

Midwest and Great Plains Climate- Drought Outlook

20 October 2016



Laura Edwards
Acting State Climatologist
SDSU Extension, Aberdeen, SD
Laura.edwards@sdstate.edu
605-626-2870

Cottonwood Fire
17 Oct 2016
Photo credit:
SD Division of
Wildland Fire

General Information

- * **Providing climate services to the Central Region**

- * Collaboration Activity Between:

- * State Climatologists
 - * NOAA – NCEI
 - * USDA Climate Hubs
 - * American Association of State Climatologists
 - * Midwest and High Plains Regional Climate Centers
 - * National Drought Mitigation Center

- * **Next Regular Climate/Drought Outlook Webinar**

- * Nov 17, 2016 (1 PM CDT) Jim Angel, State Climatologist of Illinois

- * **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

- * **Review of last season**
- * **Current conditions**
- * **Outlooks**
 - * **Fall and winter temperature and precipitation**
 - * **La Niña**



Cottonwood Fire burn area, SD, 10/20/16. Credit: Gail Schmidt, USGS EROS Data Center/SD School of Mines & Technology

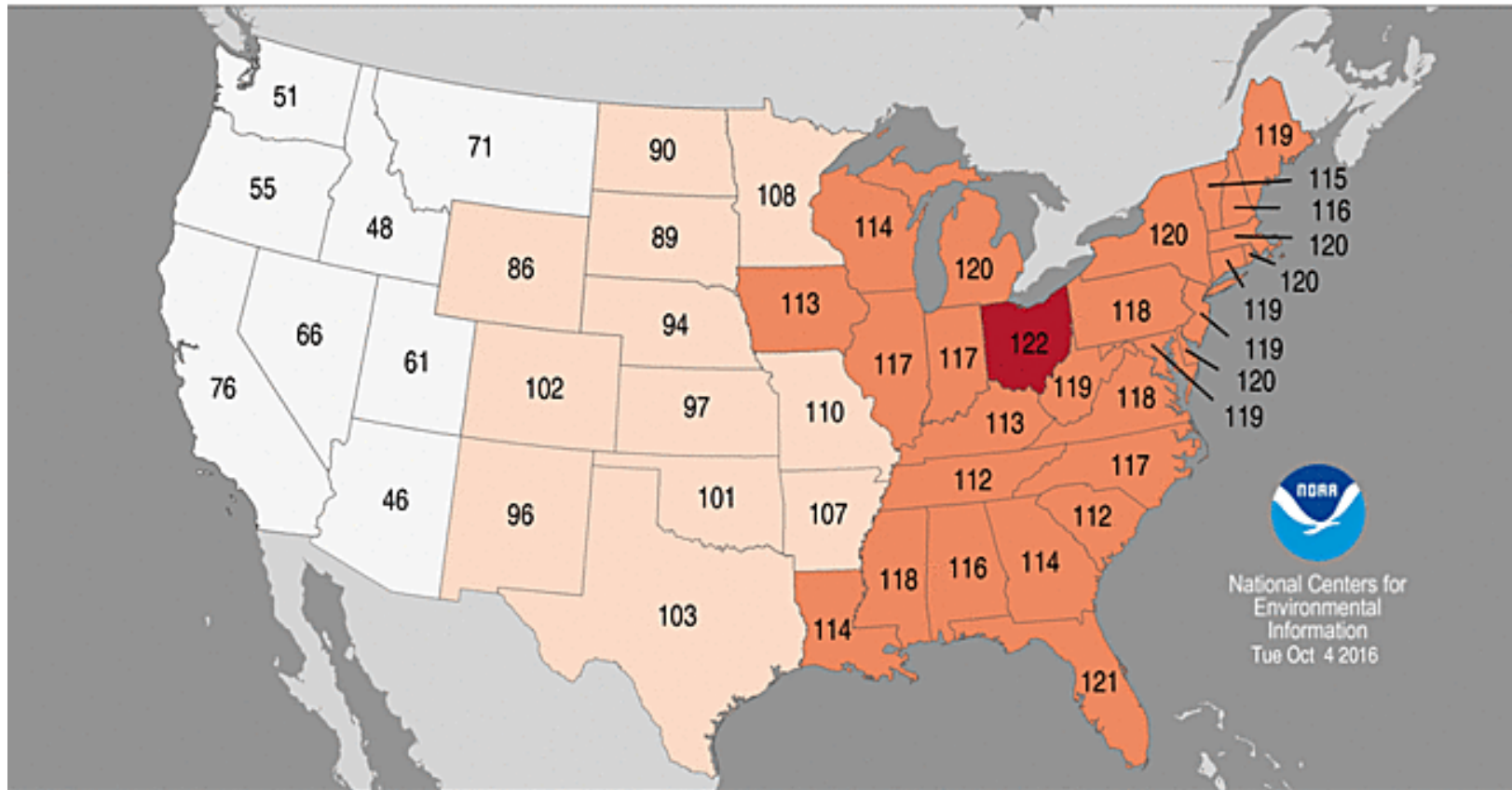
Review/Current Conditions

September Temperature Recap

Statewide Average Temperature Ranks

September 2016

Period: 1895–2016



Record Coldest (1)

Much Below Average

Below Average

Near Average

Above Average

Much Above Average

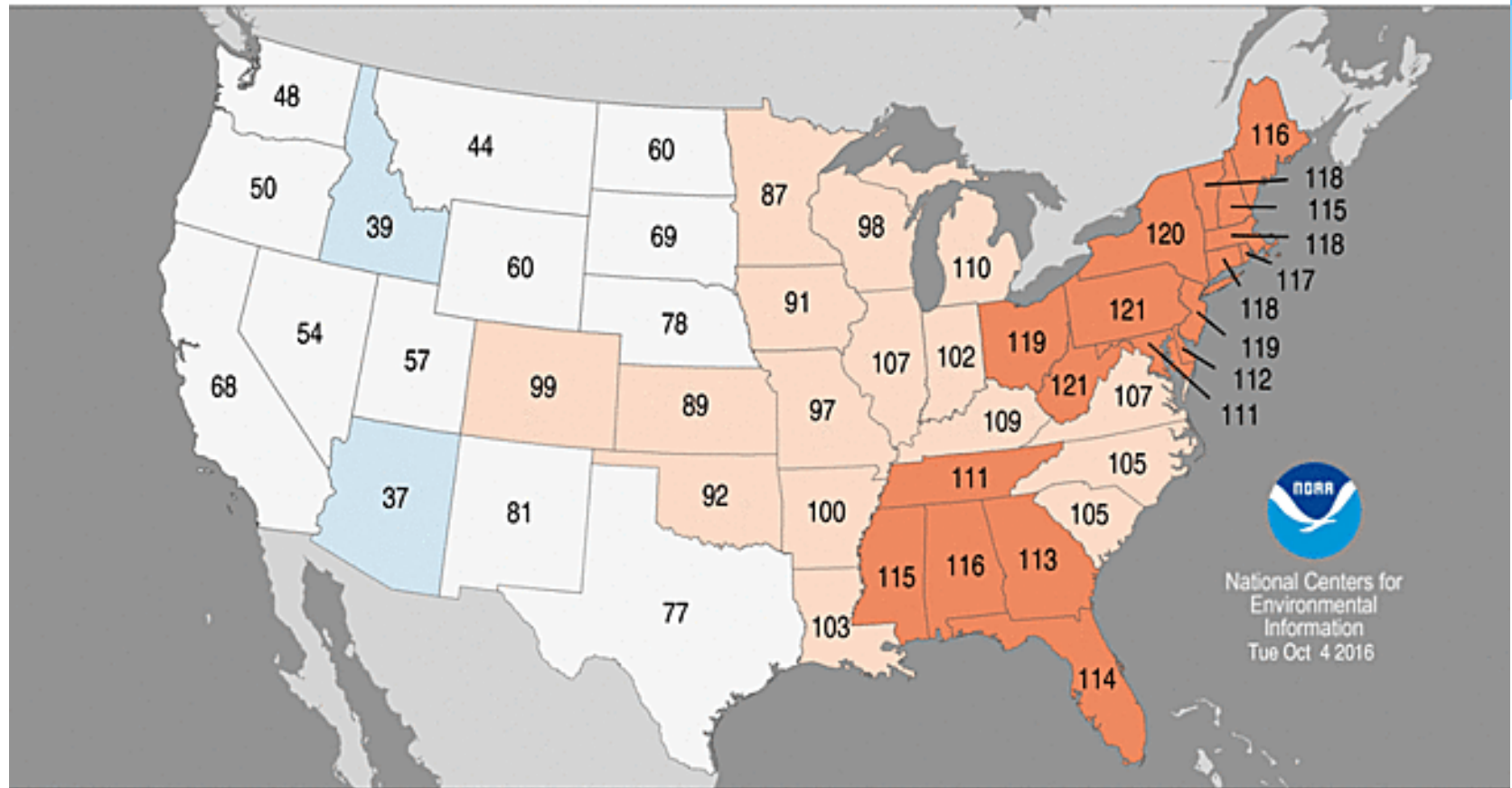
Record Warmest (122)

September Temperature Recap

Statewide Maximum Temperature Ranks

September 2016

Period: 1895-2016



National Centers for
Environmental
Information
Tue Oct 4 2016



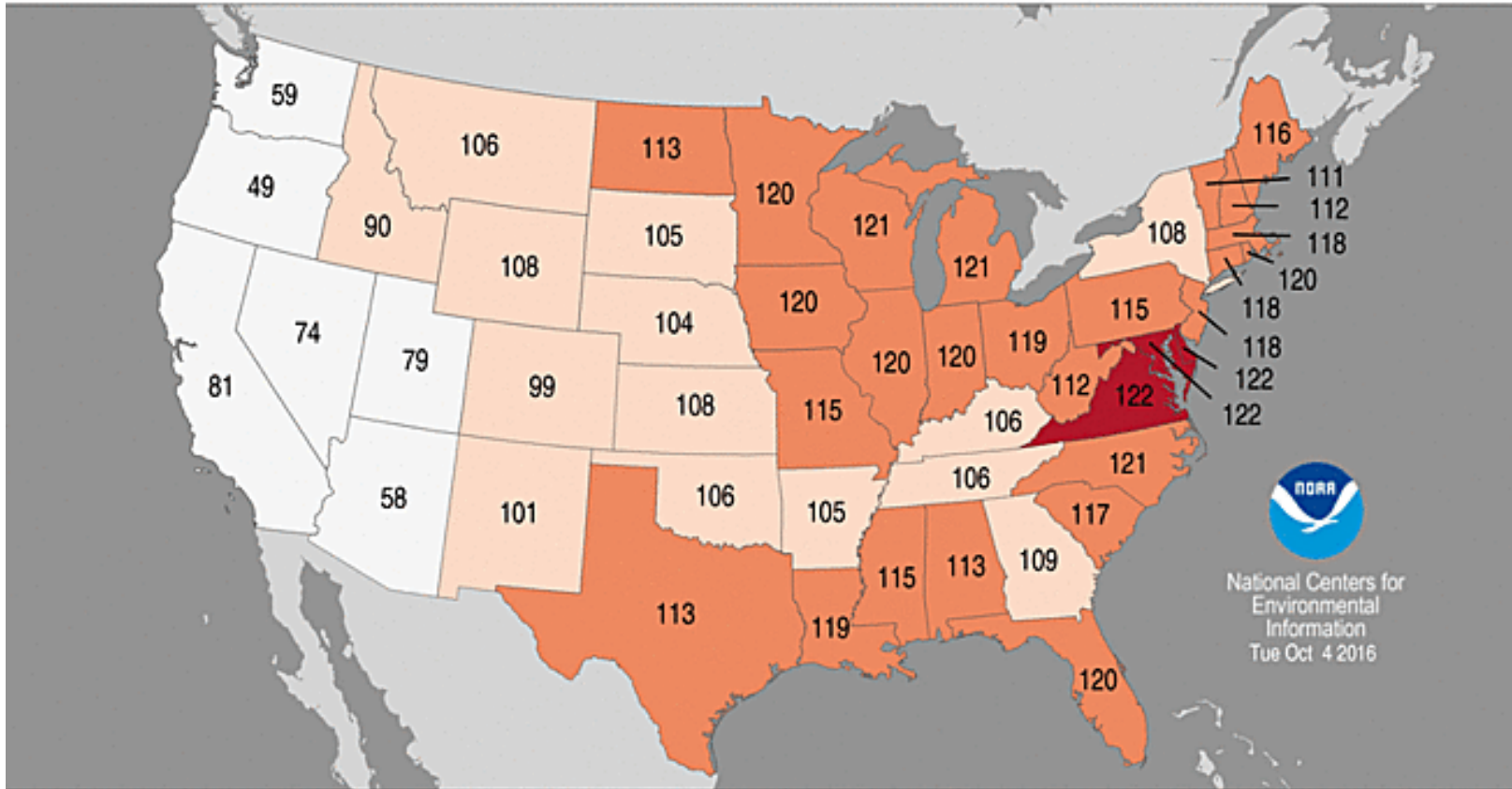
<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

