

Midwest/Great Plains Climate-Drought Outlook

August 17, 2017

Brian Fuchs
National Drought Mitigation Center
University of Nebraska-Lincoln
School of Natural Resources



United States Department of Agriculture
Midwest Climate Hub

General Information

Providing climate services to the Central Region

- Collaboration Activity Between:
 - NOAA NCEI/NWS/OAR/NIDIS/CPC
 - 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

- September 21, 2017 (1 PM CST) Dennis Todey, USDA Midwest Climate Hub

Access to Future Climate Webinars and Related Information

www.drought.gov/drought/content/regional-programs/regional-drought-webinars

Access to Past Climate Webinars

mrcc.isws.illinois.edu/multimedia/webinars.jsp

www.hprcc.unl.edu/webinars.php

Agenda

- **Current/Recent Past Conditions**
- **Regional Impacts**
 - **General**
 - **Agricultural**
 - **Update on Northern Great Plains Drought**
- **Outlooks**
- **Questions**

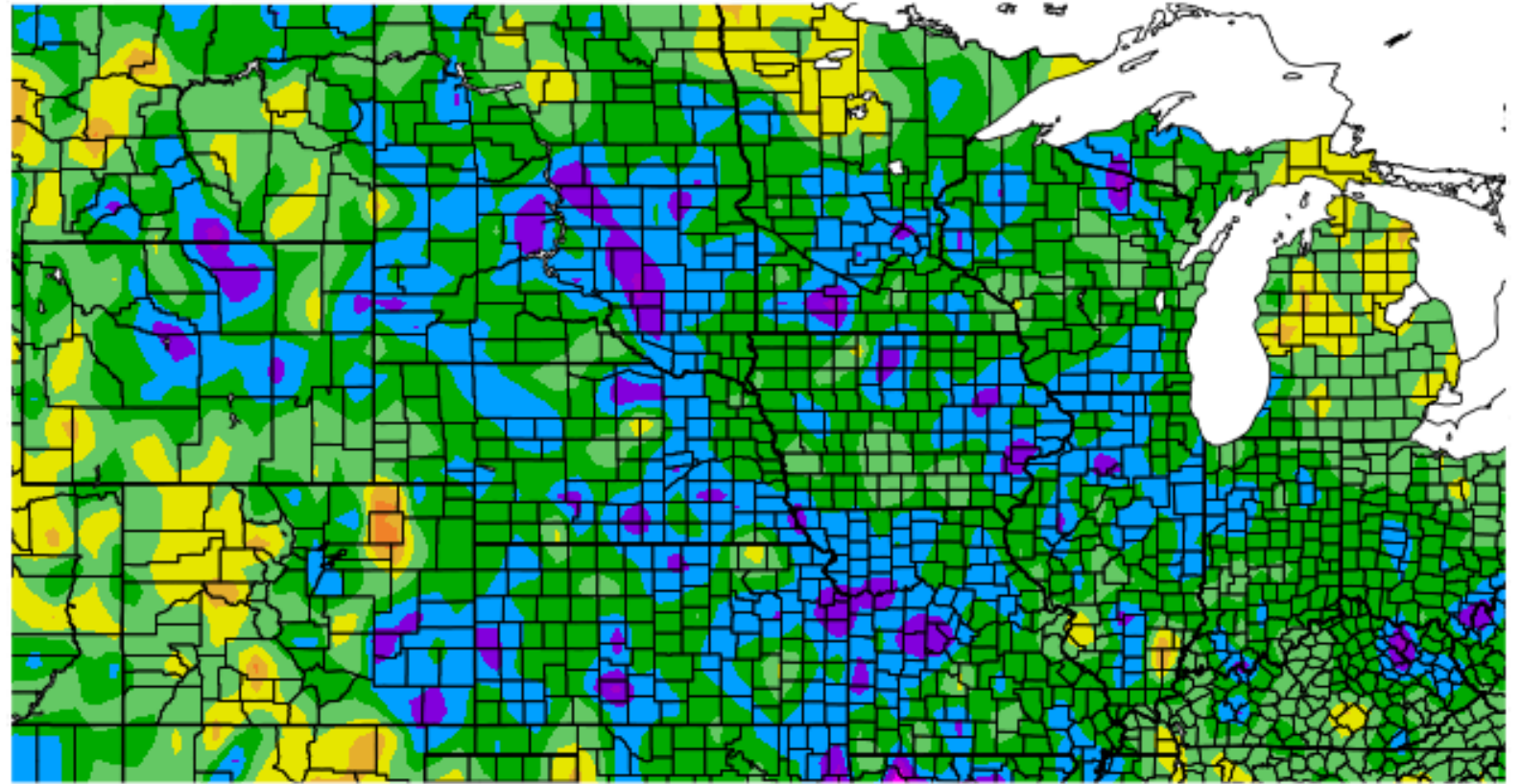
Current Conditions

Hail in Otero County, CO
Photos courtesy of Becky
Bolinger.



Departure from Normal Temperature (F) 7/18/2017 - 8/16/2017

Temperature
departures over
the last 30 Days

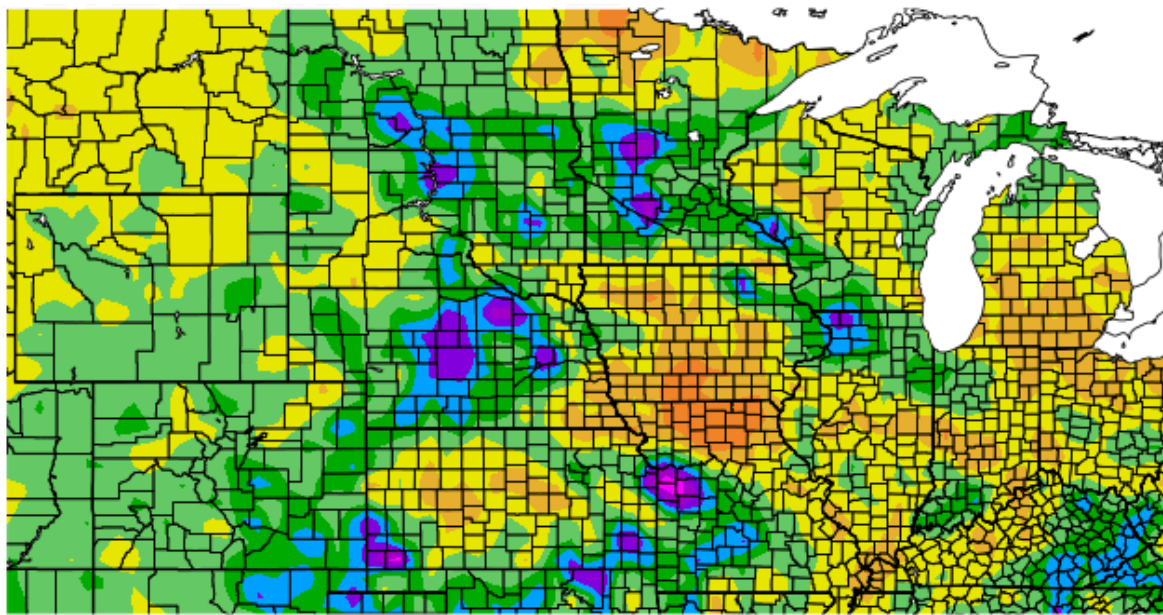


Generated 8/17/2017 at HPRCC using provisional data.

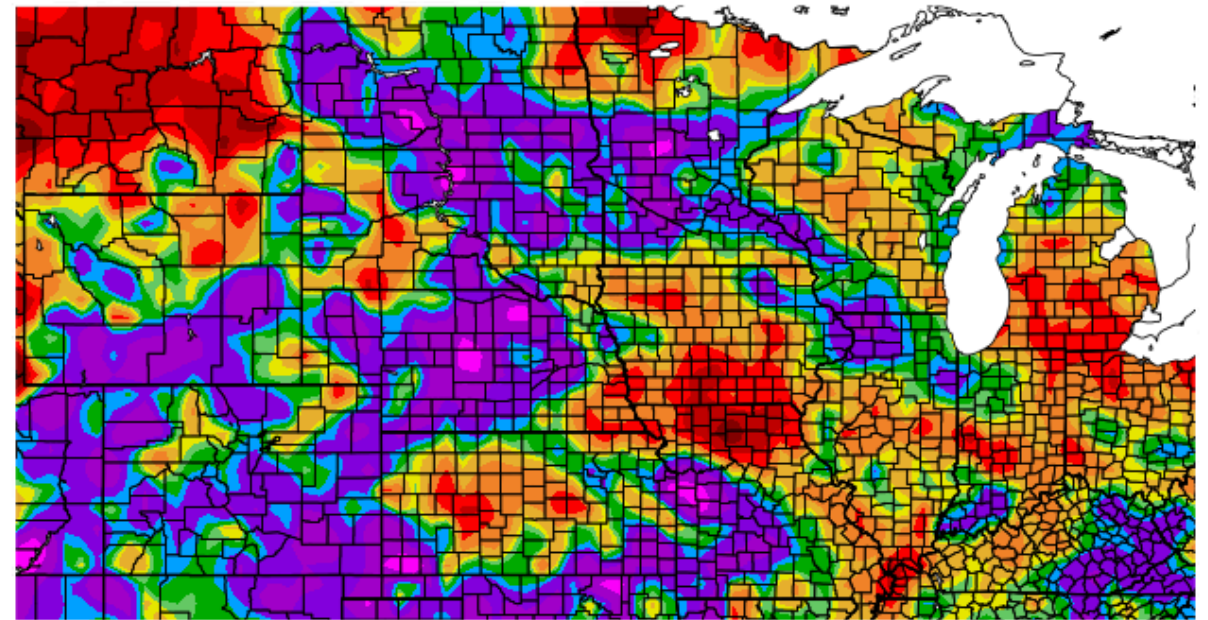
Regional Climate Centers

Precipitation over the last 30 Days

Departure from Normal Precipitation (in)
7/18/2017 – 8/16/2017



Percent of Normal Precipitation (%)
7/18/2017 – 8/16/2017



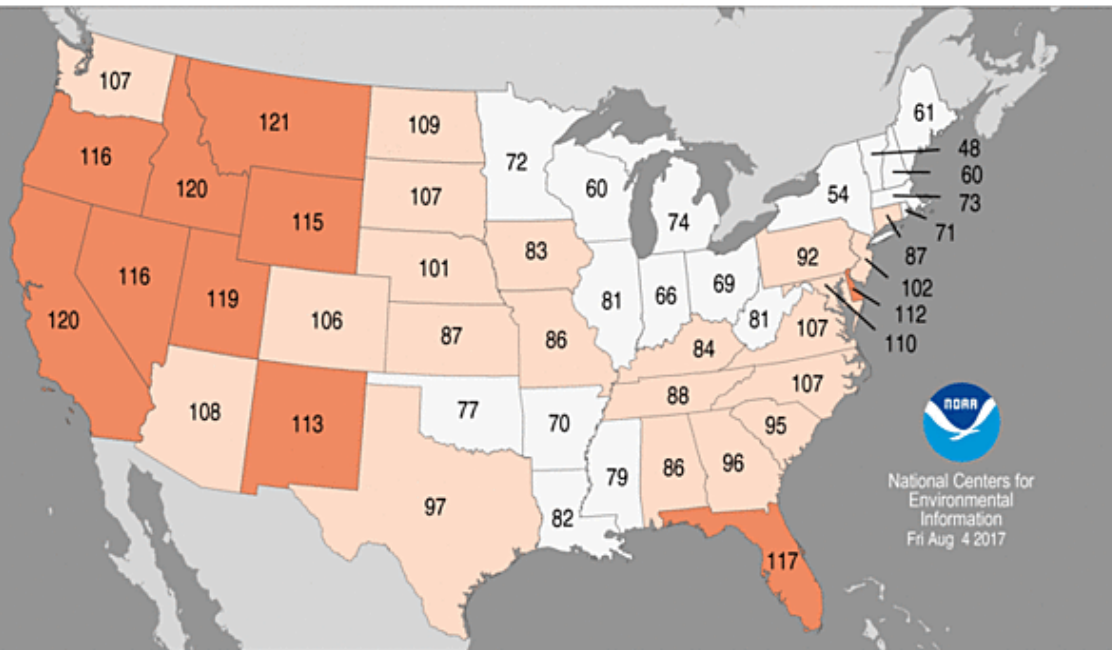
Generated 8/17/2017 at HPRCC using provisional data.

Regional Climate Center Generated 8/17/2017 at HPRCC using provisional data.

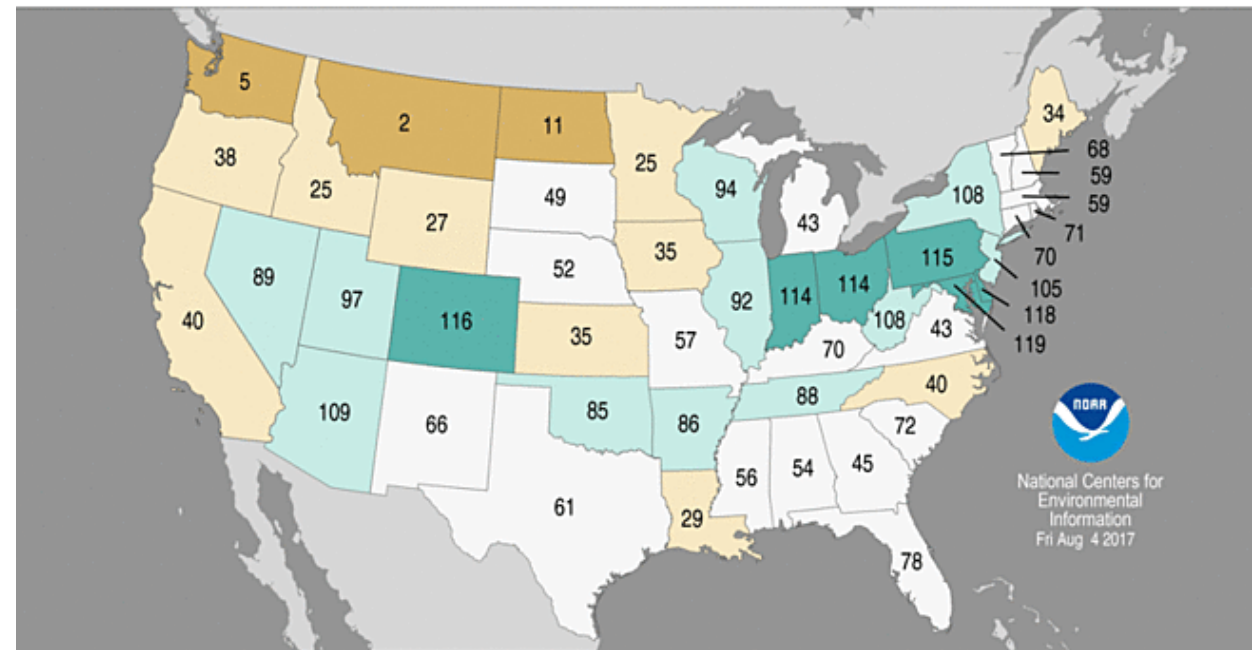
Regional Climate Centers

July 2017 Climatology from NCEI

Statewide Average Temperature Ranks
July 2017
Period: 1895-2017



Statewide Precipitation Ranks
July 2017
Period: 1895-2017



- Record Coldest (1)
- Much Below Average
- Below Average
- Near Average
- Above Average
- Much Above Average
- Record Warmest (123)
- Record Driest (1)
- Much Below Average
- Below Average
- Near Average
- Above Average
- Much Above Average
- Record Wettest (123)

