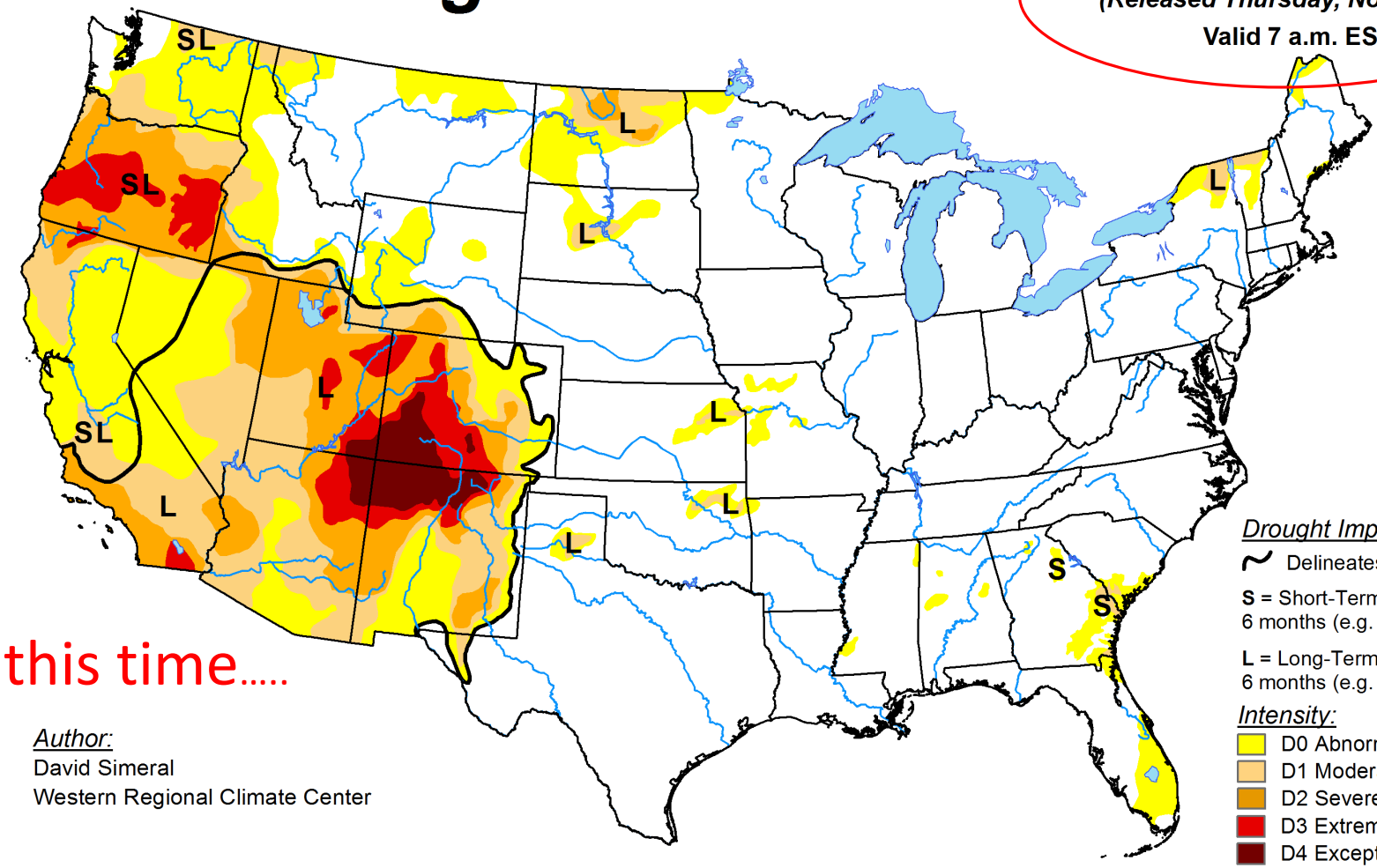
NE Drought Conditions CARC Update: November 13, 2019

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

Regional Climatic and Drought Conditions…

U.S. Drought Monitor

November 6, 2018
(Released Thursday, Nov. 8, 2018)
Valid 7 a.m. EST



Last year at this time…..

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:

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

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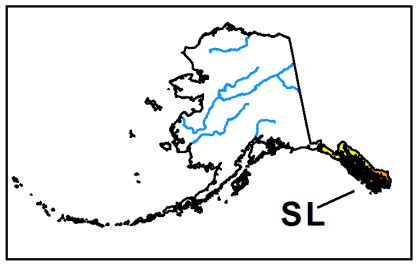
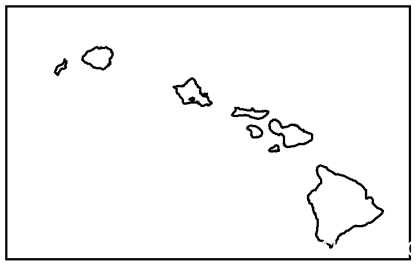
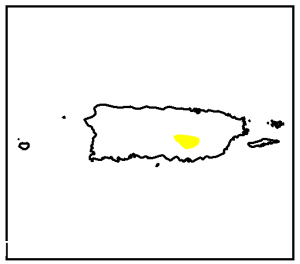




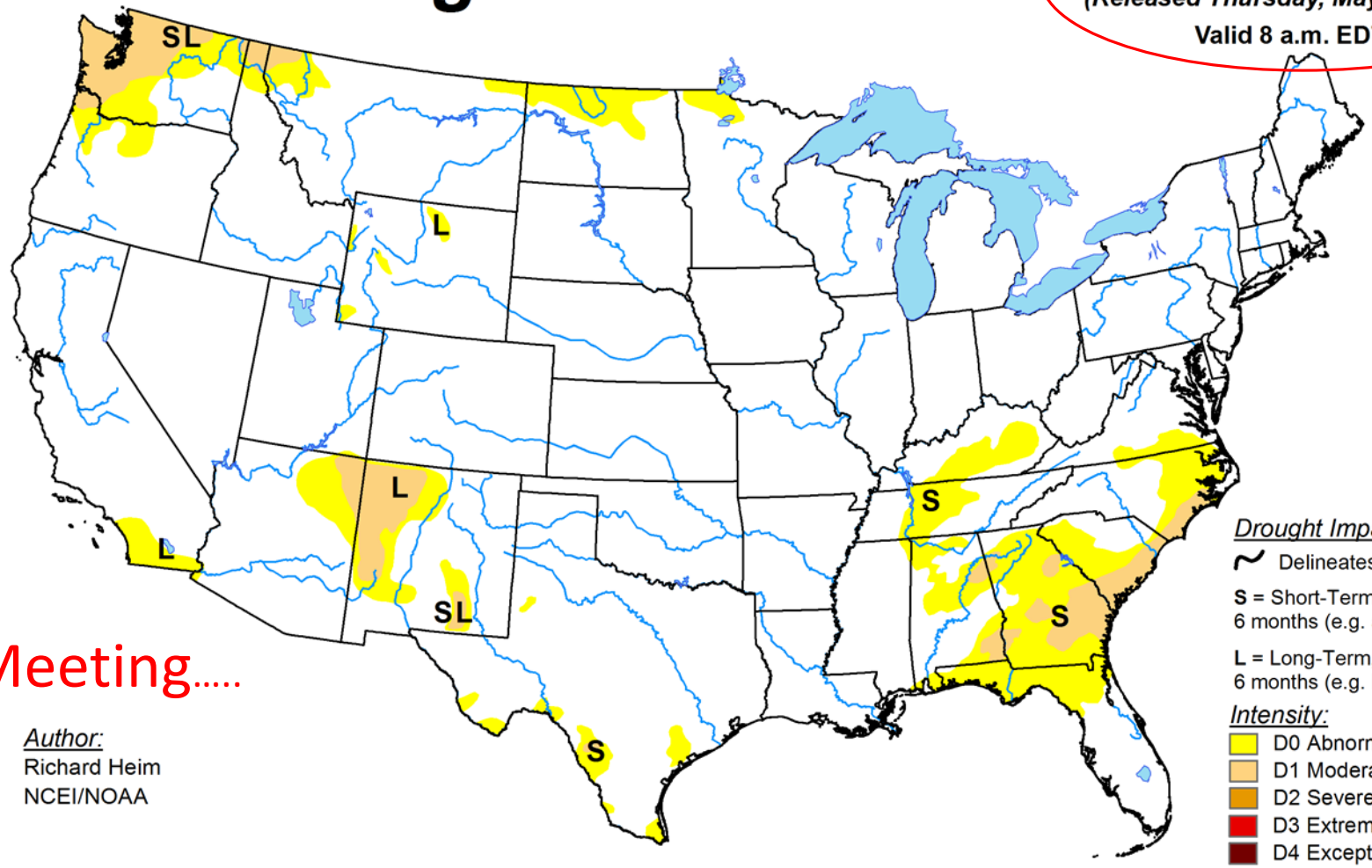


USDA NDMC DEPARTMENT OF COMMERCE NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

May 28, 2019
(Released Thursday, May. 30, 2019)
Valid 8 a.m. EDT



Last CARC Meeting…..

Author:
Richard Heim
NCEI/NOAA

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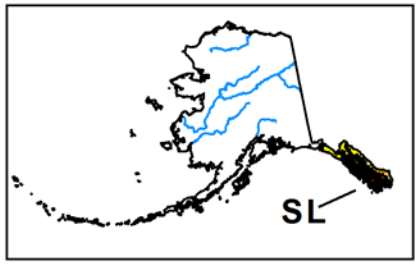

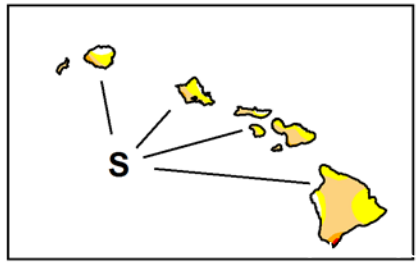

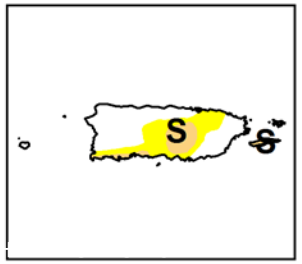

USDA NDMC

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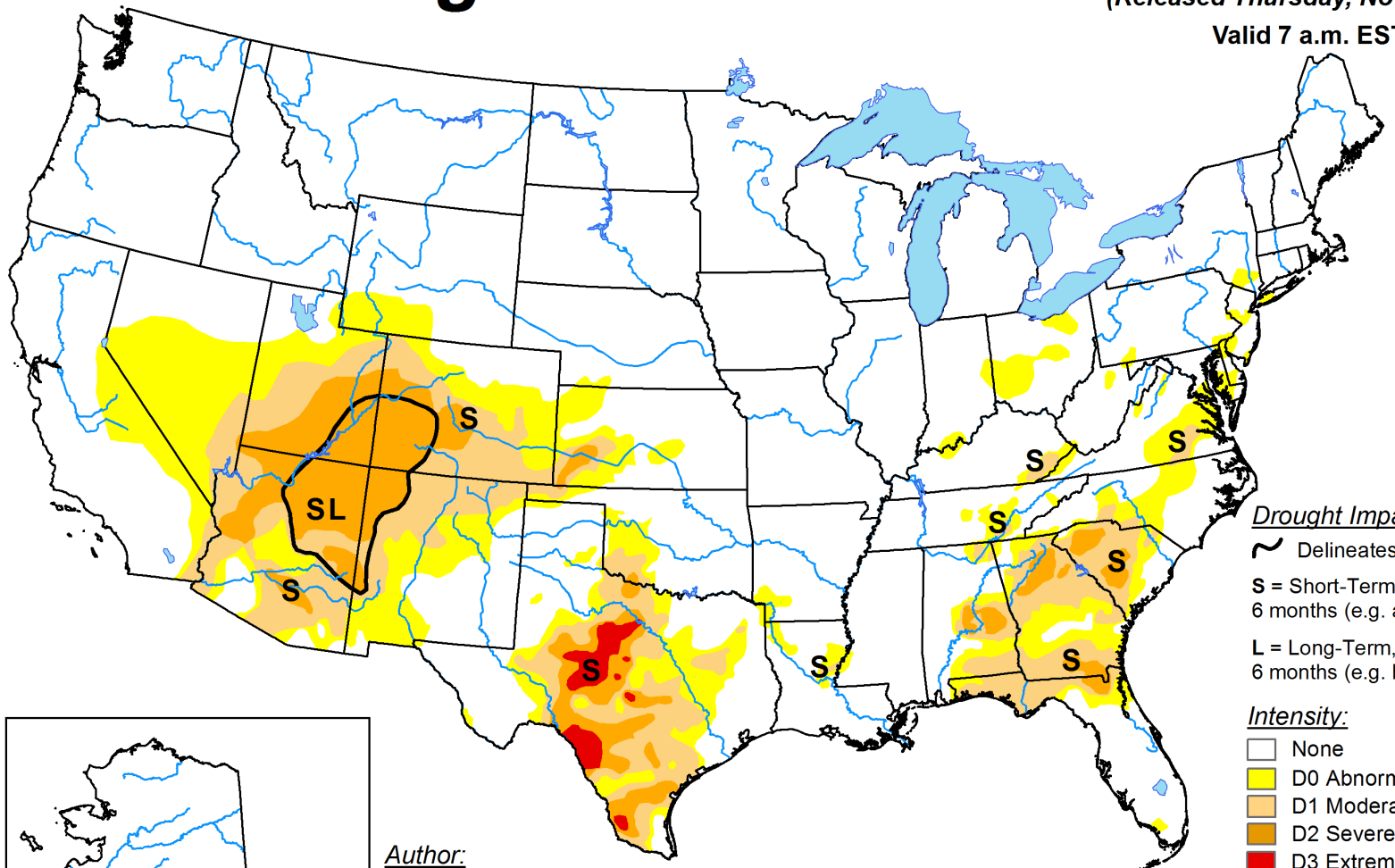
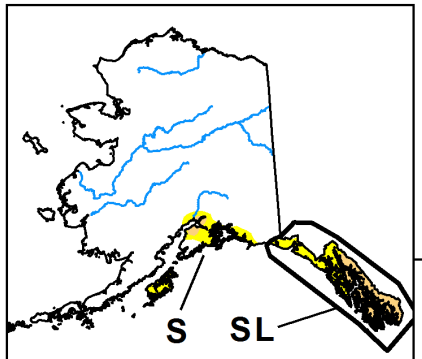
U.S. Drought Monitor