September Temperature Recap

Statewide Minimum Temperature Ranks

September 2016

Period: 1895-2016



National Centers for
Environmental
Information
Tue Oct 4 2016

Record
Coldest
(1)

Much
Below
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Near
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Above
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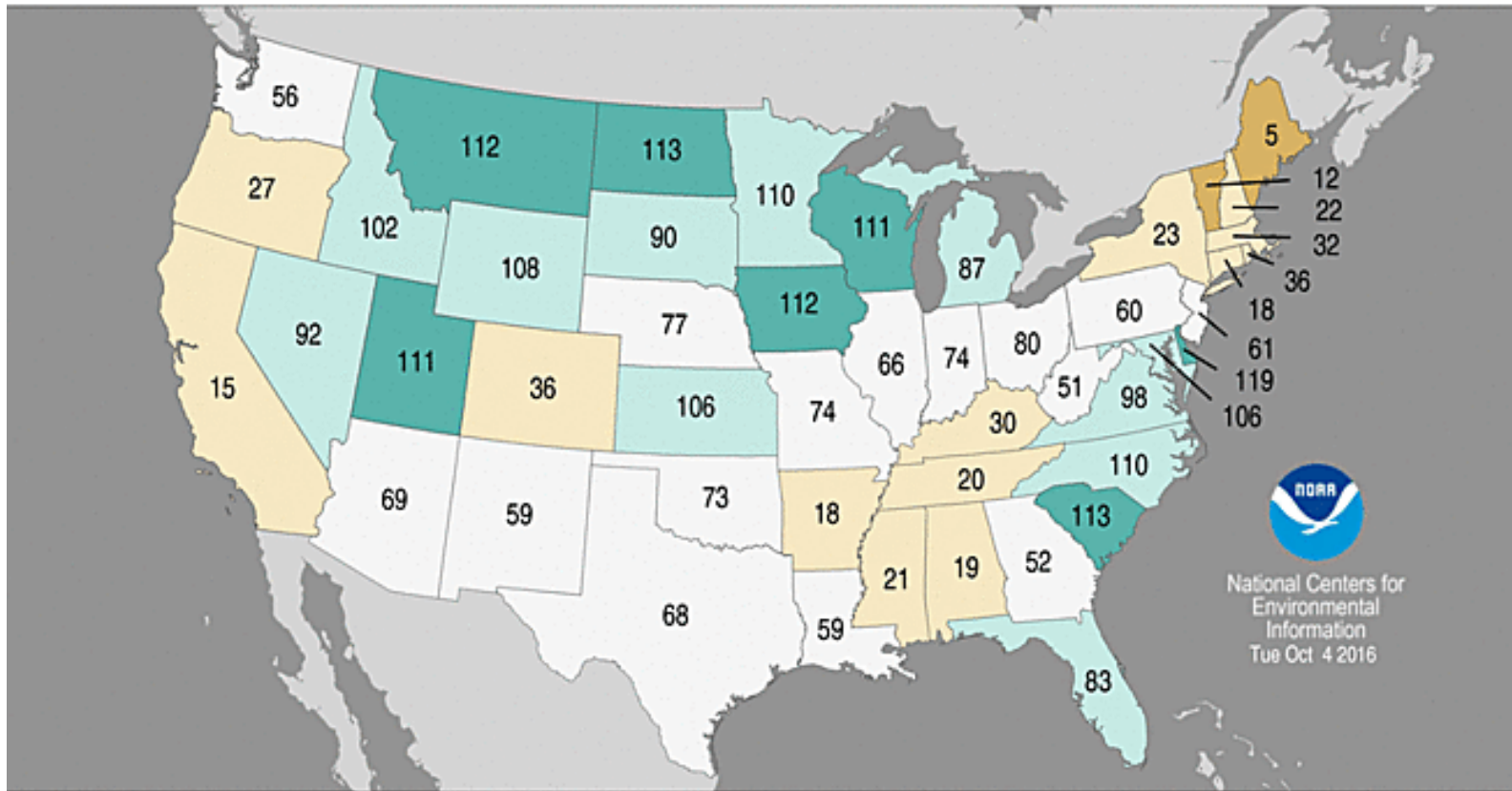
Record
Warmest
(122)

September Precipitation Recap

Statewide Precipitation Ranks

September 2016

Period: 1895-2016

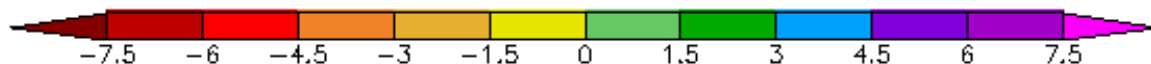
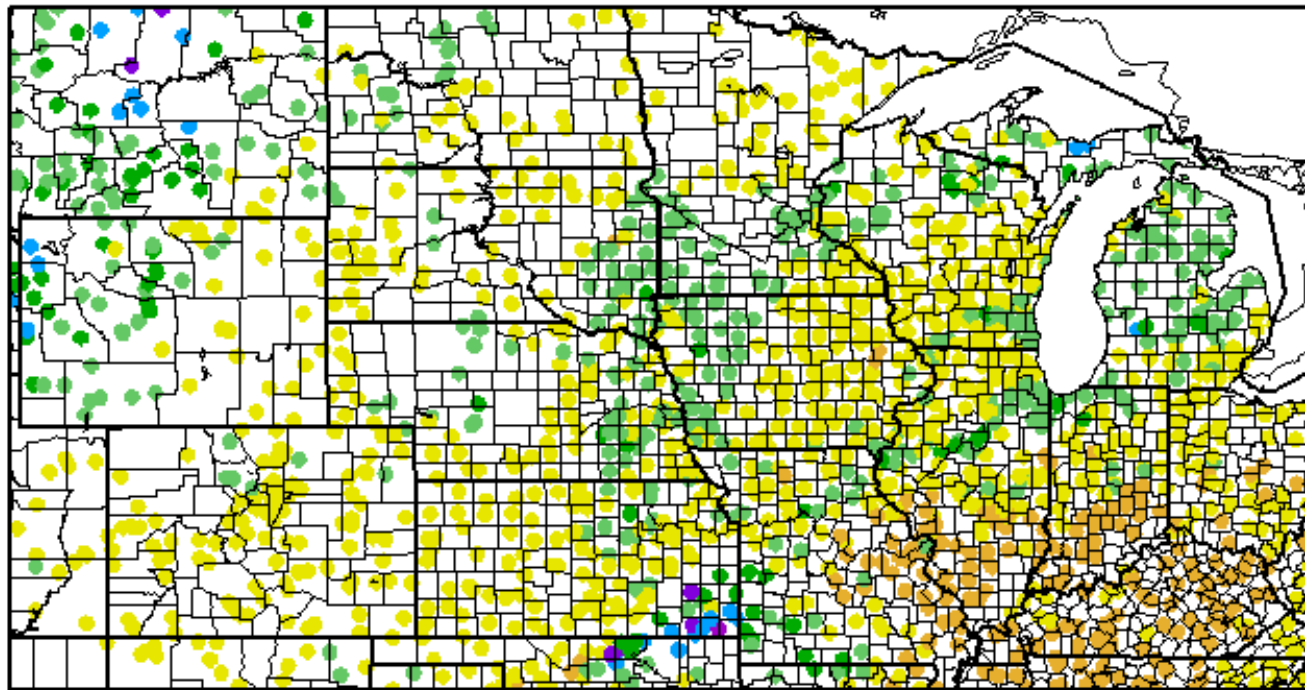


National Centers for Environmental Information
Tue Oct 4 2016



Difference from Average Precipitation, Since Oct 1

Departure from Normal Precipitation (in)
10/1/2016 – 10/19/2016



Generated 10/20/2016 at HPRCC using provisional data.

Regional Climate Centers

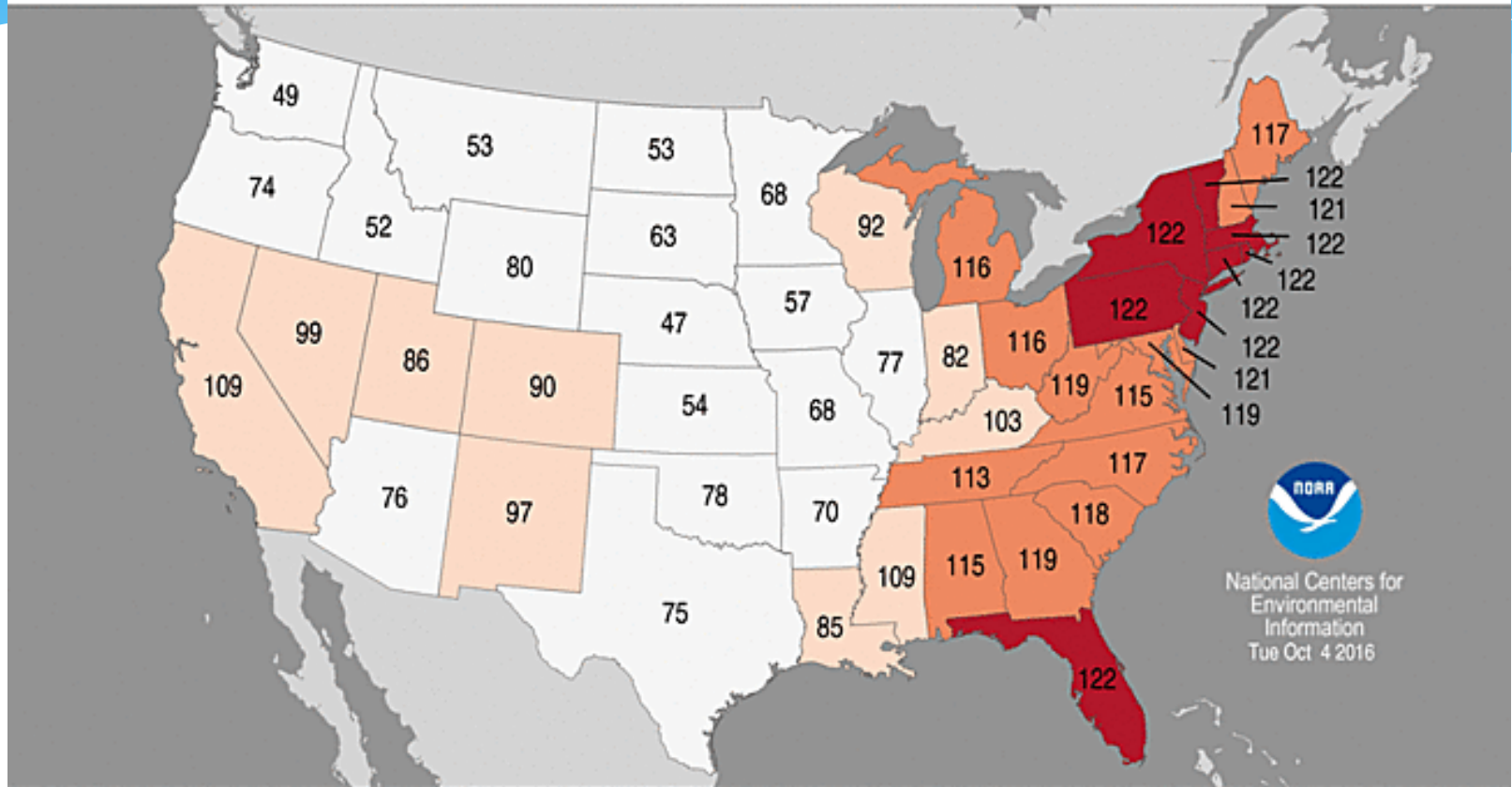
<http://www.hprcc.unl.edu/maps.php?map=ACISClimateMaps>