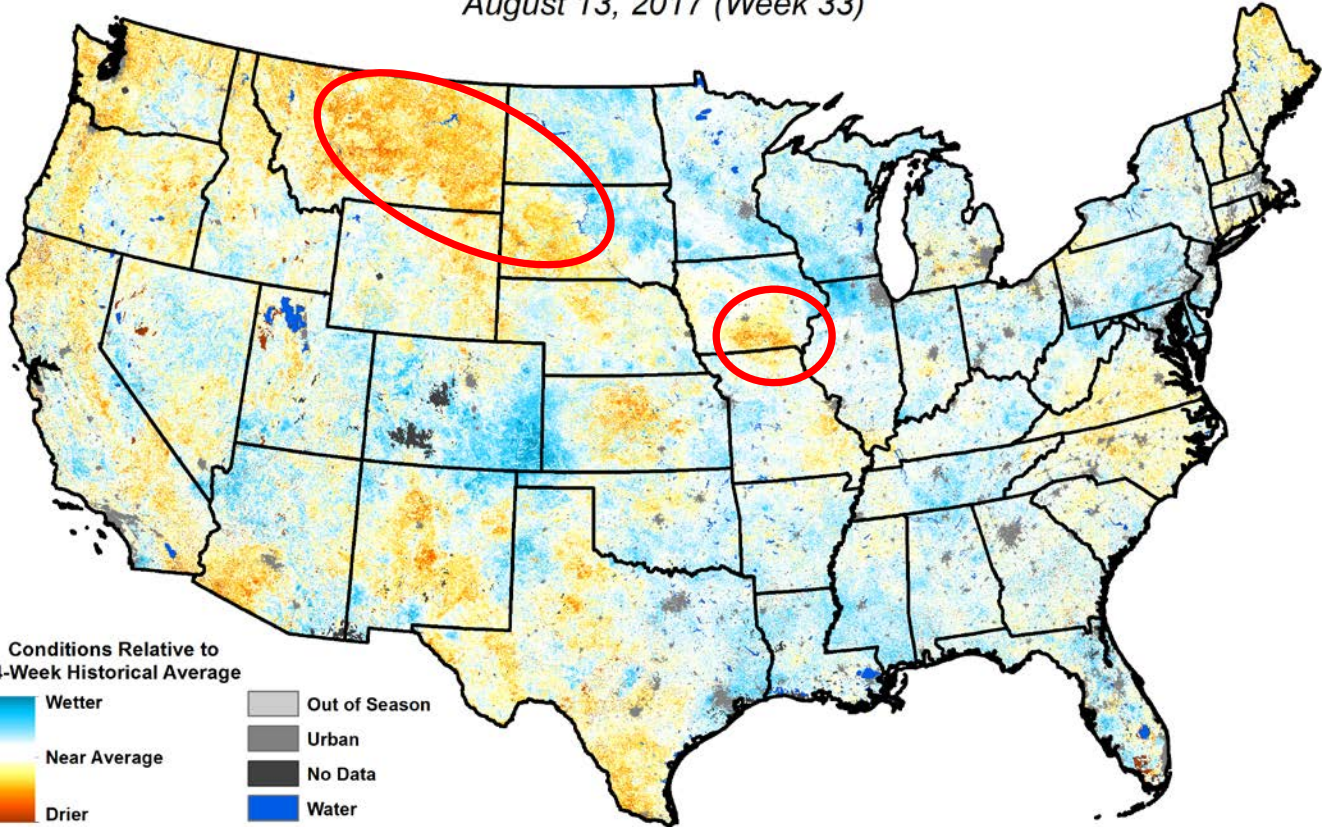
<https://www.ncdc.noaa.gov/sotc/>

Quick Drought Response Index (QuickDRI)

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

Quick Drought Response Index (QuickDRI)

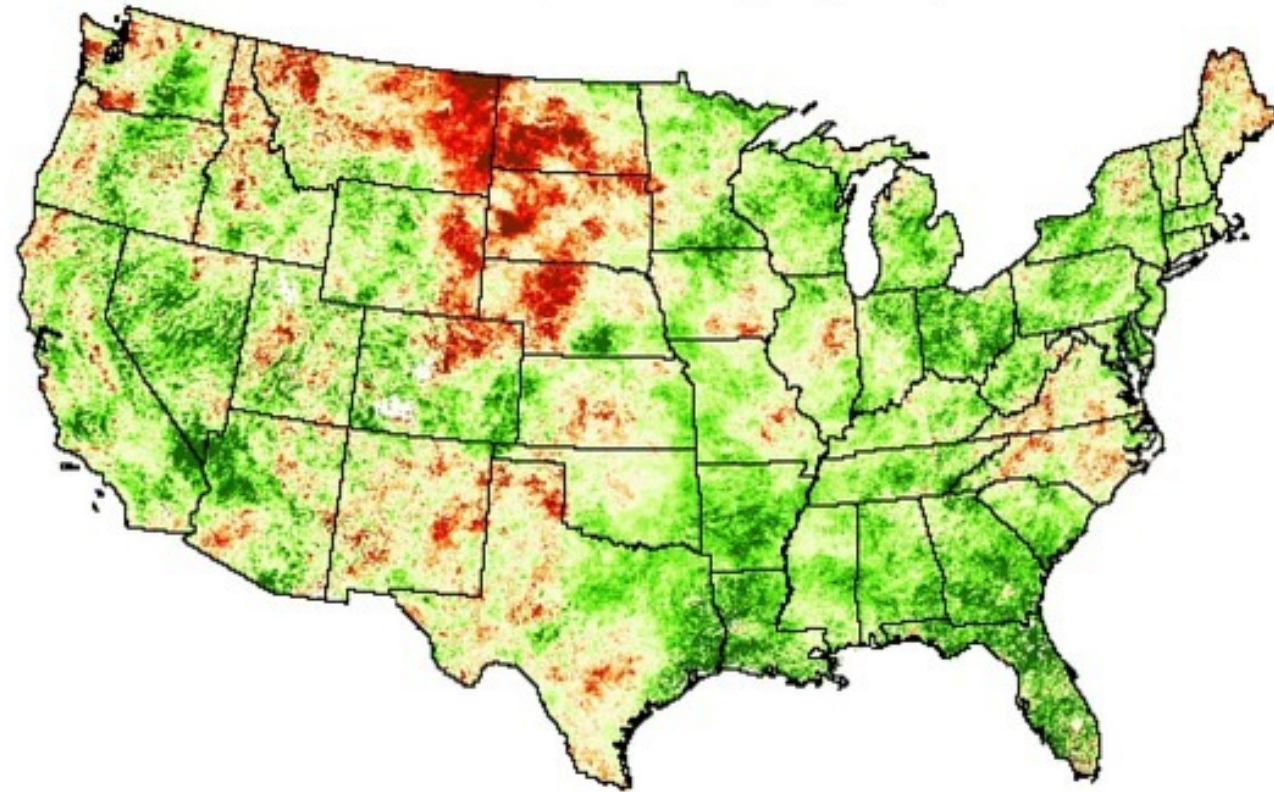
August 13, 2017 (Week 33)



Evaporative Stress Index (ESI)

Evaporative Stress Index 4km

1 month composite ending August 15, 2017



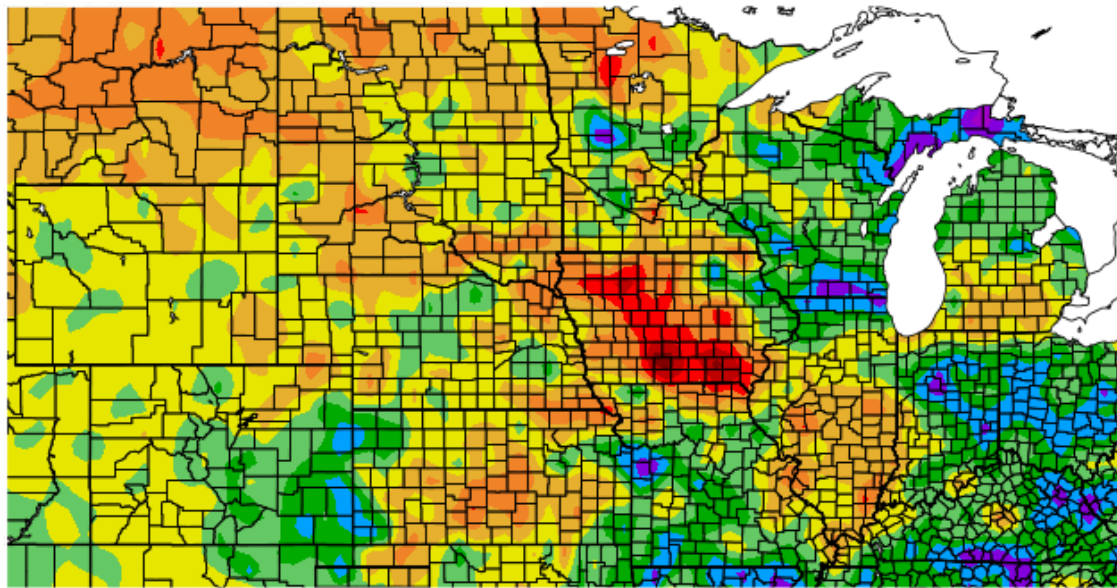
Standardized ET/PET anomalies



<http://hrsl.arsusda.gov/drought/index.php>

Precipitation over the last 90 Days

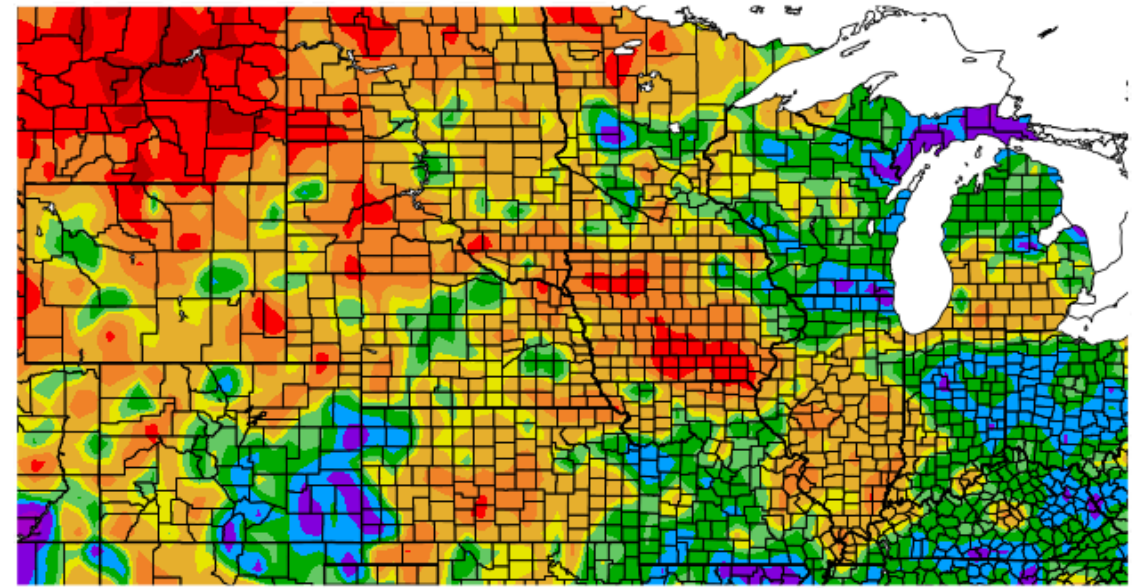
Departure from Normal Precipitation (in)
5/19/2017 - 8/16/2017



Generated 8/17/2017 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
5/19/2017 - 8/16/2017

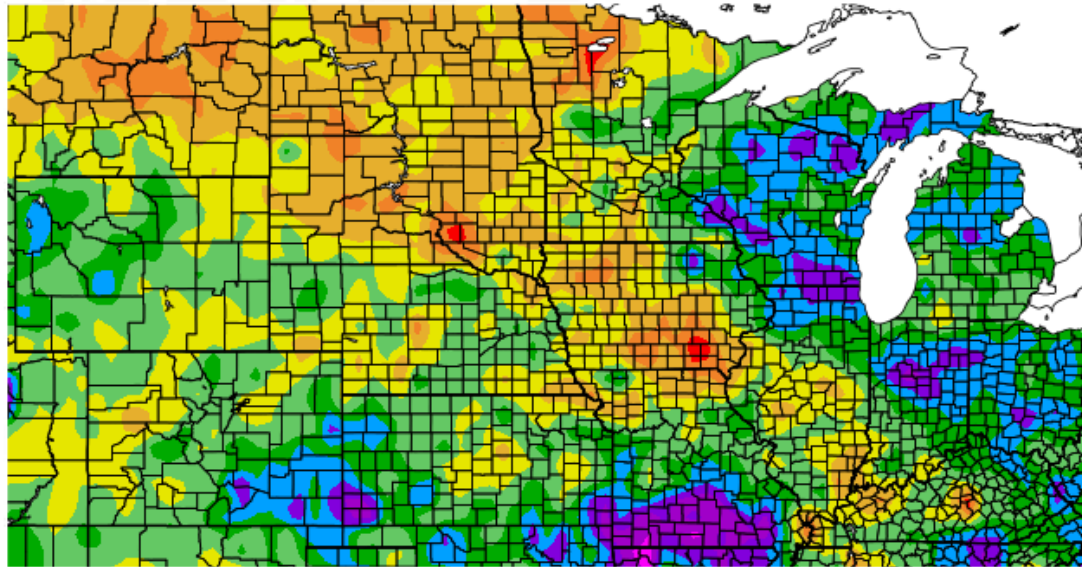


Generated 8/17/2017 at HPRCC using provisional data.

