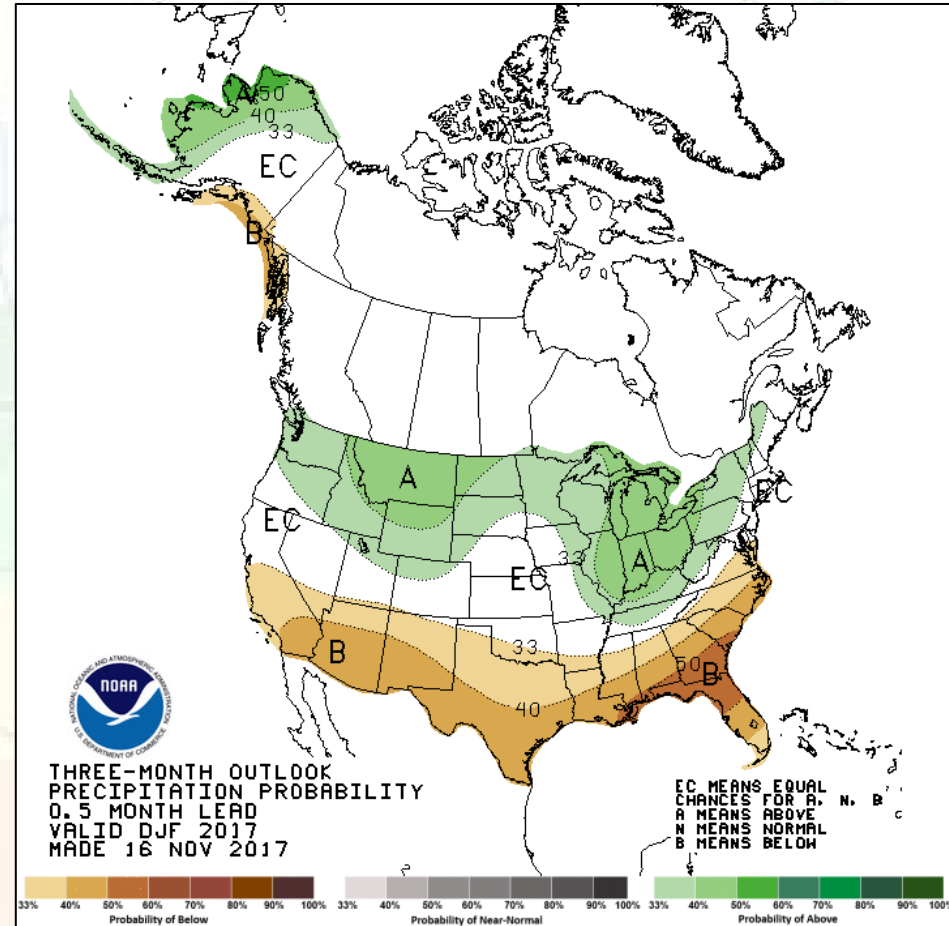
Precipitation

<http://www.cpc.ncep.noaa.gov/products/predictions/30day/>

3 Month Temperature and Precipitation Outlooks, Dec-Feb