July-September Temperature Rankings

Statewide Maximum Temperature Ranks

July-September 2016

Period: 1895-2016



National Centers for
Environmental
Information
Tue Oct 4 2016

Record
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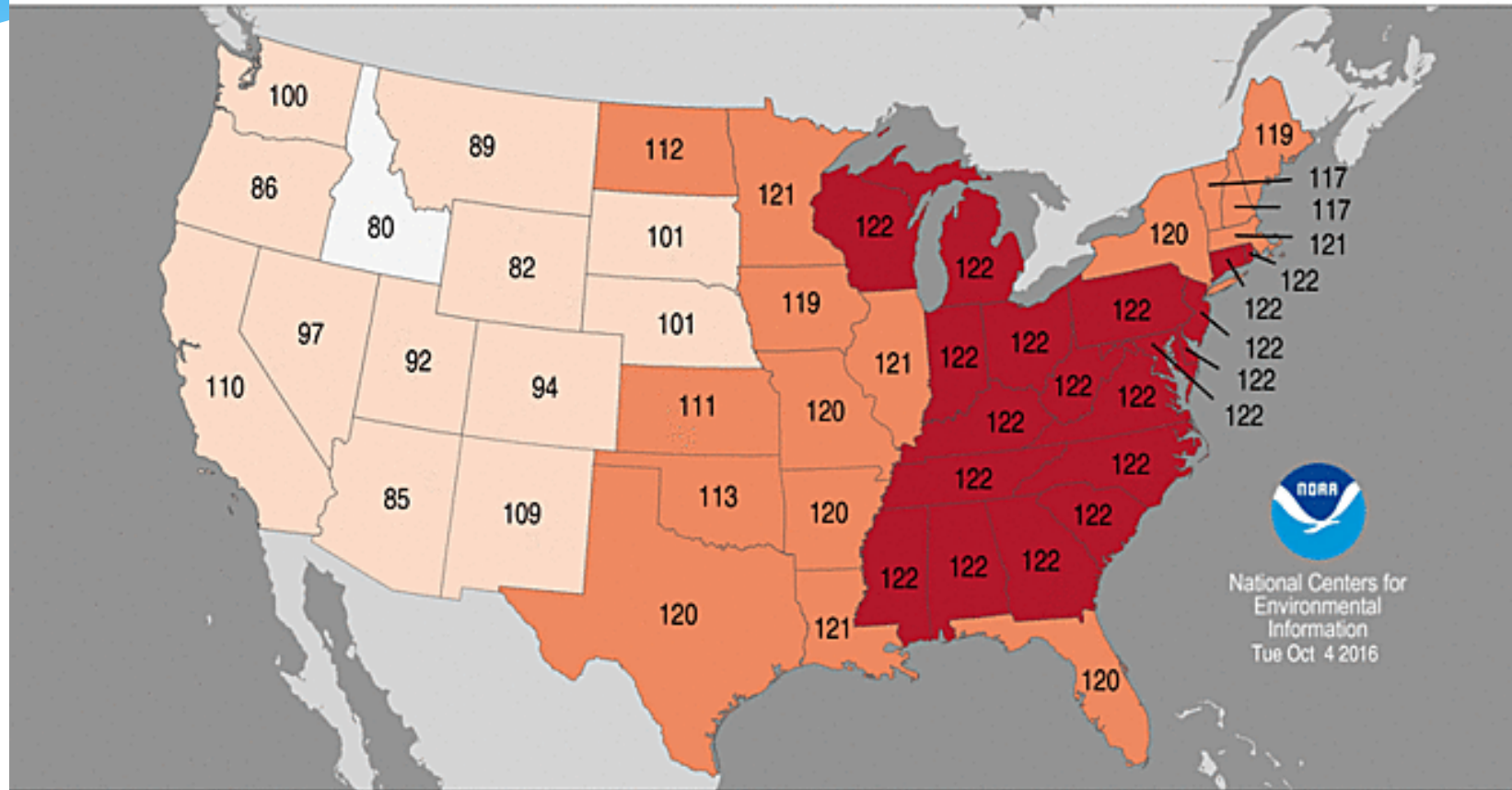
Record
Warmest
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July-September Temperature Rankings

Statewide Minimum Temperature Ranks

July-September 2016

Period: 1895-2016



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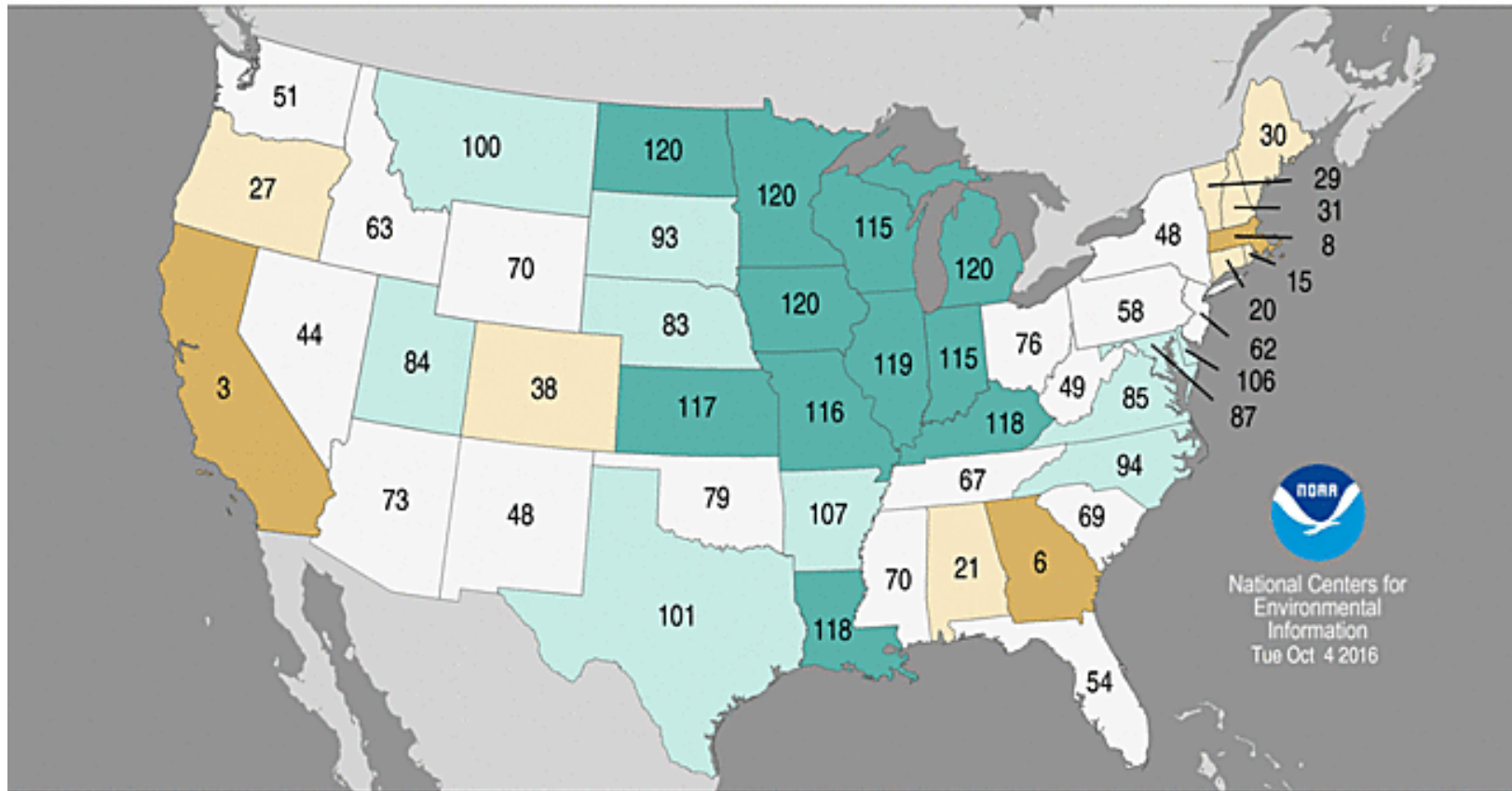
Record
Warmest
(122)