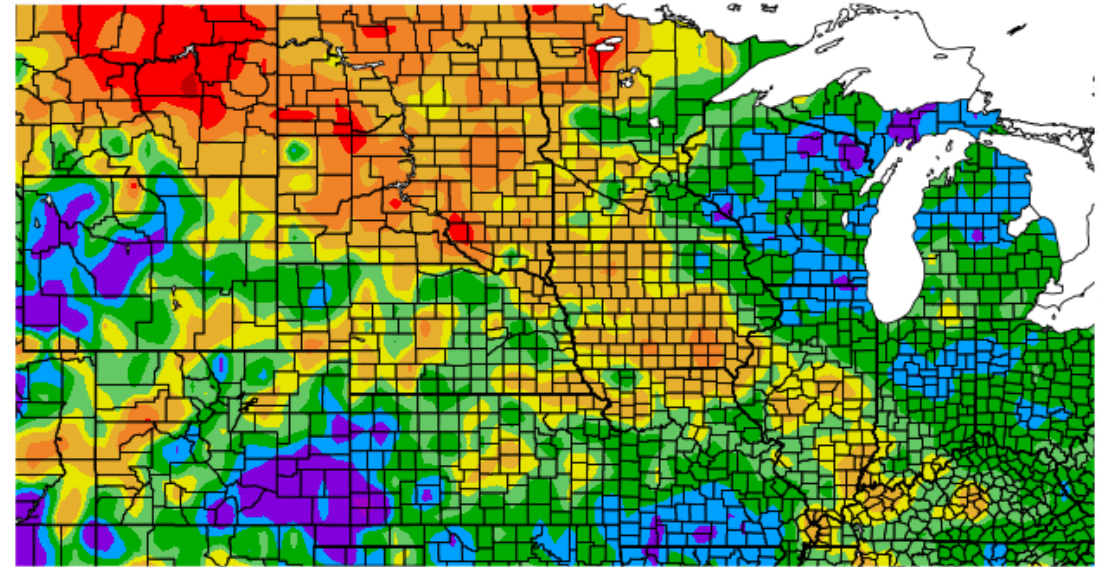
Regional Climate Centers

Calendar Year Precipitation

Departure from Normal Precipitation (in)
1/1/2017 - 8/16/2017

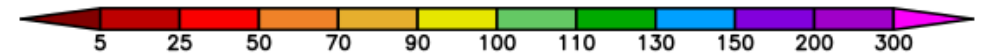


Percent of Normal Precipitation (%)
1/1/2017 - 8/16/2017



Generated 8/17/2017 at HPRCC using provisional data.

Regional Climate Centers

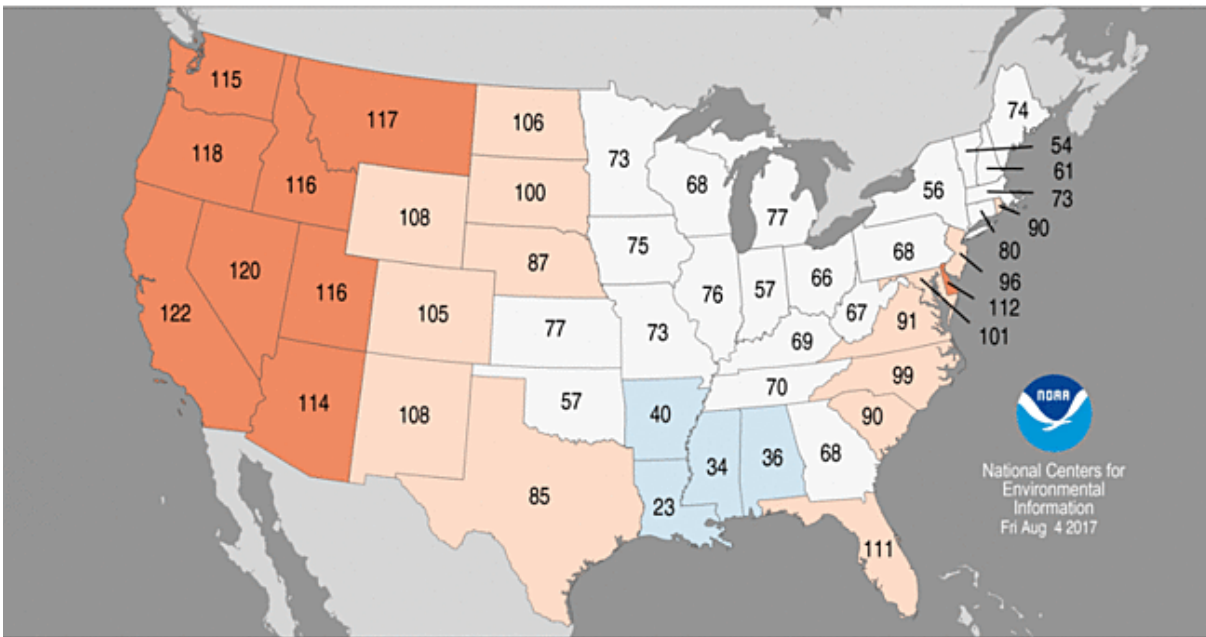


Generated 8/17/2017 at HPRCC using provisional data.

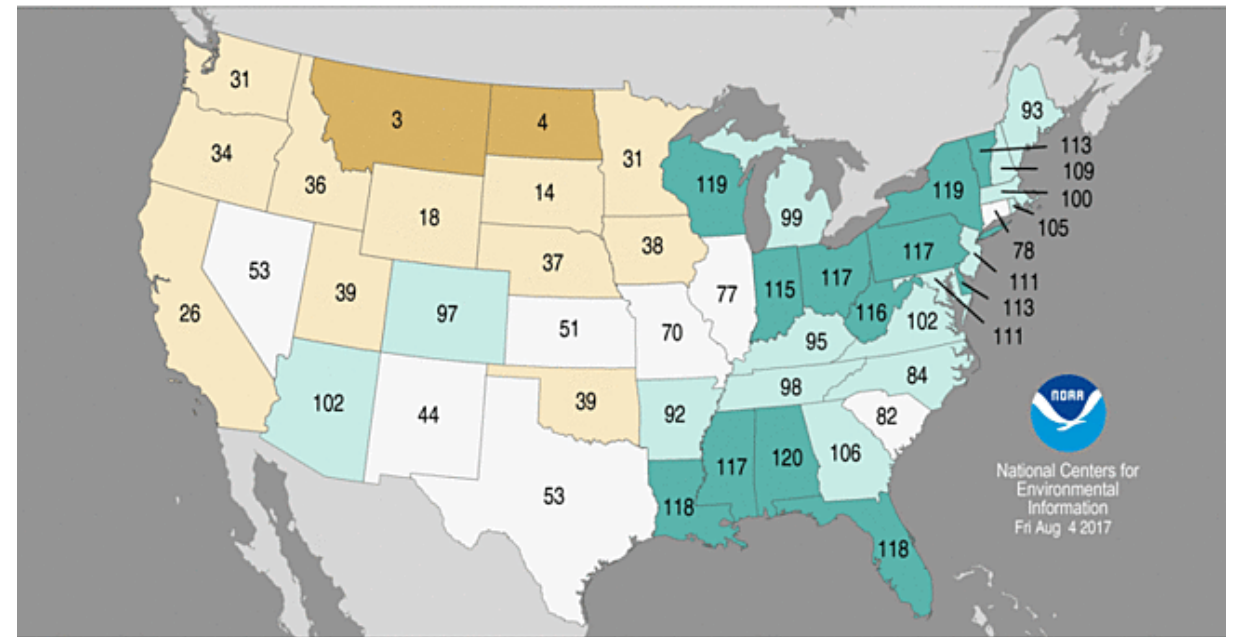
Regional Climate Centers

May to July Climate

Statewide Average Temperature Ranks
May–July 2017
Period: 1895–2017



Statewide Precipitation Ranks
May–July 2017
Period: 1895–2017



■ Record Coldest (1)
■ Much Below Average
■ Below Average
■ Near Average
■ Above Average
■ Much Above Average
■ Record Warmest (123)

■ Record Driest (1)
■ Much Below Average
■ Below Average
■ Near Average
■ Above Average
■ Much Above Average
■ Record Wettest (123)

Regional Impacts



Hail in Tripp County, SD on August 7, 2017. Photo courtesy of R. Odenbach

Severe Weather



Baseball Size Hail and flooding in Custer County, NE on August 13

Flash flooding and high winds were also widespread with this storm event

Severe Weather

Flash flooding and high winds in Greeley, CO on 8/9

Flash flooding and large hail in central Nebraska on 8/15

Up to 2 feet of hail piled up in Evan, CO in 10-15 minutes on 8/9

Missouri River Basin

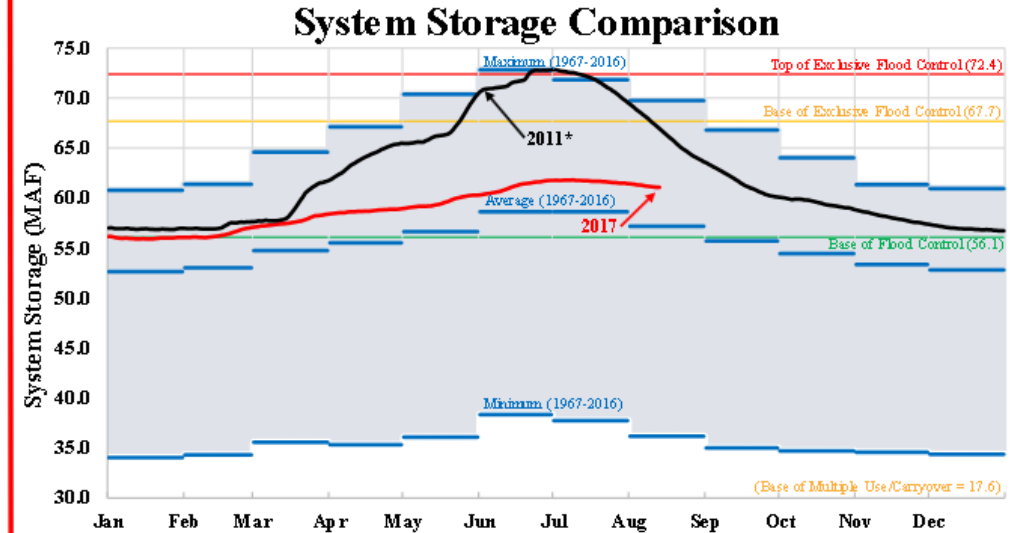
Missouri River Basin – Weekly Update – 15 August 2017

Mainstem Reservoir Status:

- ❖ System storage is 61.0 million acre-feet (MAF), 4.9 MAF above the base of the Annual Flood Control and Multiple Use Zone.
- ❖ System storage decreased 0.3 MAF during the past week.
- ❖ Water stored in the Annual Flood Control and Multiple Use Zone will be used for the remainder of the year to provide service to the authorized purposes.

Drought Monitor:

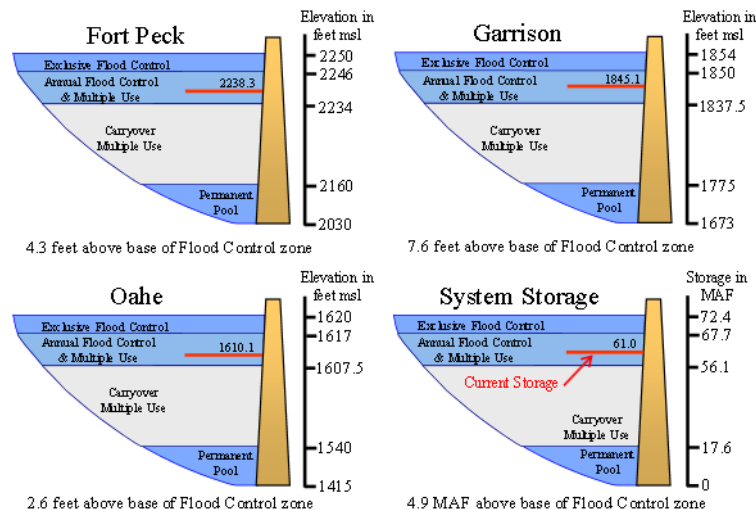
- ❖ Drought conditions continue to be seen in Montana, the Dakotas, and Nebraska and Iowa. Exceptional drought conditions are occurring in eastern Montana and western North Dakota.
- ❖ Drought class improvement was seen over the past week in parts of Nebraska and South Dakota. No changes occurred in the areas of worst drought in eastern Montana and western North Dakota. Drought conditions worsened in central Montana.



*In January 2011, the Base of Flood Control was 56.8 MAF, and the Top of Exclusive Flood Control was 73.1 MAF.

[Click Here for Comparison Plots](#)

