

NE Drought Conditions CARC Update: October 30, 2017

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



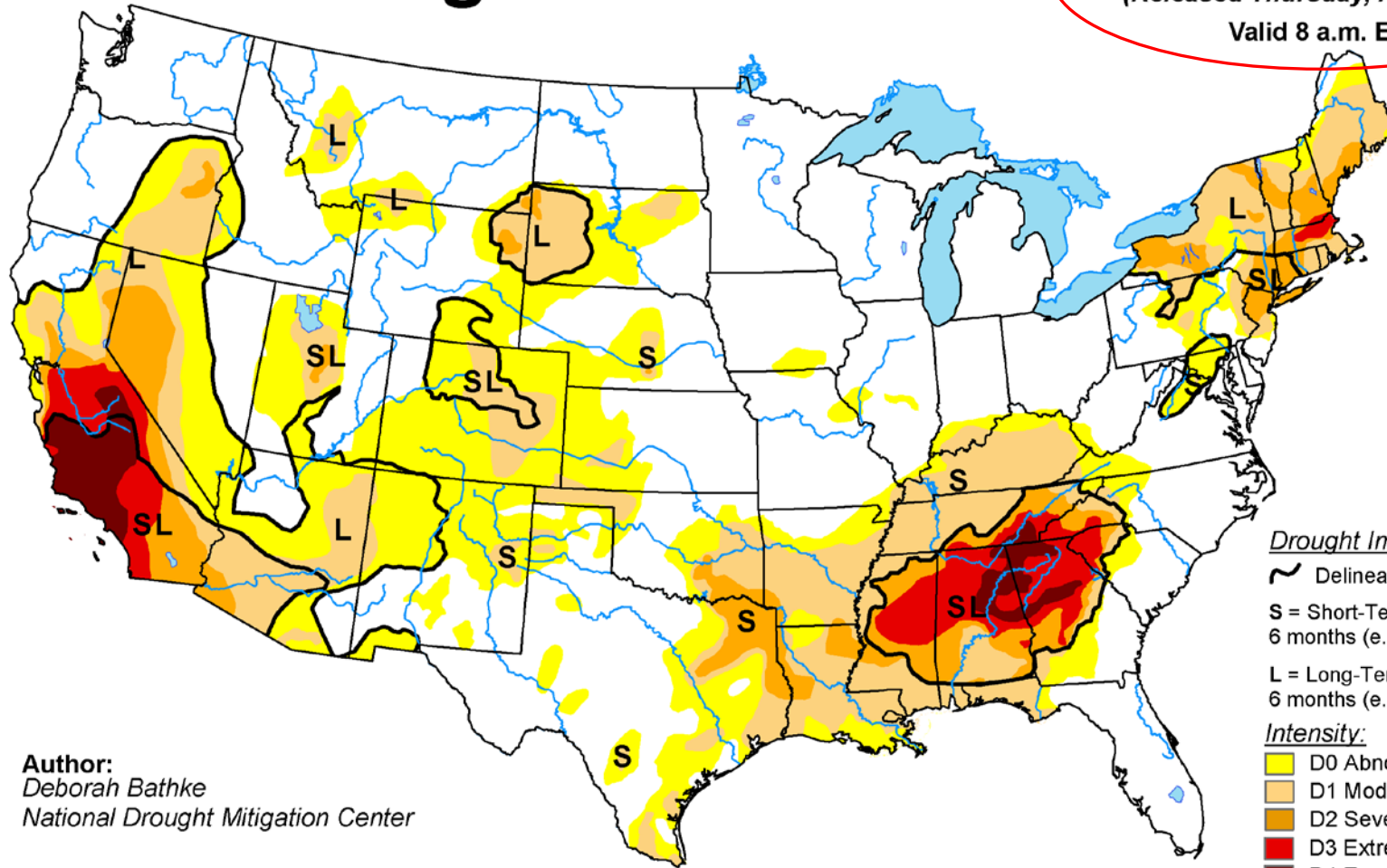
Current Conditions around Nebraska and the region...

U.S. Drought Monitor

November 1, 2016

(Released Thursday, Nov. 3, 2016)

Valid 8 a.m. EDT



Author:
Deborah Bathke
National Drought Mitigation Center

Drought Impact Types:

~ Delineates dominant impacts

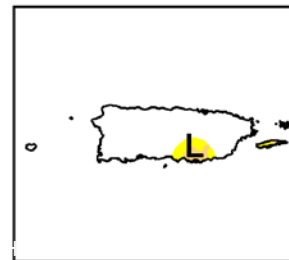
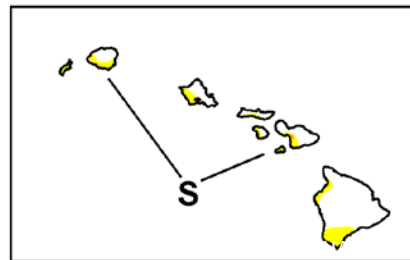
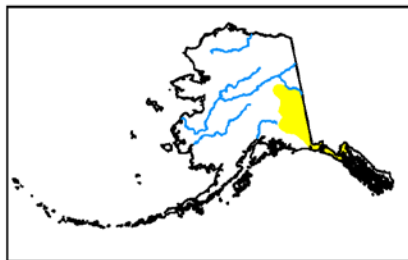
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

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.



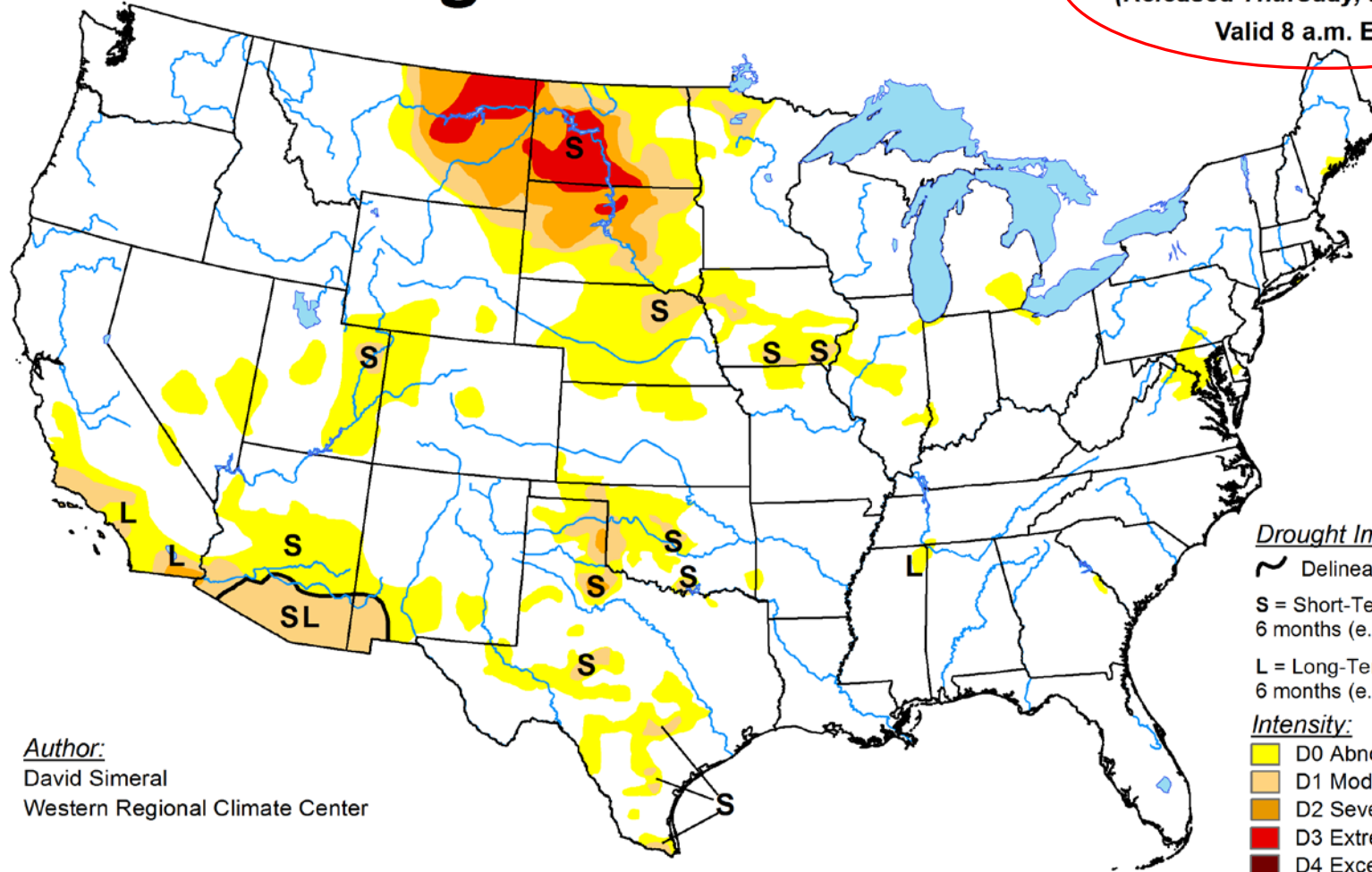
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

July 4, 2017

(Released Thursday, Jul. 6, 2017)

Valid 8 a.m. EDT



Author:

David Simeral

Western Regional Climate Center

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:

Yellow D0 Abnormally Dry

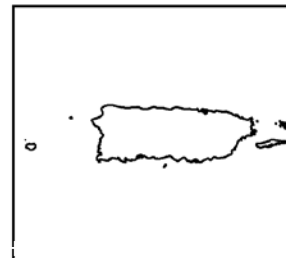
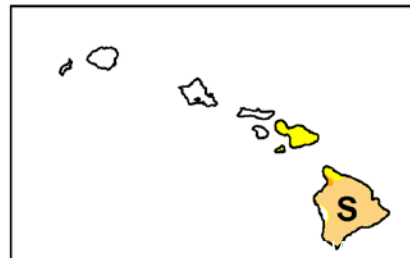
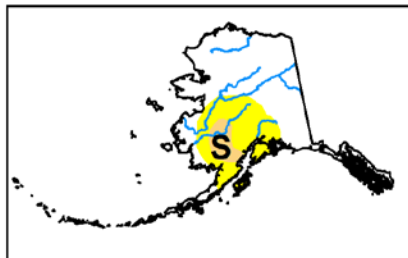
Orange D1 Moderate Drought

Brown D2 Severe Drought

Red D3 Extreme Drought

Dark Red D4 Exceptional Drought

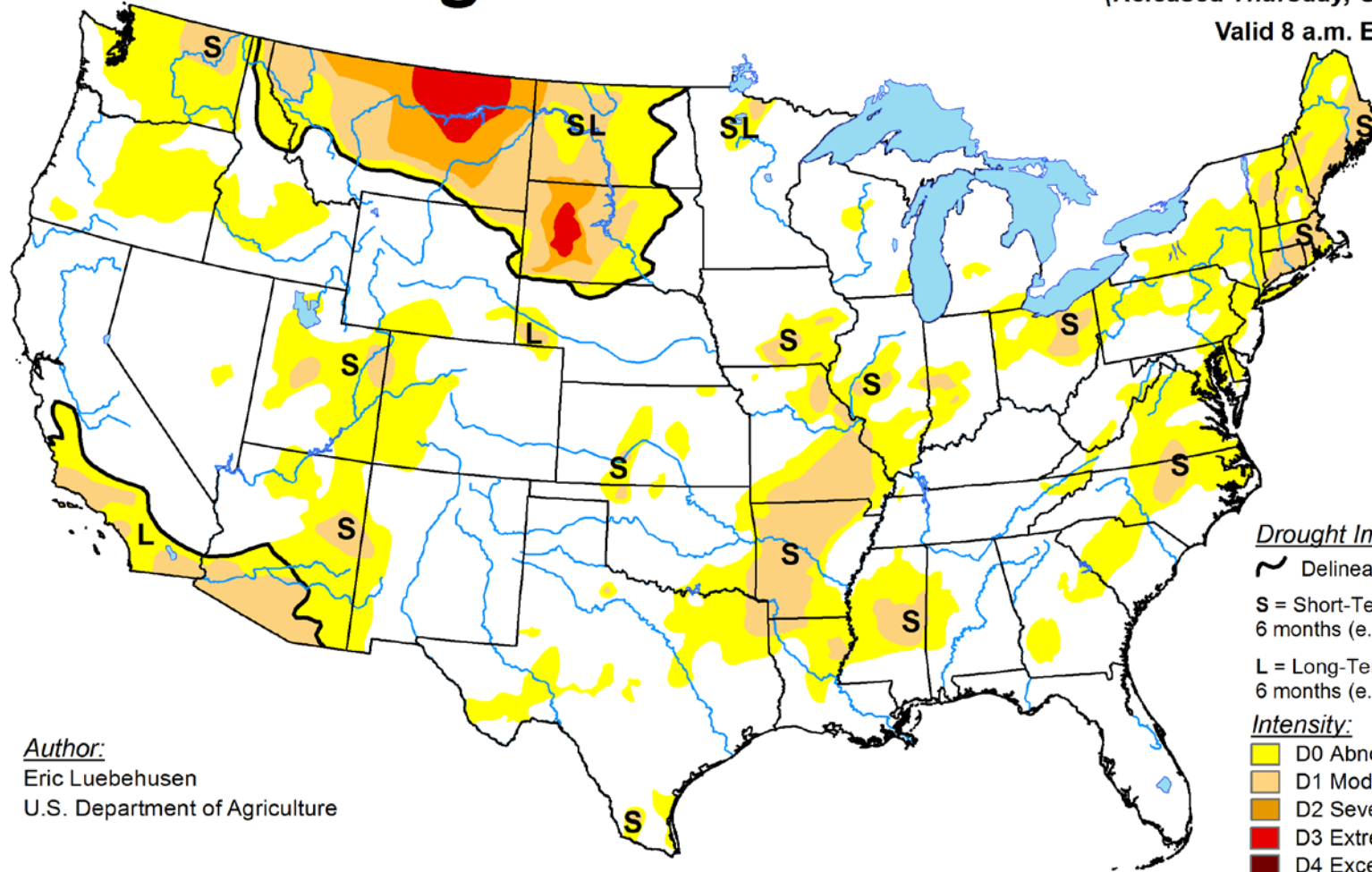
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