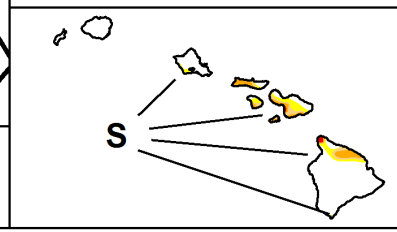
November 5, 2019

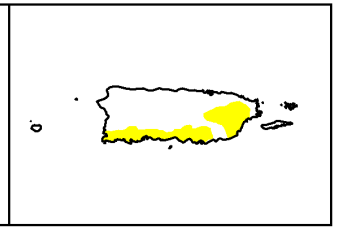
(Released Thursday, Nov. 7, 2019)

Valid 7 a.m. EST









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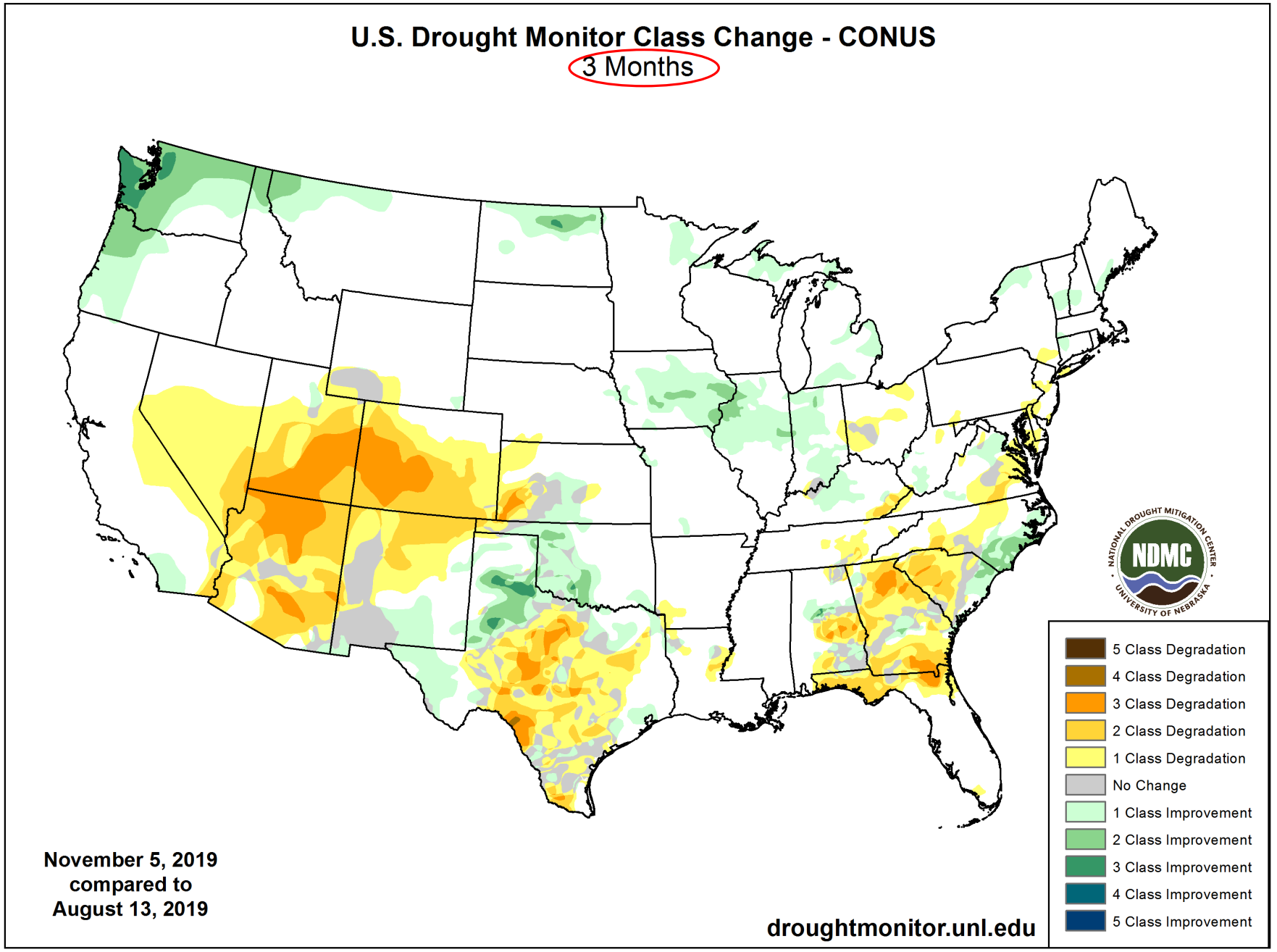
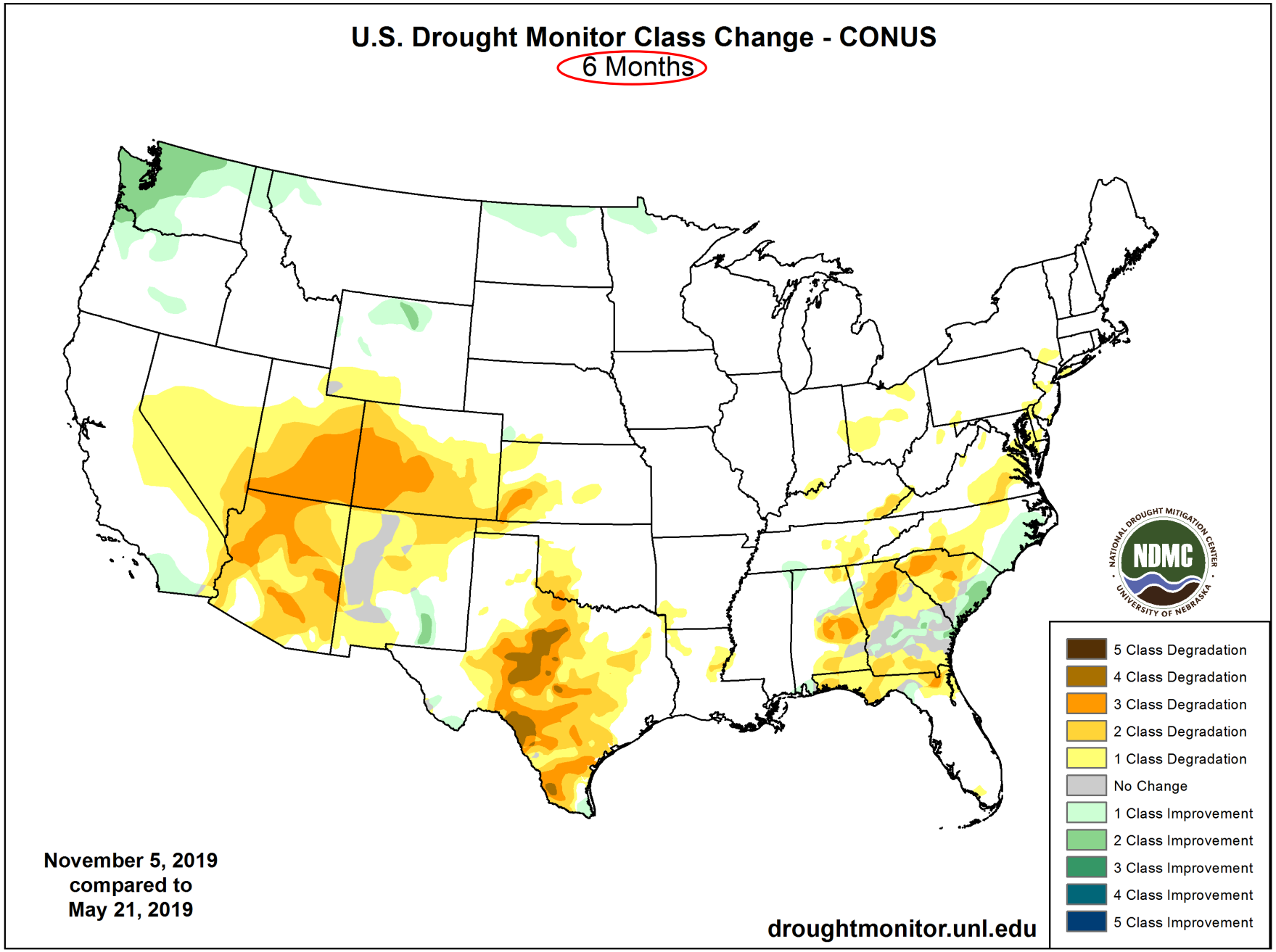
droughtmonitor.unl.edu


U.S. Drought Monitor Class Change - CONUS
3 Months
November 5, 2019
compared to
August 13, 2019
droughtmonitor.unl.edu
NATIONAL DROUGHT MITIGATION CENTER
NDMC
UNIVERSITY OF NEBRASKA
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 - CONUS
6 Months
November 5, 2019
compared to
May 21, 2019
droughtmonitor.unl.edu
NATIONAL DROUGHT MITIGATION CENTER
NDMC
UNIVERSITY OF NEBRASKA
5 Class Degradation
4 Class Degradation
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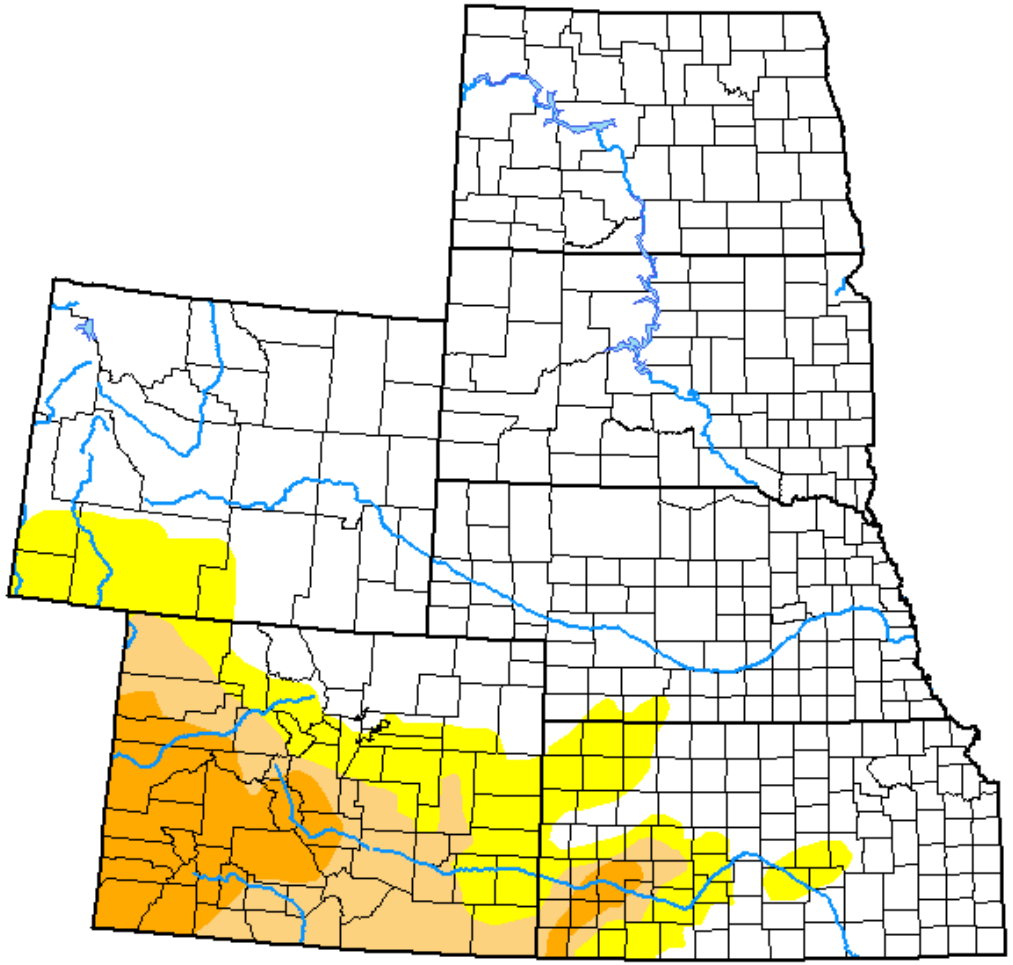
U.S. Drought Monitor