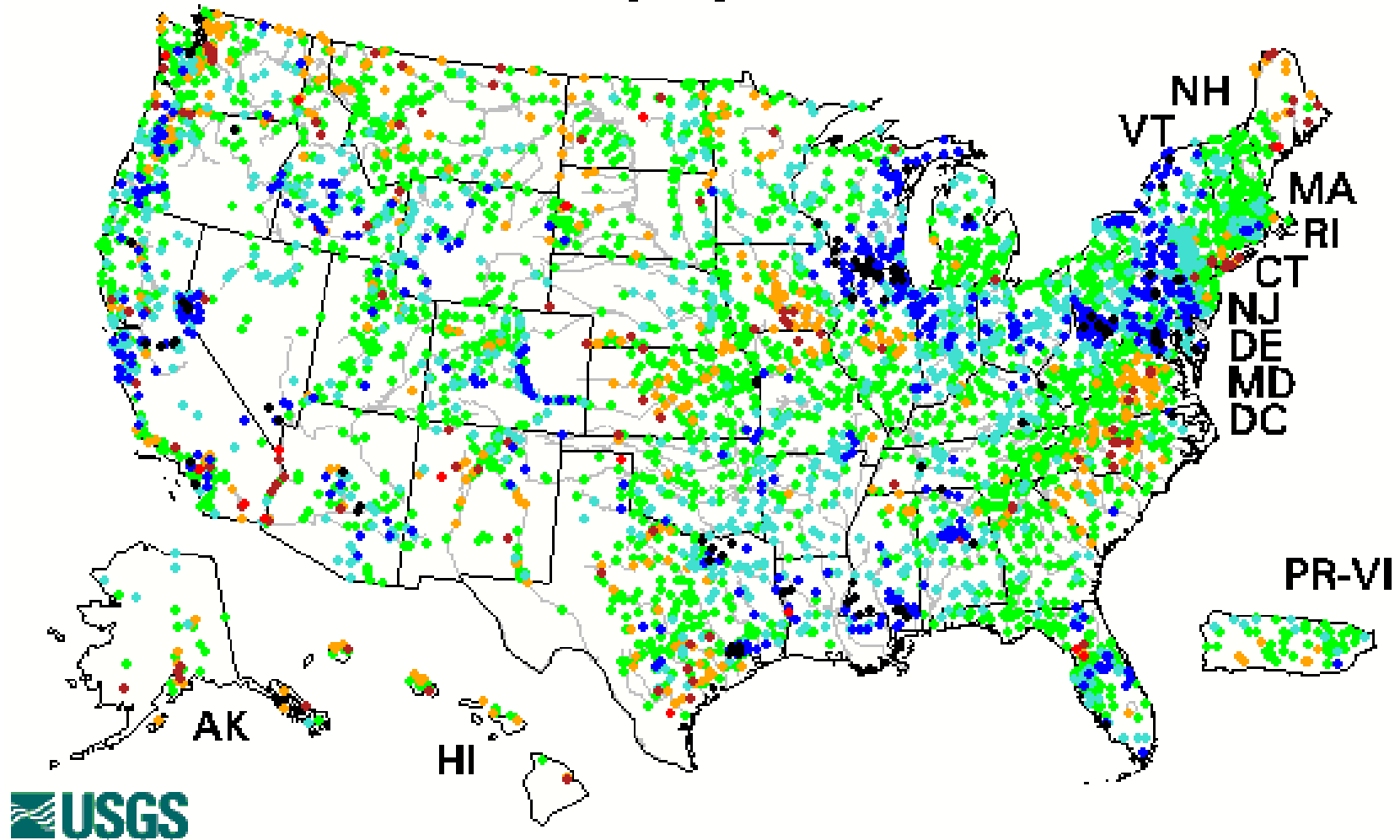
Current Reservoir Levels



<http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/weeklyupdate.pdf>

28-Day Average Streamflow

Wednesday, August 16, 2017

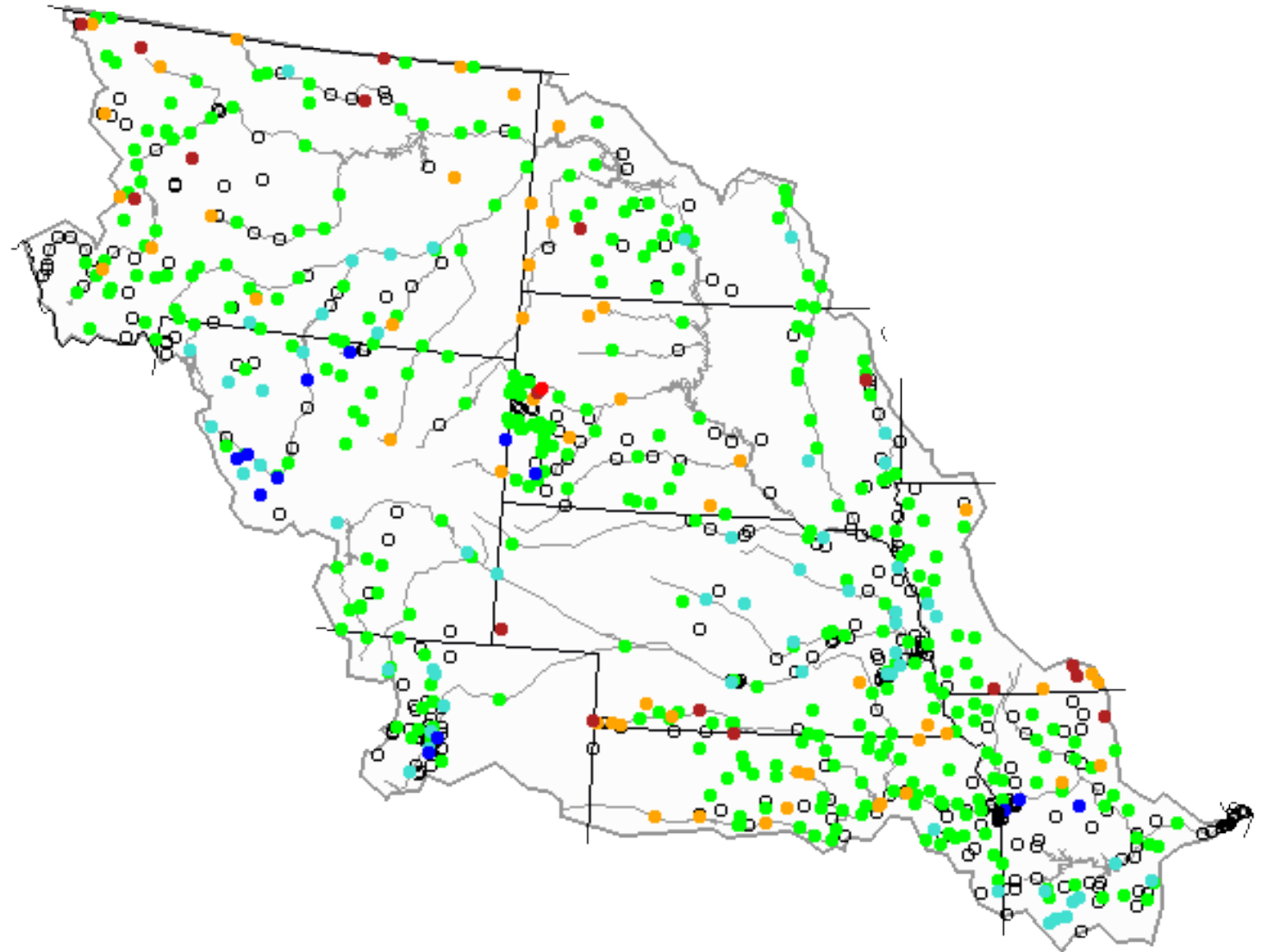


Explanation - Percentile classes







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

Wednesday, August 16, 2017

28-Day Average Streamflow



Explanation - Percentile classes

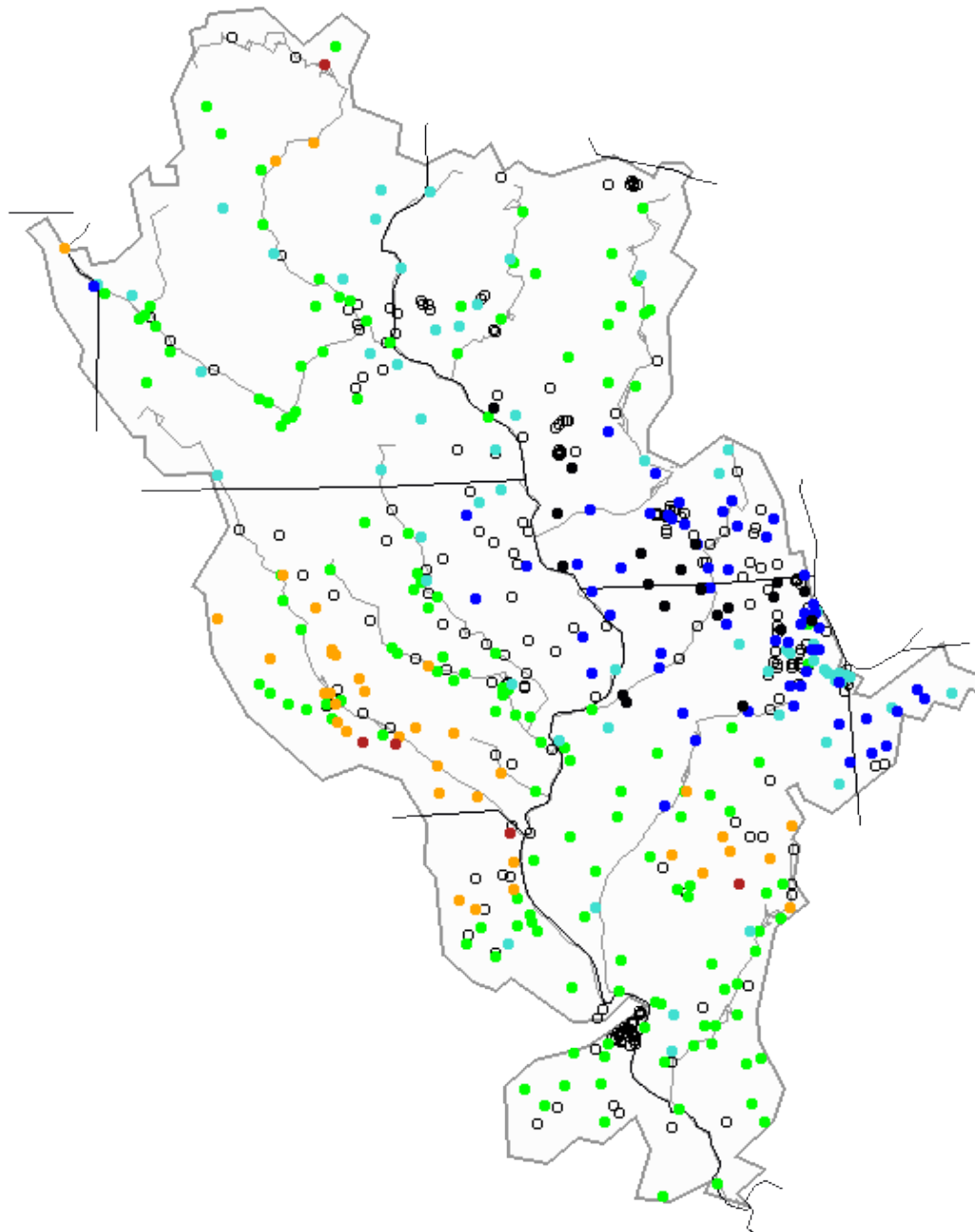
						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

<http://waterwatch.usgs.gov/>









NATIONAL DROUGHT MITIGATION CENTER

28-Day Average Streamflow










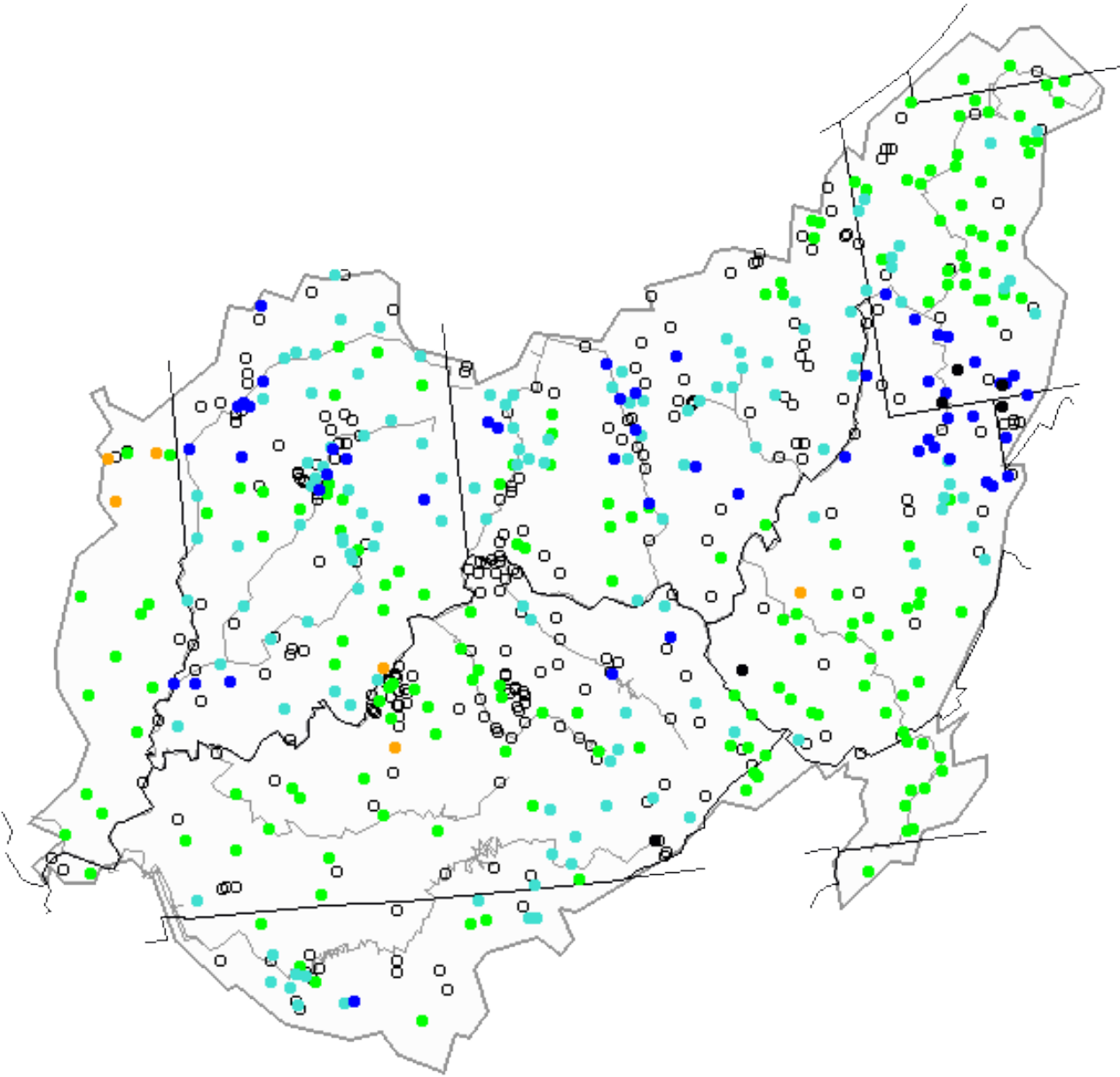
Explanation - Percentile classes

						
Low	<10	10-24	25-75	76-90	>90	High
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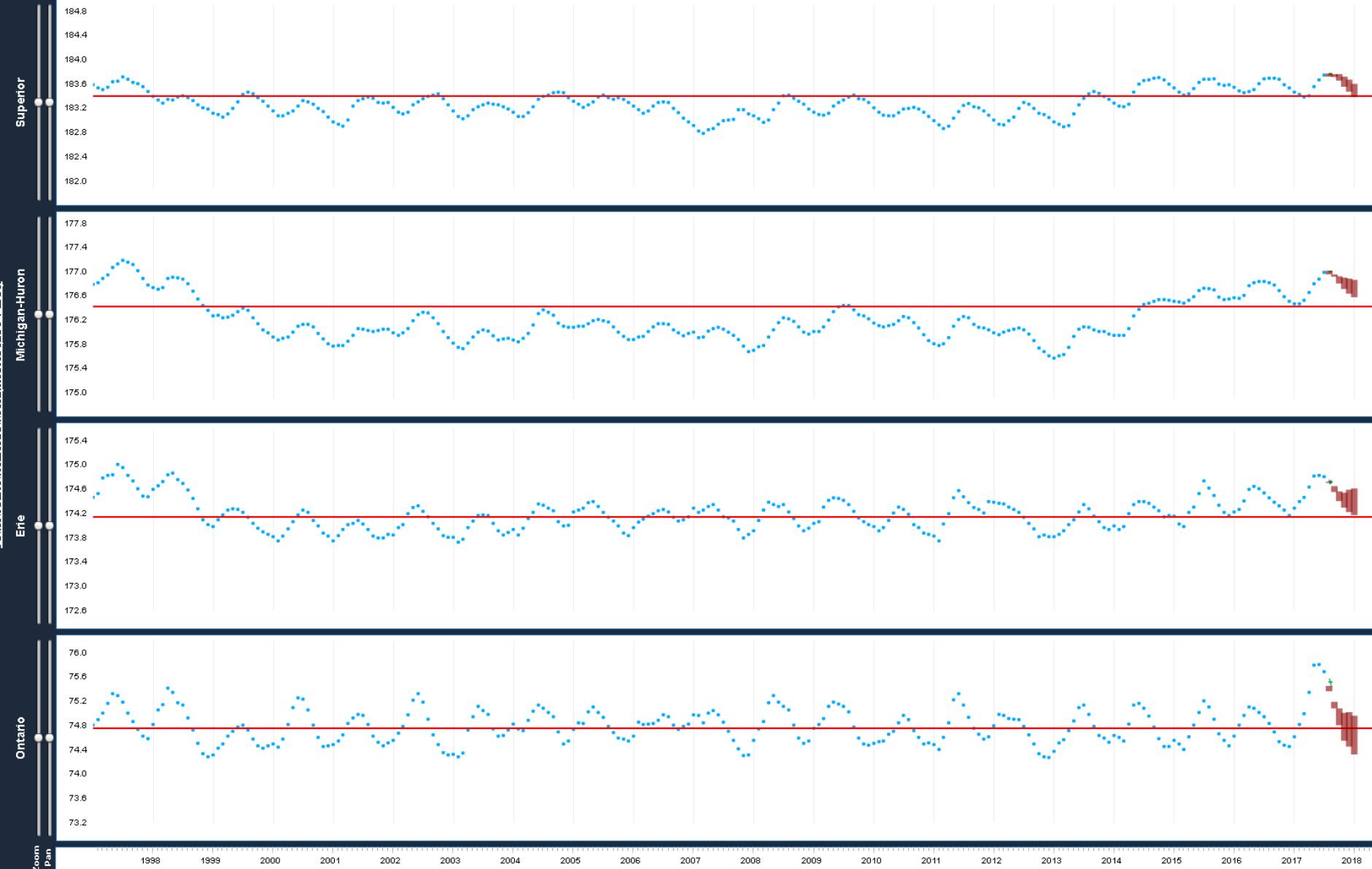
28-Day Average Streamflow