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

U.S. Drought Monitor

October 24, 2017
(Released Thursday, Oct. 26, 2017)
Valid 8 a.m. EDT



Author:
Eric Luebehusen
U.S. Department of Agriculture

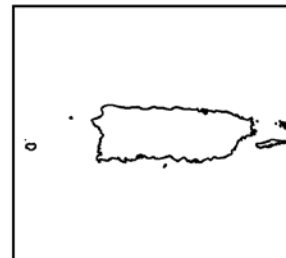
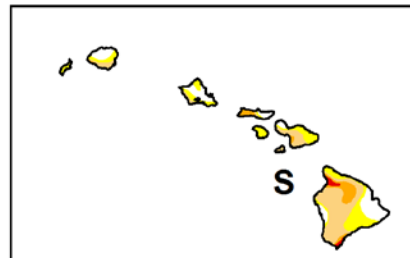
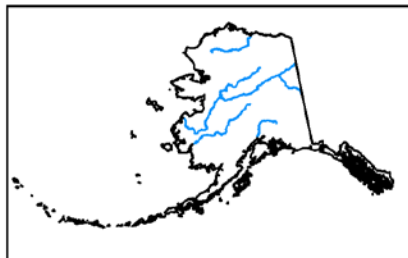
Drought Impact Types:

- ~ 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:

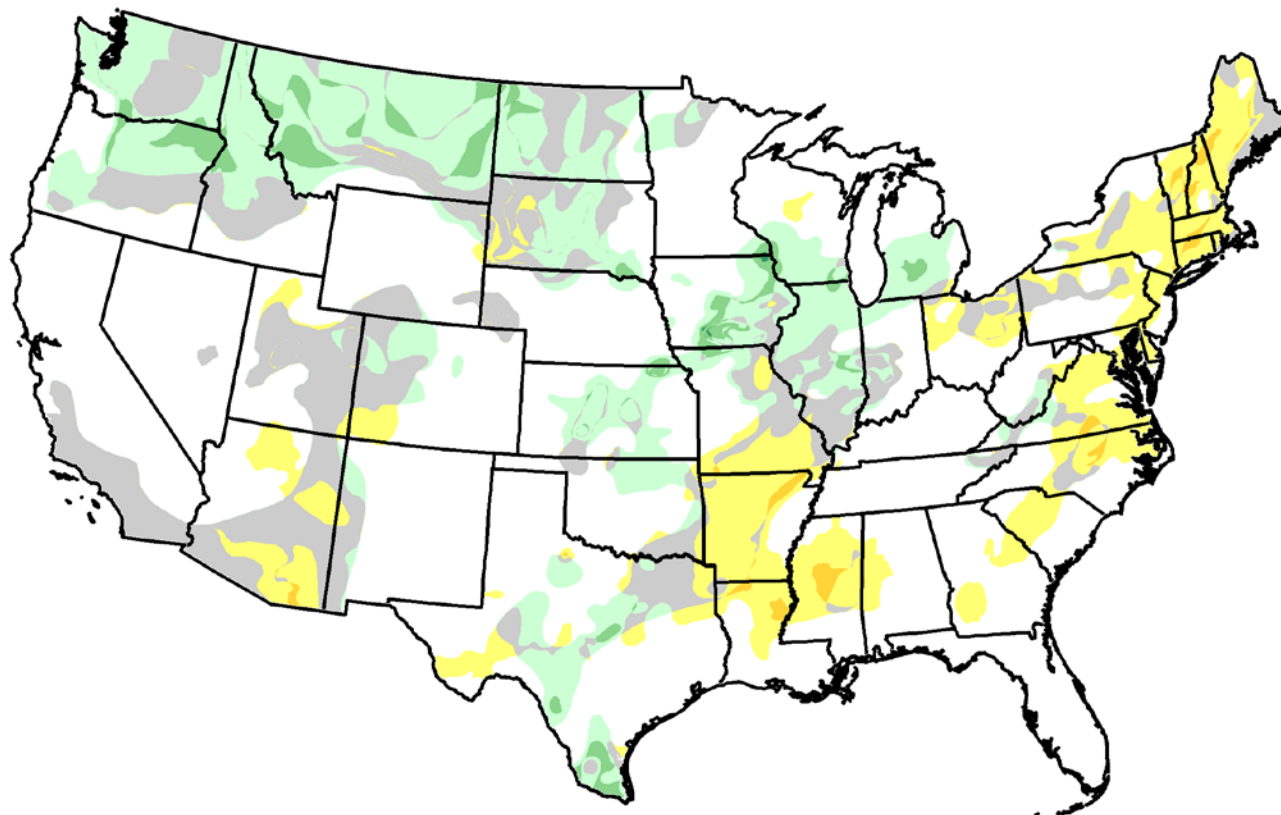
- Yellow: D0 Abnormally Dry
- Light Orange: D1 Moderate Drought
- Dark Orange: D2 Severe Drought
- Red: D3 Extreme Drought
- Dark Red: D4 Exceptional Drought

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



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

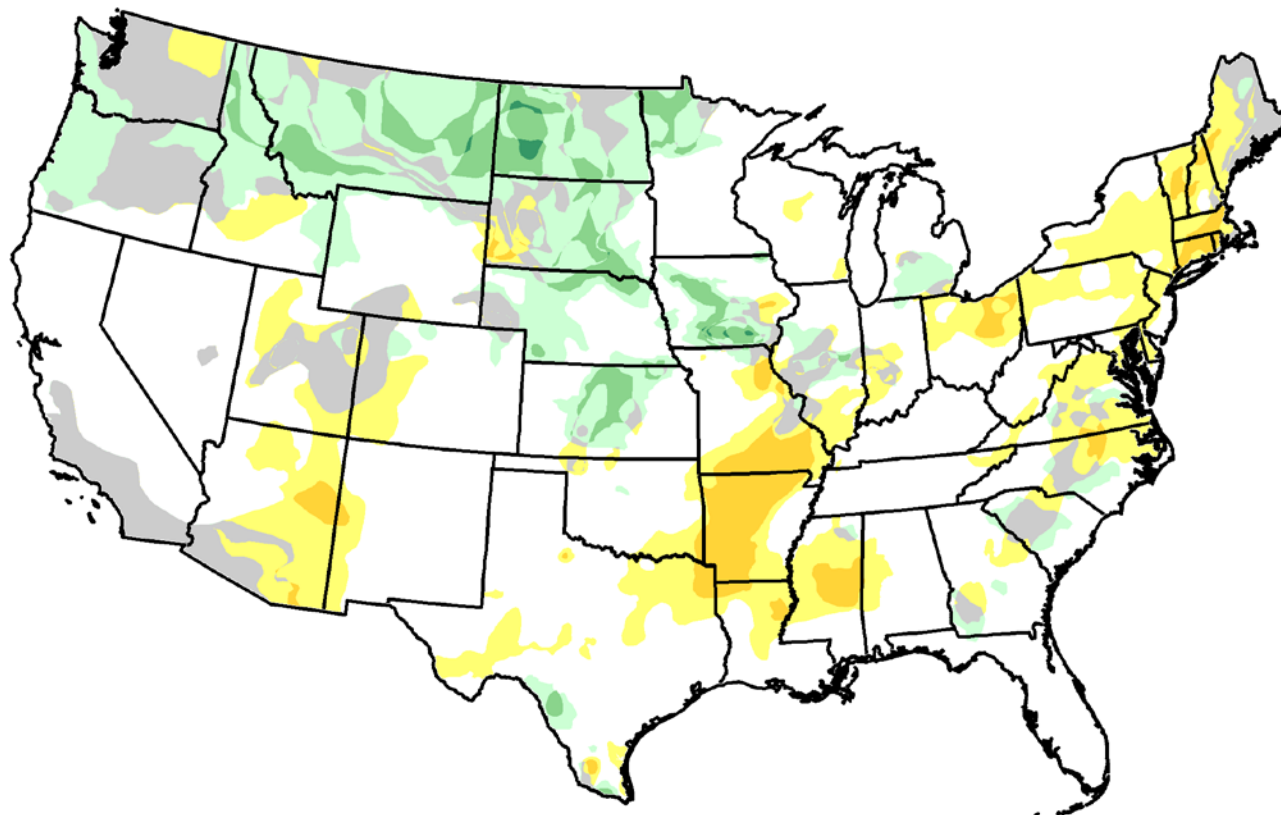
U.S. Drought Monitor Class Change - CONUS 1 Month



October 24, 2017
compared to
September 26, 2017

<http://droughtmonitor.unl.edu>

U.S. Drought Monitor Class Change - CONUS 2 Months



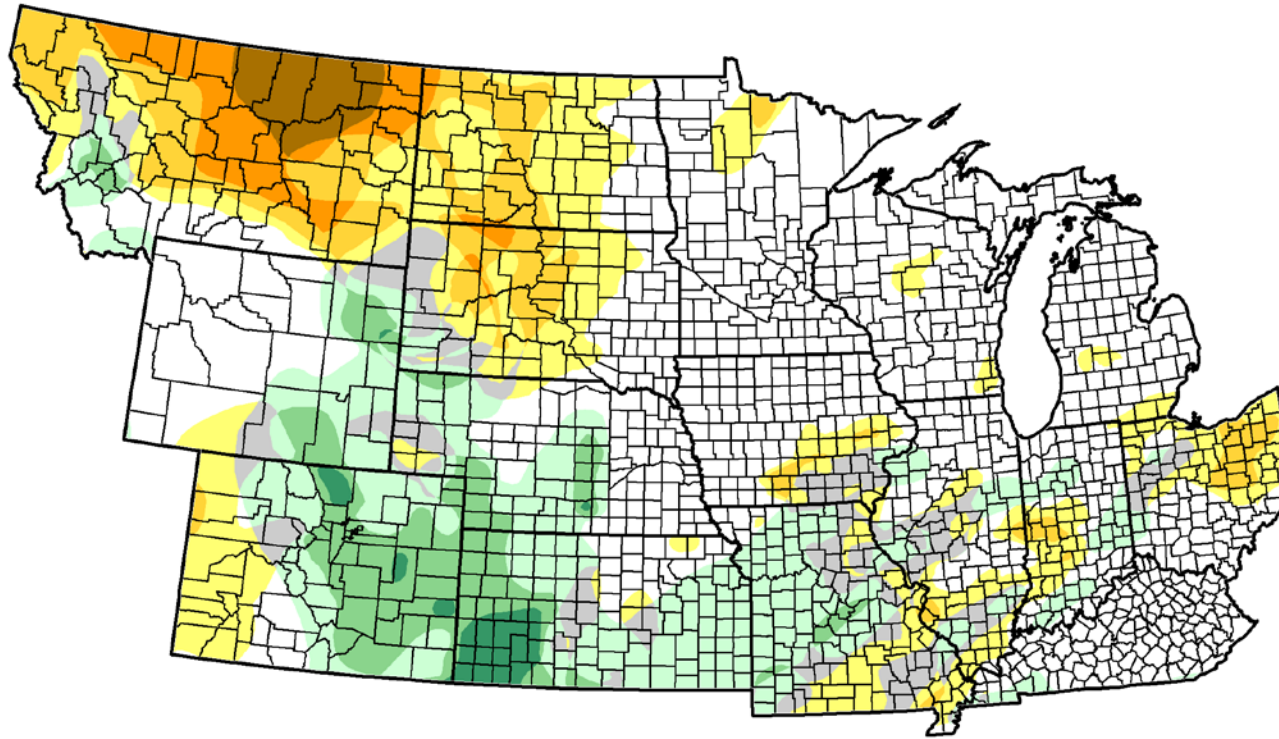
October 24, 2017
compared to
August 29, 2017