July-September Precipitation

Statewide Precipitation Ranks

July-September 2016

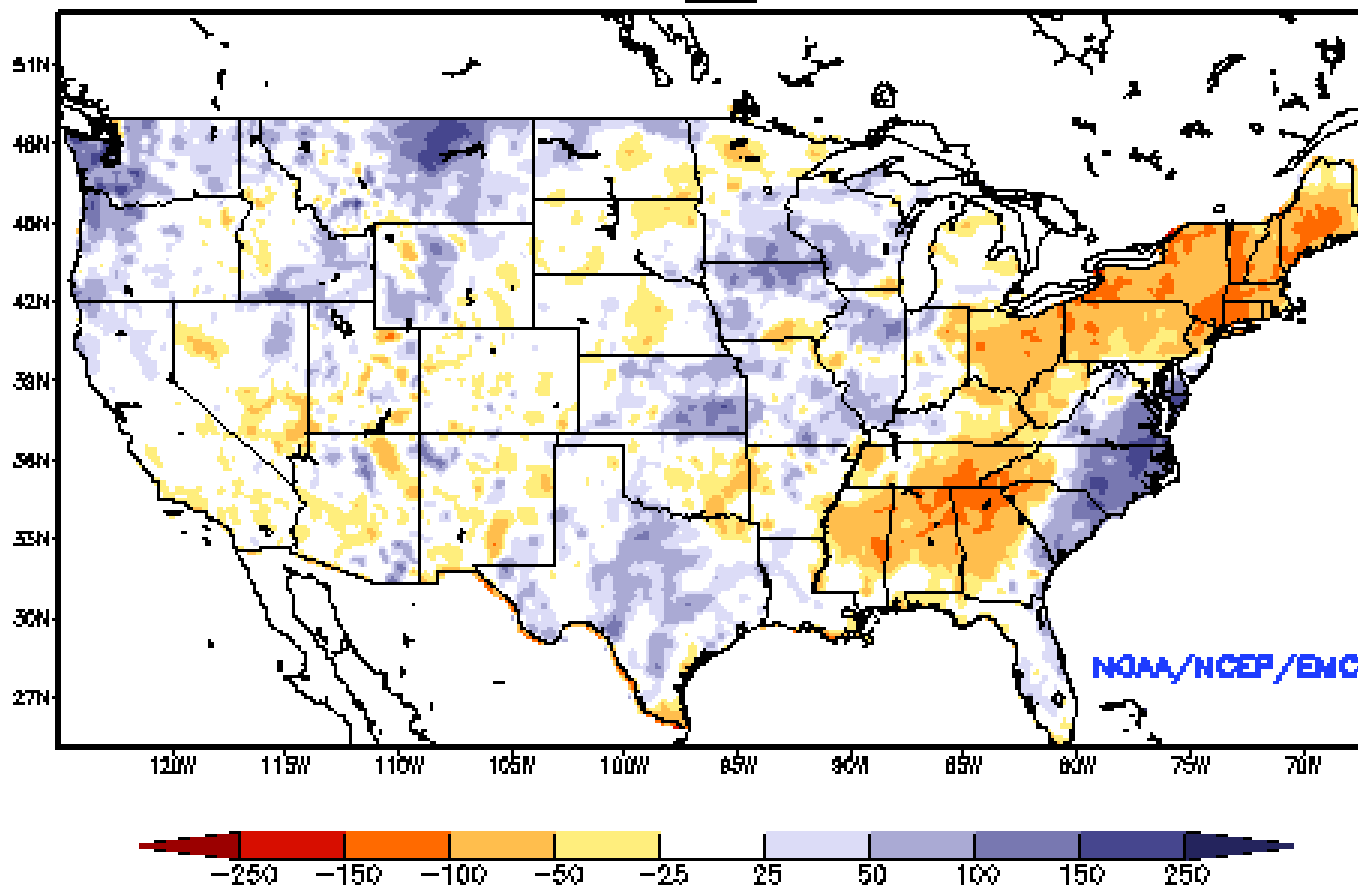
Period: 1895-2016



National Centers for
Environmental
Information
Tue Oct 4 2016

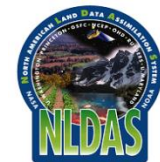
Soil Moisture

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: OCT 15, 2016



Soil Moisture Anomaly in millimeters

<http://www.emc.ncep.noaa.gov/mmb/nldas/drought/>



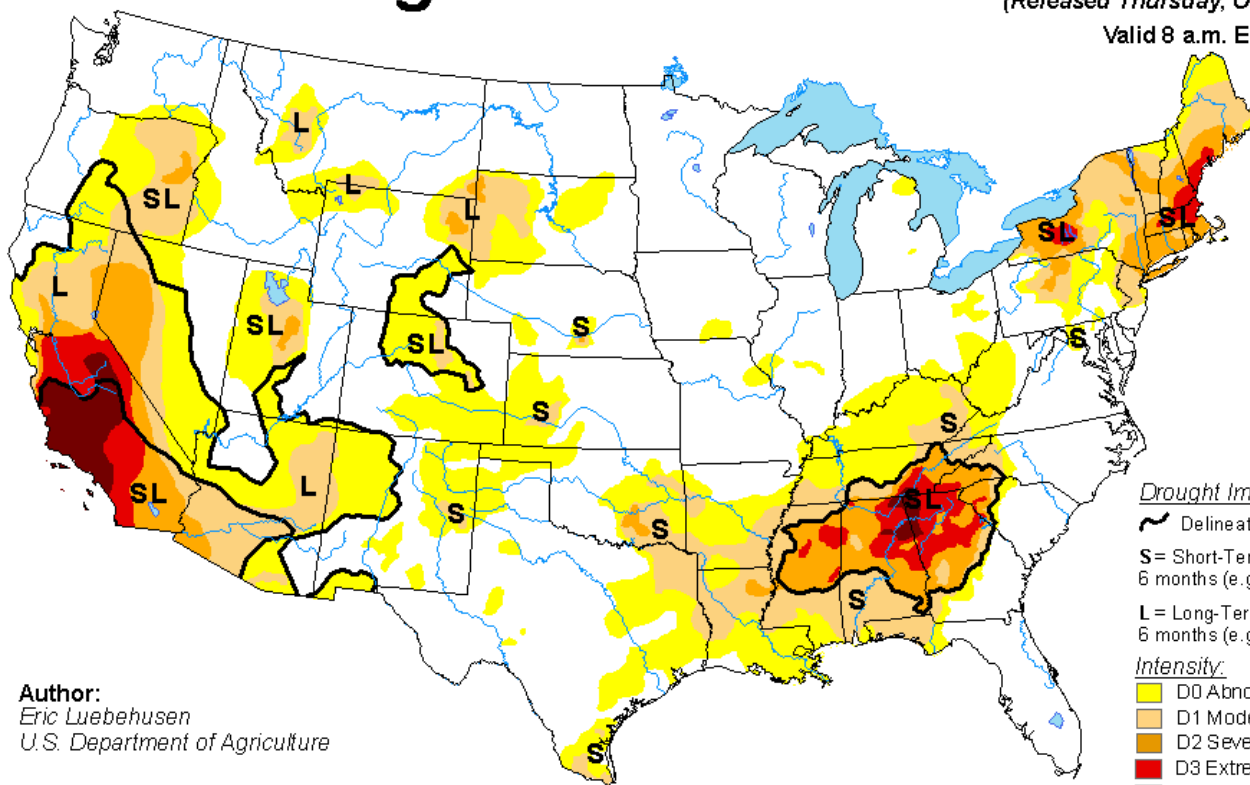
US Drought Monitor

U.S. Drought Monitor

October 18, 2016

(Released Thursday, Oct. 20, 2016)

Valid 8 a.m. EDT



Author:
Eric Luebbehusen
U.S. Department of Agriculture

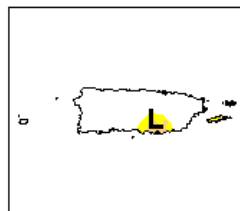
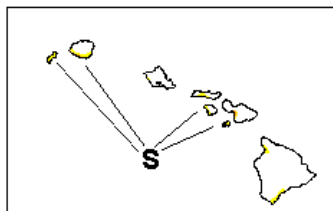
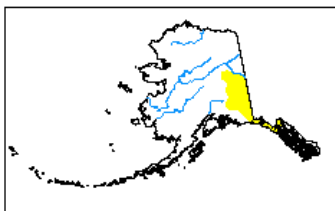
Drought Impact Types:

- ~ 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

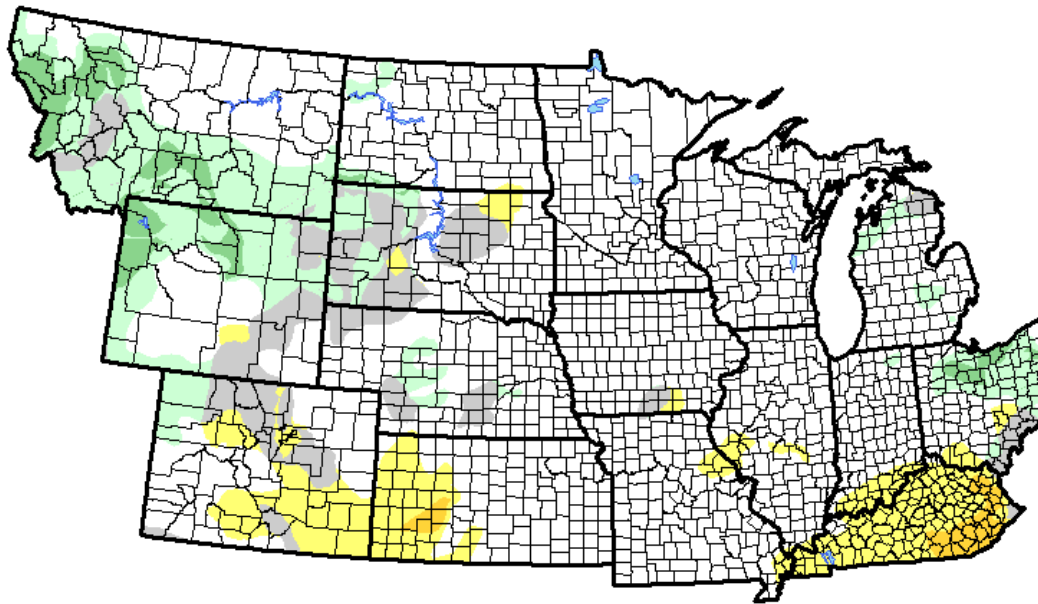
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

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



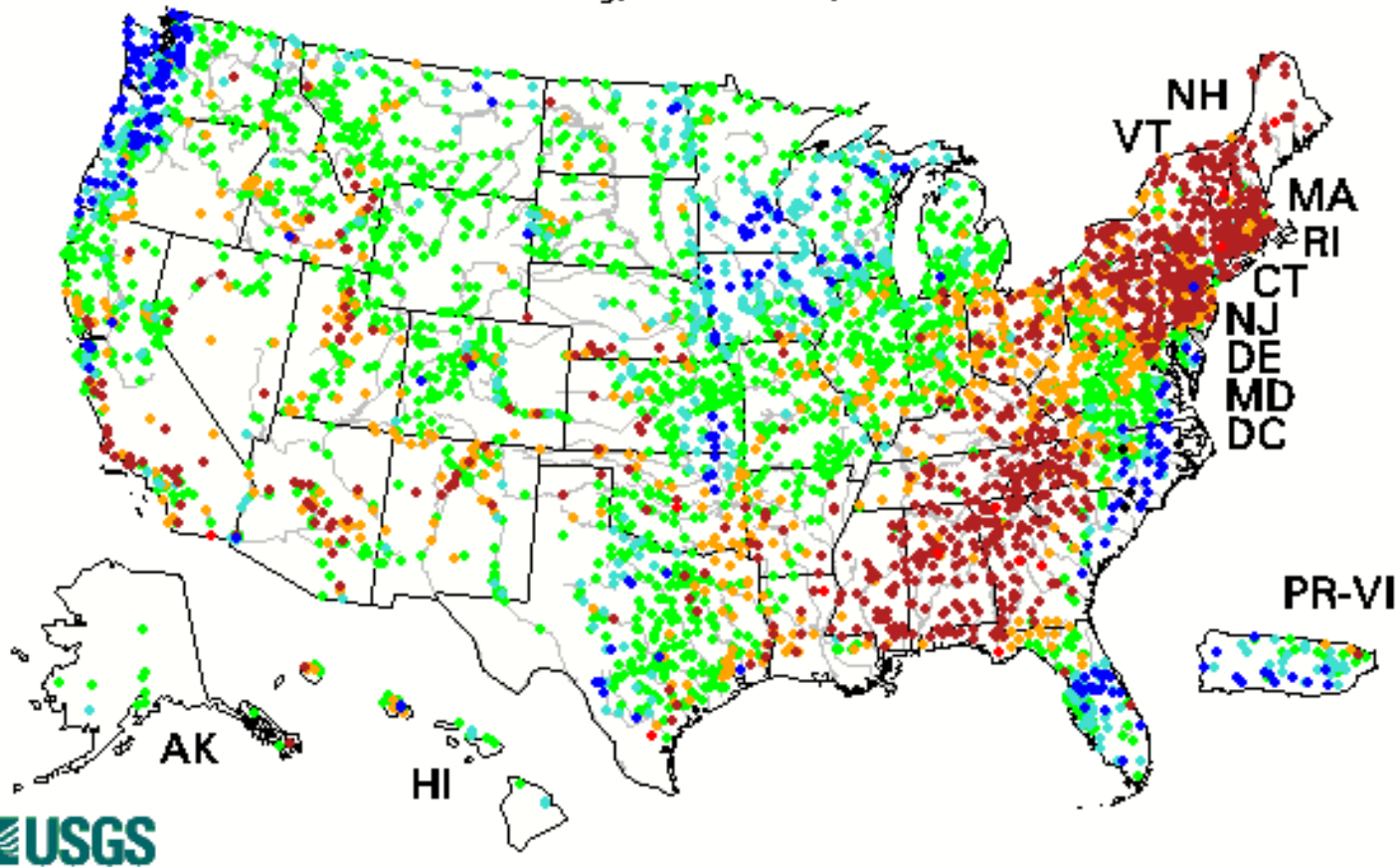
October 18, 2016
compared to
September 20, 2016