Explanation - Percentile classes

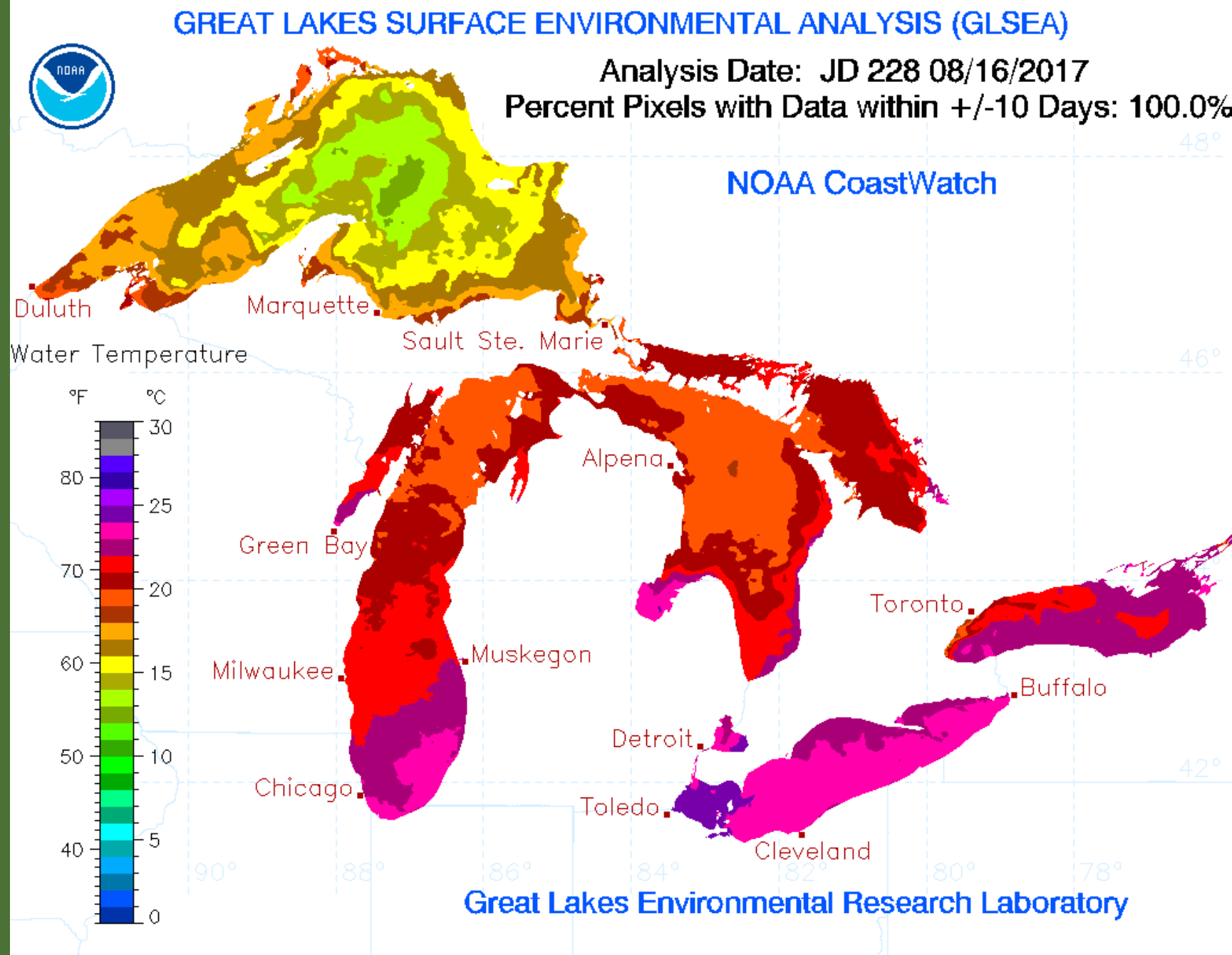
						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	



Great Lakes Water Levels



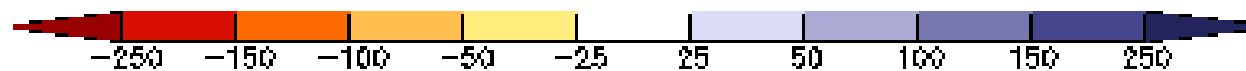
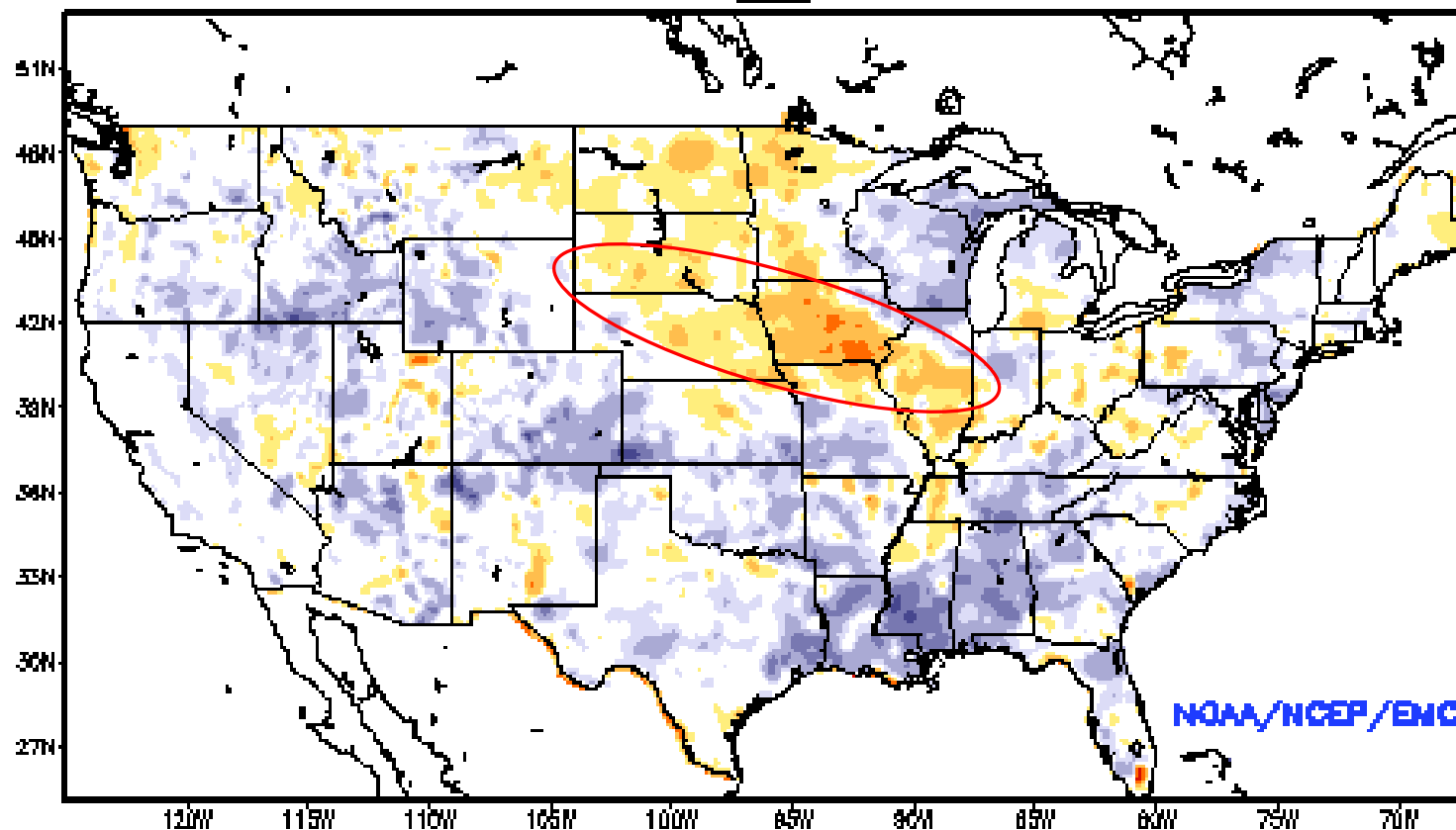
Great Lakes current water temperatures



Agricultural Impacts

Current Soil Moisture Anomaly

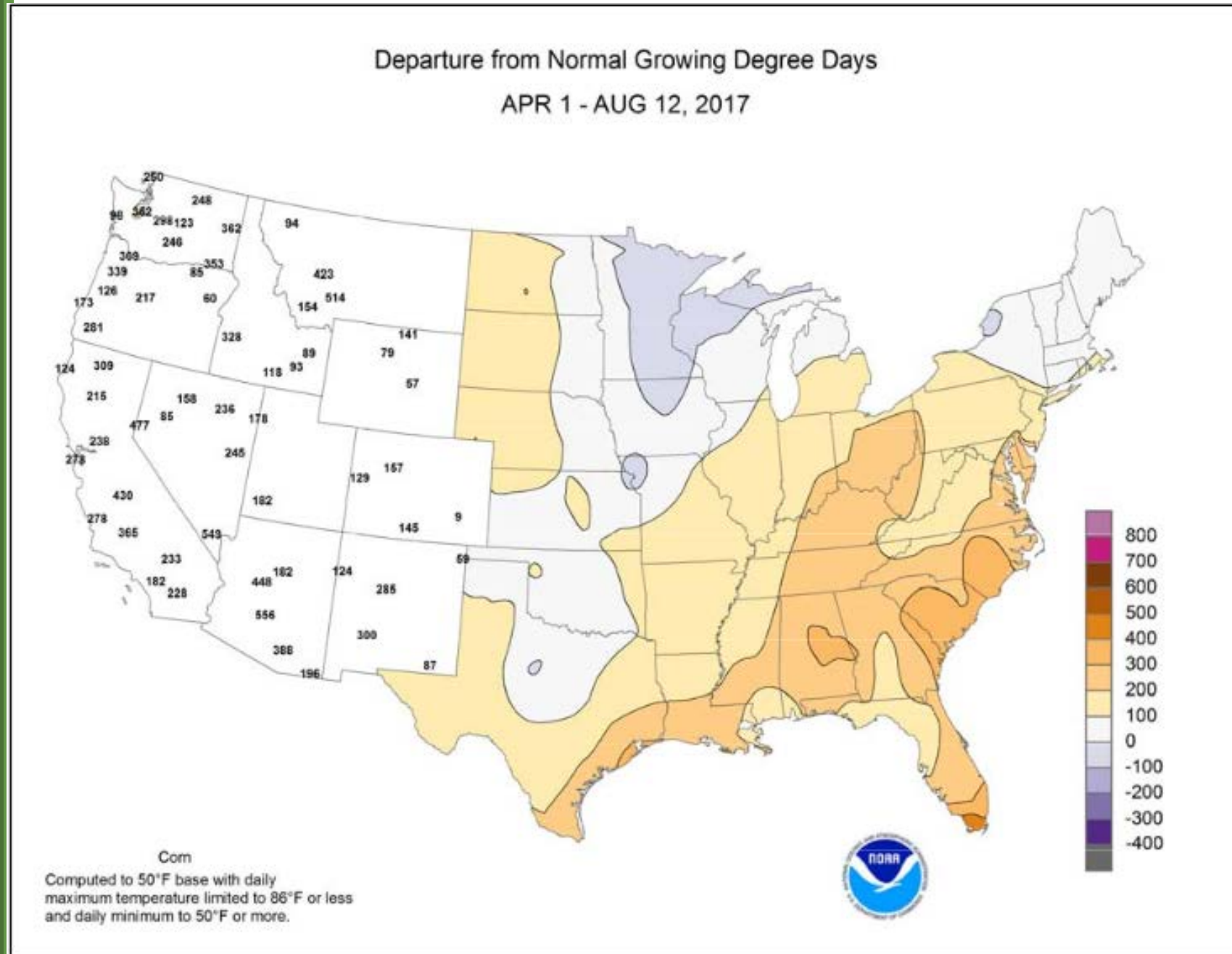
Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: AUG 12, 2017