High Plains



November 5, 2019

(Released Thursday, Nov. 7, 2019)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	75.23	24.77	13.35	6.18	0.00	0.00
Last Week *10-29-2019*	75.23	24.77	13.35	6.18	0.00	0.00
3 Months Ago *08-06-2019*	88.28	11.72	0.40	0.00	0.00	0.00
Start of Calendar Year *01-01-2019*	70.74	29.26	18.27	11.85	5.54	2.29
Start of Water Year *10-01-2019*	78.65	21.35	6.42	0.00	0.00	0.00
One Year Ago *11-06-2018*	62.71	37.29	20.69	12.82	7.19	2.73

Intensity:

- None
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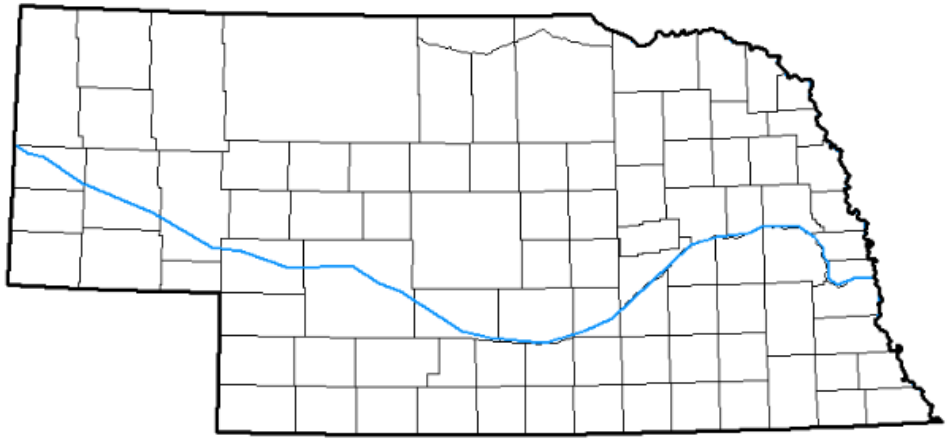
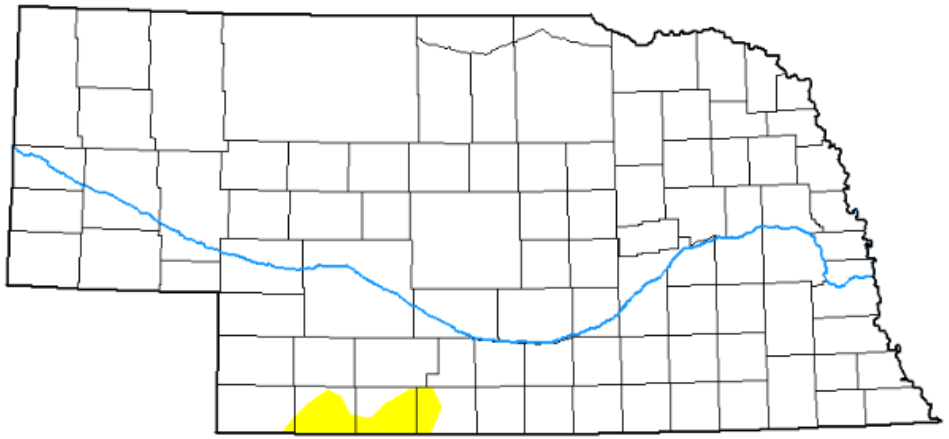


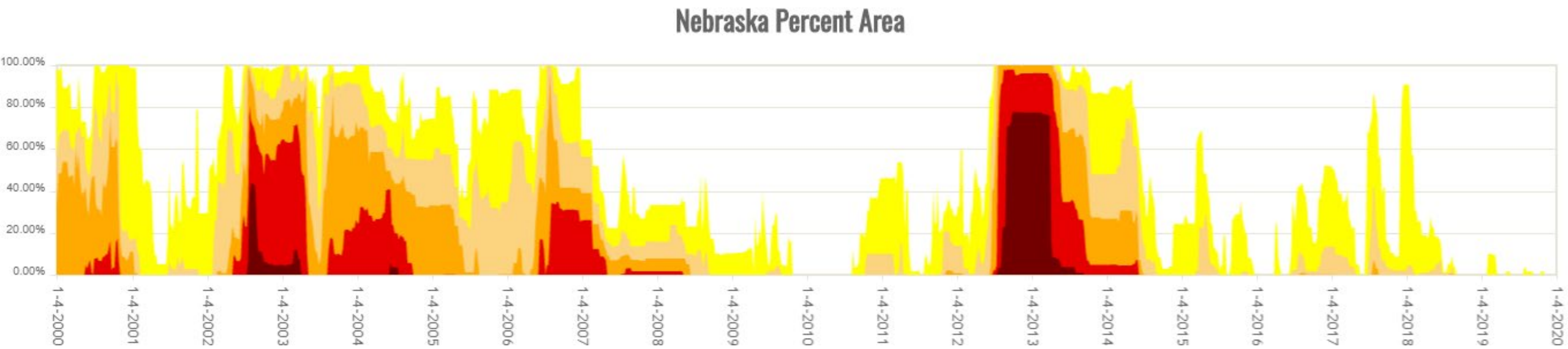


November 6, 2018

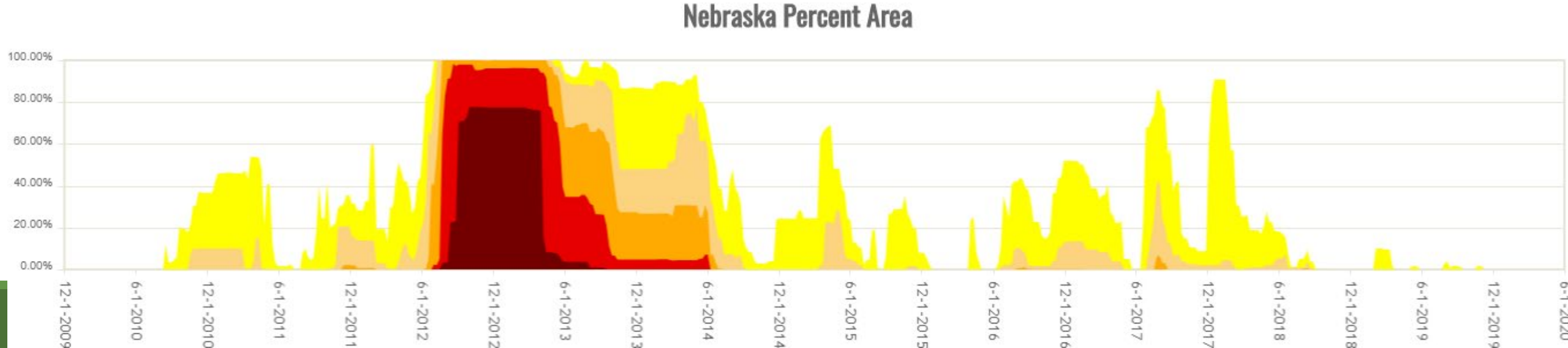
November 5, 2019

Statistics Comparison

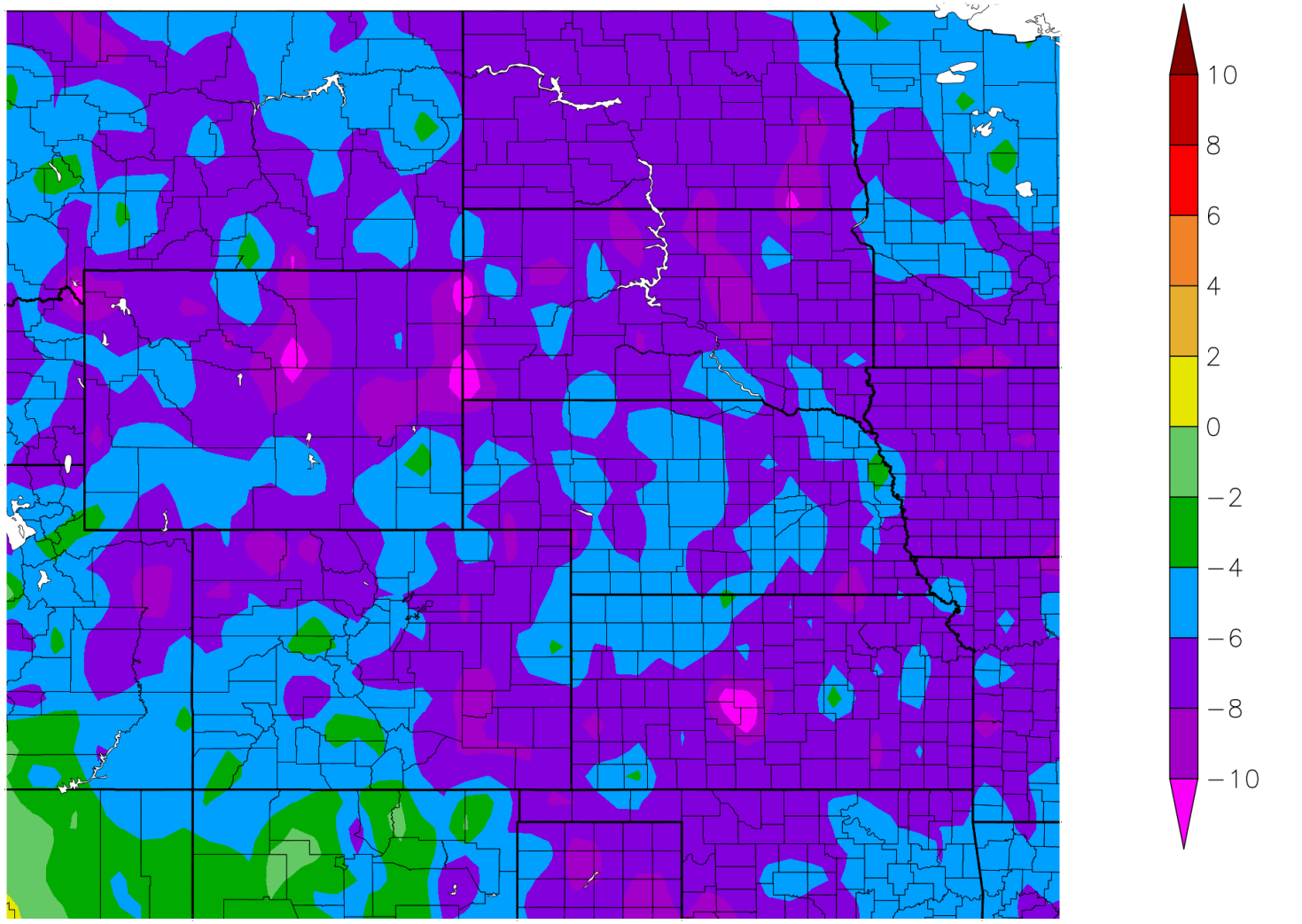
Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2018-11-06	100.00	0.00	0.00	0.00	0.00	0.00	0
2019-11-05	98.43	1.57	0.00	0.00	0.00	0.00	2
Change	-1.57	1.57	0.00	0.00	0.00	0.00	2



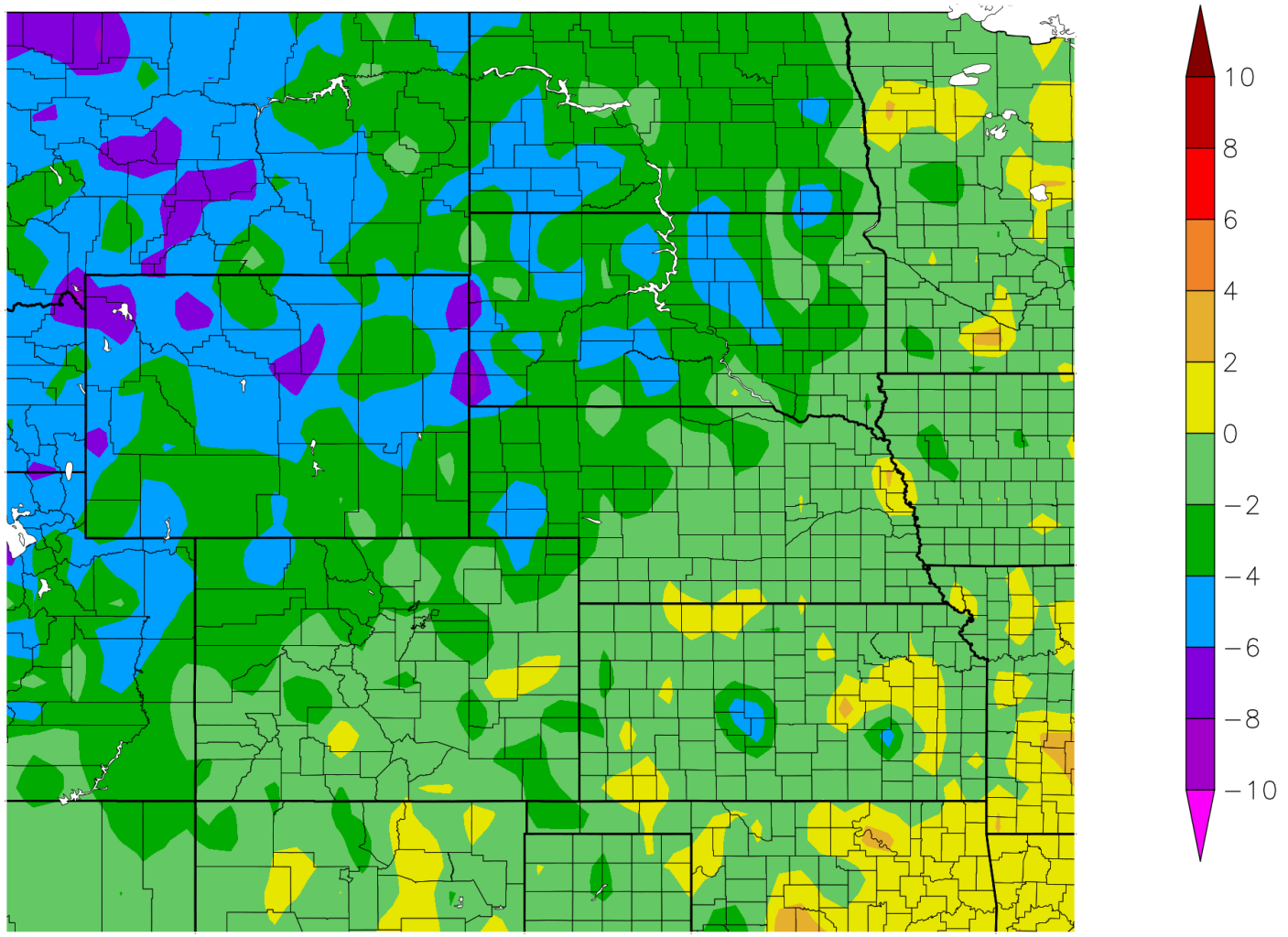
History is showing that Nebraska traditionally does not go this long between drought episodes, when is the next one ?