<http://droughtmonitor.unl.edu>

- 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

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

Start of Calendar Year



October 24, 2017
compared to
January 3, 2017

<http://droughtmonitor.unl.edu>

- 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

U.S. Drought Monitor

High Plains

October 24, 2017

(Released Thursday, Oct. 26, 2017)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	64.98	35.02	13.68	3.26	0.90	0.00
Last Week 10-17-2017	66.26	33.74	13.34	3.51	0.55	0.00
3 Months Ago 07-25-2017	37.57	62.43	31.21	17.92	8.59	1.06
Start of Calendar Year 01-03-2017	50.65	49.35	21.54	3.85	0.00	0.00
Start of Water Year 09-26-2017	56.15	43.85	21.11	8.37	1.32	0.06
One Year Ago 10-25-2016	61.59	38.41	8.74	0.56	0.00	0.00

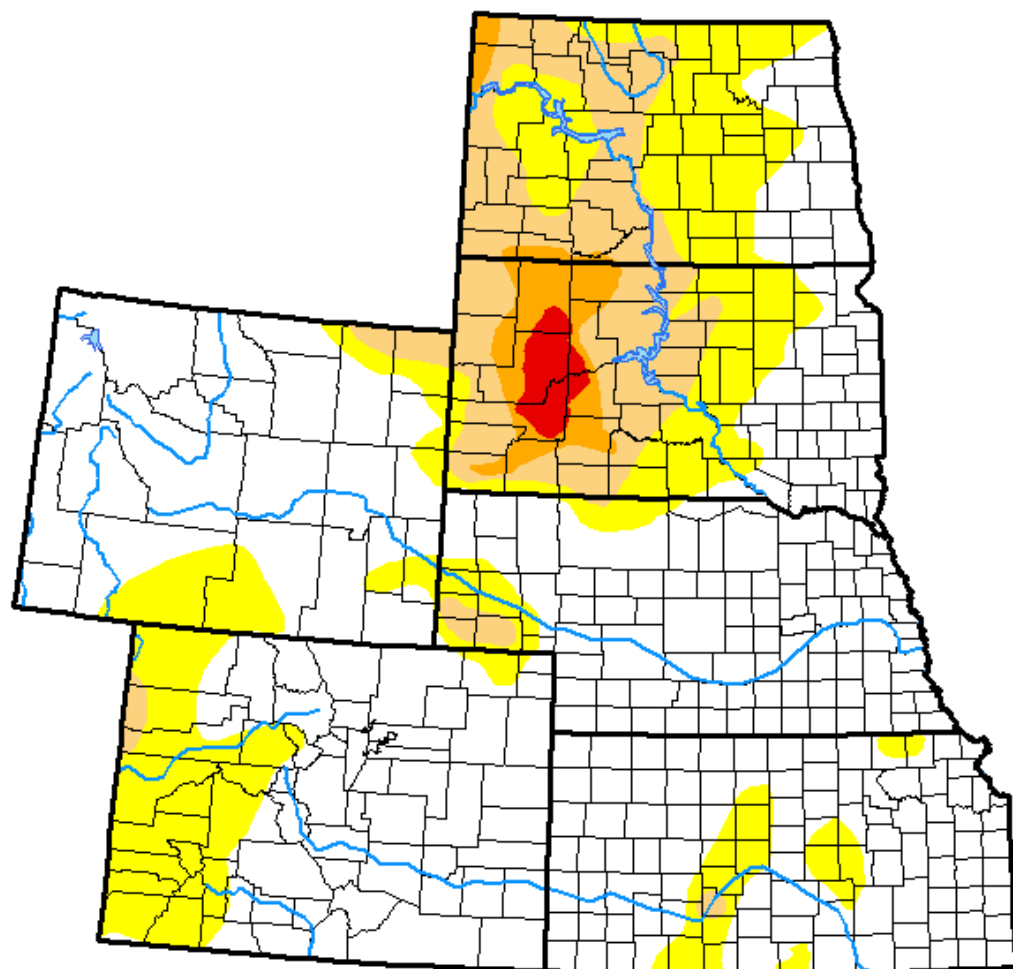
Intensity:

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

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

Author:

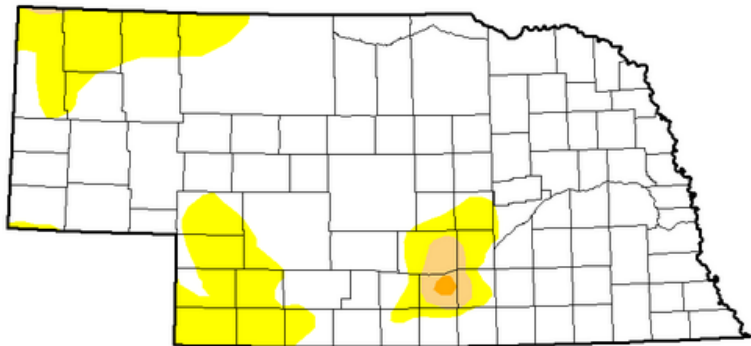
Eric Luebehusen
U.S. Department of Agriculture



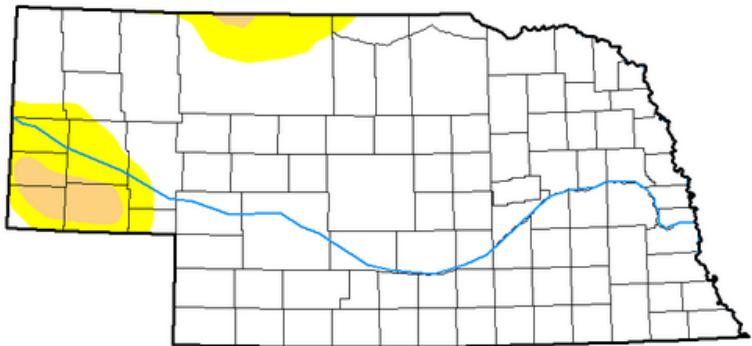
<http://droughtmonitor.unl.edu/>

Drought Classification

None D0 (Abnormally Dry) D1 (Moderate Drought) D2 (Severe Drought) D3 (Extreme Drought) D4 (Exceptional Drought)



October 25, 2016



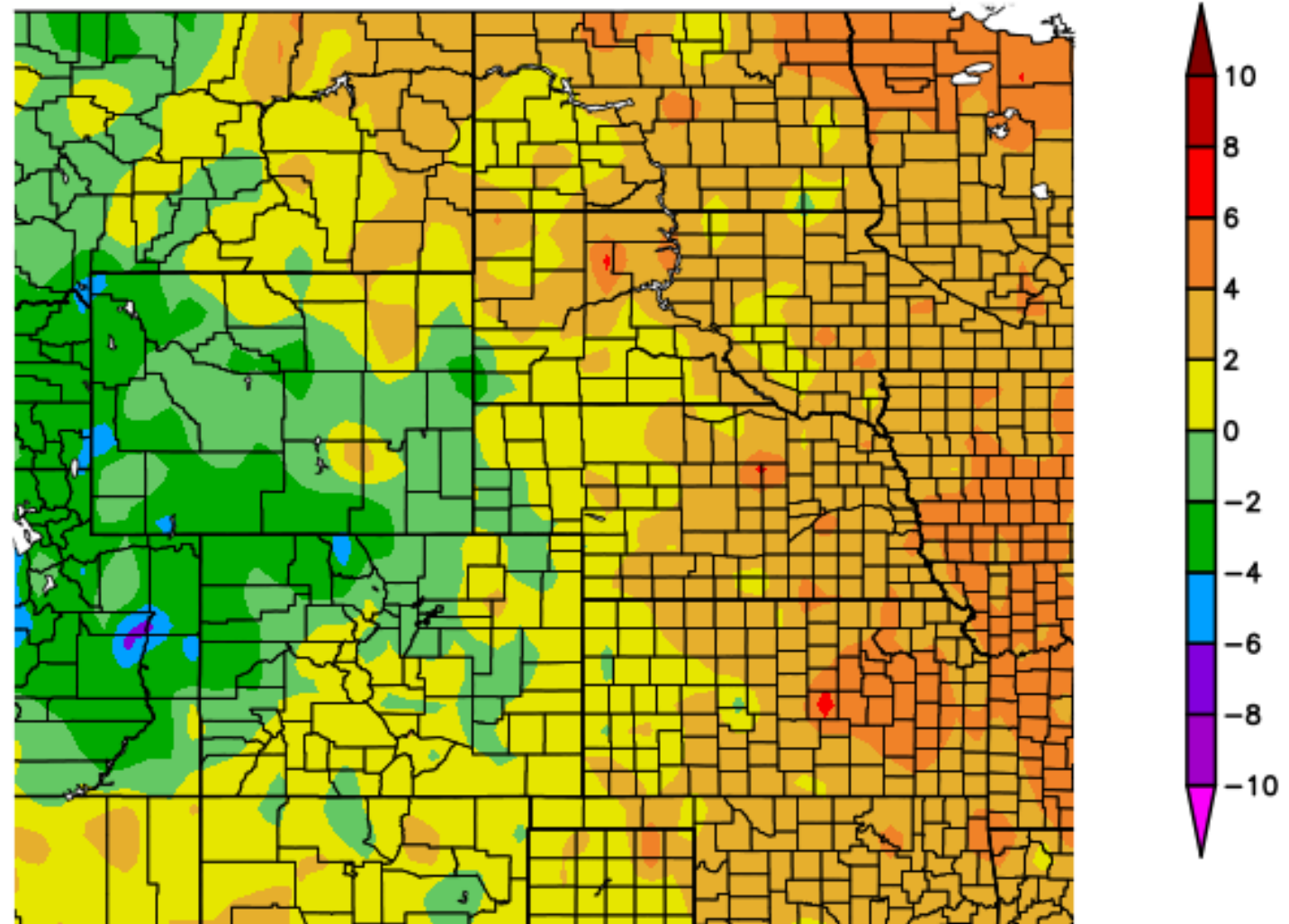
October 24, 2017

Statistics Comparison

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2016-10-25	82.17	17.83	1.59	0.16	0.00	0.00	20
2017-10-24	89.51	10.49	2.50	0.00	0.00	0.00	13
Change	7.34	-7.34	0.91	-0.16	0.00	0.00	-7

Departure from
Normal
Temperatures over
the last 30 days

Departure from Normal Temperature (F)
9/27/2017 – 10/26/2017

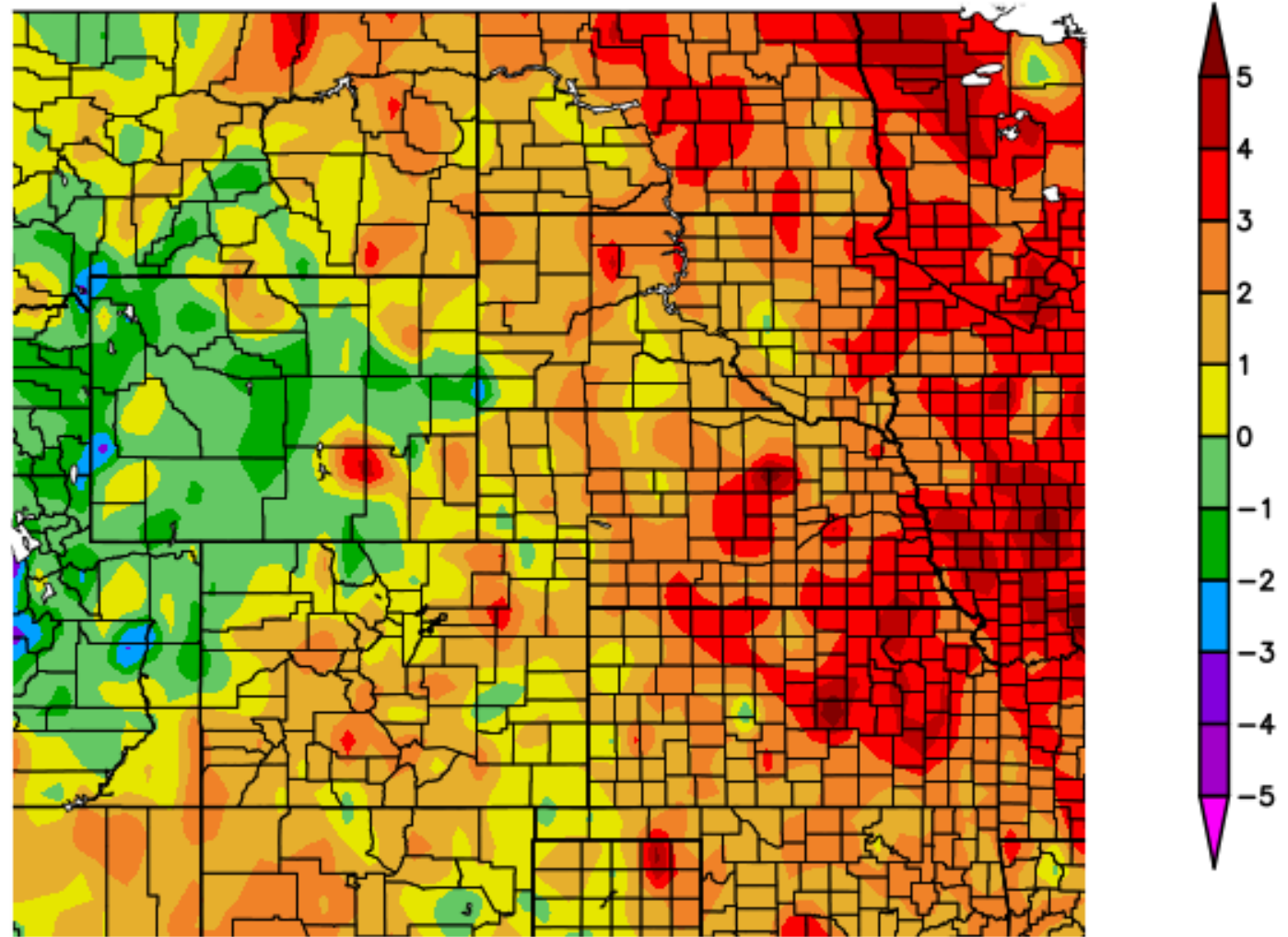


Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from
Normal
Temperatures over
the last 60 days