Departure from Normal Growing Degree Days

April 1-August 12, 2017

Computed for corn using a base of 50F and a maximum temperature of 86F



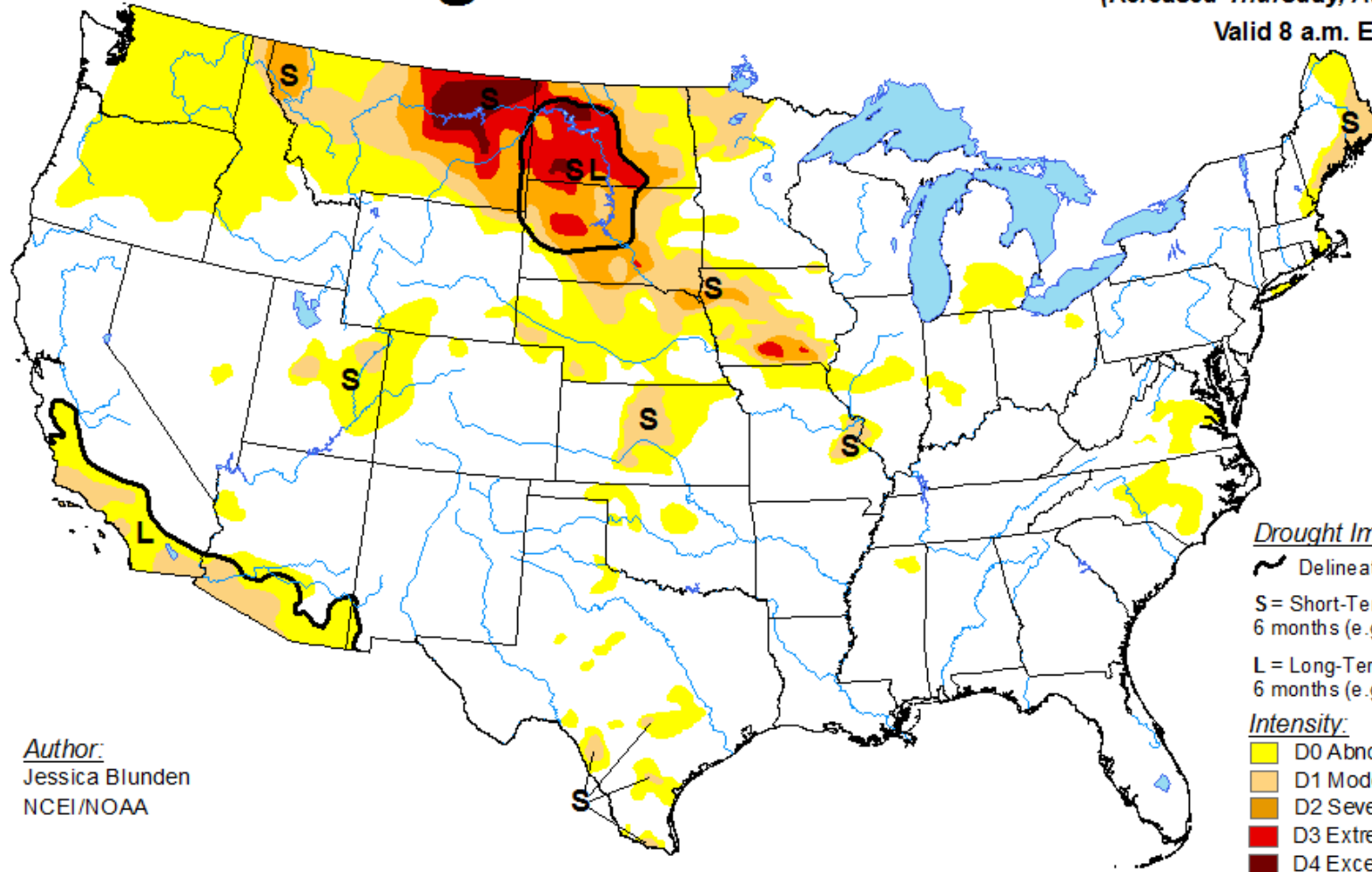
Drought Update

U.S. Drought Monitor

August 15, 2017


(Released Thursday, Aug. 17, 2017)

Valid 8 a.m. EDT








Author:
Jessica Blunden
NCEI/NOAA

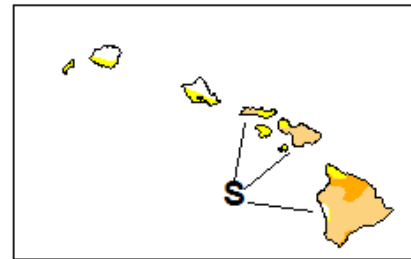
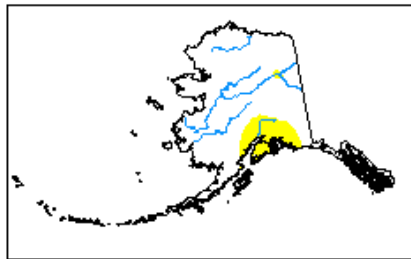
Drought Impact Types:

-  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.



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

Drought Condition (Percent Area): United States

Statistics type: Traditional (D0-D4, D1-D4, etc.) Categorical (D0, D1, etc.)

Conditions for the U.S., including Alaska, Hawaii and Puerto Rico

Week	Date	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2017-08-15	74.67	25.33	9.58	4.48	2.05	0.59
Last Week	2017-08-08	69.72	30.28	9.63	4.51	1.98	0.63
3 Months Ago	2017-05-16	80.74	19.26	4.73	1.15	0.36	0.00
Start of Calendar Year	2016-12-27	56.09	43.91	20.09	8.43	3.78	1.51
Start of Water Year	2016-09-27	61.21	38.79	15.85	6.77	2.67	0.97
One Year Ago	2016-08-16	57.47	42.53	16.62	6.44	2.43	0.92

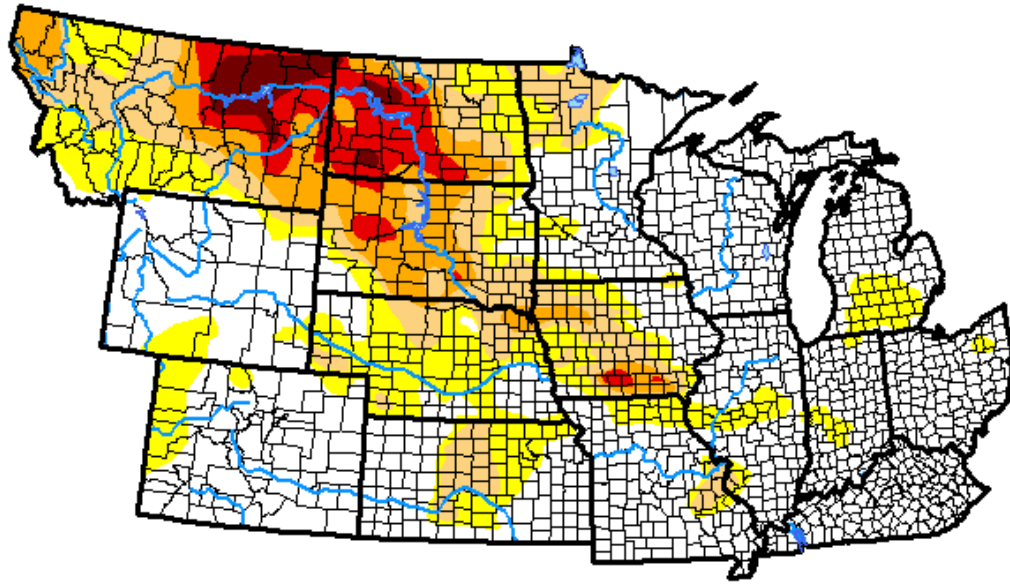
Conditions for the Contiguous U.S.

Week	Date	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2017-08-15	71.95	28.05	11.31	5.33	2.45	0.70
Last Week	2017-08-08	70.23	29.77	11.24	5.38	2.37	0.76
3 Months Ago	2017-05-16	83.42	16.58	5.61	1.38	0.43	0.00
Start of Calendar Year	2016-12-27	49.19	50.81	24.04	10.09	4.53	1.81
Start of Water Year	2016-09-27	53.60	46.40	18.96	8.10	3.20	1.16
One Year Ago	2016-08-16	52.72	47.28	19.86	7.71	2.91	1.11

As of 8/17/17 just over **18,000,000** people are being impacted by drought in the CONUS.

U.S. Drought Monitor NWS Central Region

August 15, 2017
(Released Thursday, Aug. 17, 2017)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	56.08	43.92	25.38	13.82	6.39	1.82
Last Week <i>08-08-2017</i>	56.66	43.34	24.26	13.63	6.18	1.98
3 Months Ago <i>05-16-2017</i>	92.57	7.43	0.05	0.00	0.00	0.00
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>09-27-2016</i>	76.71	23.29	7.36	1.93	0.12	0.00
One Year Ago <i>08-16-2016</i>	70.87	29.13	9.59	3.01	0.59	0.00

Intensity:



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

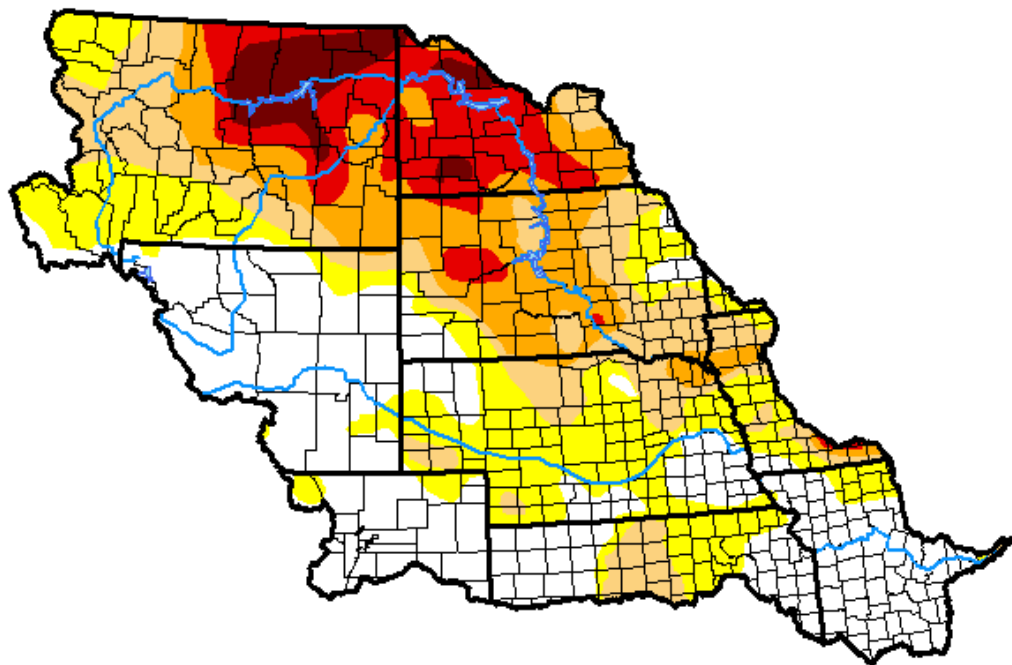
Author:

Jessica Blunden
NCEI/NOAA



U.S. Drought Monitor Missouri Watershed

August 15, 2017
(Released Thursday, Aug. 17, 2017)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.05	65.95	43.15	27.44	13.80	4.11
Last Week <i>08-08-2017</i>	34.63	65.37	42.04	27.77	13.52	4.46
3 Months Ago <i>05-16-2017</i>	86.19	13.81	0.11	0.00	0.00	0.00
Start of Calendar Year <i>01-03-2017</i>	55.33	44.67	16.00	1.41	0.00	0.00
Start of Water Year <i>09-27-2016</i>	68.17	31.83	12.24	3.65	0.26	0.00
One Year Ago <i>08-16-2016</i>	55.07	44.93	16.17	5.69	1.33	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.

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NCEI/NOAA



Climate Outlooks

7-day precipitation forecast

8-14 day outlook

Monthly Outlook

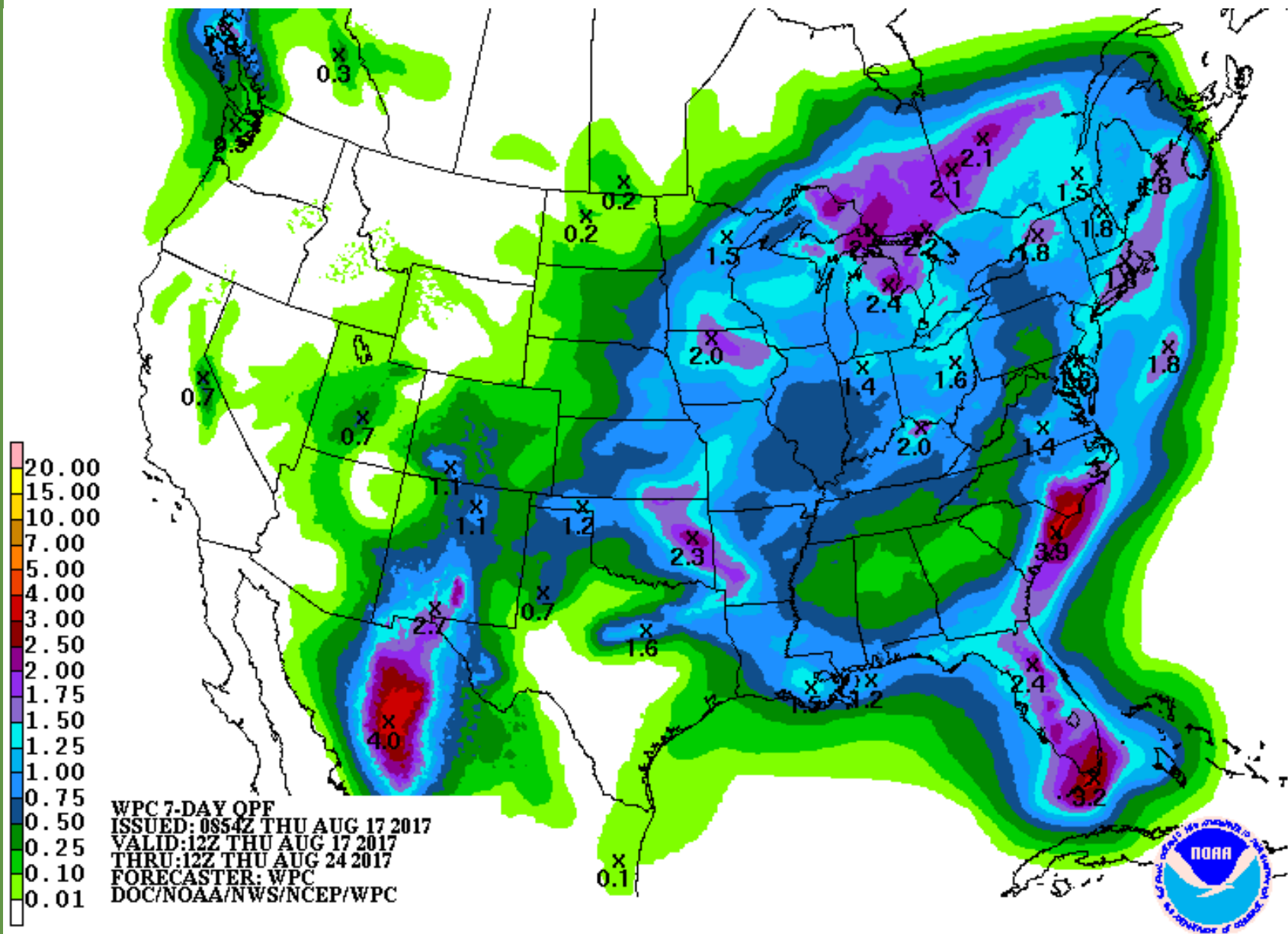
Autumn Outlook (Sep-Nov)

Winter Outlook (Dec-Feb)