- 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

7-Day Average Streamflow

Wednesday, October 19, 2016



Explanation - Percentile classes

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

<http://waterwatch.usgs.gov/index.php?id=pa07d>

Milk River flooding

Crested near 30' at Glasgow on Sunday, Oct 9
Some rainfall totals over 5 inches

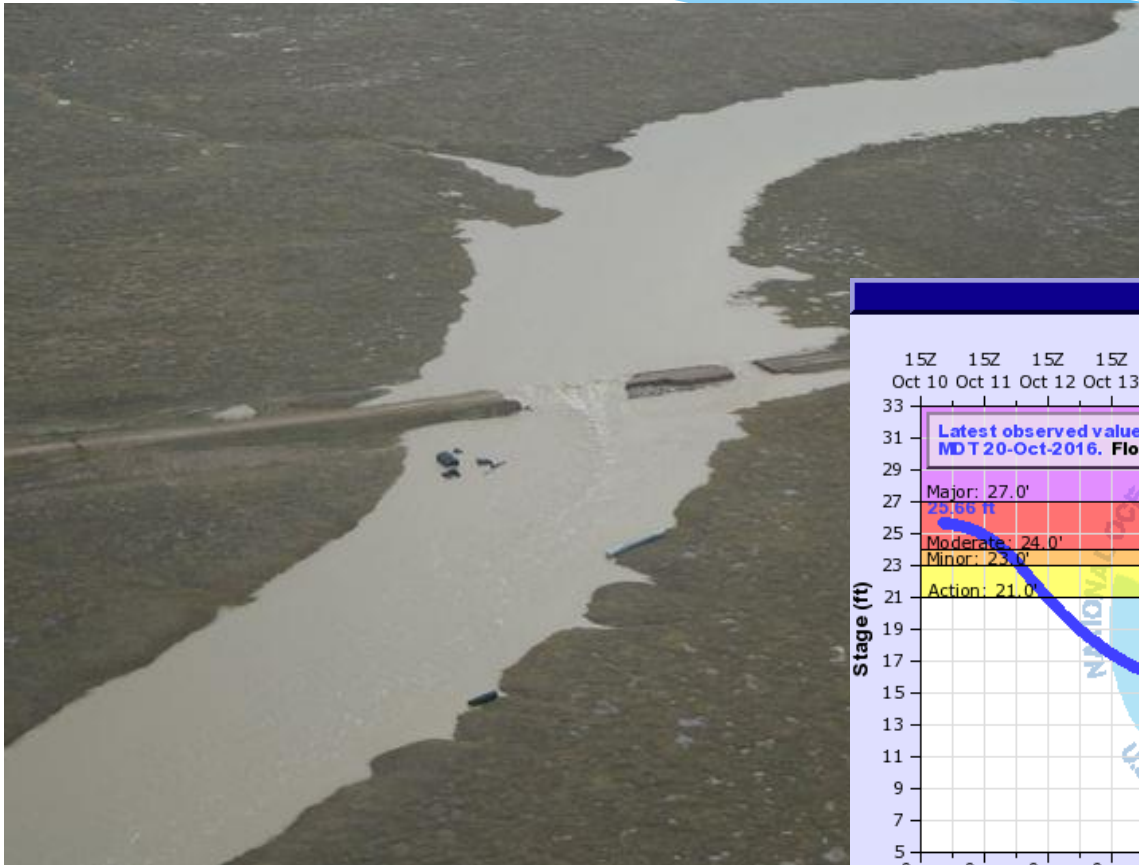
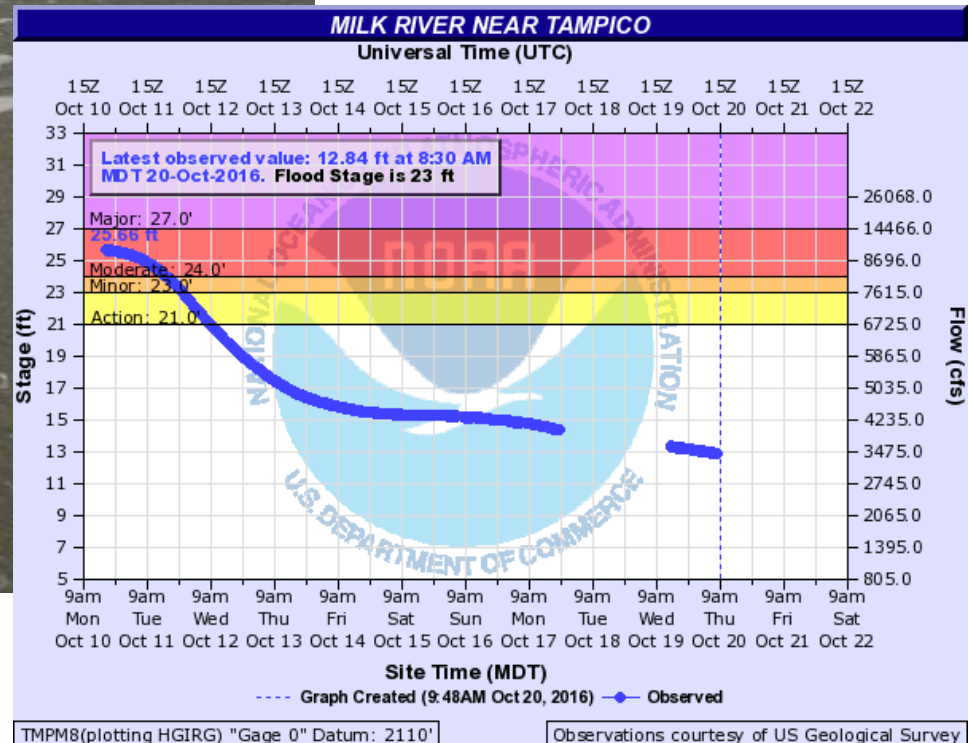
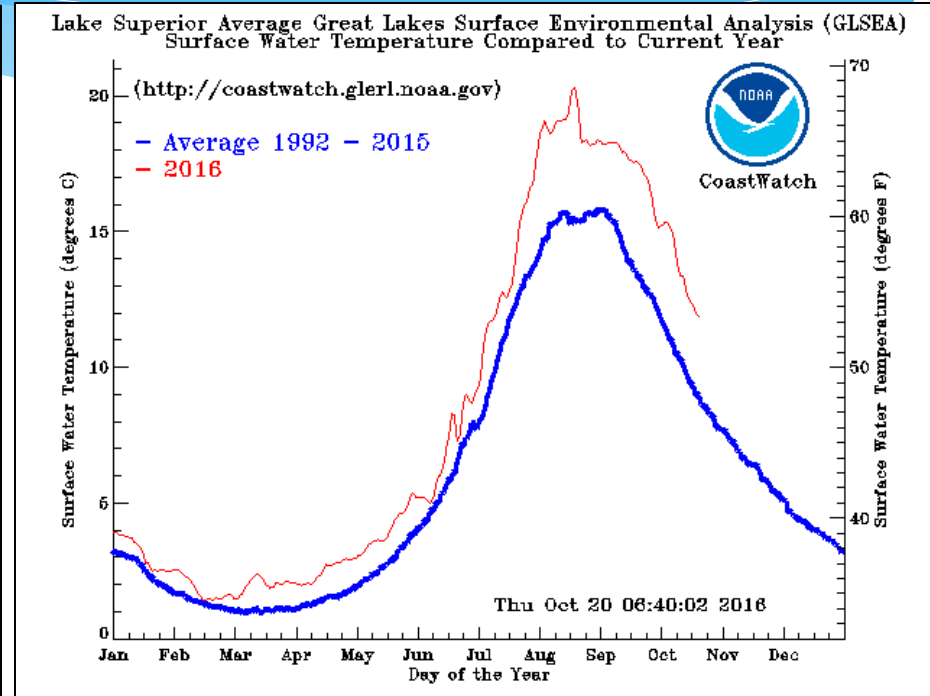
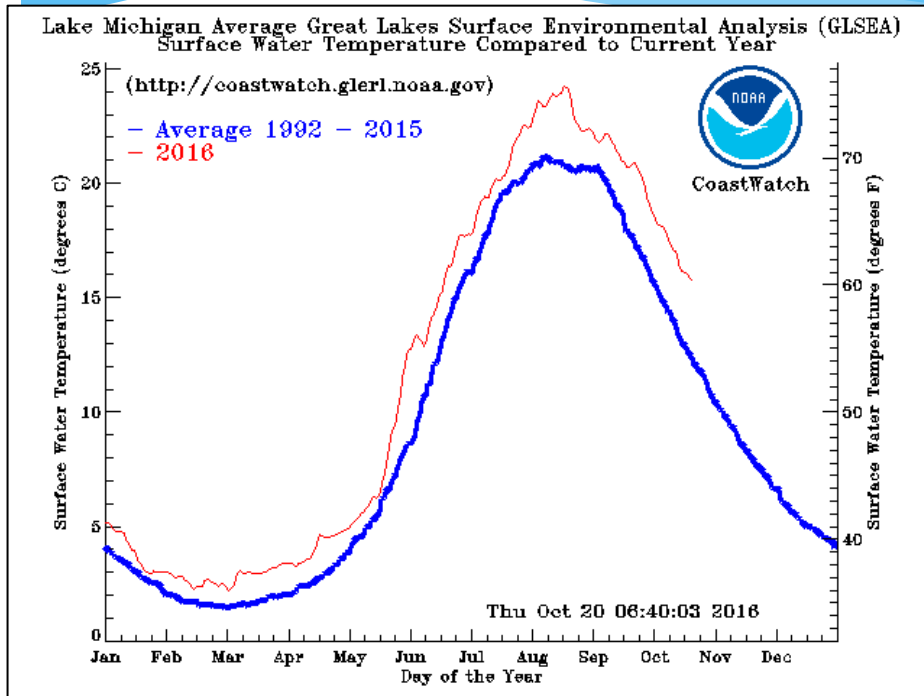


Photo: Steve Stanley, via Great Falls Tribune
10/6/16, Alkali Flats, 18 mi south of Malta



Great Lakes water temp

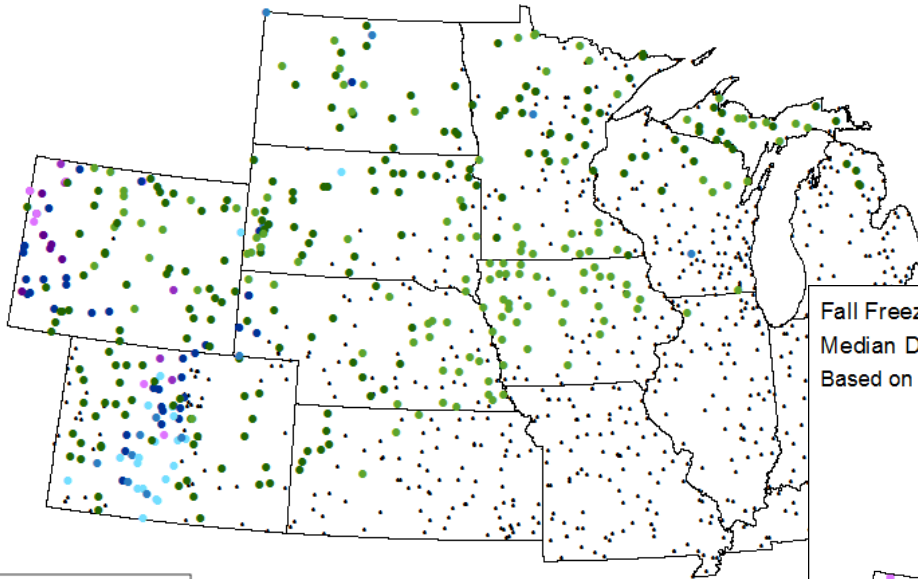


Potential for Lake Effect Snow, if cold air comes across the region.

Fall Freeze Dates (28 F)

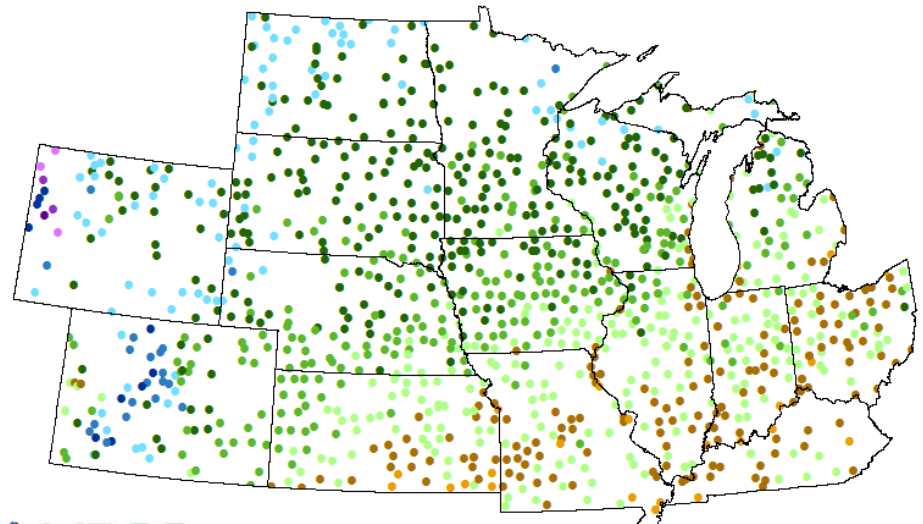
Date of First 28°F Freeze
through 10/19/2016

- Aug 10 or Earlier
 - Aug 11 - 20
 - Aug 21 - 31
 - Sep 1 - 10
 - Sep 11 - 20
 - Sep 21 - 30
 - Oct 1 - 10
 - Oct 11 - 20
 - Oct 21 - 31
 - Nov 1 - 10
 - Nov 11 - 20
 - Nov 21 or Later
- Tmin yet to reach 28°F



Fall Freeze
Median Date Of 28°F Freeze
Based on 1981-2010 Average

- Aug 10 or Earlier
- Aug 11 - 20
- Aug 21 - 31
- Sep 1 - 10
- Sep 11 - 20
- Sep 21 - 30
- Oct 1 - 10
- Oct 11 - 20
- Oct 21 - 31
- Nov 1 - 10
- Nov 11 - 20
- Nov 21 or Later