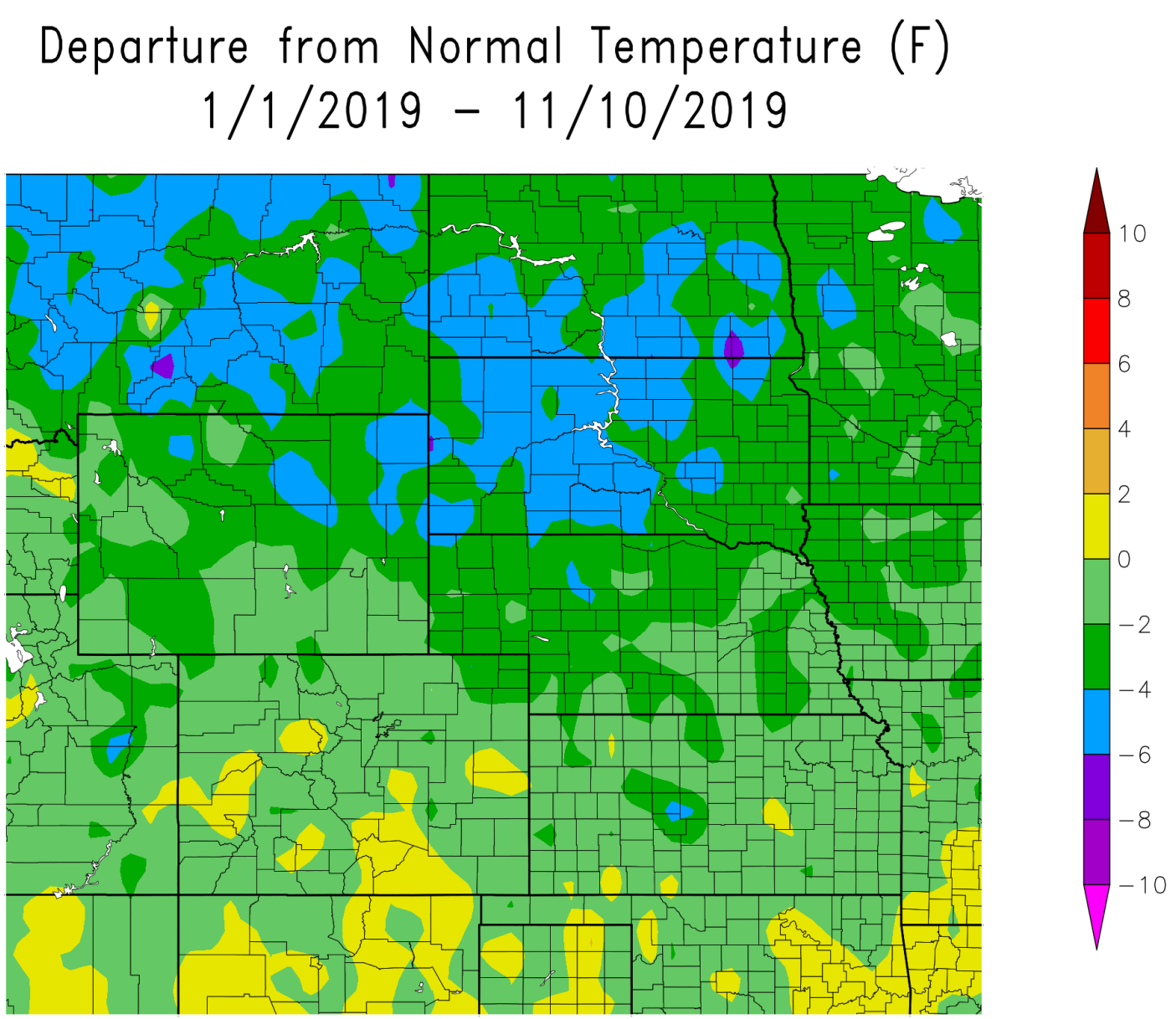
Departure from Normal Temperatures over the last 30 days



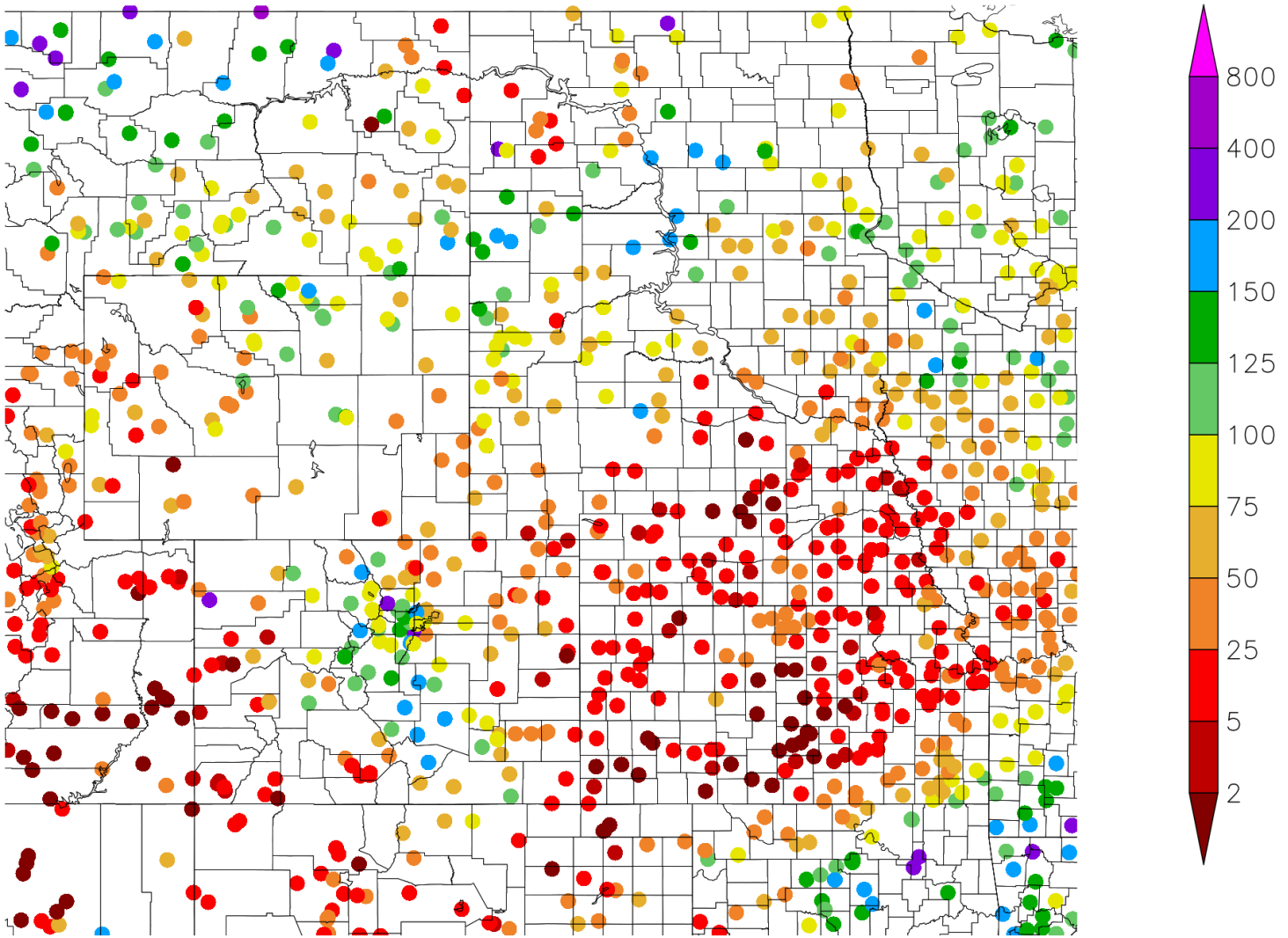
Departure from Normal Temperatures over the last 60 days



Departure from Normal Temperatures for the Calendar Year



Percent of Normal Precipitation over the last 30 days



Generated 11/11/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

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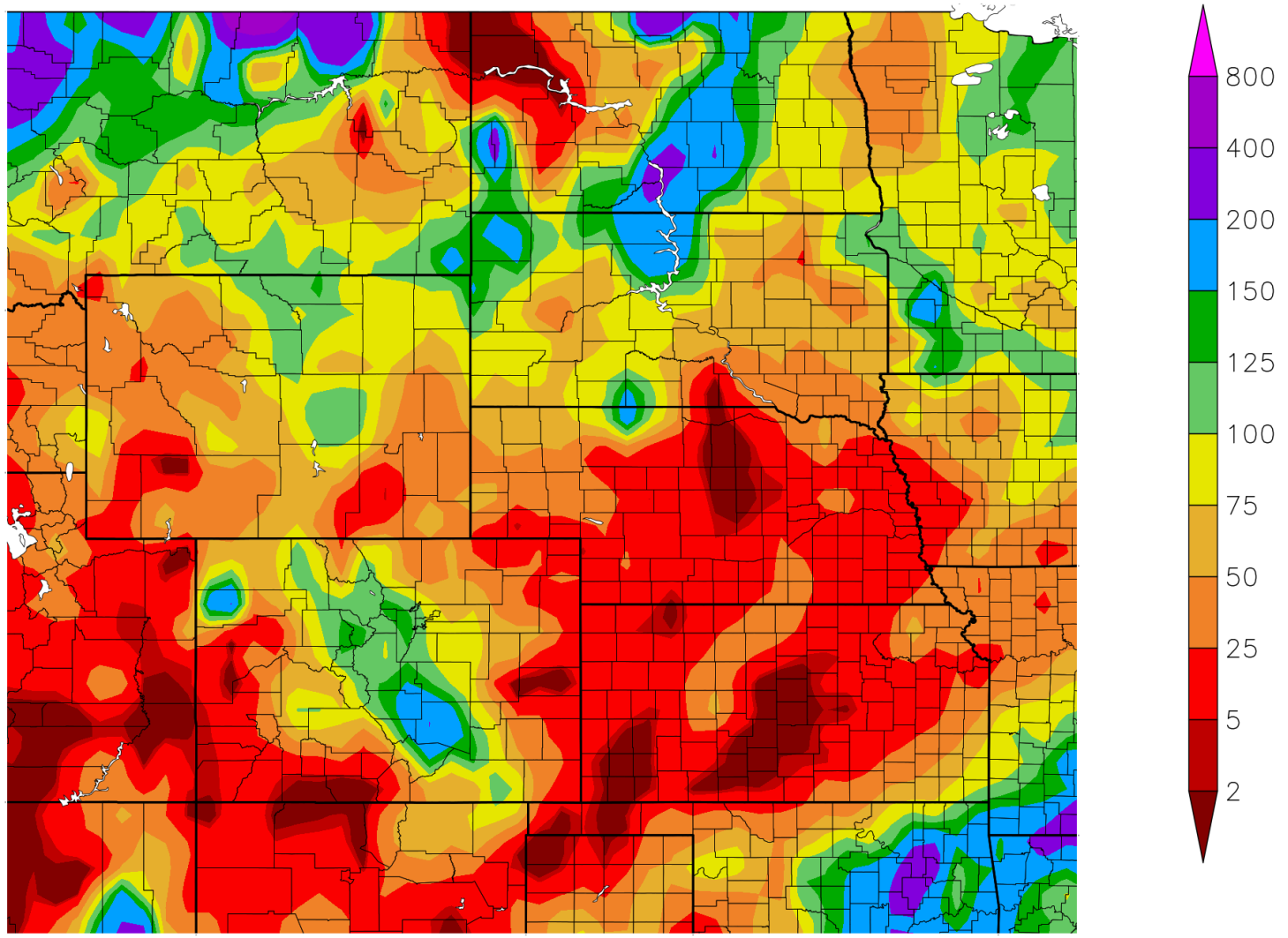