Departure from Normal Temperature (F)
8/28/2017 – 10/26/2017

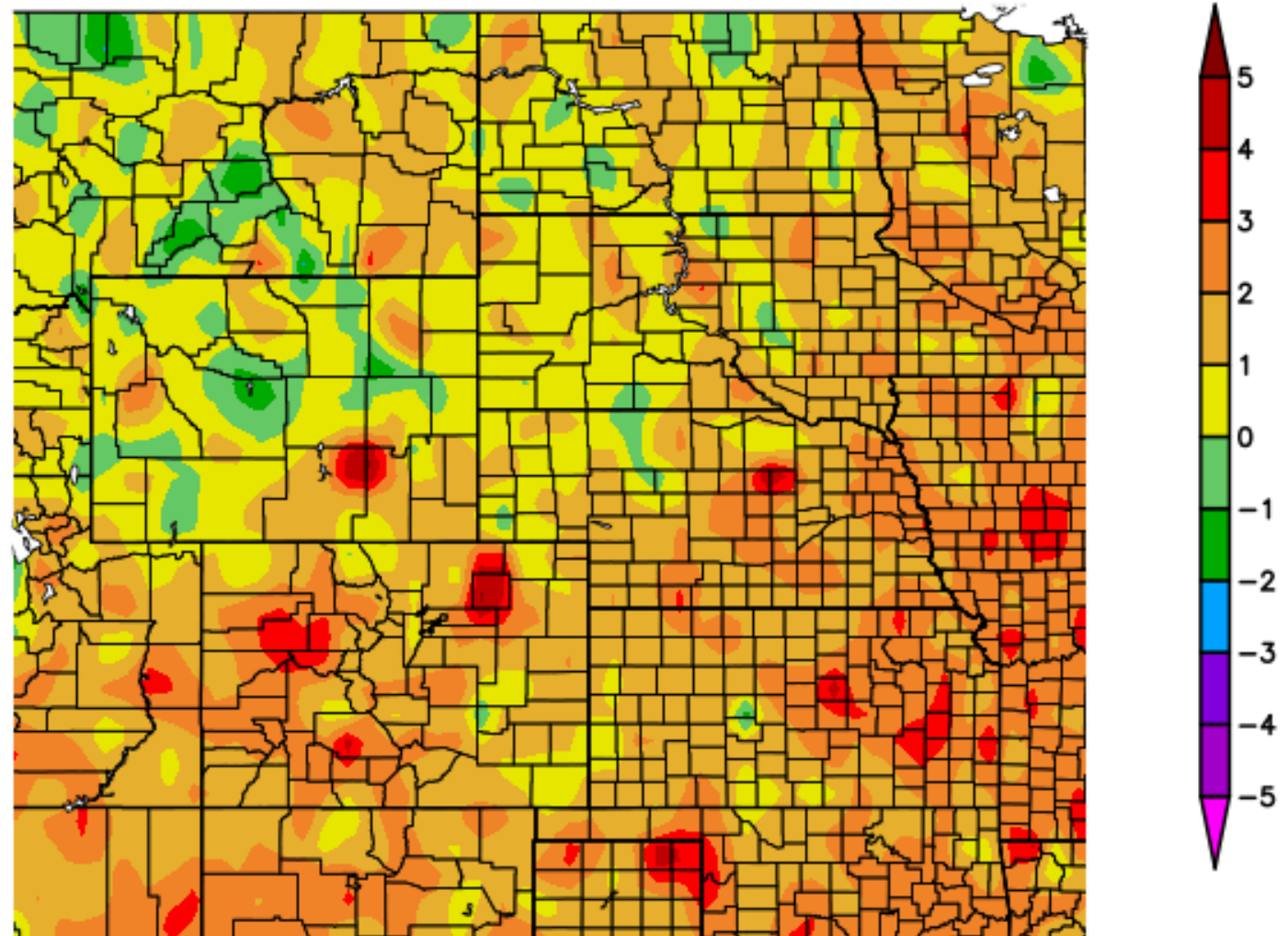


Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Temperatures for the Calendar Year

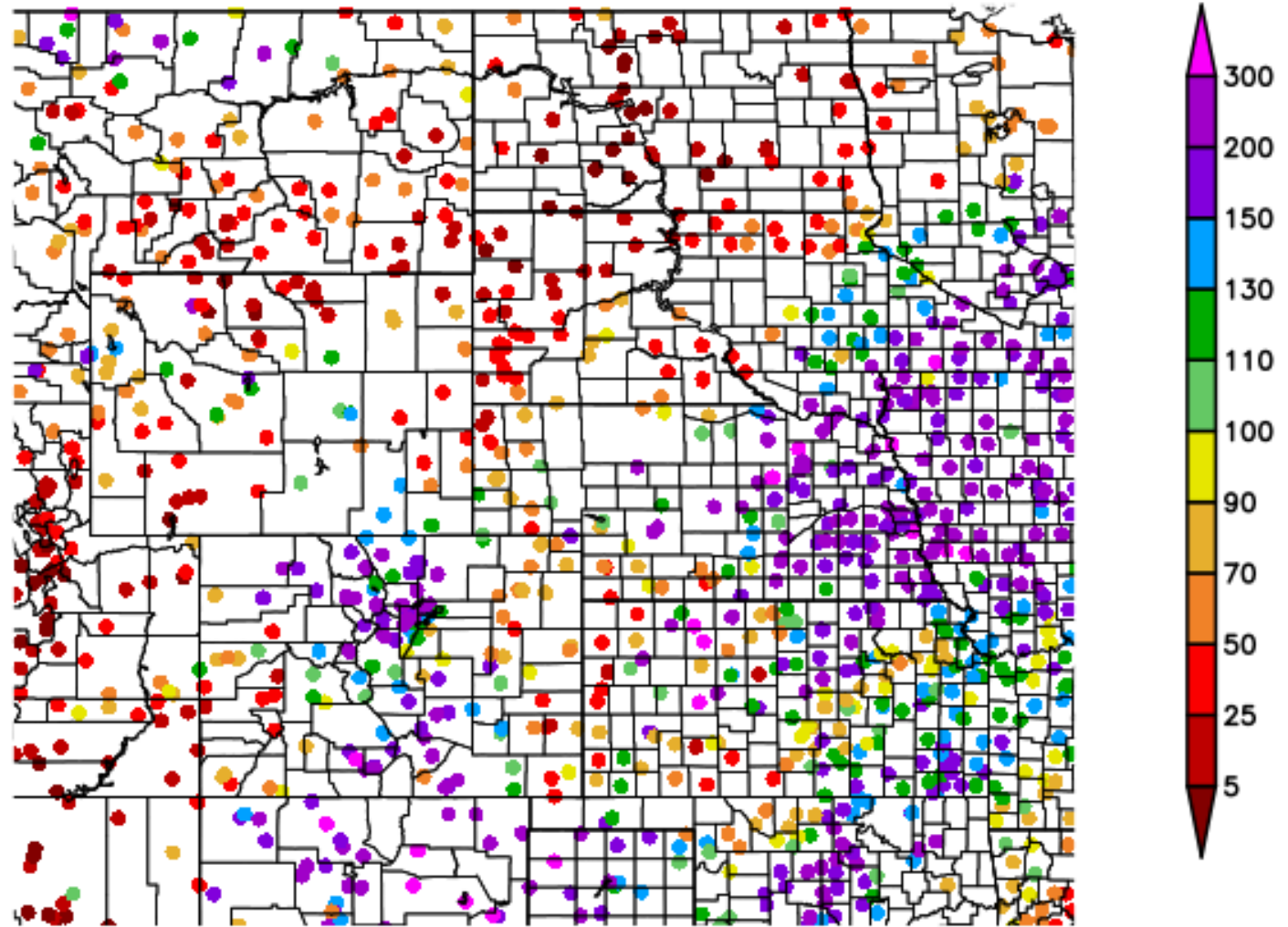
Departure from Normal Temperature (F)
1/1/2017 – 10/26/2017



Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
9/27/2017 – 10/26/2017



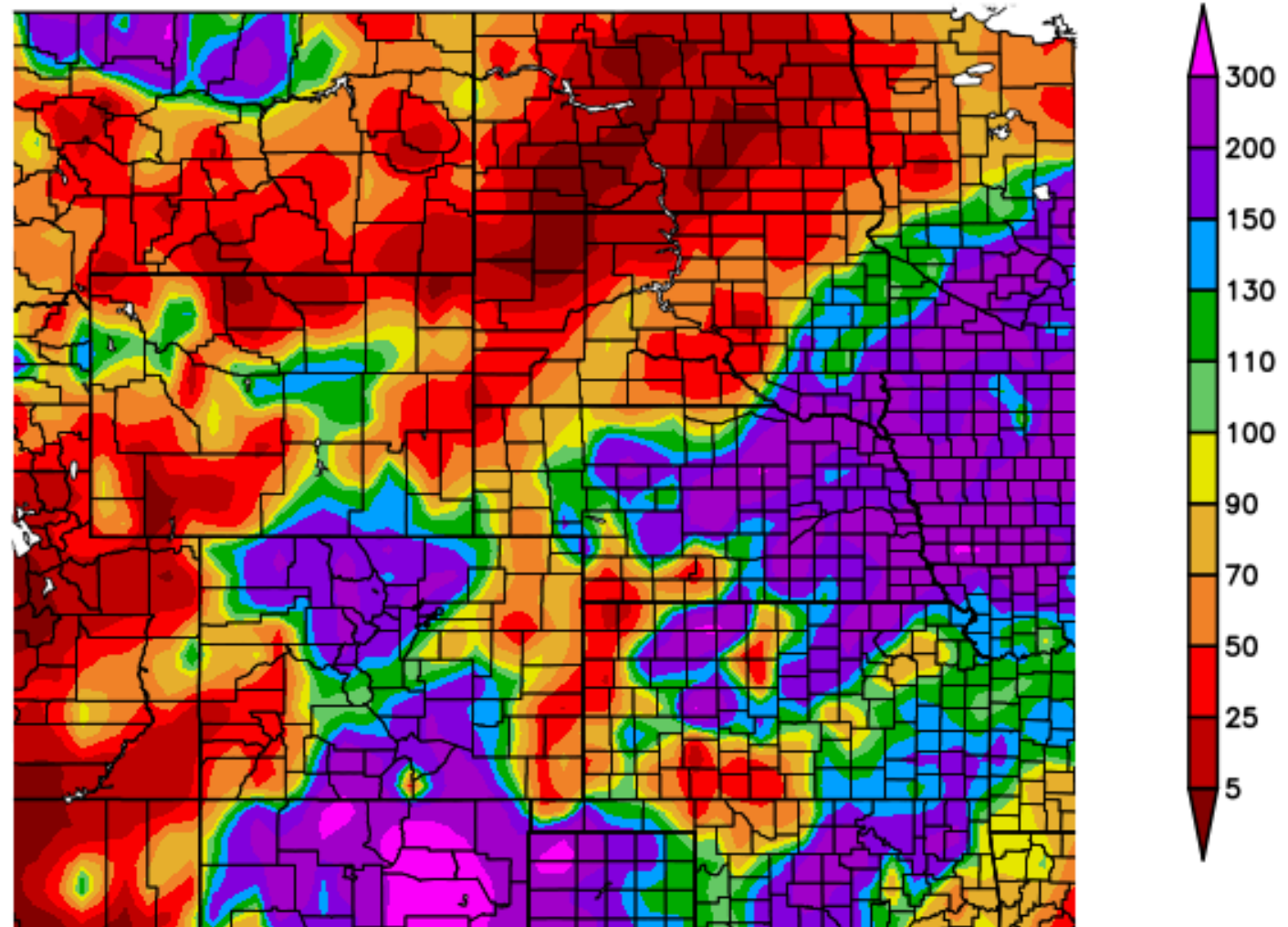
Percent of
Normal
Precipitation
over the last 30
days

Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of
Normal
Precipitation
over the last 30
days

Percent of Normal Precipitation (%)
9/27/2017 – 10/26/2017

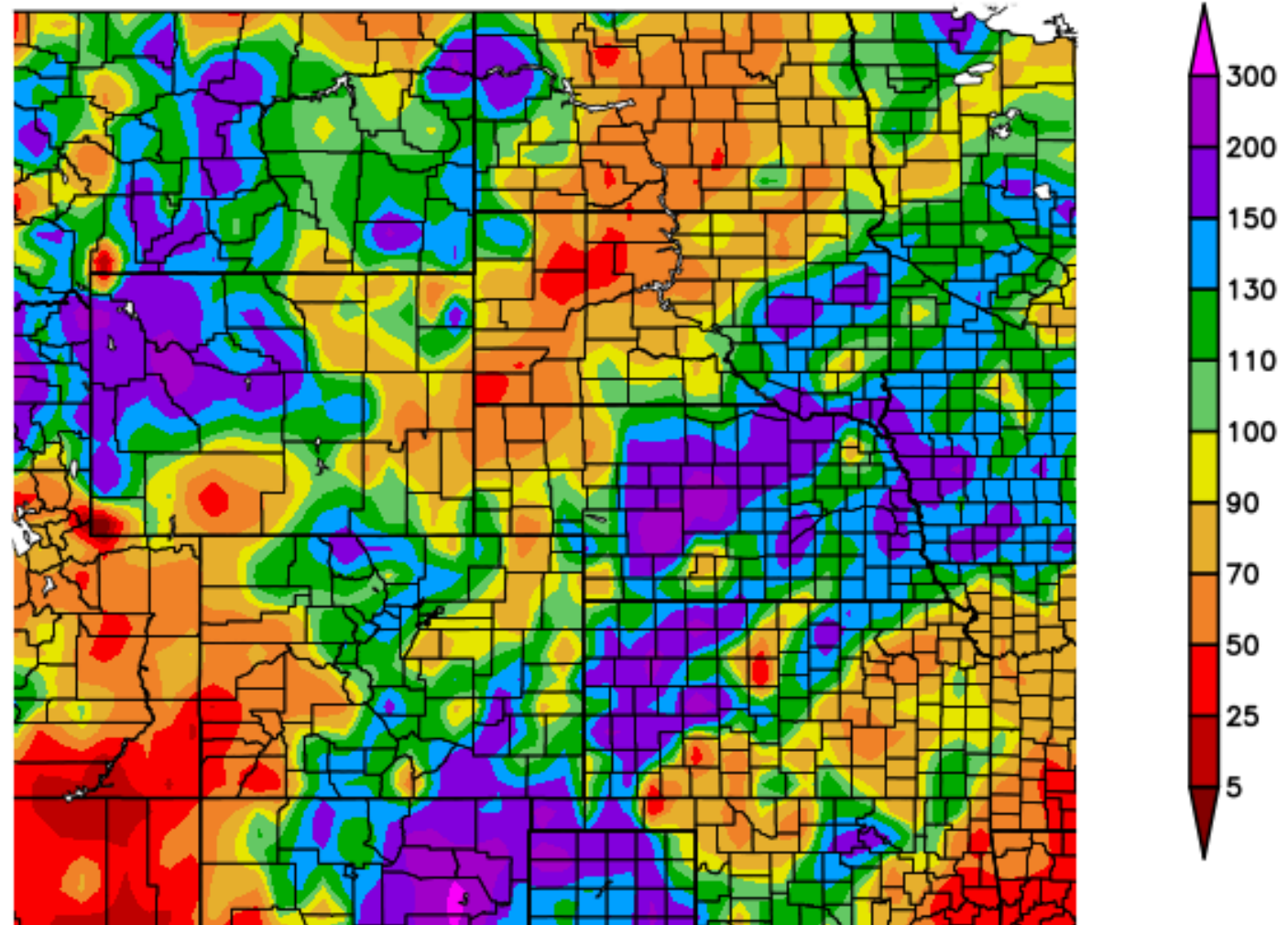


Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of
Normal
Precipitation
over the last 60
days

Percent of Normal Precipitation (%)
8/28/2017 – 10/26/2017

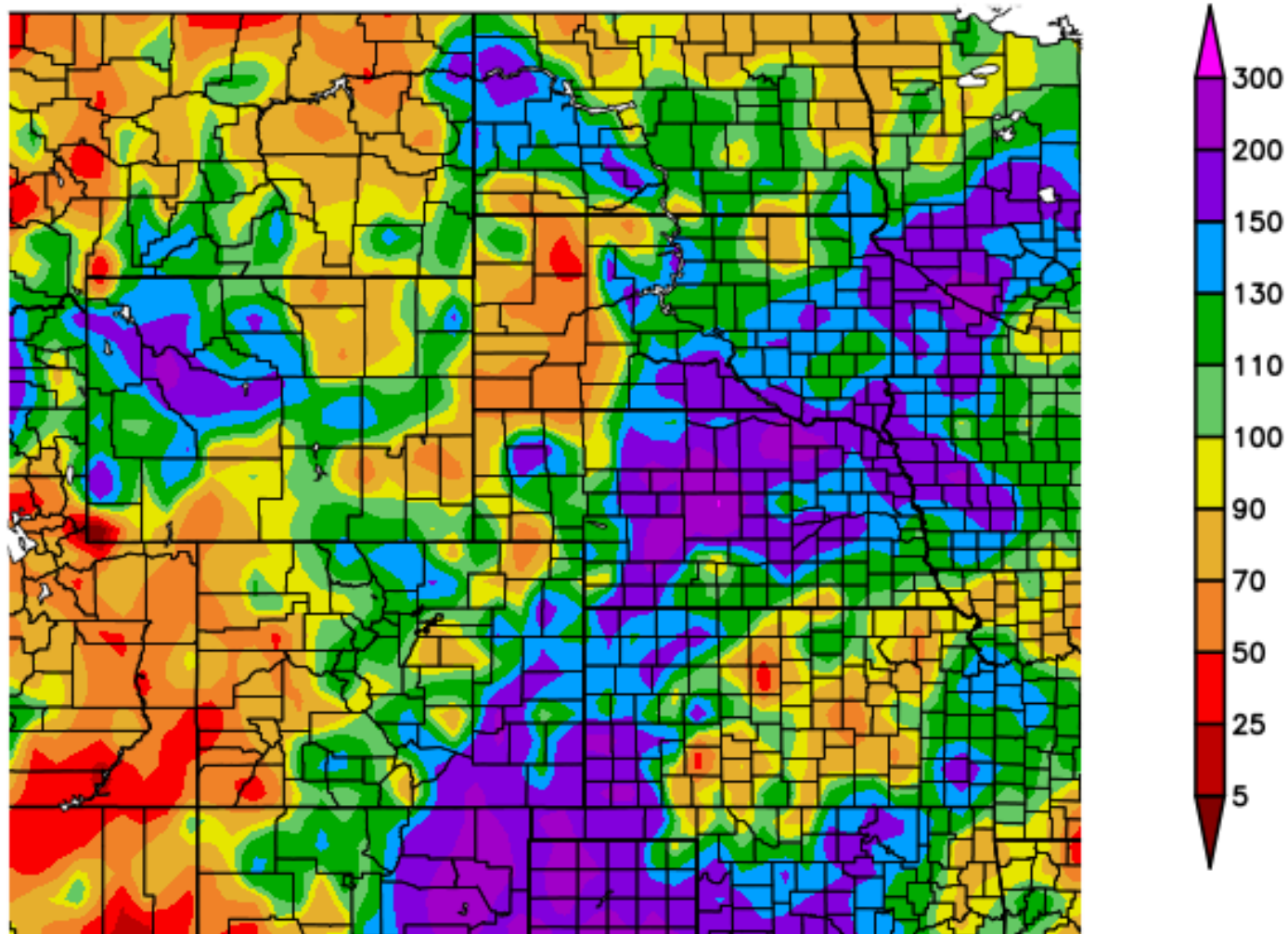


Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of
Normal
Precipitation
over the last 90
days

Percent of Normal Precipitation (%)
7/29/2017 – 10/26/2017

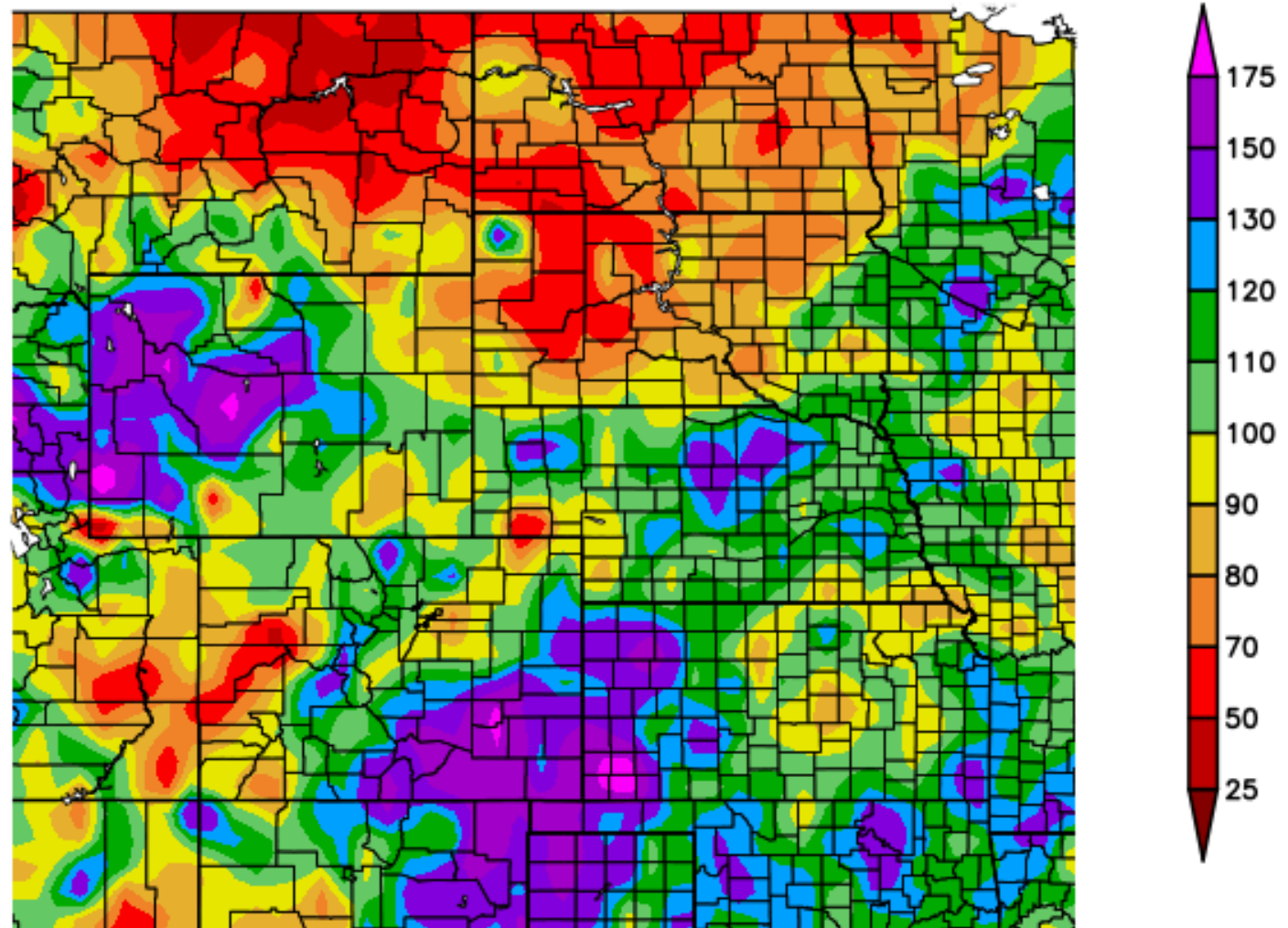


Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of
Normal
Precipitation for
the calendar
year