Seasonal Drought Outlook

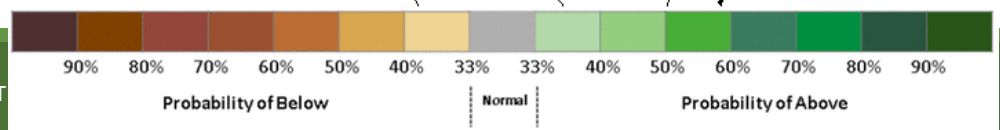
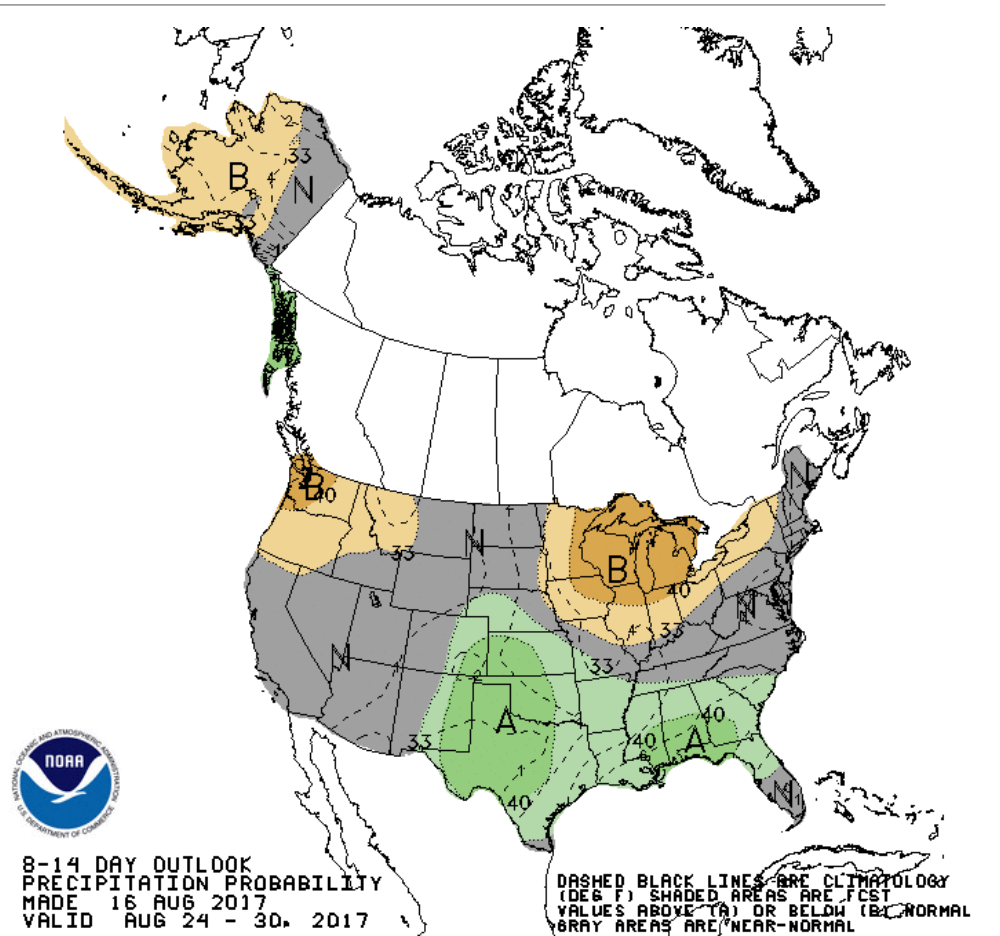
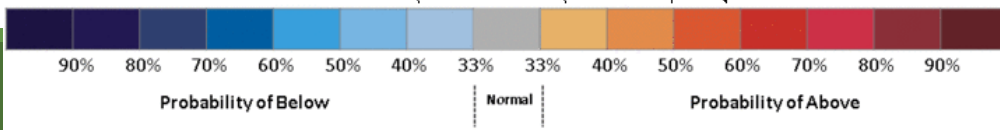
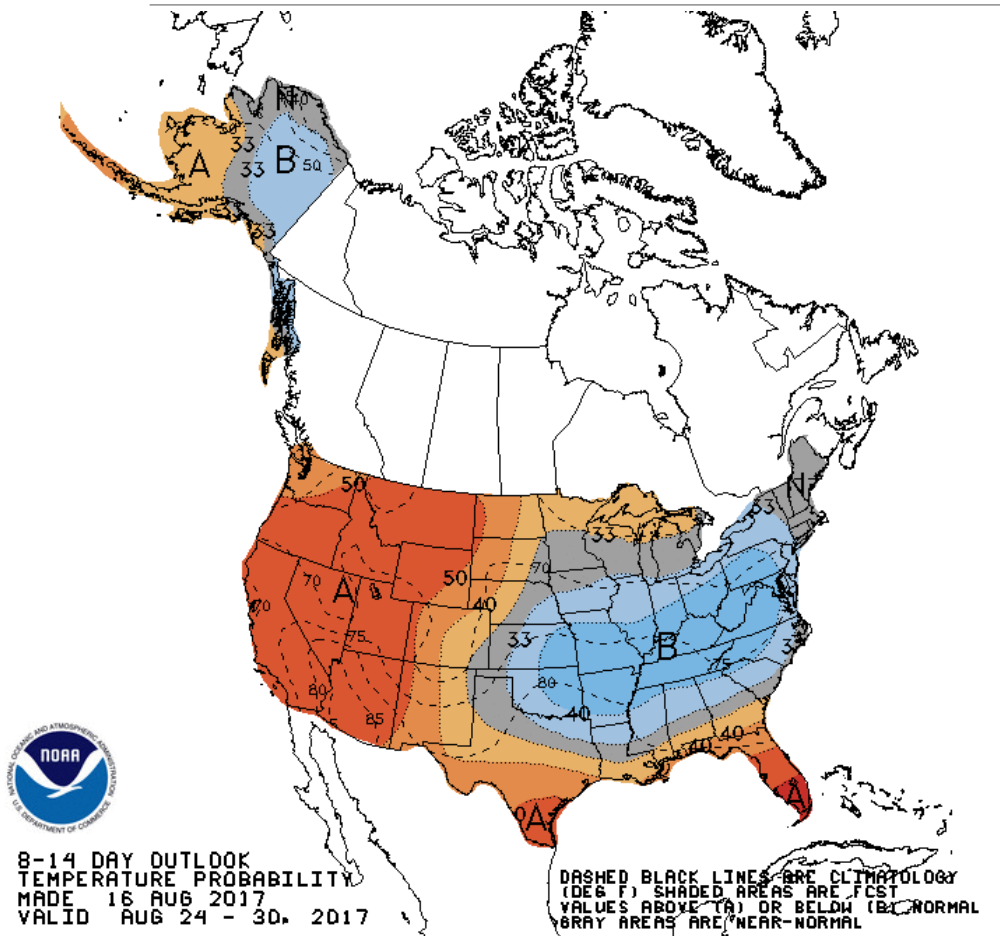
7 Day QPF valid from August 17-24, 2017

<http://www.wpc.ncep.noaa.gov/qpf/p168i.gif?1502982056>

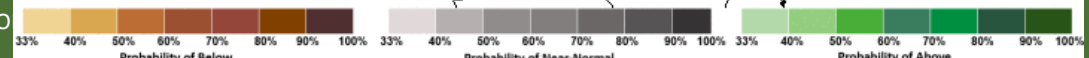
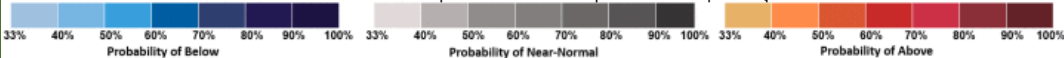
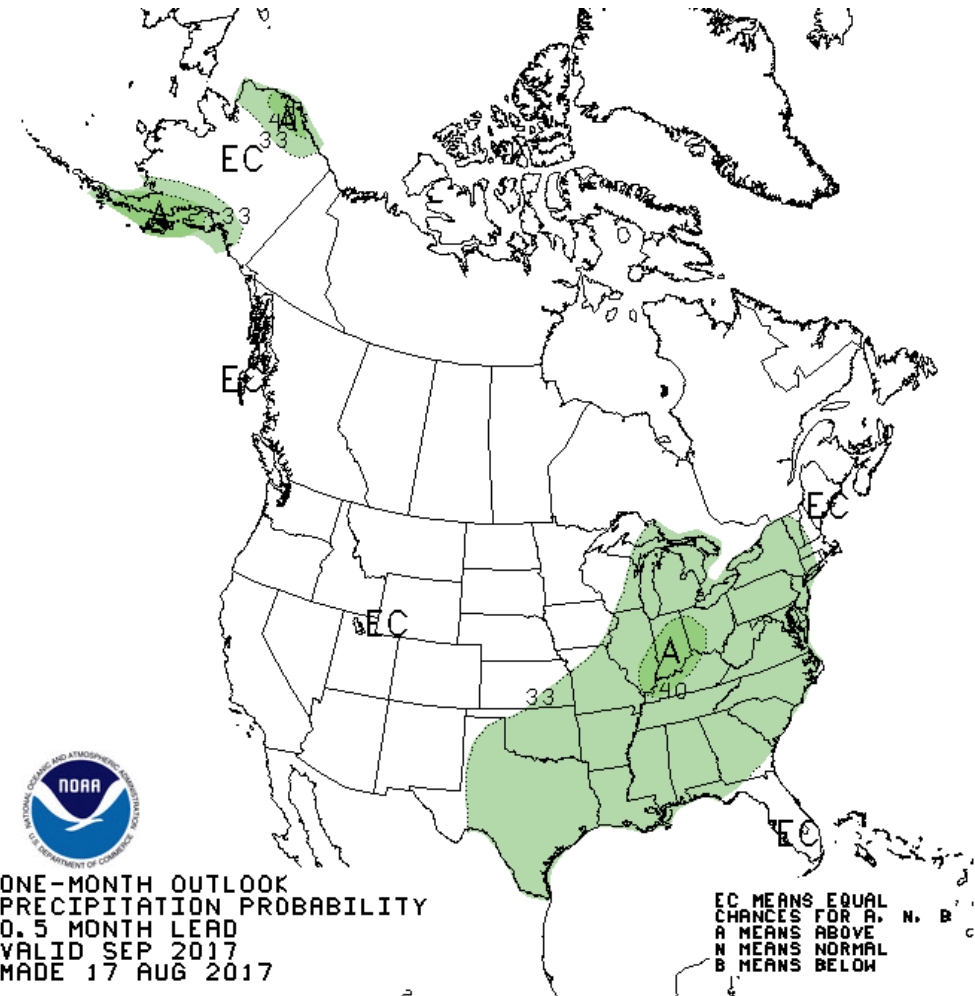
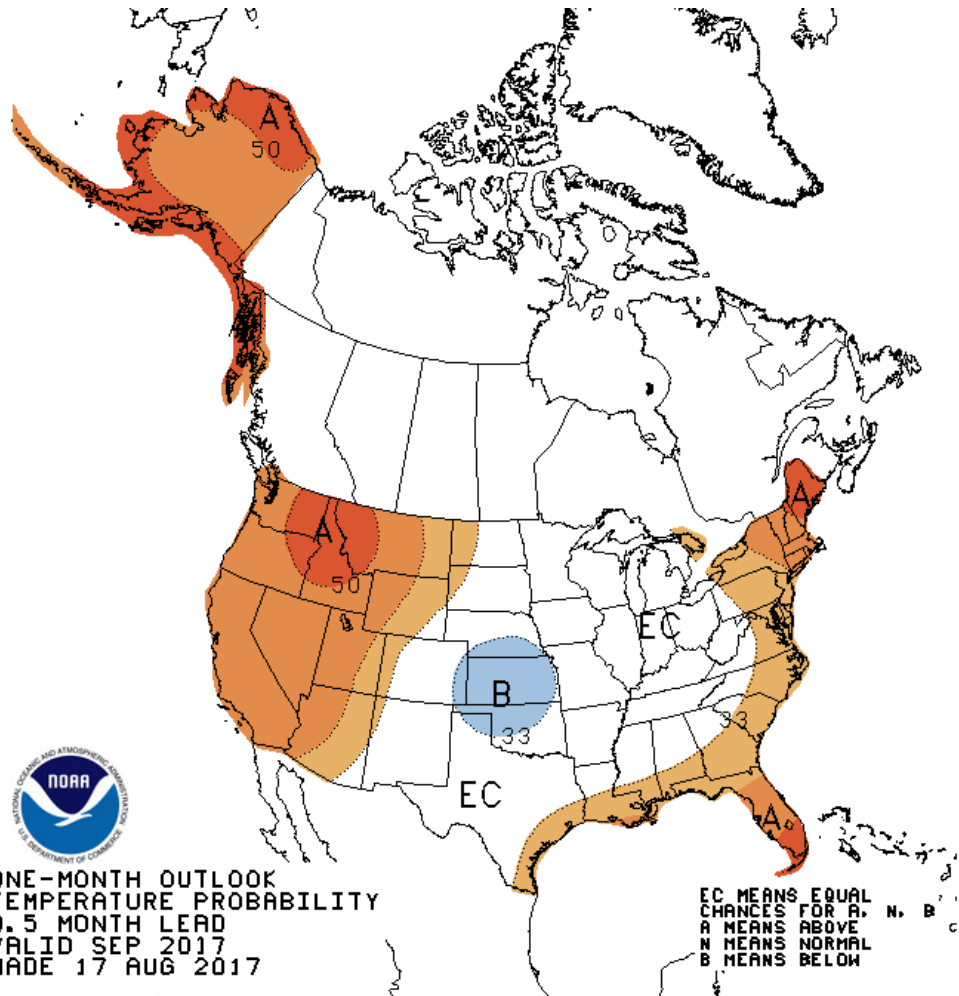