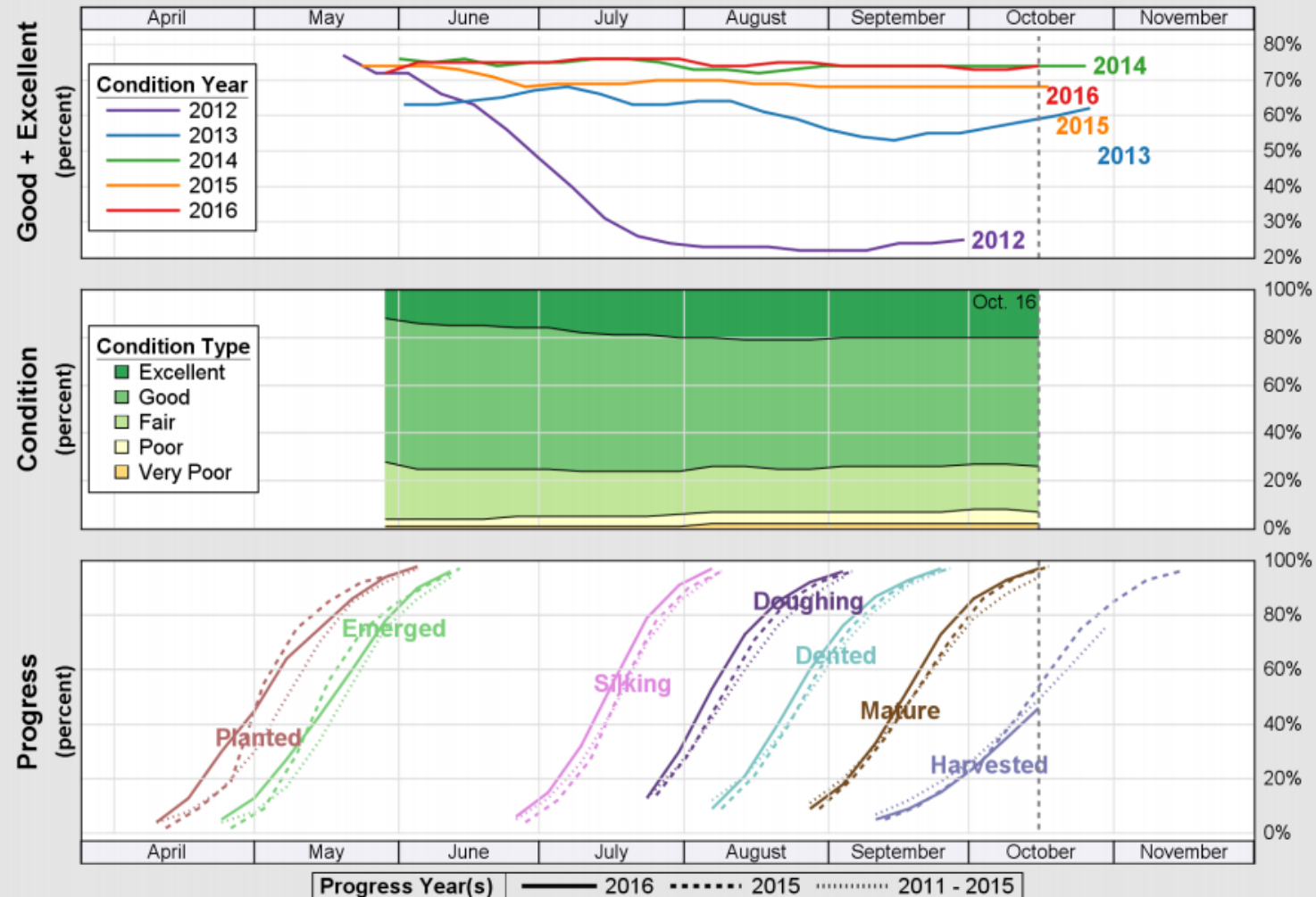


Agriculture

USDA

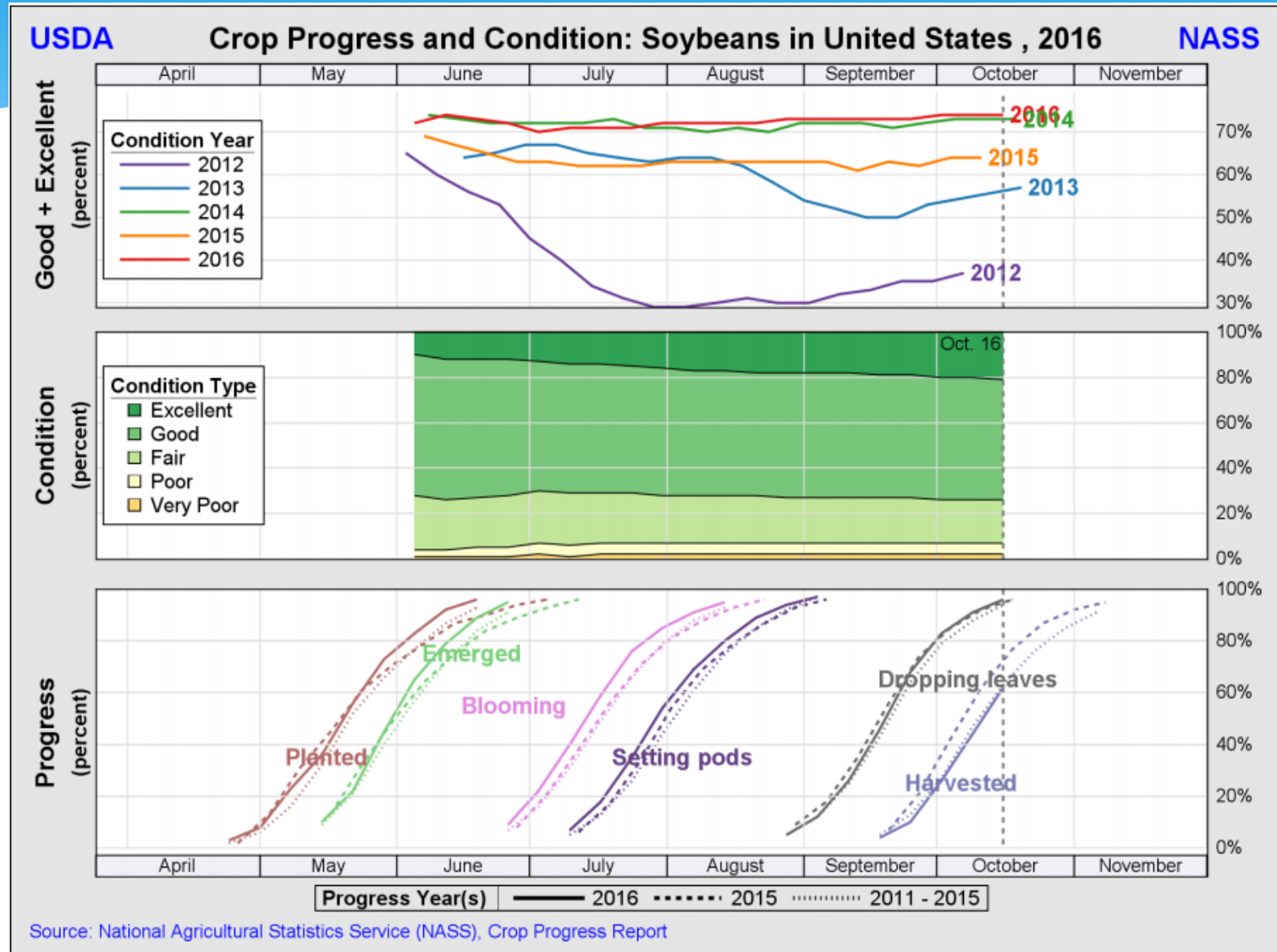
Crop Progress and Condition: Corn in United States, 2016

NASS



Source: National Agricultural Statistics Service (NASS), Crop Progress Report

Agriculture



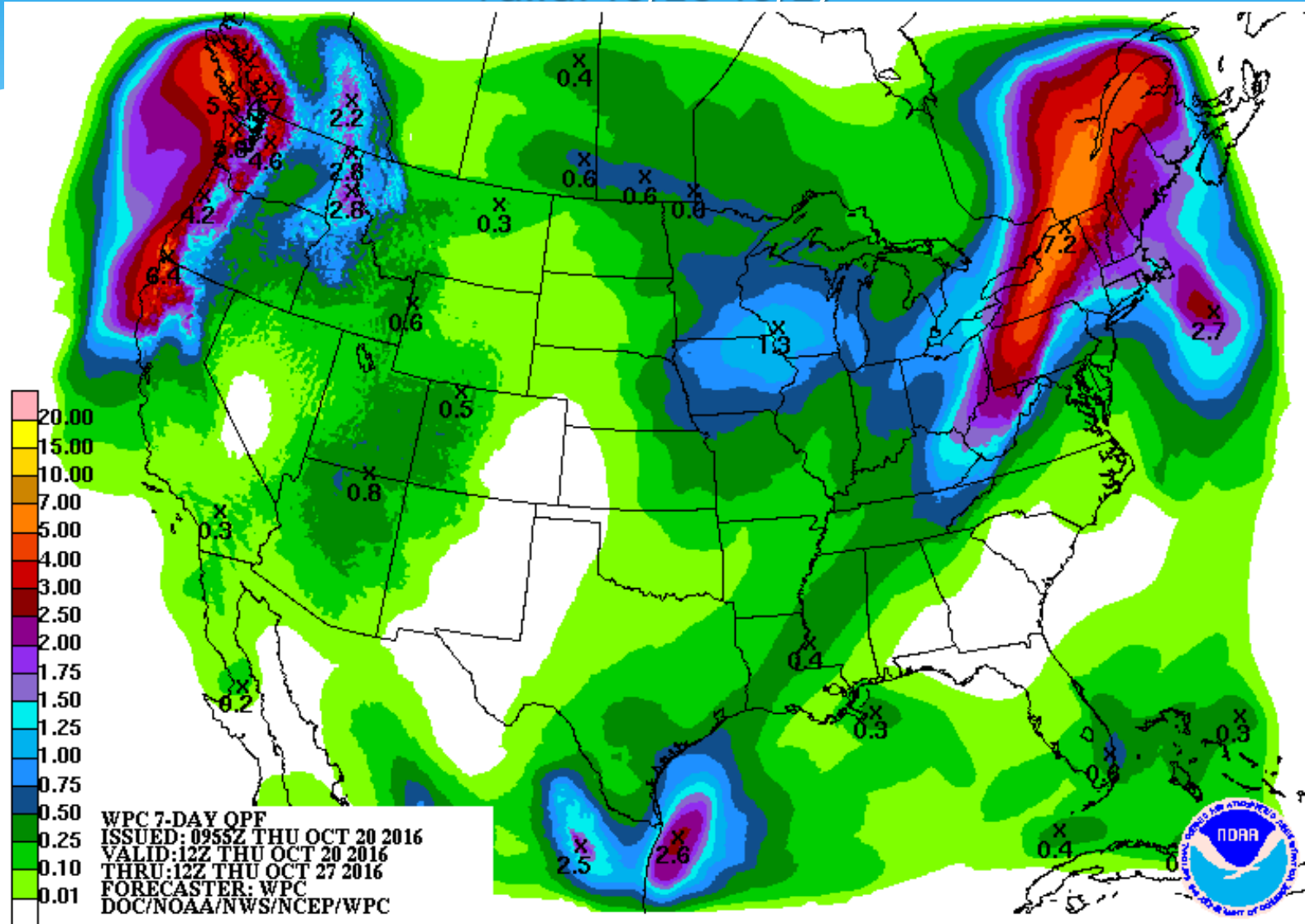
Other Impacts

- * SD/MN/IA/NE region slow for harvest of soybeans and corn due to high humidity, fog and wet fields
- * Wet soils leading to compaction issues during harvest due to heavy equipment
- * Cattle and sheep in western region in good condition, calves are at good weights and cows have good pregnancy rates
- * Sugarbeet and potato harvest and yields impacted by wet conditions late in the season
- * Sunflower harvest a little slow
- * Winter wheat planting generally complete
- * Mosquito populations now reduced with frost occurrence. 2016 was a high West Nile Virus year in SD, estimated 115-120 cases.

Climate Outlooks

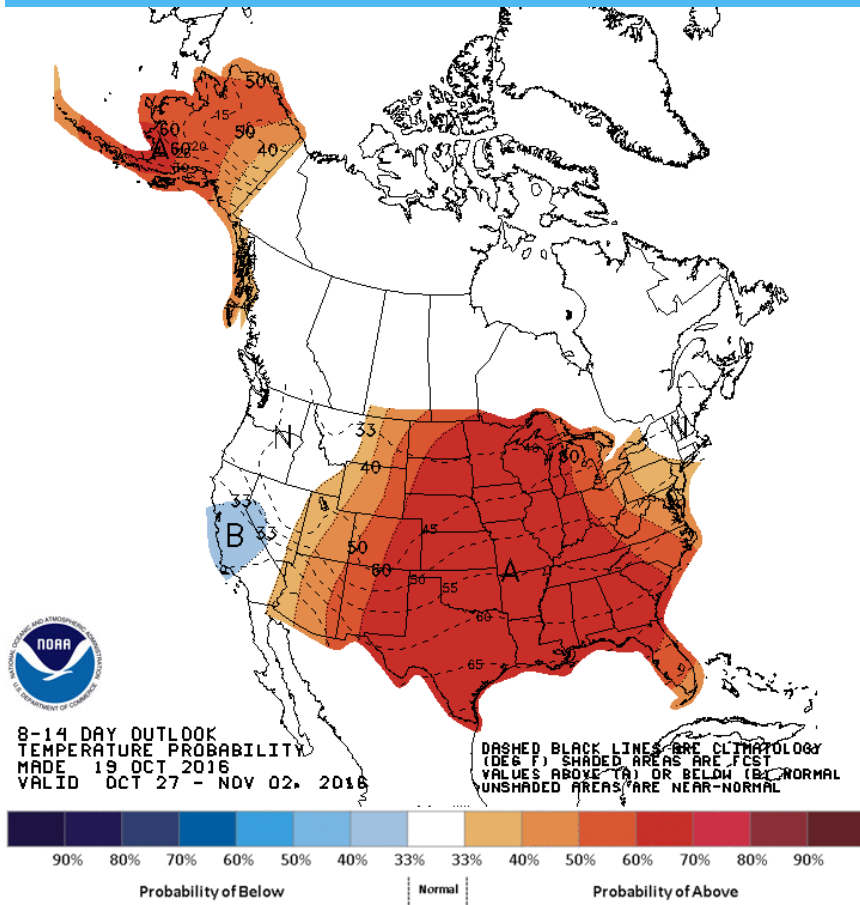
7-day Quantitative Precipitation Forecast