Percent of Normal Precipitation (%)
1/1/2017 – 10/26/2017

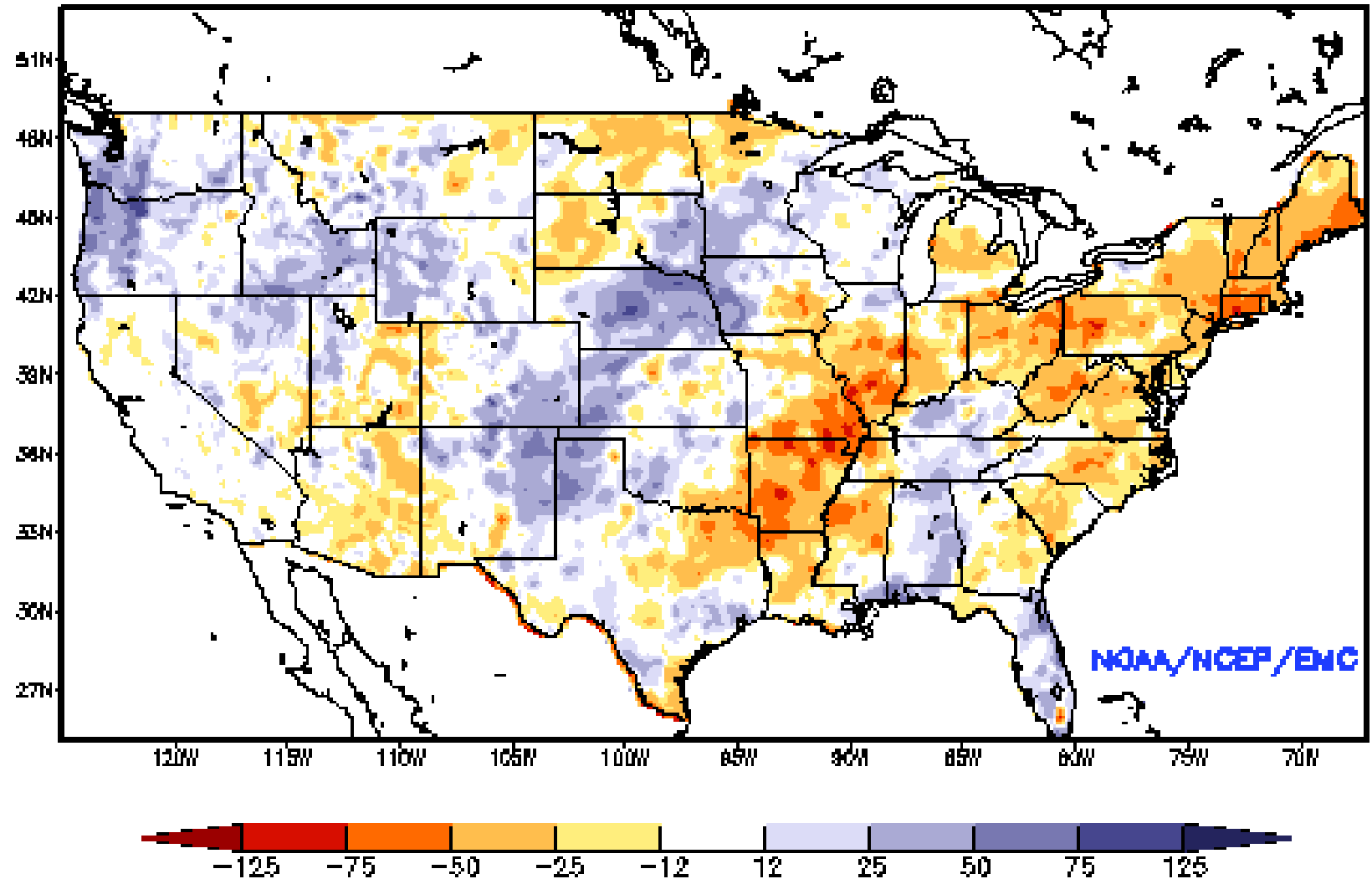


Generated 10/27/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

NLDAS Soil Moisture Model: Current Soil Moisture Anomaly

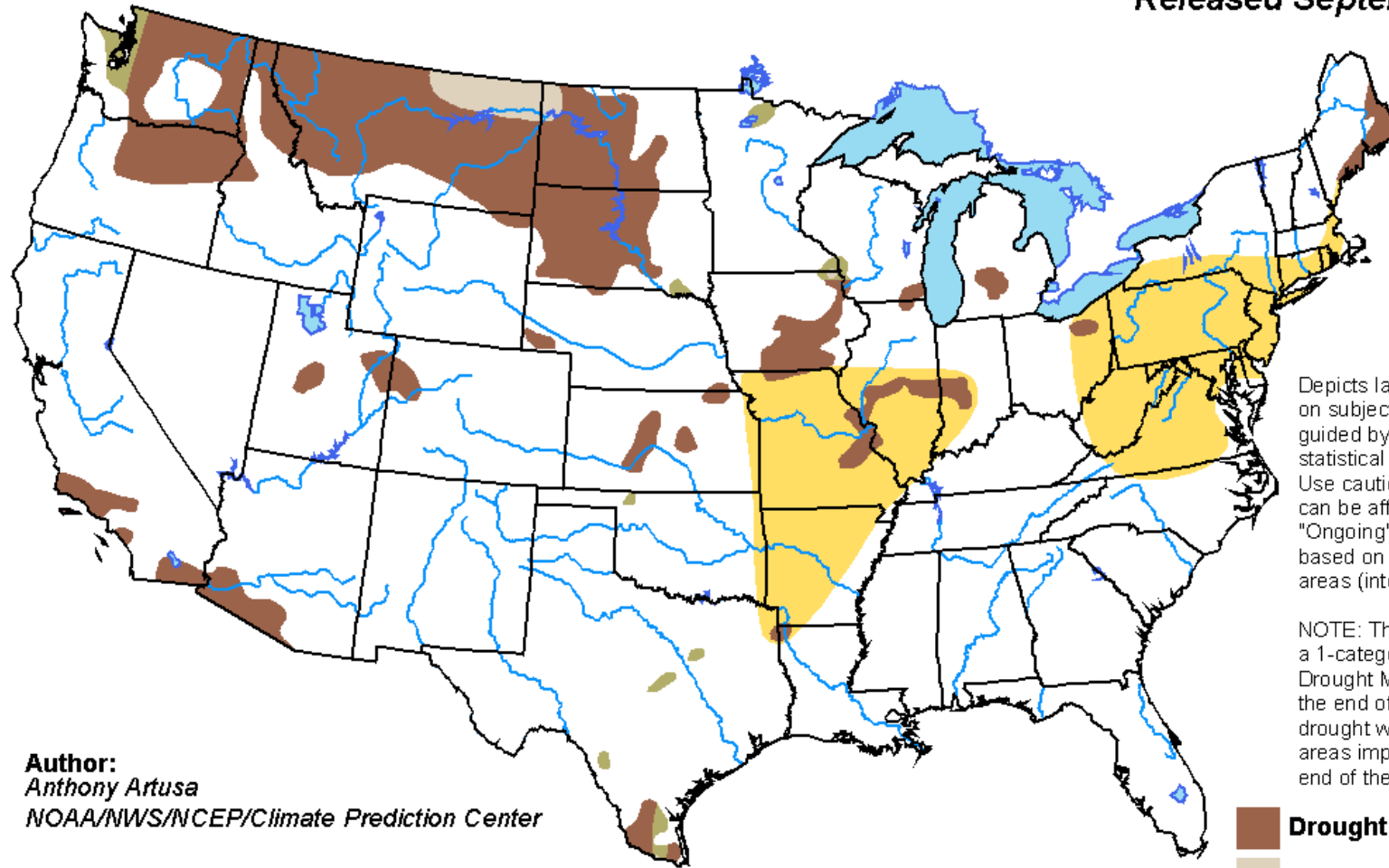
Ensemble-Mean - Current Top 1M Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: OCT 22, 2017



U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for October 2017
Released September 30, 2017

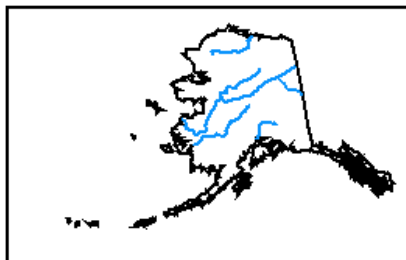


Author:
Anthony Artusa
NOAA/NWS/NCEP/Climate Prediction Center

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).

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

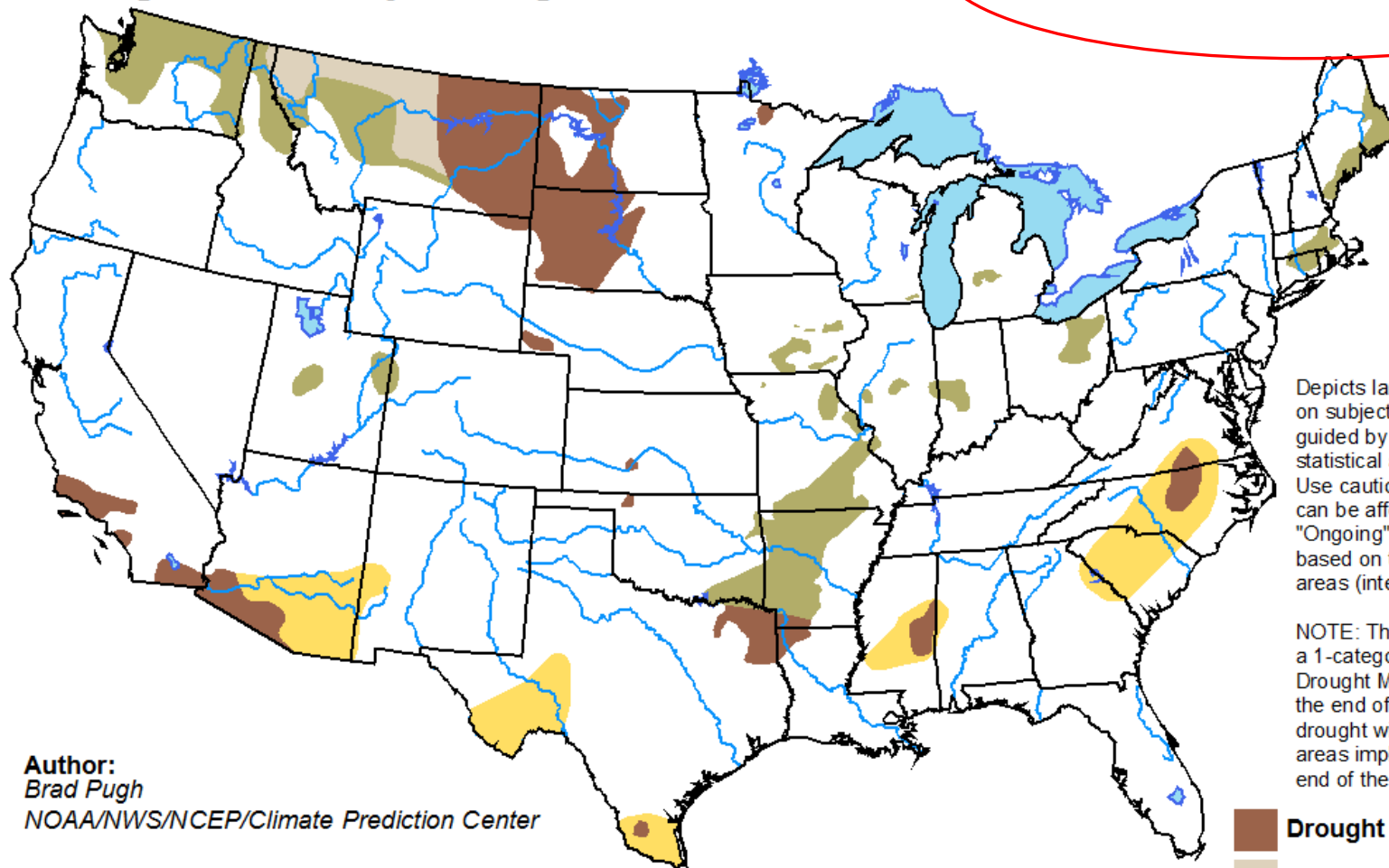


<http://go.usa.gov/3eZGd>

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period





Valid for October 19 - January 31, 2018
Released October 19, 2017

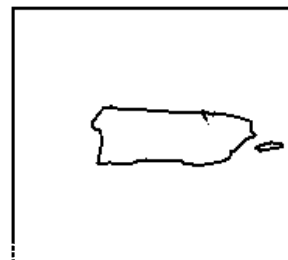
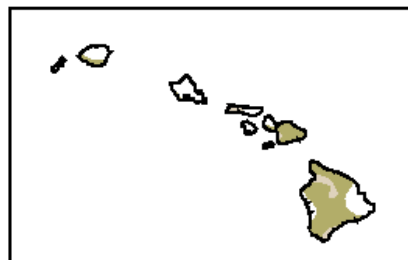
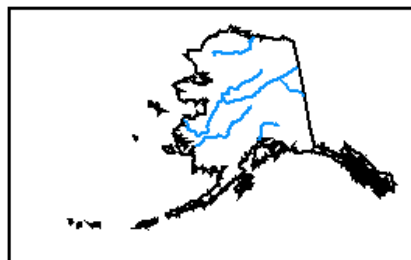