8-14 day outlook for August 24-30

<http://www.cpc.ncep.noaa.gov/products/predictions/814day/>

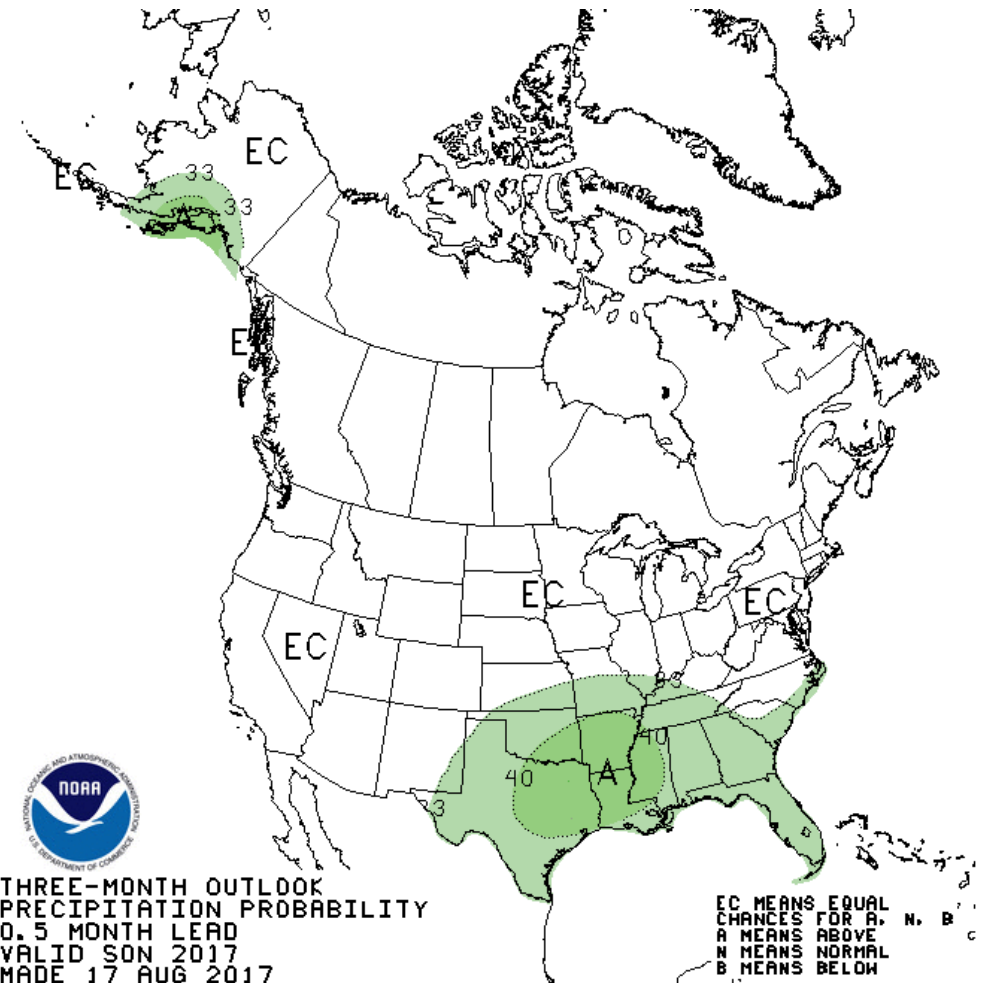
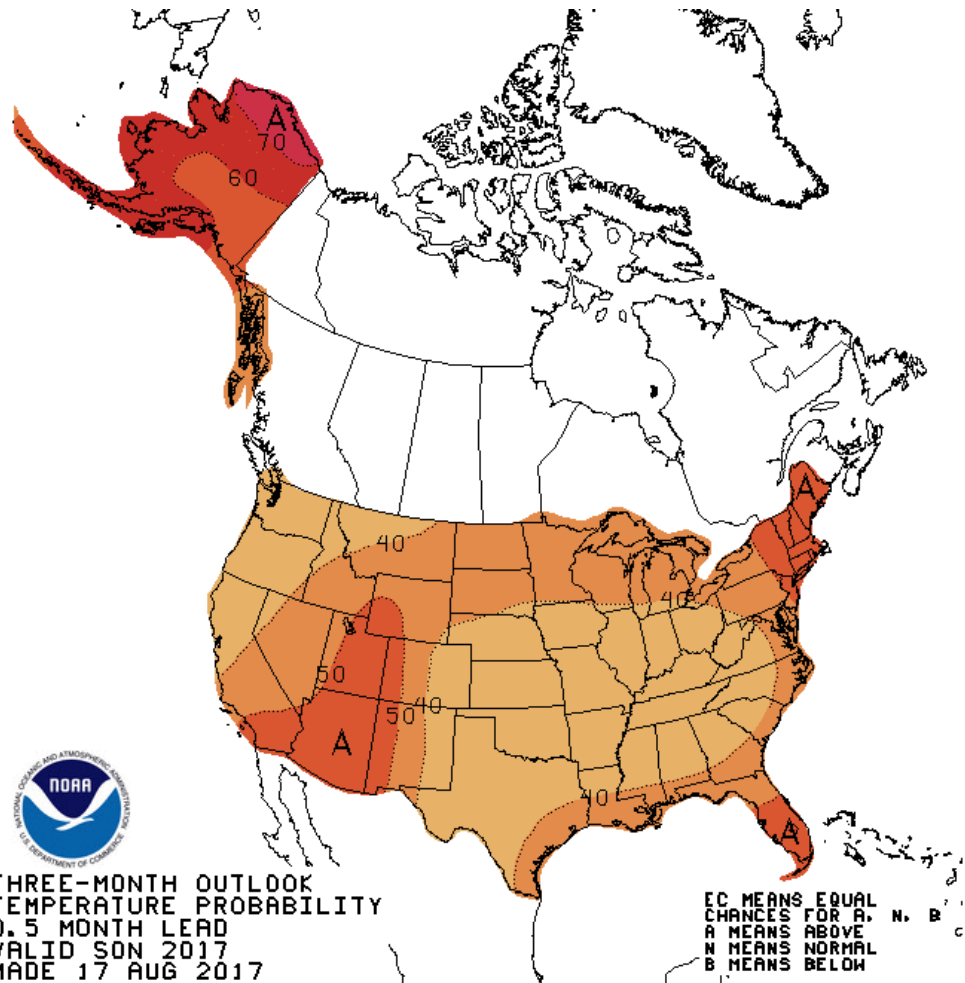


Monthly Outlook for September



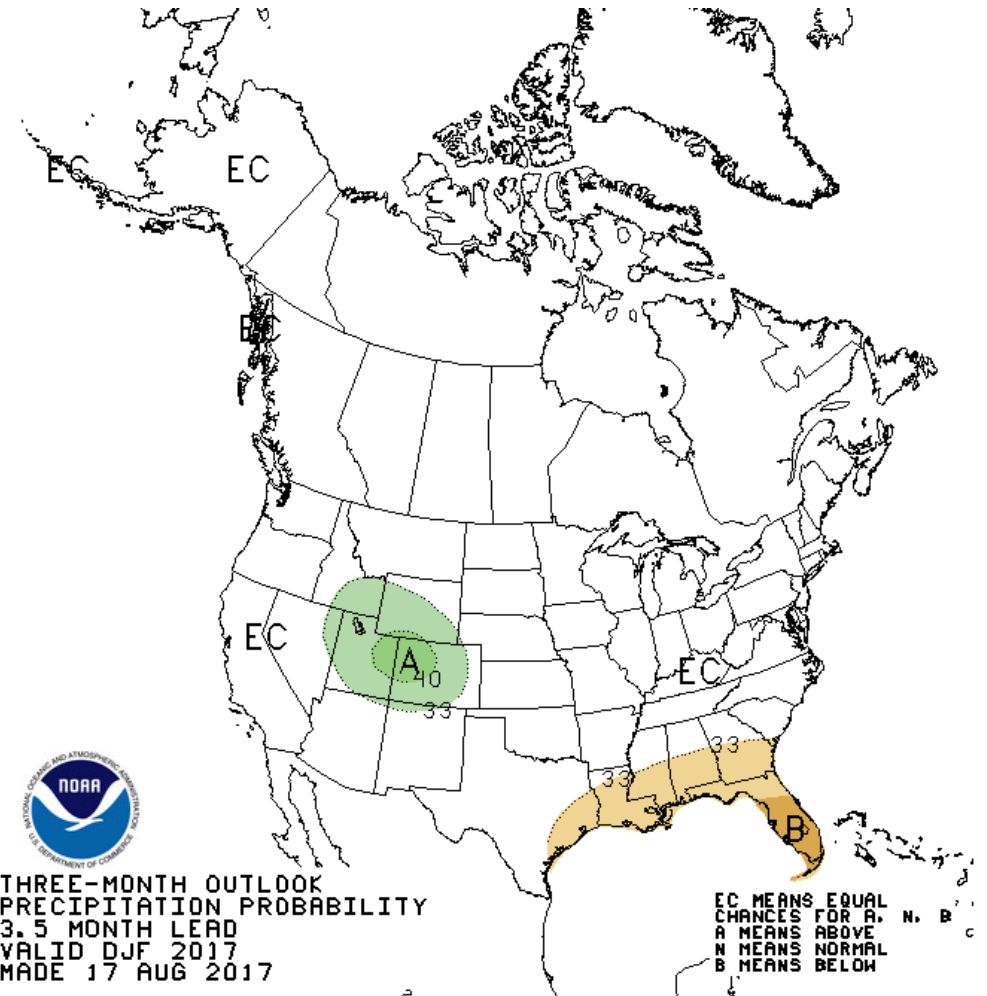
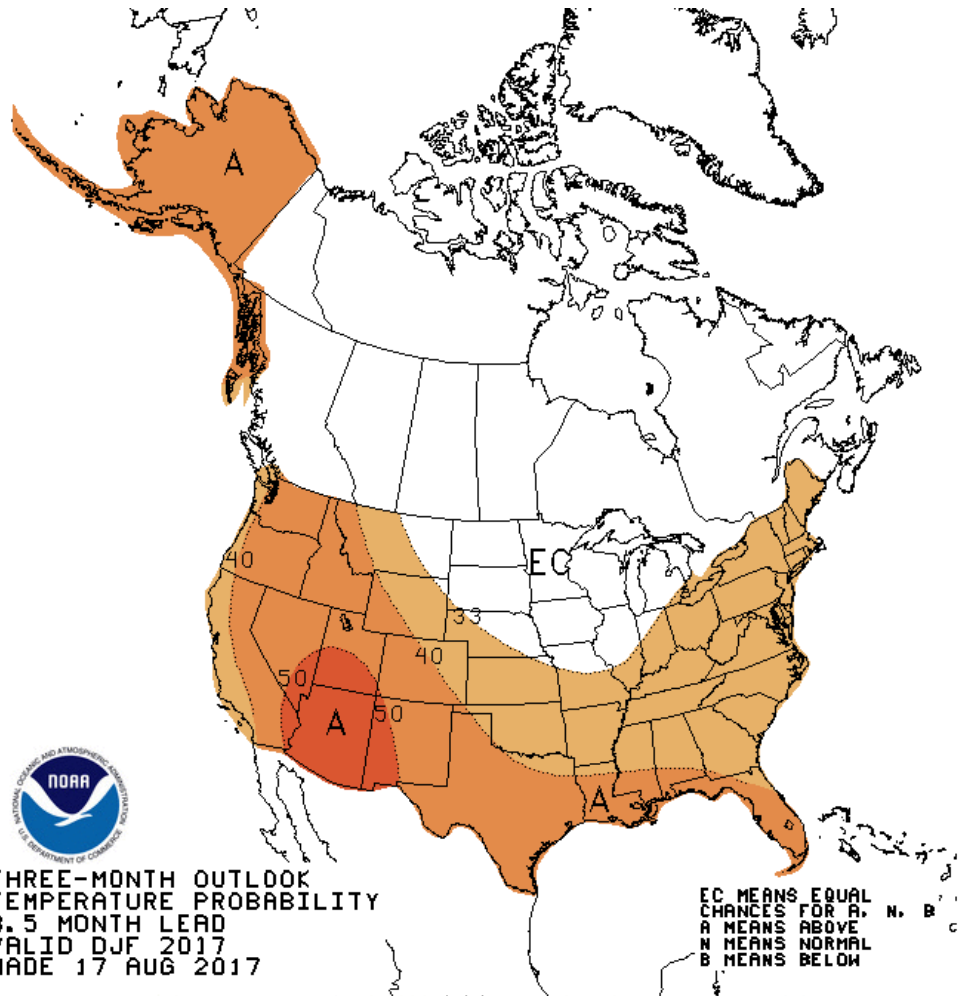
DROUGHT MITIGATION

Autumn Outlook (September-November)



DROUGHT MITIGATION

Winter Outlook (December-February)

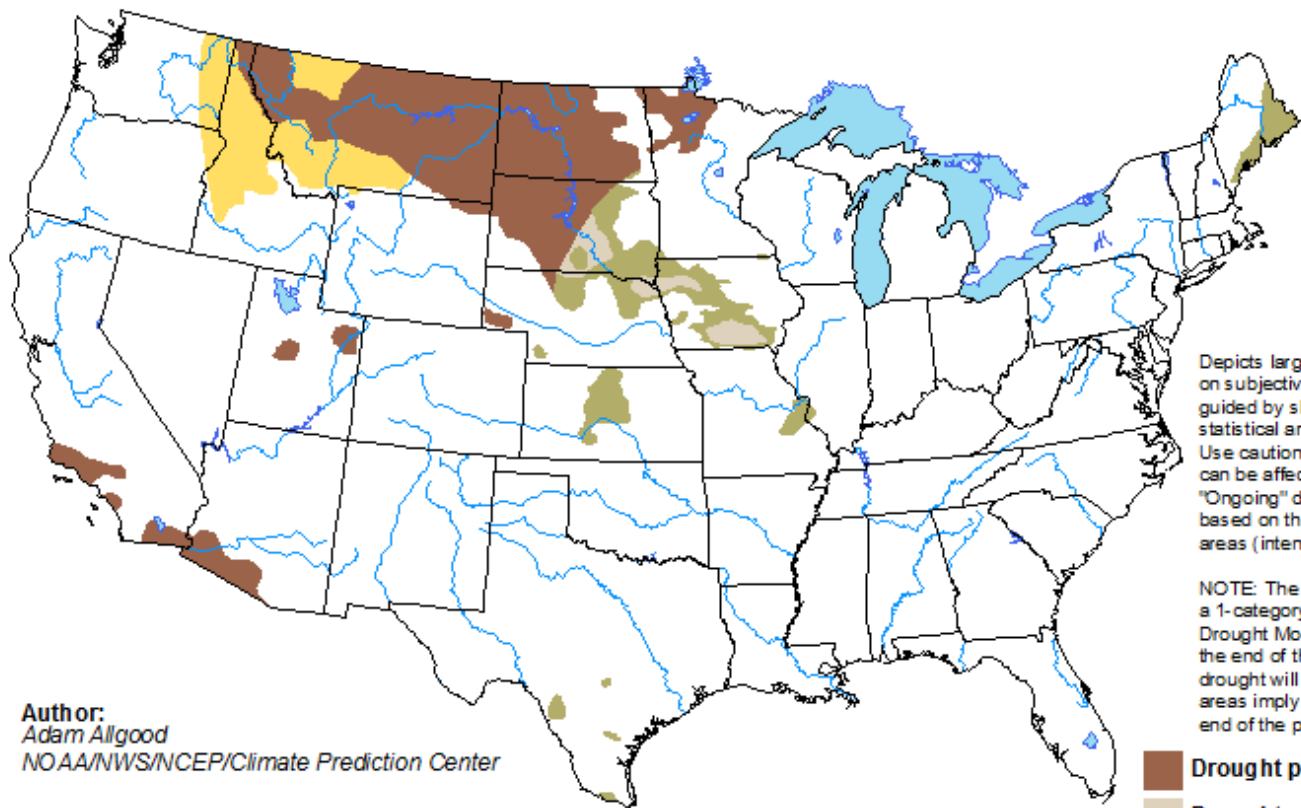


DROUGHT MITIGATION

Seasonal Drought Outlook

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





Valid for August 17 - November 30, 2017
Released August 17, 2017

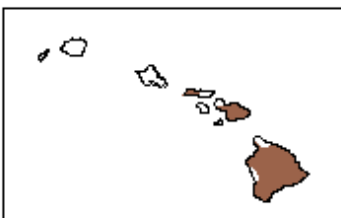
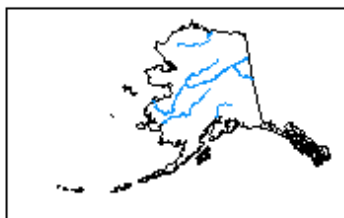


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

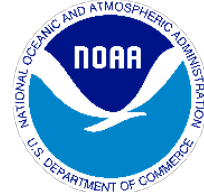
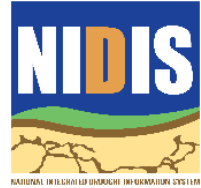
Author:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center

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



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

OUR PARTNERS



Any Questions ?





DROUGHT.UNL.EDU

e | ndmc@unl.edu

 /NationalDroughtMitigationCenter

 @droughtcenter

Brian Fuchs
bfuchs2@unl.edu
402-472-6775

National Drought Mitigation Center
School of Natural Resources
University of Nebraska-Lincoln