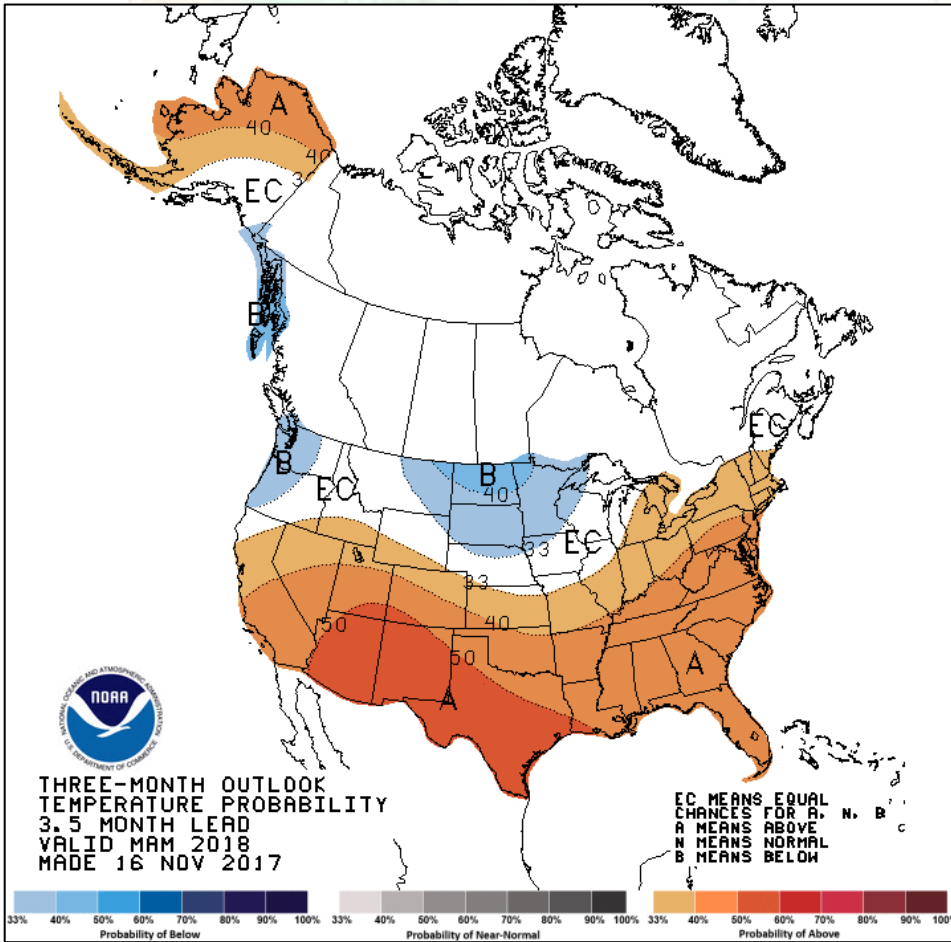
Temperature



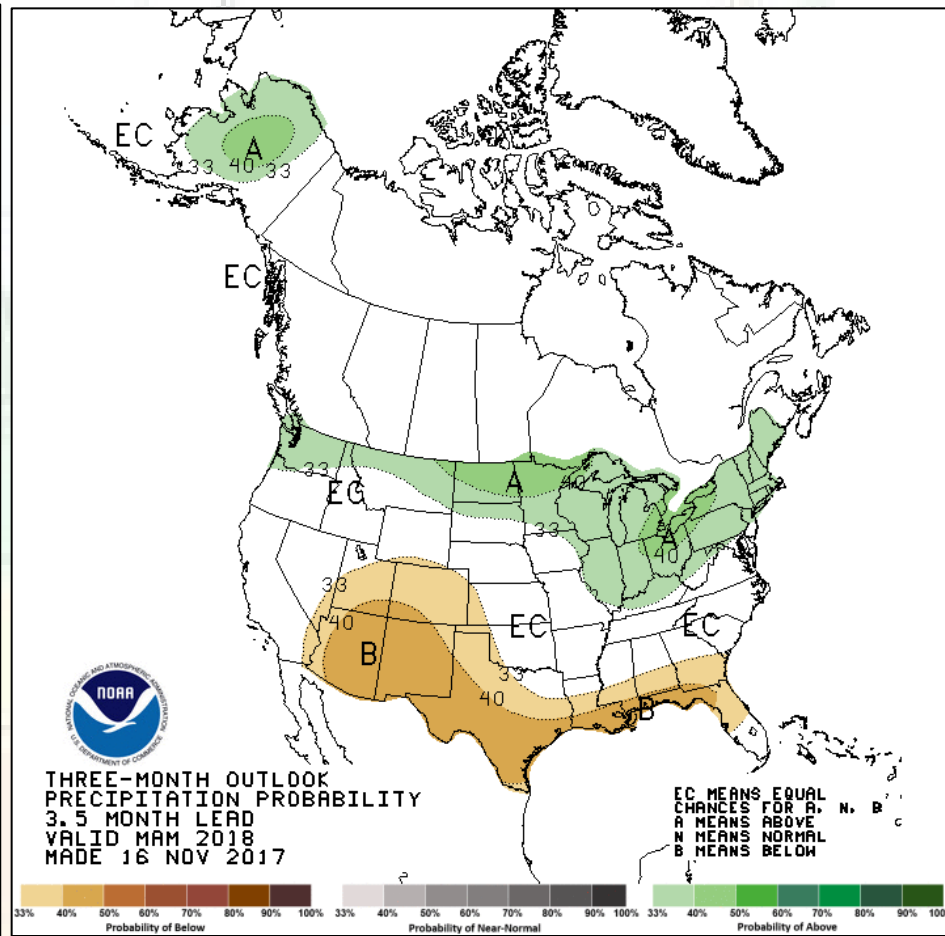
Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=2