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

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



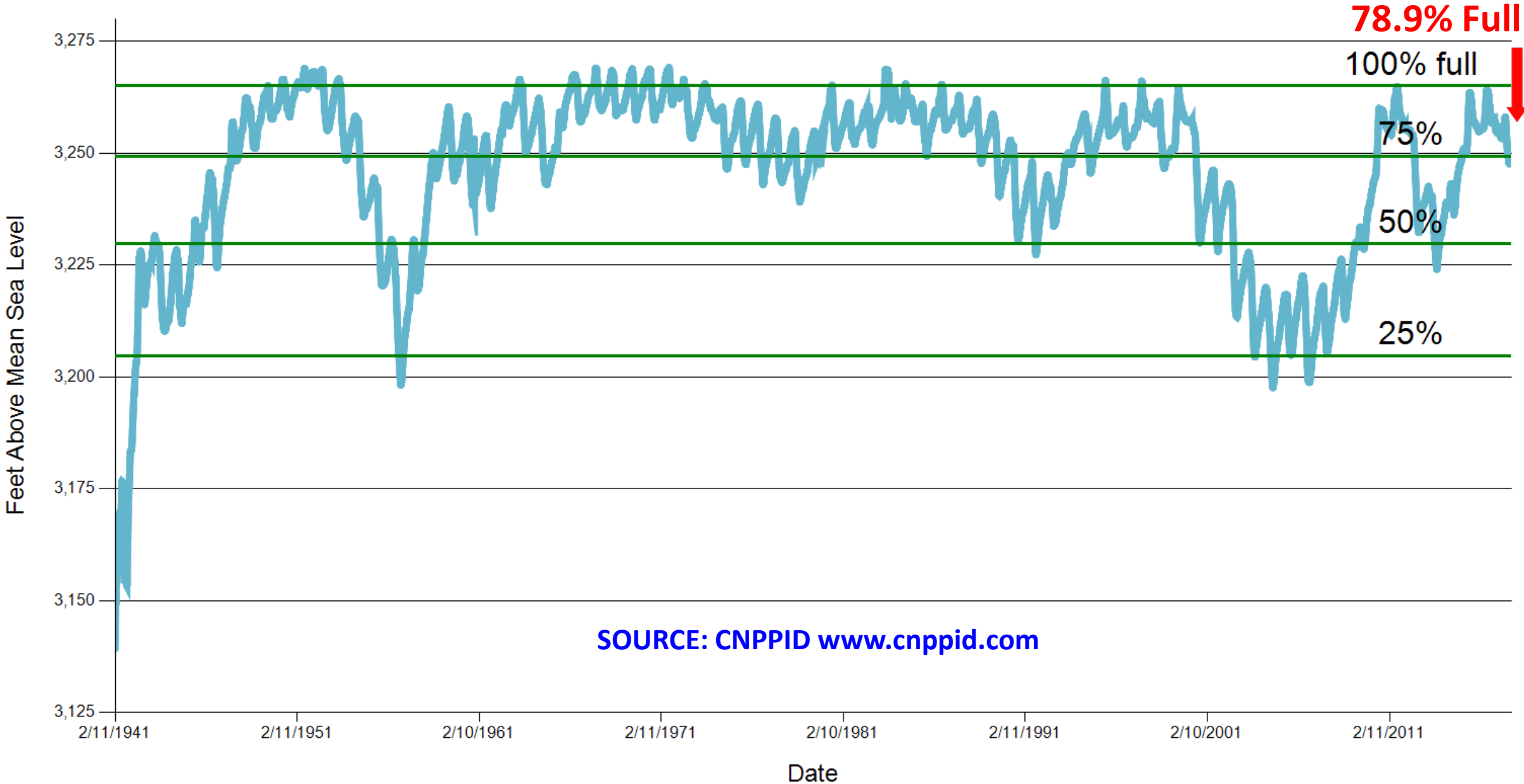
<http://go.usa.gov/3eZ73>

Climate/Drought Summary

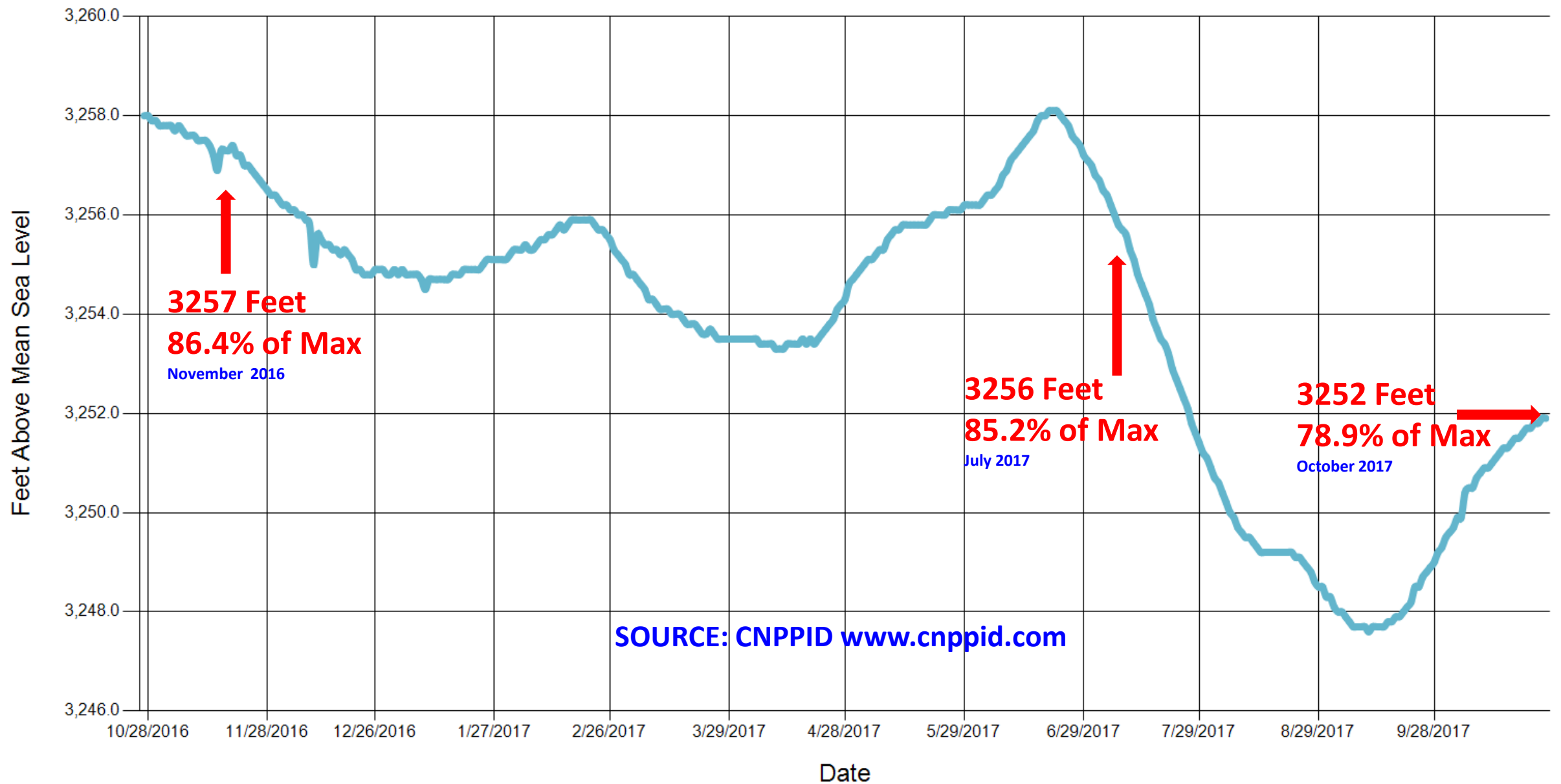
- Warmer than normal conditions have dominated the state and region so far in 2017 with Nebraska averaging about 1-3 degrees F above normal through the end of October.
- Outside a few pockets in southeast Nebraska and the southern Panhandle, most all of Nebraska has recorded above normal precipitation through the end of October.
- Precipitation over the last 60 days has helped to replenish soil moisture for all depths.
- Nebraska is mostly drought free with only a small pocket of a few counties in the Panhandle with moderate drought according to the US Drought Monitor
- The outlook does not show drought conditions developing in Nebraska through the end of January 2018.

Nebraska Water Supply Update...

Lake McConaughy Elevation since 1941



Lake McConaughy Elevation (One Year)



October 2017 CARC Meeting



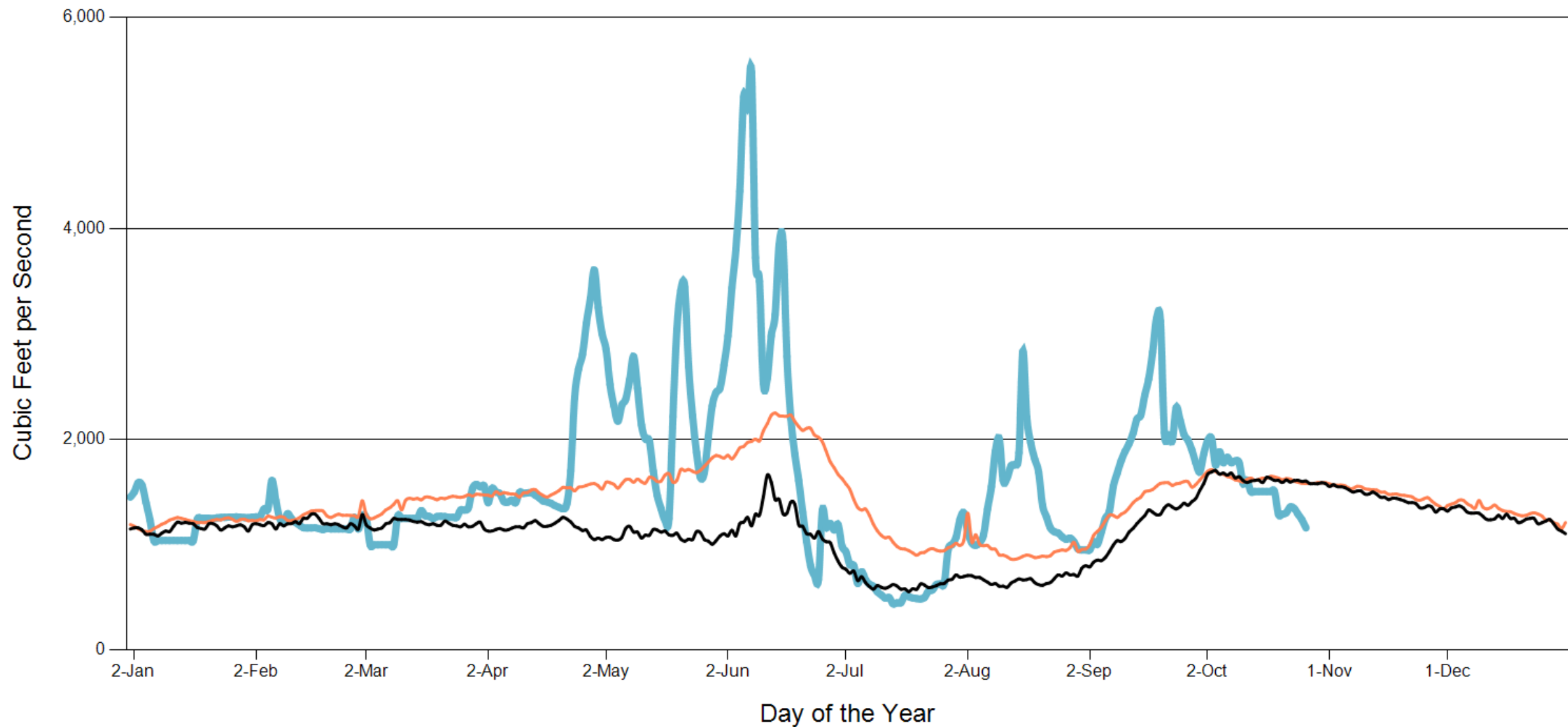
River & Canal Flows

Station	Today (Cubic Feet per Second)	1 Week Ago	1 Month Ago	1 Year Ago
Inflows to McConaughy	1,160	1,290	2,073	1,367
Total Outflows from McConaughy	508	415	237	1,864
North Platte at Keystone	311	221	22	1,711
Keystone Diversion	197	194	215	153
North Platte at North Platte	559	507	463	1,960
South Platte at Roscoe	113	97.6	115	92.3
South Platte at North Platte	155	171	160	210
Supply Canal Diversion	960	1,327	1,726	2,265
Platte at Overton	1,918	325	1,687	2,099
Platte at Kearney	1730	283	1030	1830
Platte at Grand Island	380	312	853	1750

Flows and elevations are provisional. Readings from measuring equipment may be affected during icing conditions.

SOURCE: CNPPID www.cnppid.com

Lake McConaughy Inflows



— This Year's Inflows — Historic Average (1941-Present) — Historic Median (1941-Present)

Lake McConaughy

Civil engineer Cory Steinke reported that Lake McConaughy's elevation, currently at elevation 3,249.7 feet (1.31 million acre-feet or 75 percent of capacity) and rising about an inch per day. He reported that releases from the reservoir have been halted for the time being to facilitate maintenance projects on facilities owned by Central and the Nebraska Public Power District.