Valid: 10/20-10/27

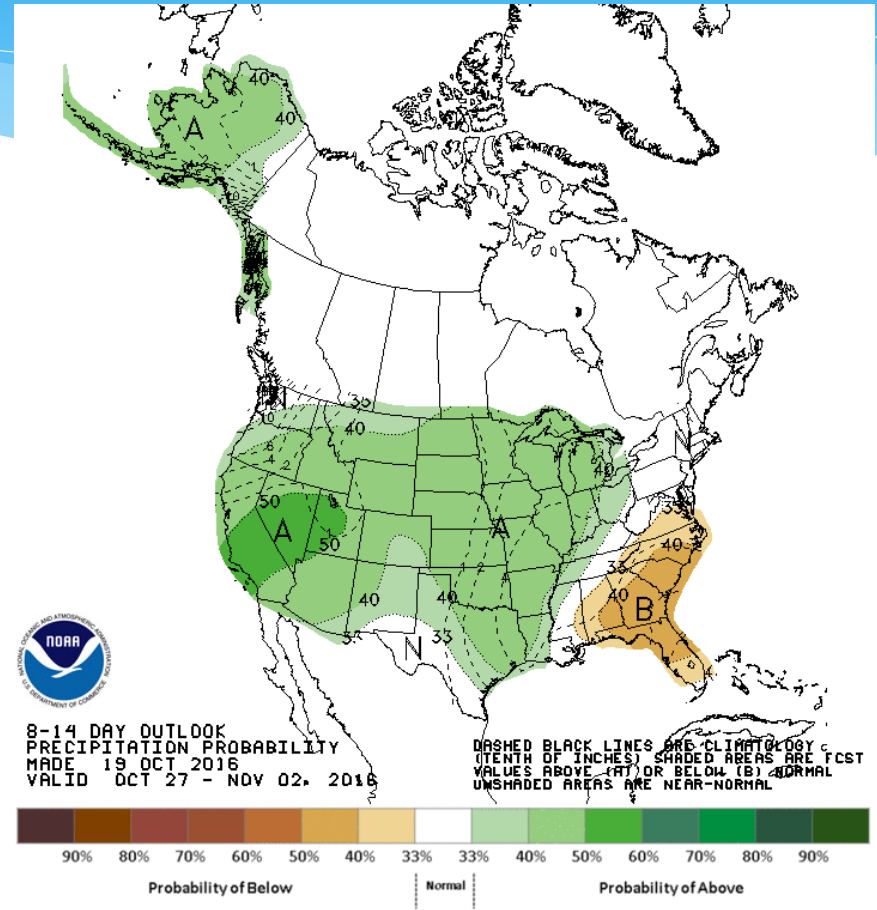


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

Temperature and Precipitation Probabilities for 27 Oct – 2 Nov 2016



Temperature

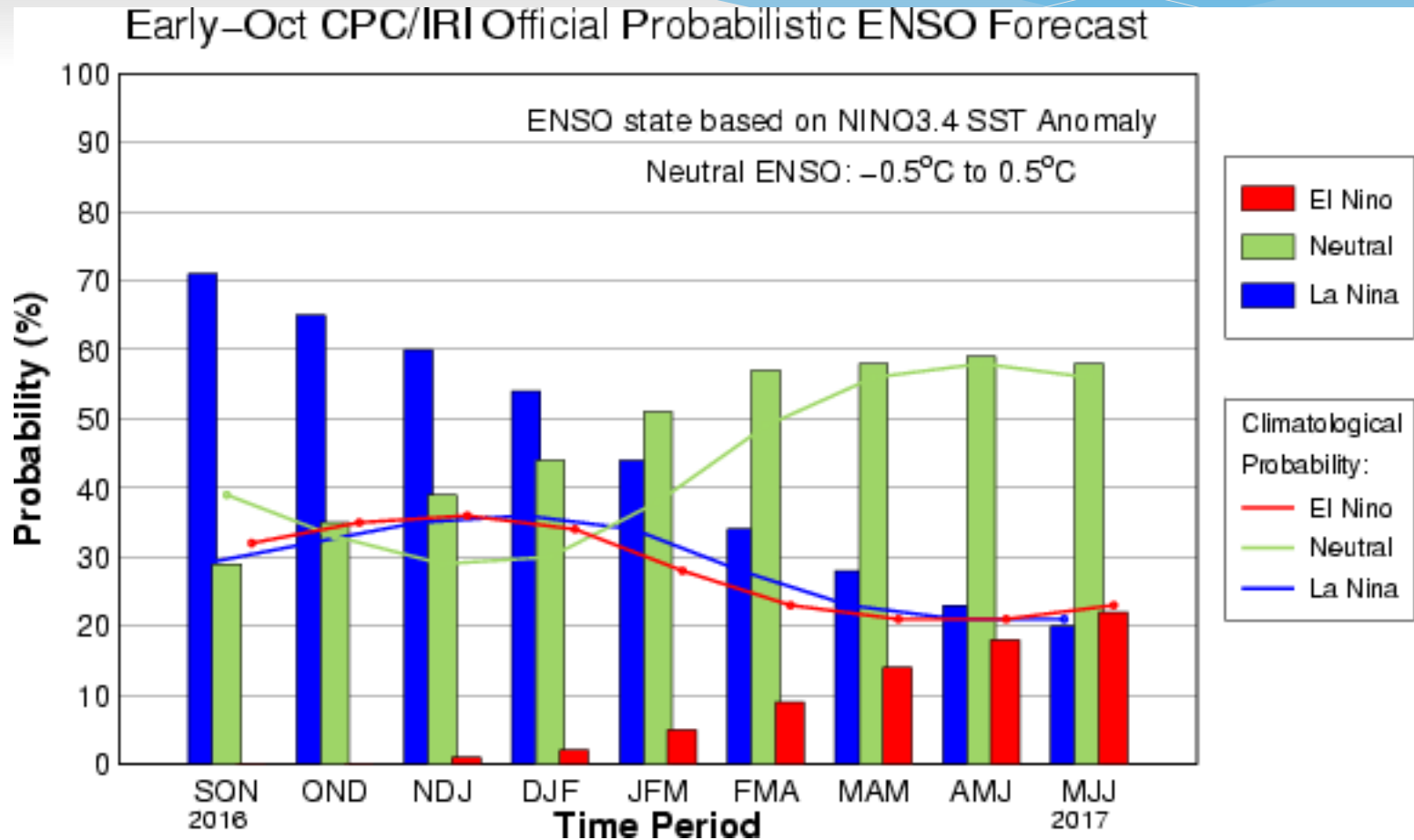


Precipitation

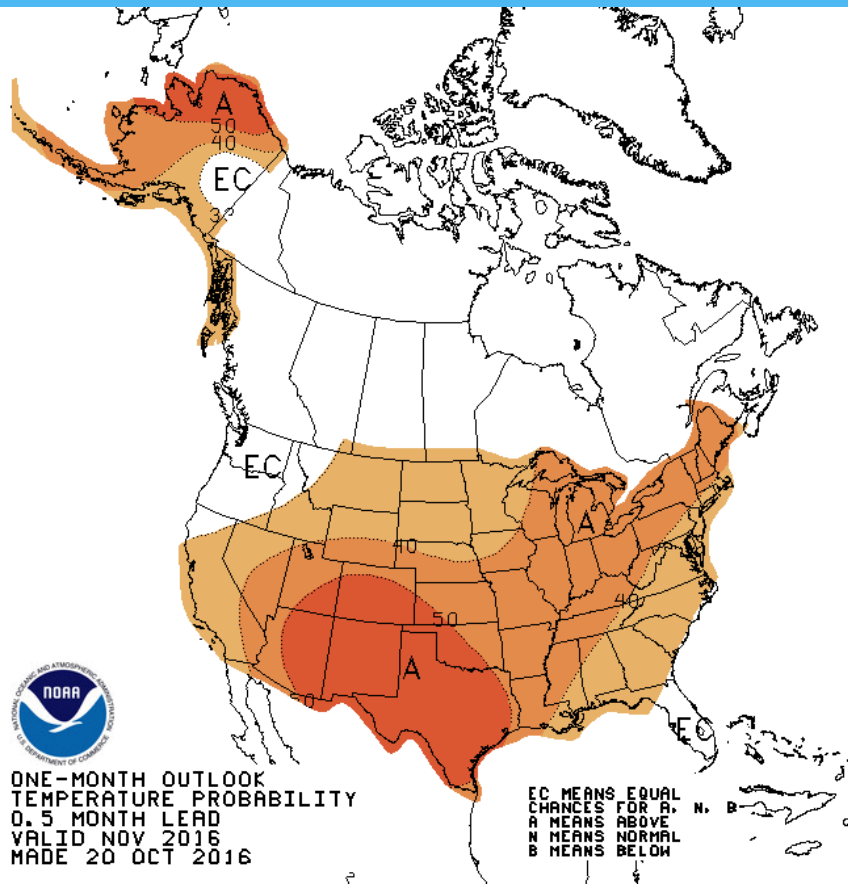
CPC/IRI Probabilistic ENSO Outlook

Updated: 13 October 2016

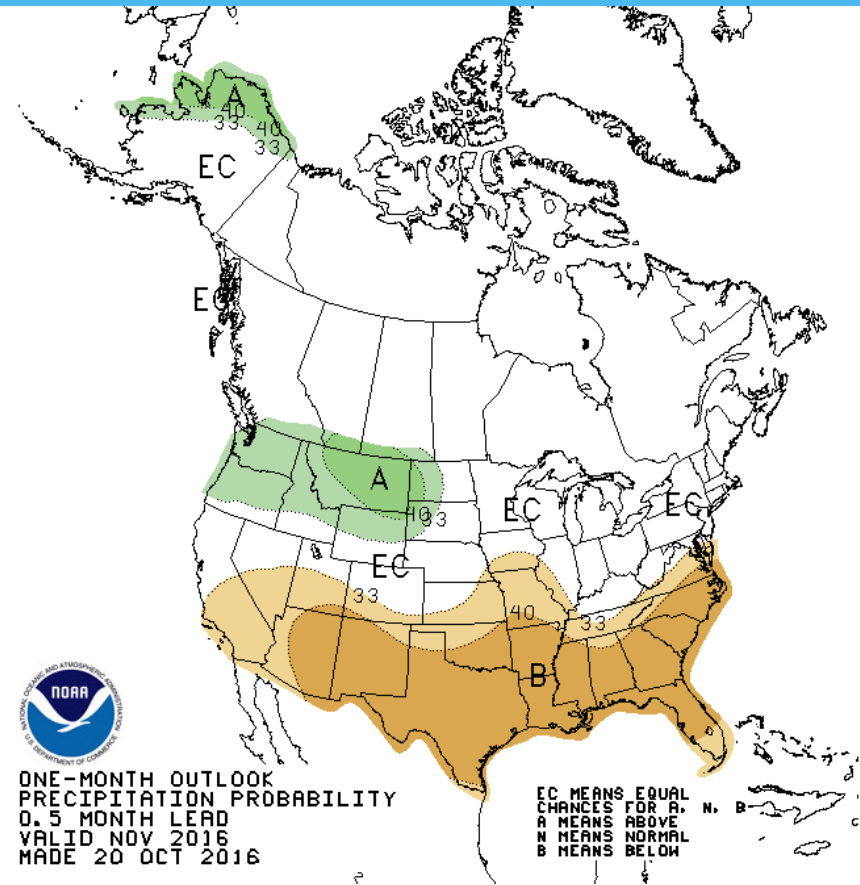
La Nina conditions most likely outcome for fall 2016, into winter 2016-17.