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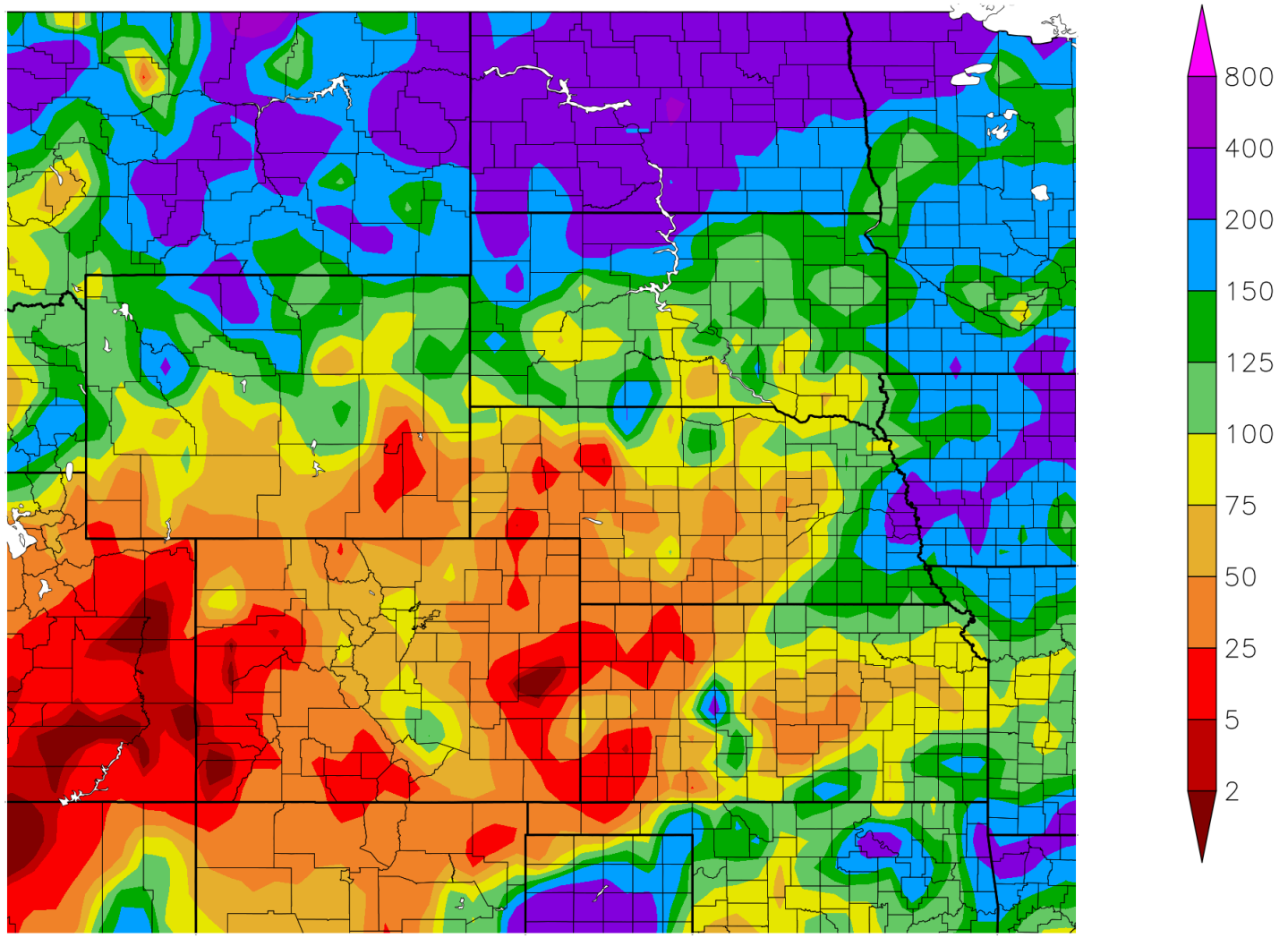

Generated 11/11/2019 at HPRCC using provisional data.

NATIONAL DROUGHT MITIGATION CENTER

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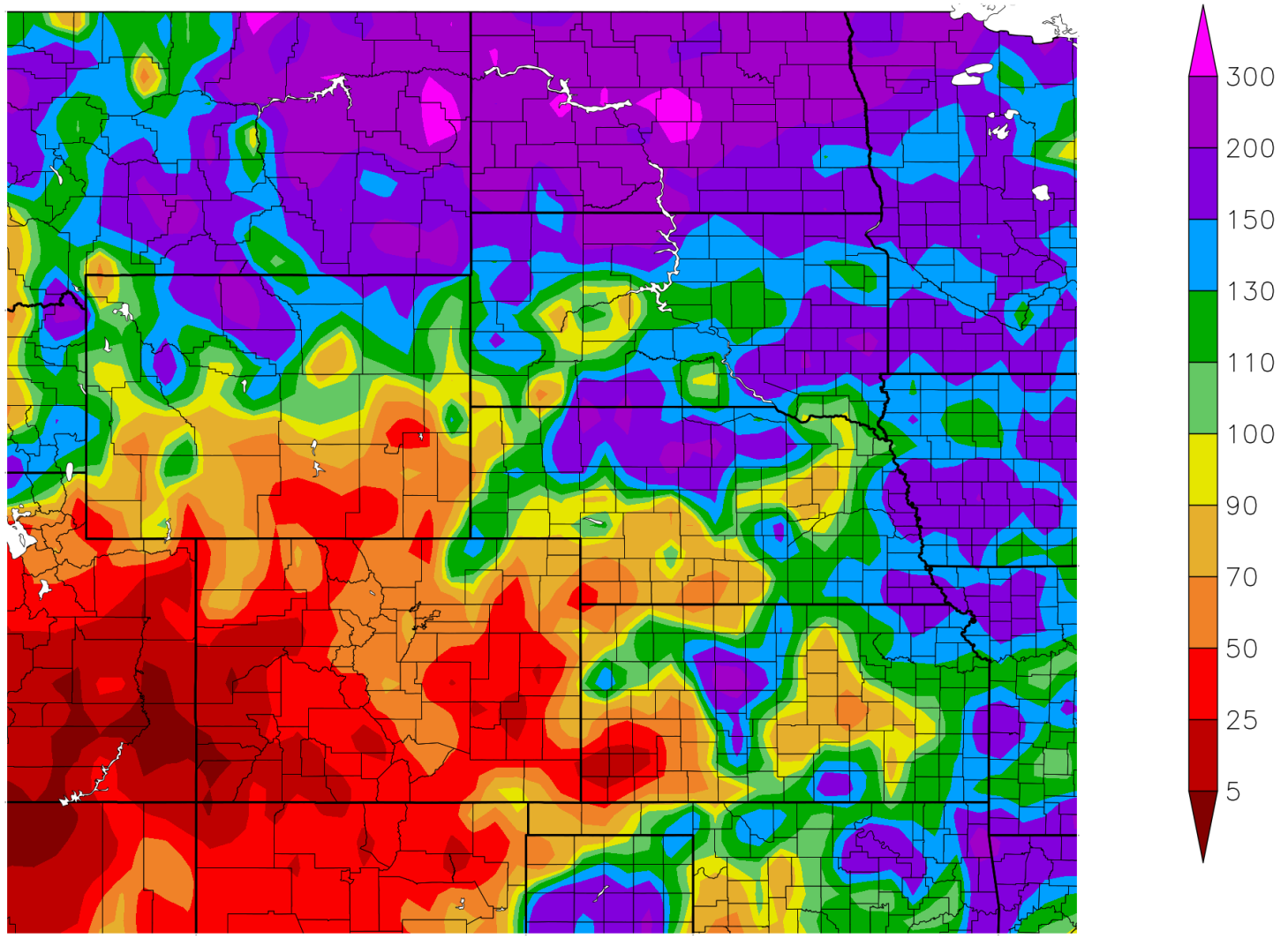
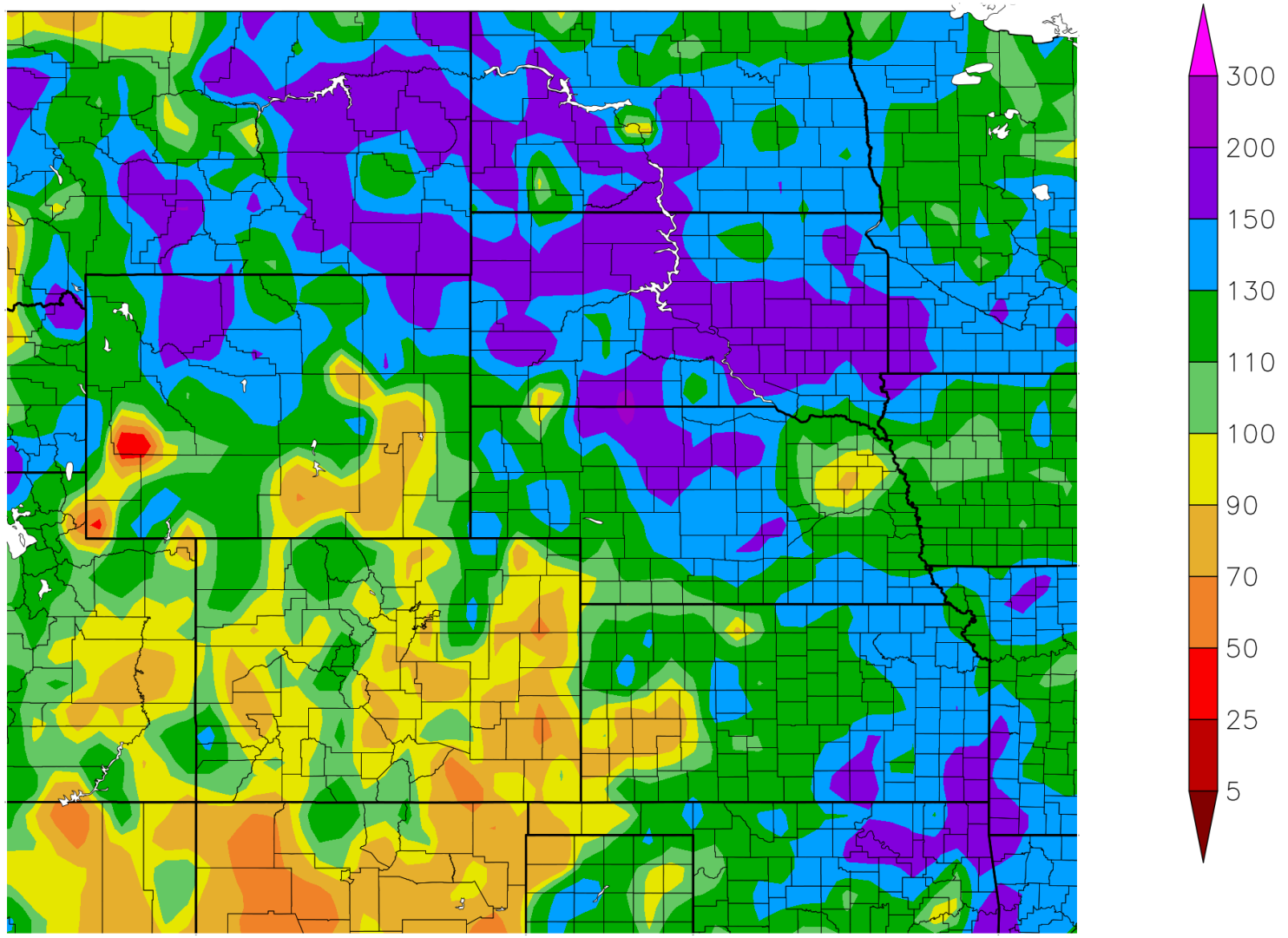
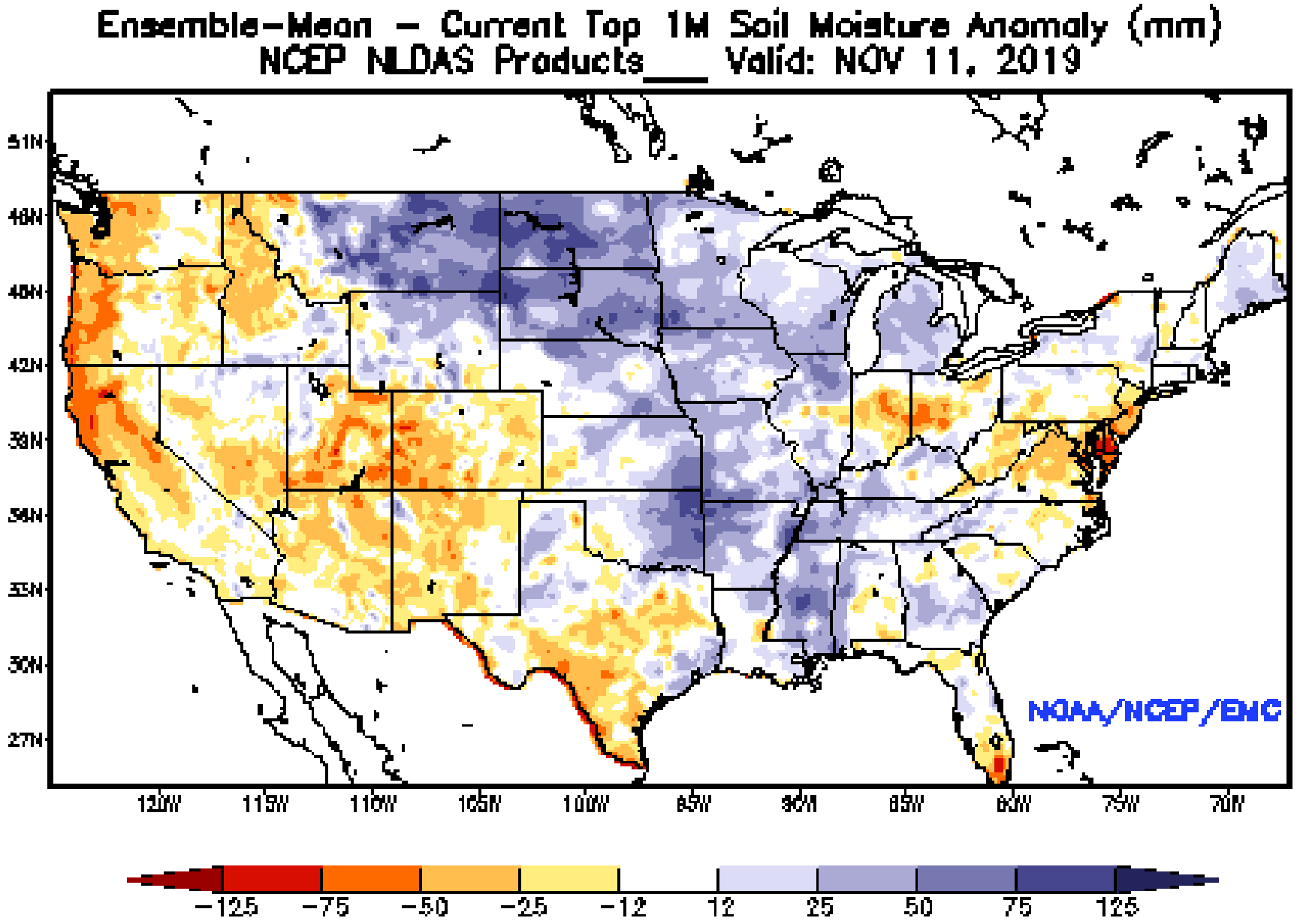
Percent of Normal Precipitation over the last 90 days