3 Month Temperature and Precipitation Outlooks, Mar-May



Temperature

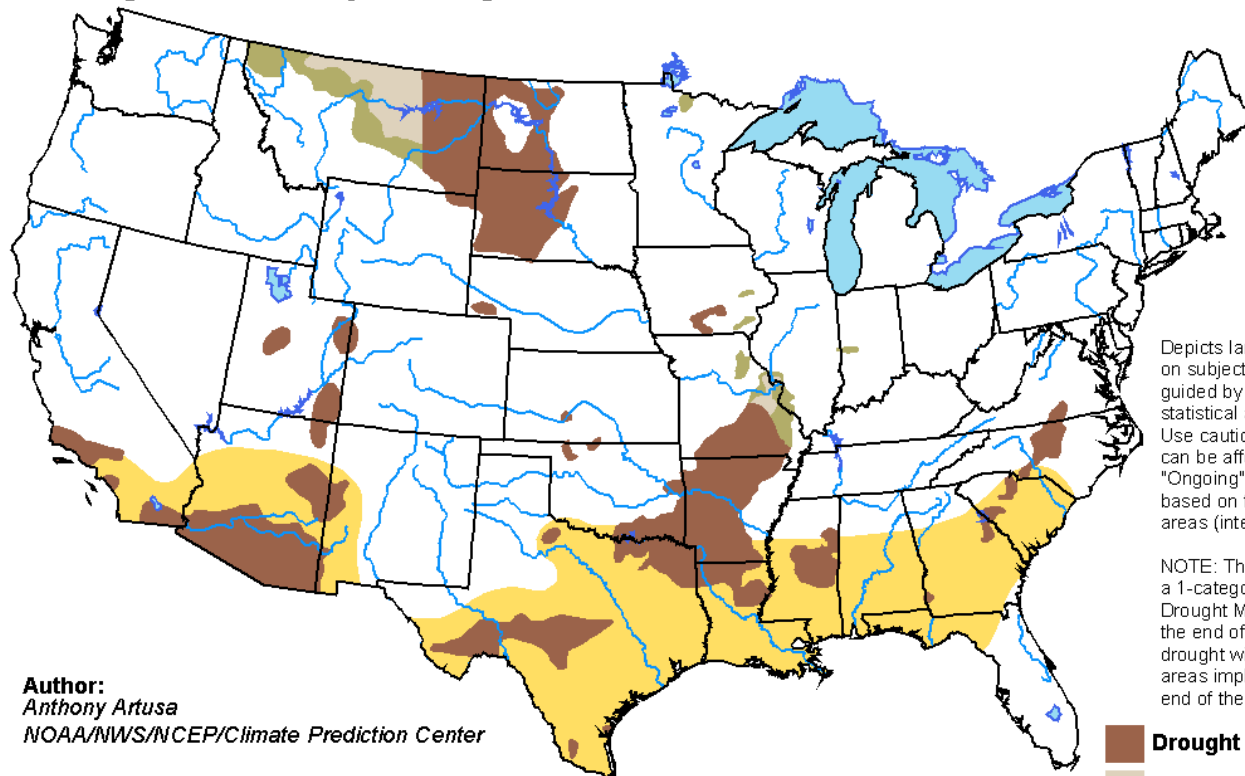


Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=2

Seasonal Drought Outlook




U.S. Seasonal Drought Outlook Valid for November 16 - February 28, 2018
Drought Tendency During the Valid Period Released November 16, 2017

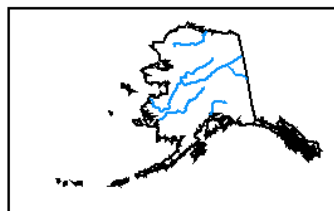


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Anthony Artusa
NOAA/NWS/NCEP/Climate Prediction Center

-  **Drought persists**
-  **Drought remains but improves**
-  **Drought removal likely**
-  **Drought development likely**



<http://go.usa.gov/3eZ73>

Summary - Conditions

- * Colder than normal across the central US, except for Colorado, and a big contrast to this time last year
- * Dry in western two-thirds of the central US (Rockies to WI/IL) with drought worsening in Missouri
- * Wet in the eastern third of the region with concerns of flooding in the Ohio River Valley
- * Above-normal snow in CO/WY/MT and Great Lakes

Summary - Outlooks

- * **La Niña Advisory –**

- * Good chance of persisting through winter but likely returning to neutral conditions by spring

- * **December:**

- * Wetter conditions favored in northern states from Montana to Michigan
- * Equal chances dominate for temperature in central US

- * **Winter:**

- * Colder conditions favored from Montana to Minnesota
- * Wetter conditions favored across the north and Great Lakes

Further Information - Partners

- **Today's and Past Recorded Presentations:**
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu>
- NOAA's National Climatic Data Center: www.ncdc.noaa.gov
 - Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: www.drought.gov
- National Drought Mitigation Center: <http://drought.unl.edu/>
- State climatologists
 - <http://www.stateclimate.org>
- Regional climate centers
 - <http://mrcc.isws.illinois.edu>
 - <http://www.hprcc.unl.edu>

Thank You and Questions?

- Questions:
 - **Climate:**
 - Jim Angel: jimangel@Illinois.edu, 217-333-0729
 - Laura Edwards: laura.edwards@sdstate.edu, 605-626-2870
 - Dennis Todey: dennis.todey@ars.usda.gov , 515-294-2013
 - Doug Kluck: doug.kluck@noaa.gov, 816-994-3008
 - Mike Timlin: mtimlin@illinois.edu; 217-333-8506
 - Natalie Umphlett: numphlett2@unl.edu ; 402 472-6764
 - Brian Fuchs: bfuchs2@unl.edu 402 472-6775
 - **Weather:**
 - crhroc@noaa.gov