SOURCE: CNPPID News Release, October 2, 2017

www.cnppid.com

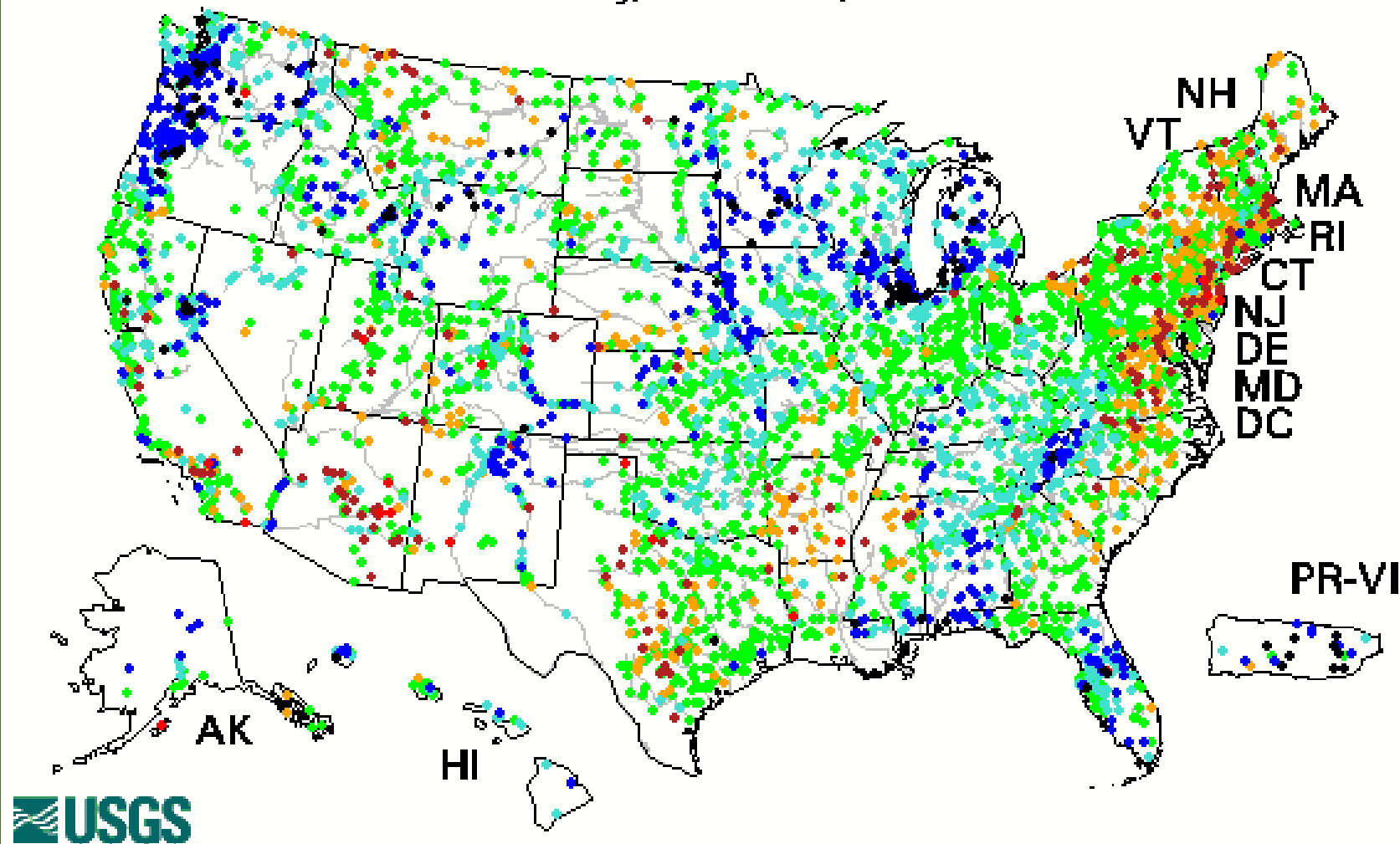
Lake McConaughy

- Irrigation Division Manager Dave Ford provided an end-of-irrigation season summary to the board. Deliveries to Central's 1,075 customer accounts averaged 7.2 inches/acre with more than 60,500 acre-feet of water delivered. The 2017 average was about two inches less than average over the past 20 years. More than 101,800 acre-feet of water during the irrigation season went to groundwater recharge.
- On the Supply Canal's 74 accounts, 3,843 acre-feet were delivered for an average of 8.2 inches/acre.
- Rainfall during the six-month growing season at the Holdrege rain gauge (approximately in the middle of the irrigated area) totaled 19.04 inches, compared to a 20-year average of 18.35 inches and a 60-year average of 18.84 inches.
- Ford said diversion and delivery amounts vary from year to year depending upon temperatures and precipitation in the irrigated area, but that the trend over the last 30 years shows that diversions into the irrigation system have been decreasing. However, he added, the crops' water demands are being met with significantly less total diversions because of increasing on-farm irrigation efficiency and improved conveyance efficiencies in the canal system. **"The bottom line," Ford said, "is that our customers are growing more crops with less water."**

SOURCE: CNPPID News Release, October 2, 2017

14-day average streamflow compared to historical streamflow for the day of year

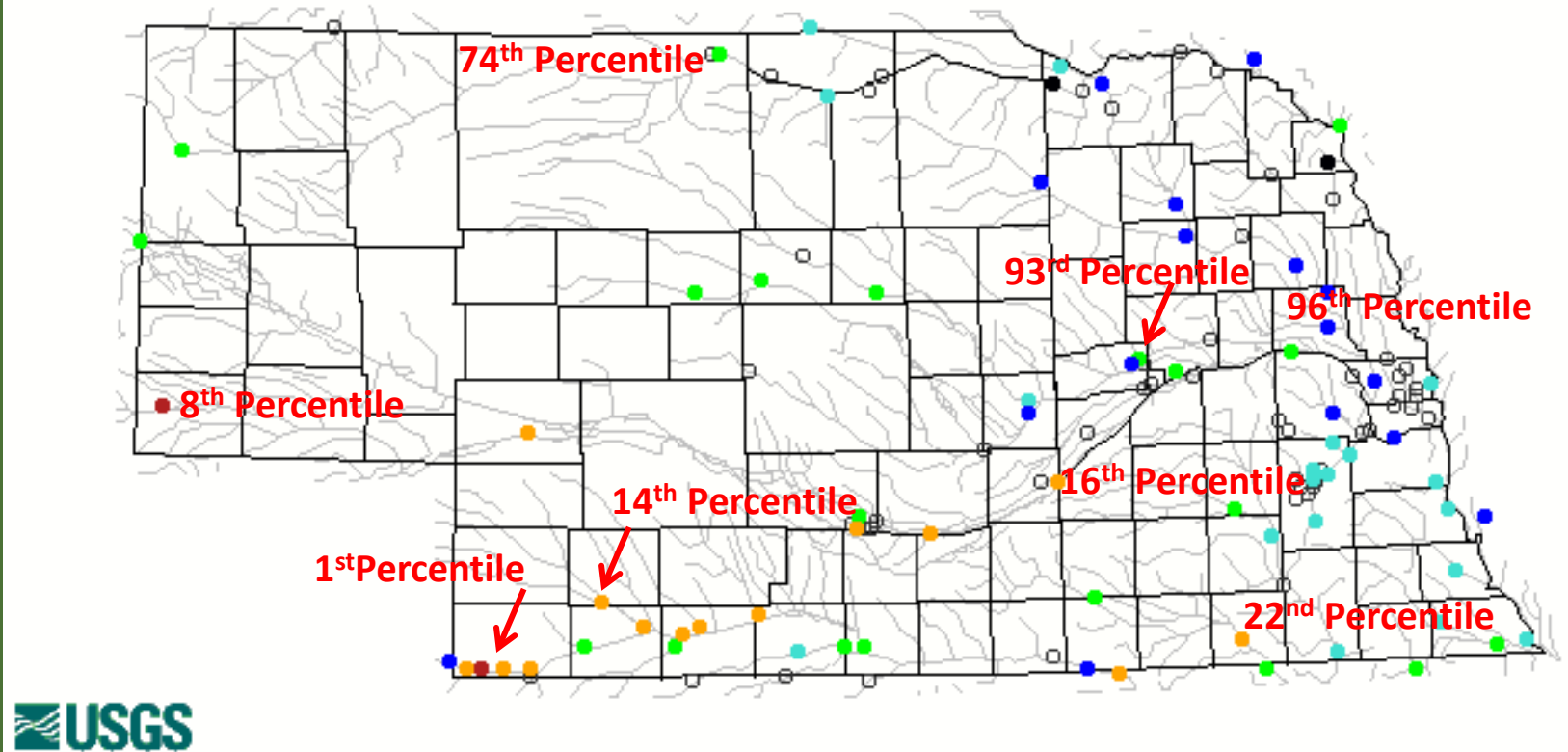
Thursday, October 26, 2017



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		

14-day average streamflow compared to historical streamflow for the day of year

Thursday, October 26, 2017



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

Republican River Basin

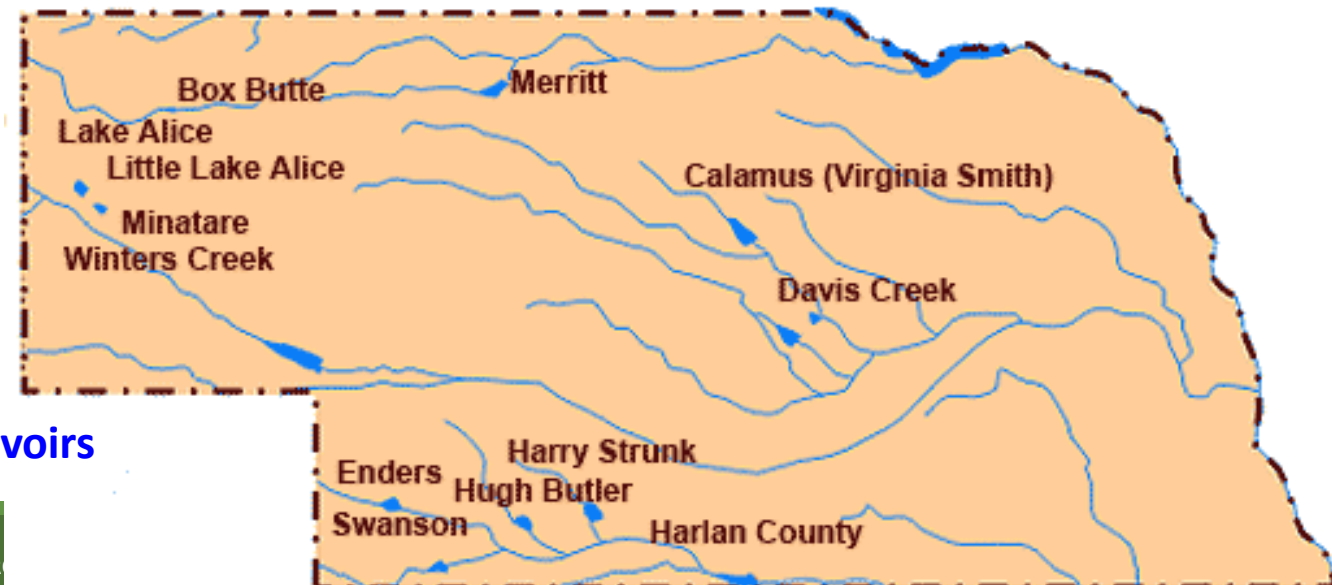
Hugh Butler: 41.8%(44.9%) of conservation pool

Enders: 19.7% (21.4%) of conservation pool

Harry Strunk: 53%(76.7%) of conservation pool

Swanson: 44% (57.6%) of conservation pool

*values in red are from the last
CARC meeting in July 2017.



Source: BOR http://www.usbr.gov/gp/lakes_reservoirs

Republican River Basin

Harlan County Current Conditions

*values in red are from the last
CARC meeting in July 2017.

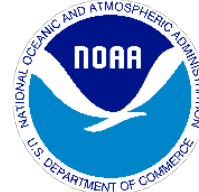
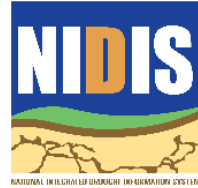
- ✓ Conservation Pool is 69.7% full (81.6%)
- ✓ 218,826 Acre-Feet in storage compared to 256,247 Acre-Feet (AF) of water in storage during July 2017
- ✓ Last year at this time, 190,818 AF was in storage (October 2016)
- ✓ Historical average storage for this time of the year is 213,631AF

Source: BOR http://www.usbr.gov/gp/lakes_reservoirs/

Water Supply Summary

- Lake McConaughy is currently 78.9 percent of capacity which is lower than in July 2017 (last CARC meeting) and lower compared to levels in October 2016.
- The Republican River basin reservoirs are lower than in July as water is again accumulating after the irrigation season.
- Harlan County Reservoir is holding about 37,000 acre-feet less water now than in July 2017.
- Harlan County is holding about 28,000 acre-feet more water now than last year at this time and is about average for this time of year.
- All reservoir levels and storage should see a steady increase through the rest of the fall and winter as irrigation deliveries have ended.

OUR PARTNERS



Any Questions ?



DROUGHT.UNL.EDU

e | ndmc@unl.edu

f /NationalDroughtMitigationCenter

@droughtcenter

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

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