Percent of Normal Precipitation for the calendar year



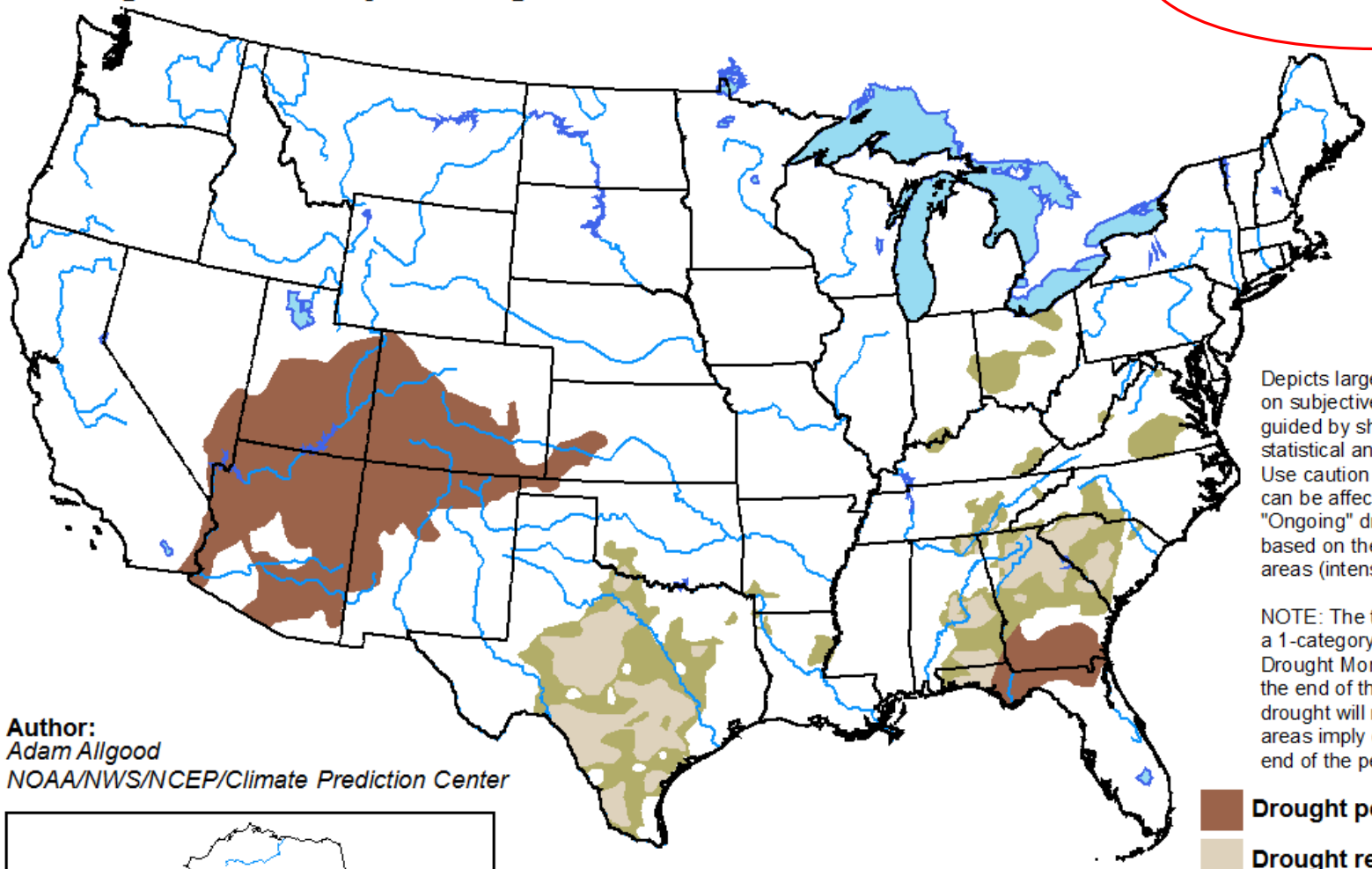
NLDAS Soil Moisture Model: Current Soil Moisture Anomaly



U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for November 2019
Released October 31, 2019



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).

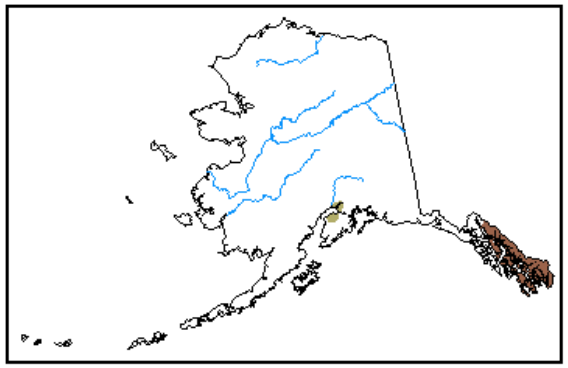
Drought persists

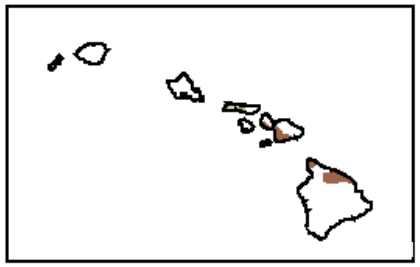
Drought remains but improves

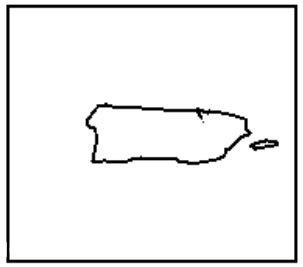
Drought removal likely

Drought development likely

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





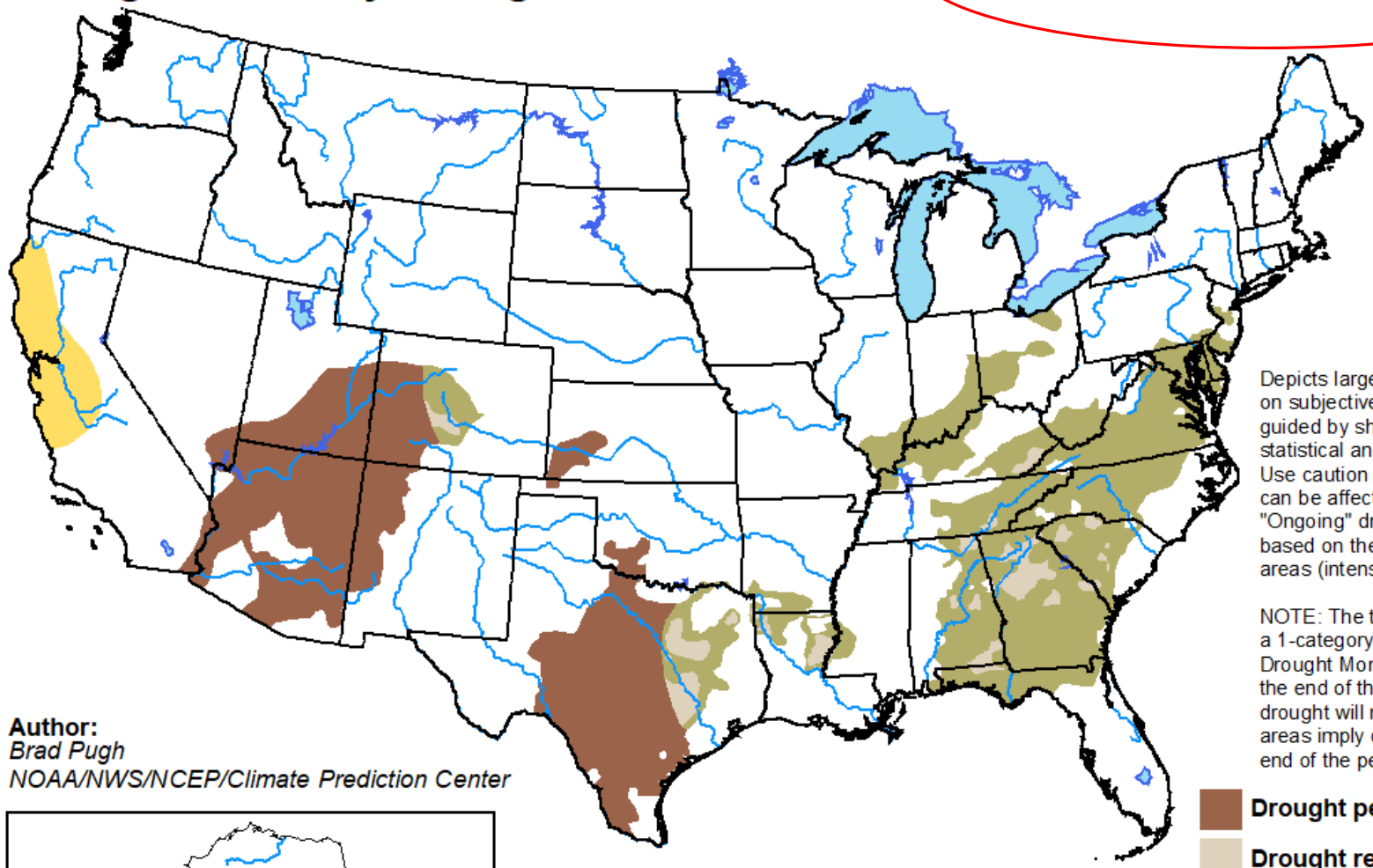


http://go.usa.gov/3eZGd

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 17, 2019 - January 31, 2020
Released October 17, 2019