November Temperature and Precipitation Probabilities



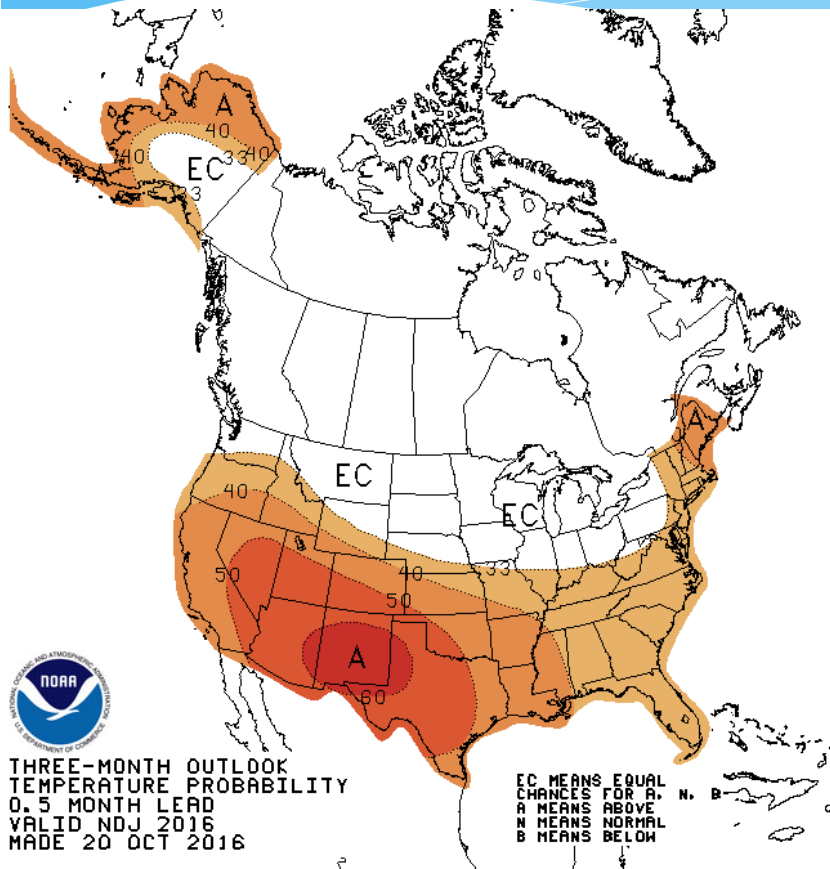
Temperature



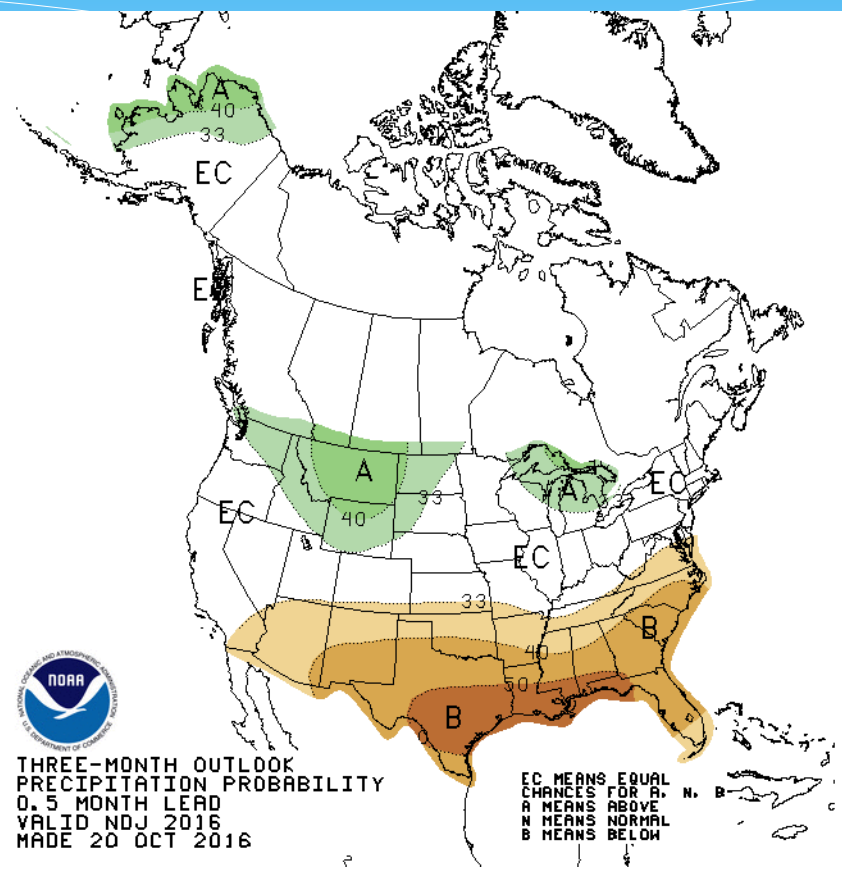
Precipitation

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

3 Month Temperature and Precipitation Probabilities (November-January)

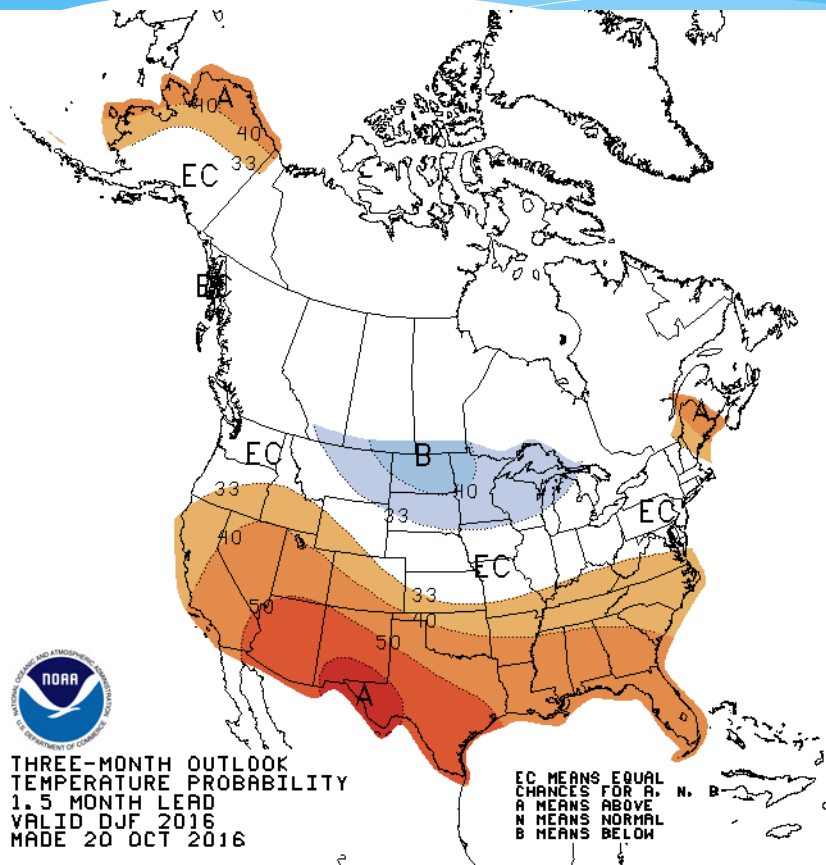


Temperature

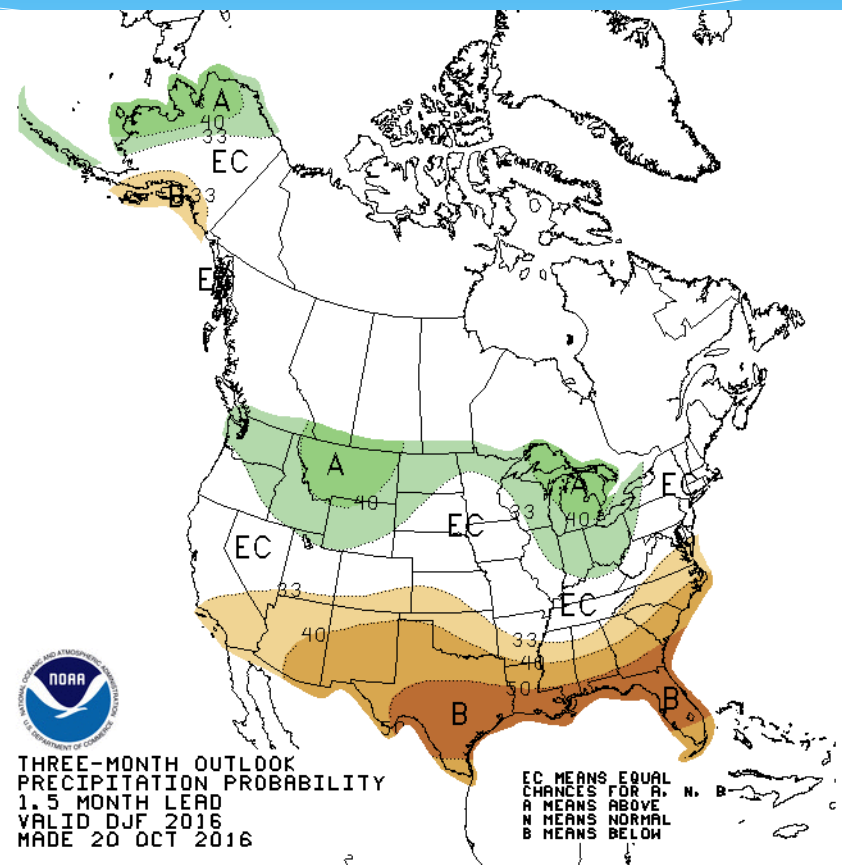


Precipitation

3 Month Temperature and Precipitation Probabilities (December - February)



Temperature

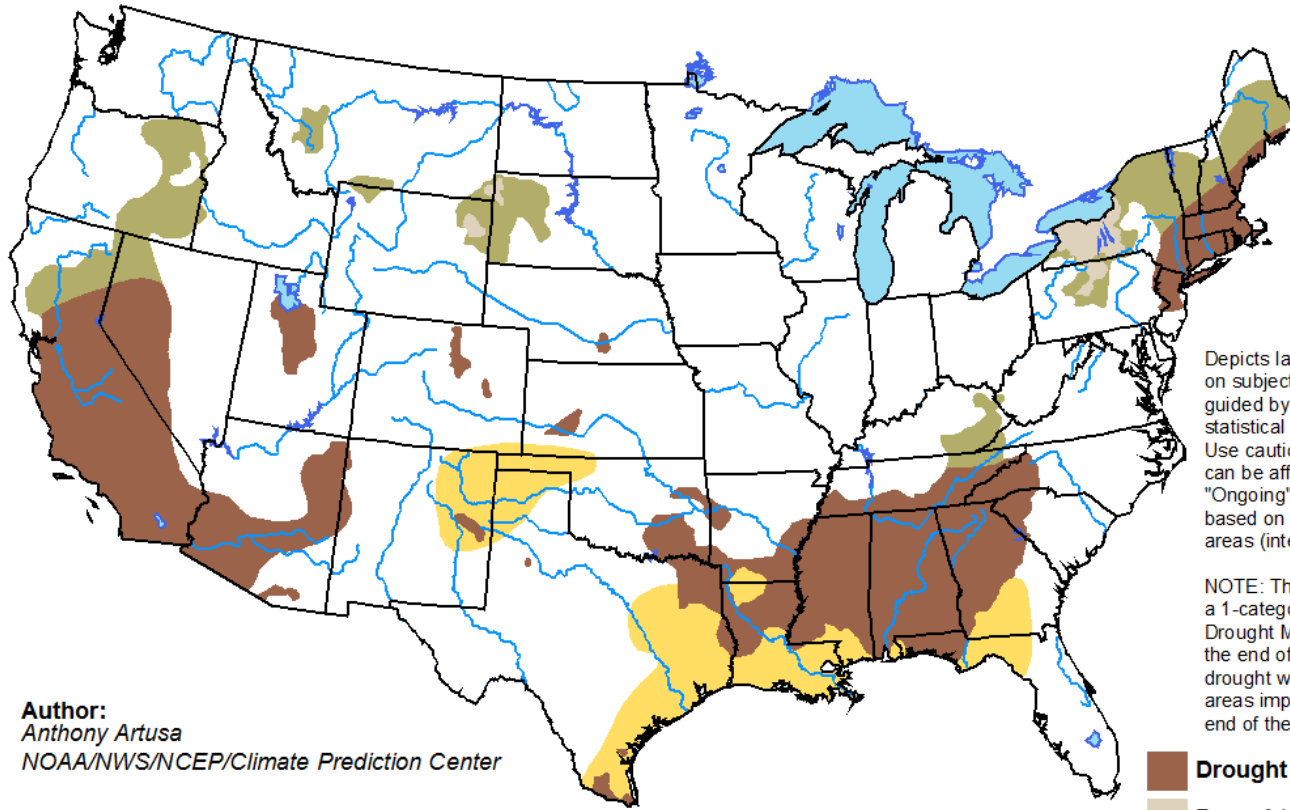


Precipitation

Drought Outlook through 31 Jan

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period





Valid for October 20 - January 31, 2017
Released October 20, 2016

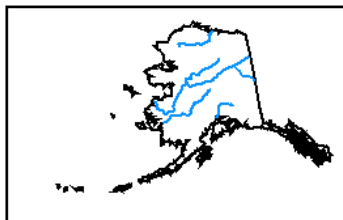


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif/

Summary – Current Conditions

- * Warmer than average temperatures driven primarily by elevated minimum temperatures July through September
- * So far, frost and freeze occurring at median date or later across the region
- * Rainfall much above average for 4 Midwest & Northern Plains states in September
- * July through September ranked top 5 wettest for ND, MN, IA, IL, MI and KY

Summary - Outlooks

- * La Niña – Watch status in effect. Weak event expected
- * Warmer than average temperatures projected through November
- * More likely to turn cooler than average in December-January
- * Increased potential for wetter than average in northern Rockies, Great Lakes

Further Information - Partners

- * **Today's and Past Recorded Presentations and :**
- * <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:**

- * 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

- * Laura Edwards: laura.edwards@sdstate.edu, 605-626-2870

- * **Weather:**

- * crhroc@noaa.gov