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

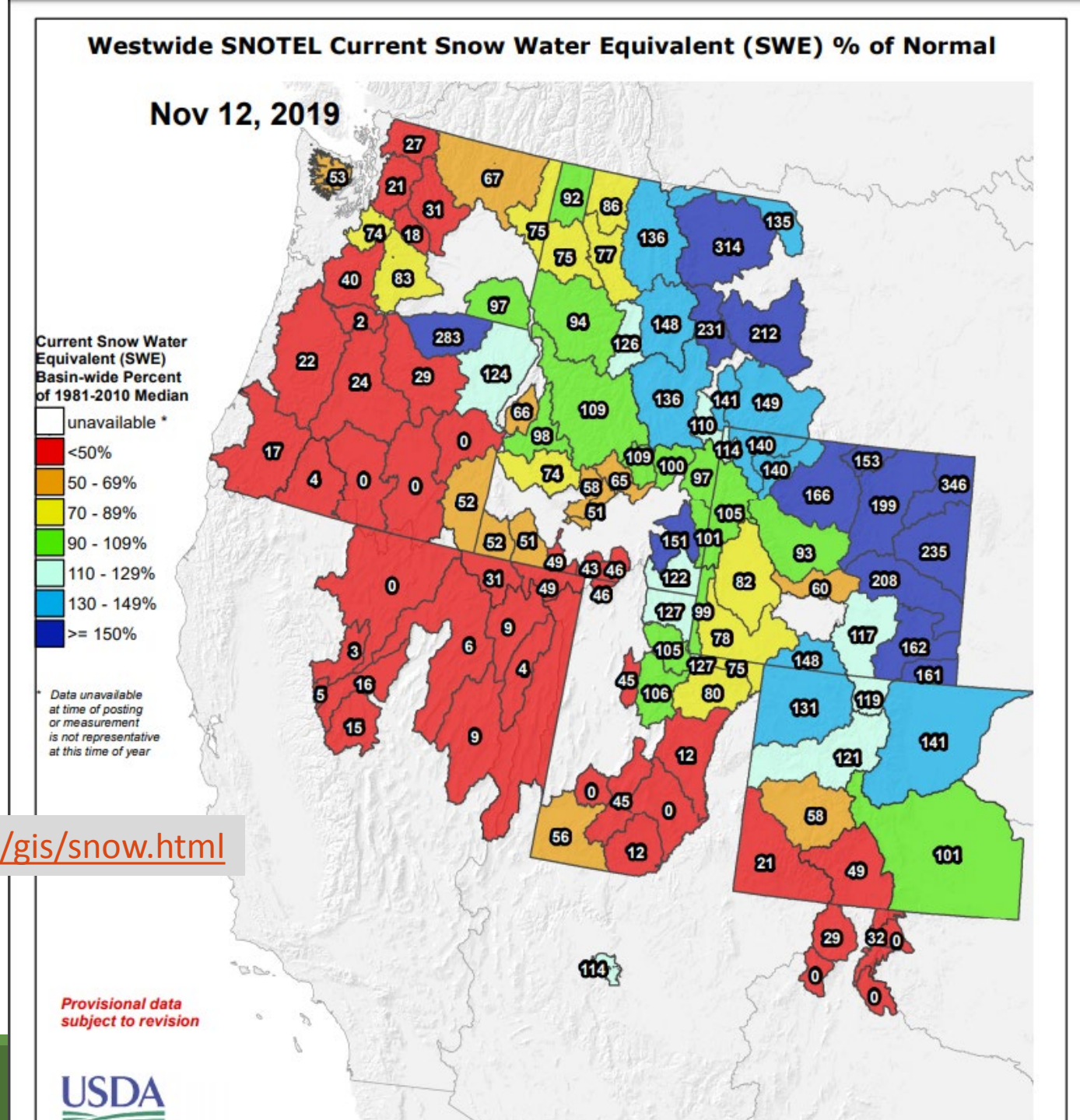
Author:
Brad Pugh
NOAA/NWS/NCEP/Climate Prediction Center

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

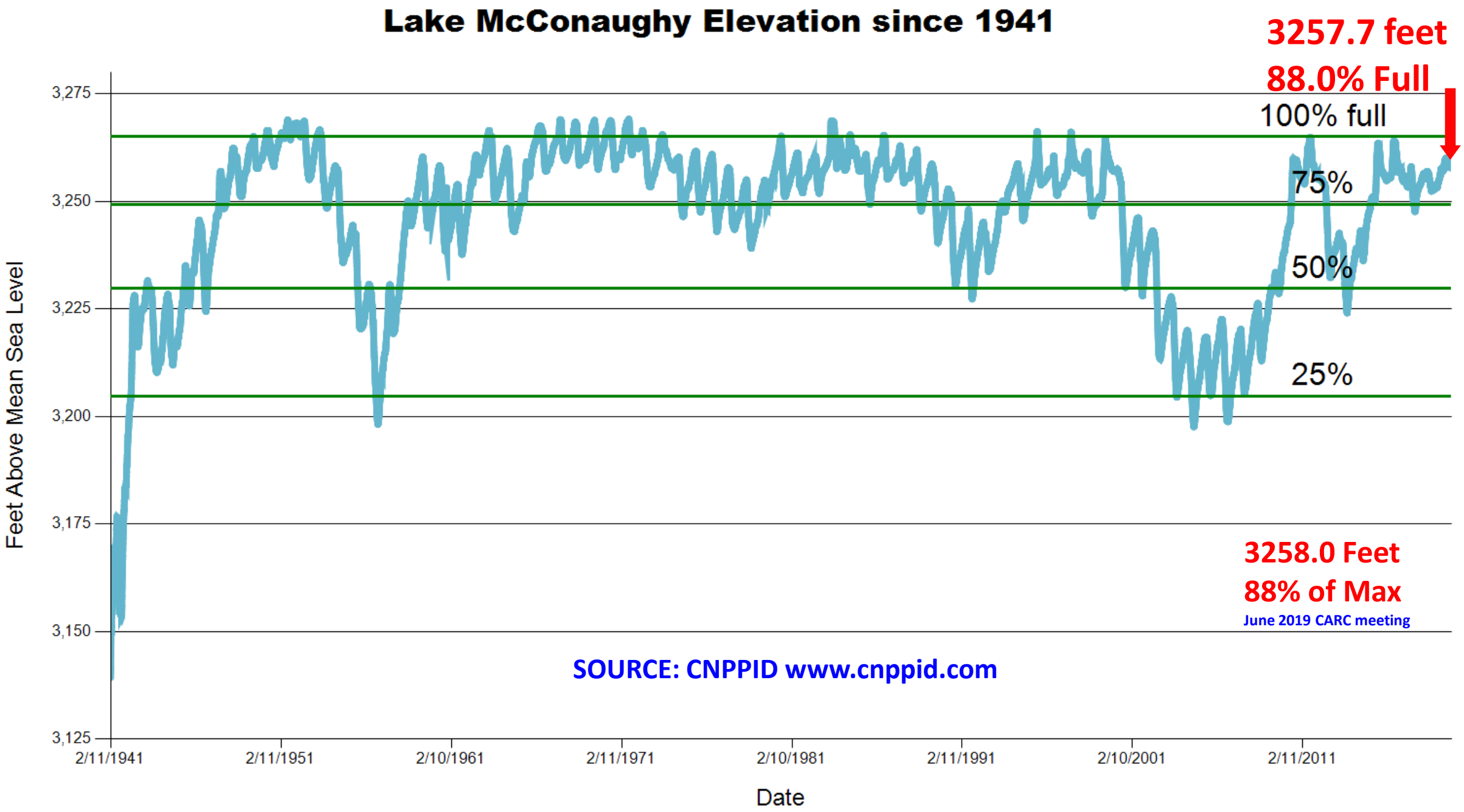
Climate/Drought Summary

- Cooler than normal conditions have dominated the state and region recently with regional temperatures averaging about 2-4 degrees F below normal the last 60 days and 4-6 degrees F below normal further to the north into the Dakotas.
- Almost the entire state of Nebraska has recorded above normal precipitation for this year so far with areas of northcentral Nebraska great than 12 inches above normal.
- Nebraska is drought free and has been since early September 2018 and there has been some abnormal dryness being depicted since late October in the southwest. The last time Nebraska had 10% or more of the state in drought was August 2017. The last time that Nebraska had over 10% of the state in severe drought (D2) was June 2014.
- The seasonal drought outlooks do not show drought conditions developing in Nebraska through the end of January 2020.

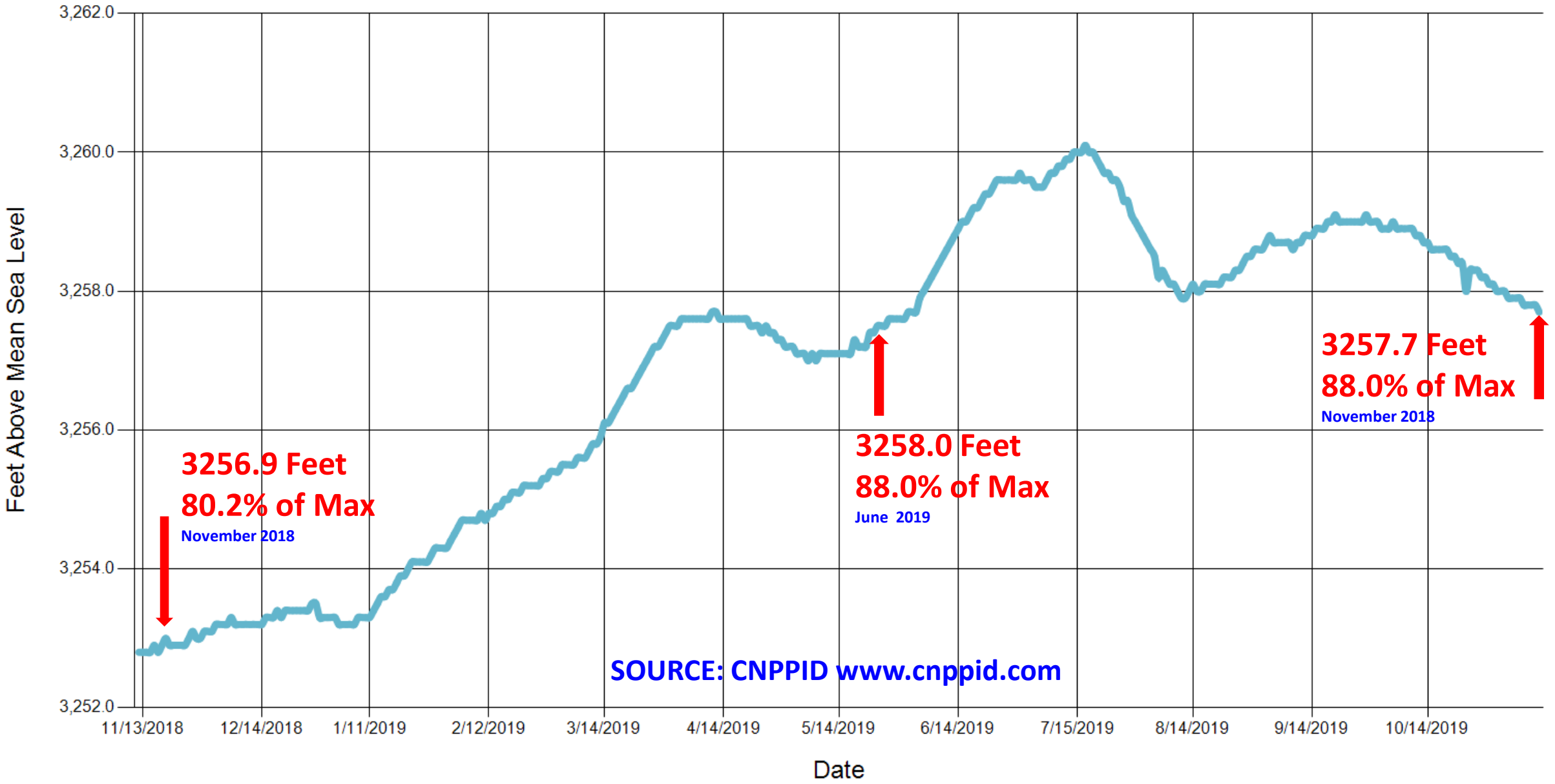
Nebraska Water Supply Update…



https://www.wcc.nrcs.usda.gov/gis/snow.html


Lake McConaughy Elevation since 1941
3257.7 feet
88.0% Full
100% full
75%
50%
25%
3,275
3,250
3,225
3,200
3,175
3,150
3,125
Feet Above Mean Sea Level
2/11/1941
2/11/1951
2/10/1961
2/11/1971
2/10/1981
2/11/1991
2/10/2001
2/11/2011
Date
3258.0 Feet
88% of Max
June 2019 CARC meeting
SOURCE: CNPPID www.cnppid.com

Lake McConaughy Elevation (One Year)



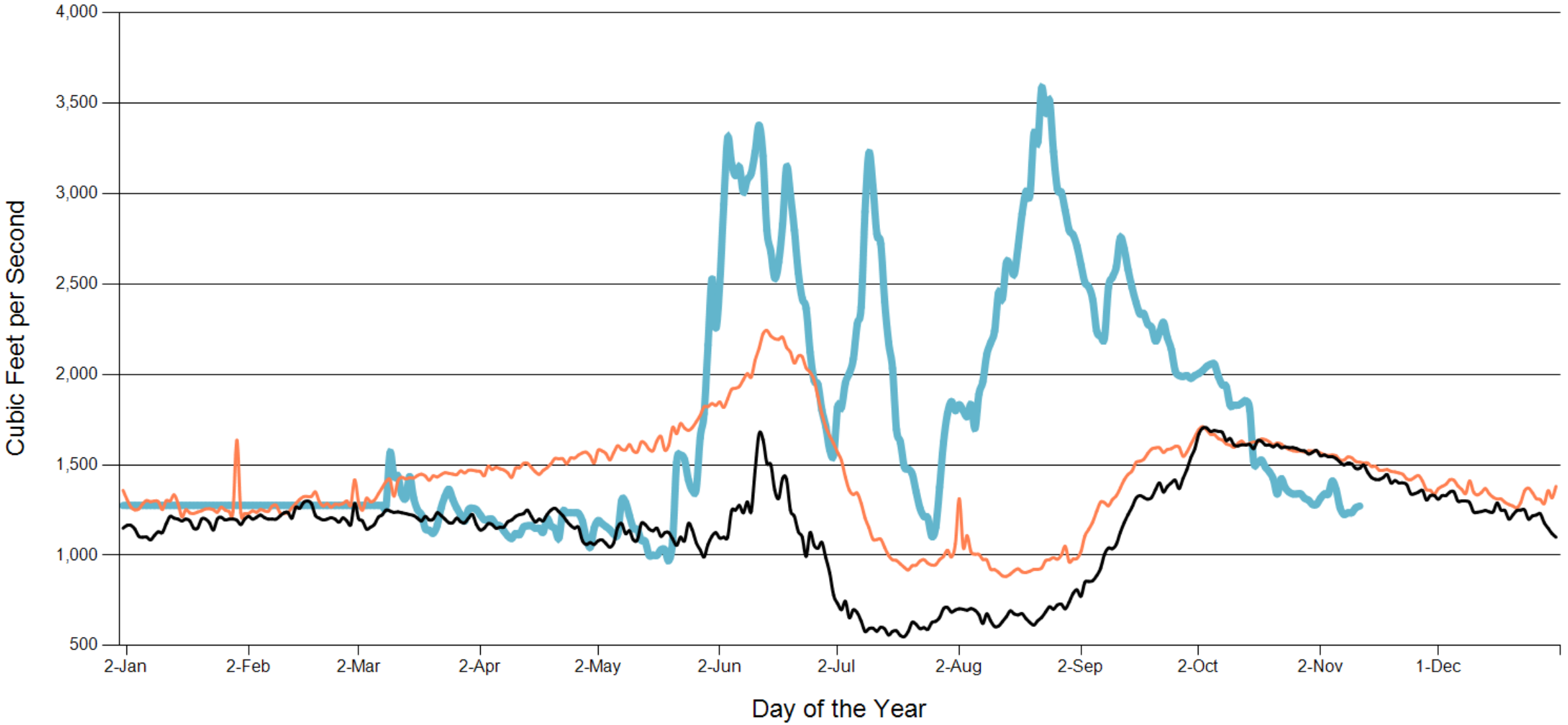
November 2019 CARC Meeting

River & Canal Flows

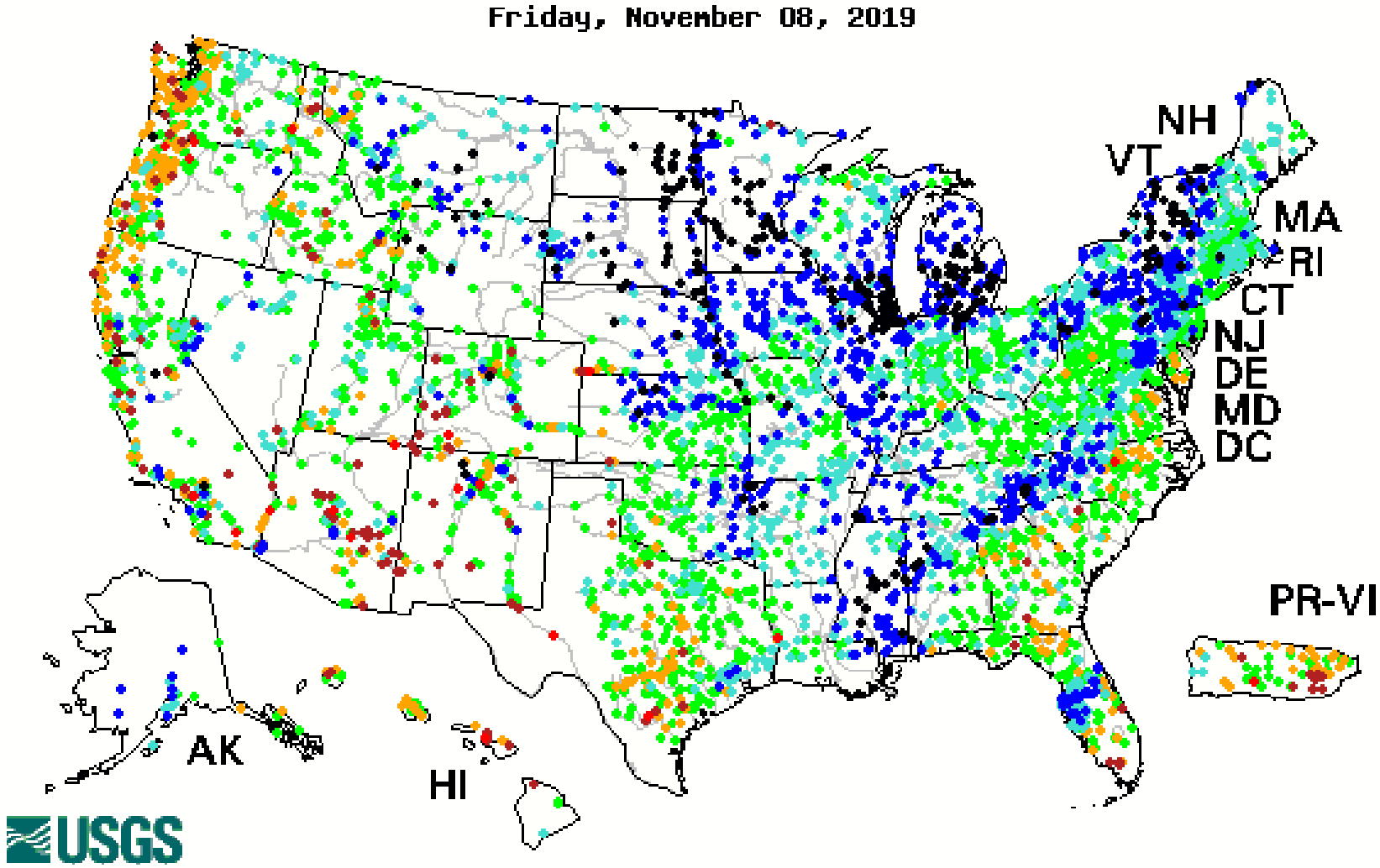
Station	Today (Cubic Feet per Second)	1 Week Ago	1 Month Ago	1 Year Ago
Inflows to McConaughy	1,272	1,316	1,758	1,083
Total Outflows from McConaughy	1,684	1,751	2,170	998
North Platte at Keystone	179	237	725	51
Keystone Diversion	1,505	1,514	1,445	947
North Platte at North Platte	488	569	707	519
South Platte at Roscoe	303	192	212	55.5
South Platte at North Platte	327	274	320	178
Supply Canal Diversion	2,021	2,139	1,989	1,639
Platte at Overton	1,993	2,346	2,190	2,058
Platte at Kearney	2590	2670	2140	2000
Platte at Grand Island	2340	2650	2730	1850

SOURCE: CNPPID www.cnppid.com

Lake McConaughy Inflows

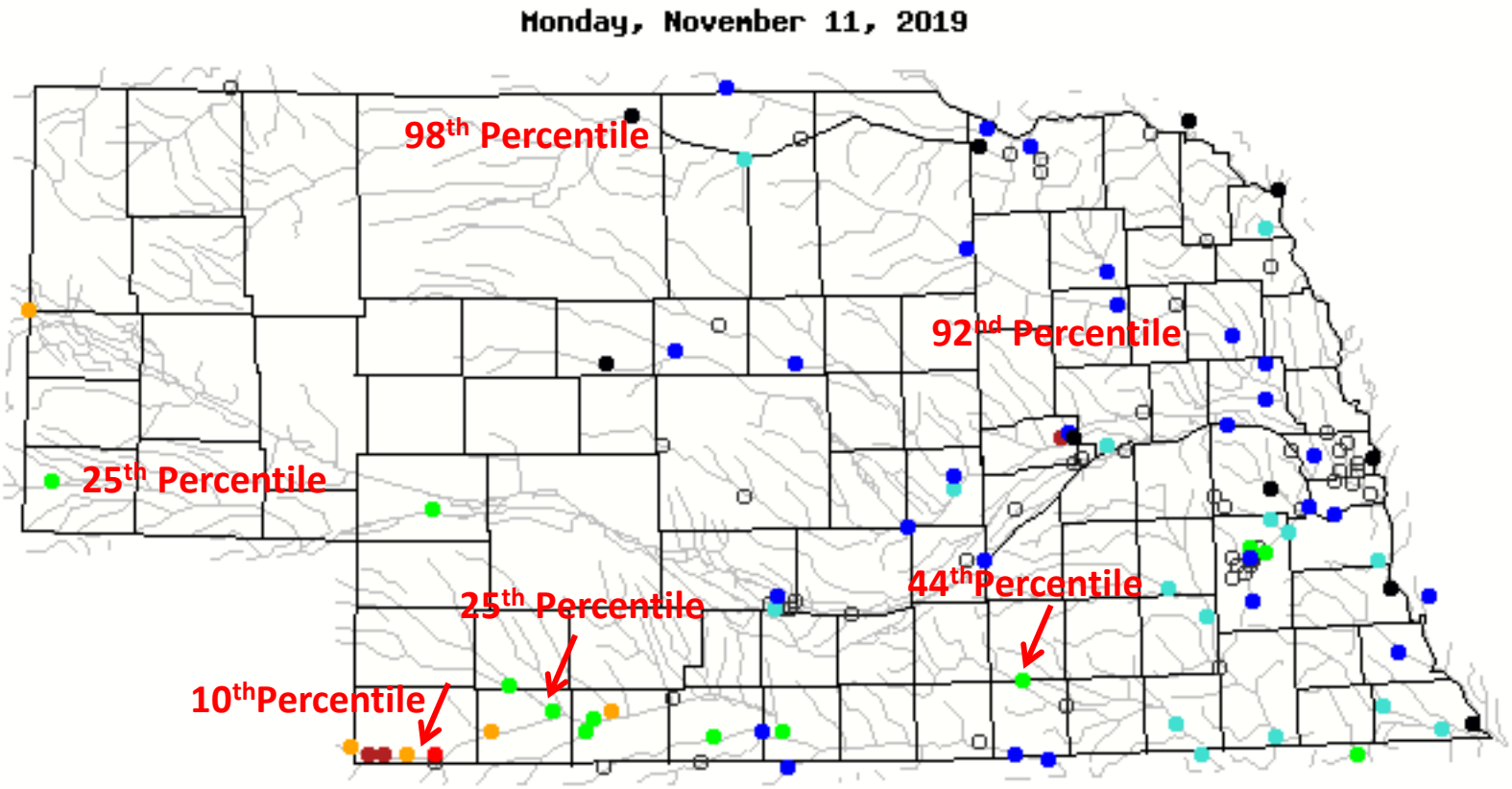


14-day average streamflow compared to historical streamflow for the day of year



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



USGS

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	Much below normal	Below normal	Normal	Above normal	Much above normal		

Republican River Basin

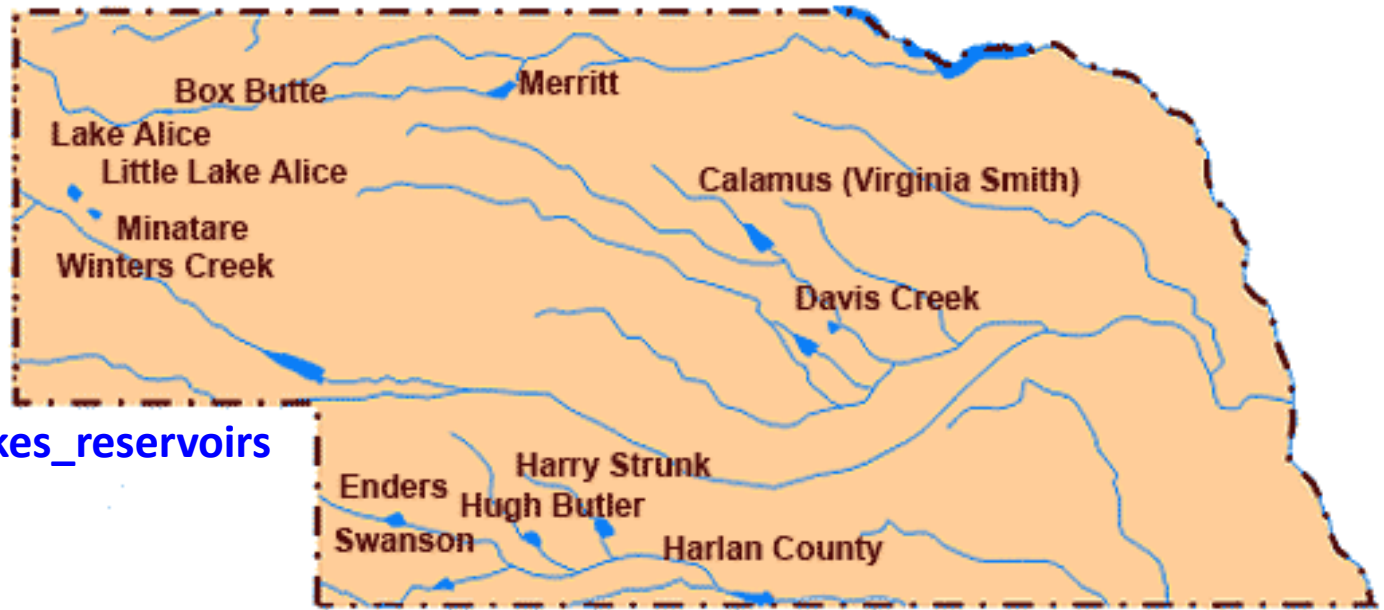
Hugh Butler: 59.8%(63.5%) of conservation pool

Enders: 22.1% (24.2%) of conservation pool

Harry Strunk: 93.8%(100%) of conservation pool

Swanson: 51.9% (70.0%) of conservation pool

*values in red are from the last CARC meeting in June 2019.



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 November 2018.

✓Conservation Pool is 100.00% full (100.00%)

✓405,099 Acre-Feet in storage compared to 388,347 Acre-Feet (AF) of water in storage during June 2019

✓Last year at this time, 234,467 AF was in storage (November 2018)

✓Historical average storage for this time of the year is 208,409 AF

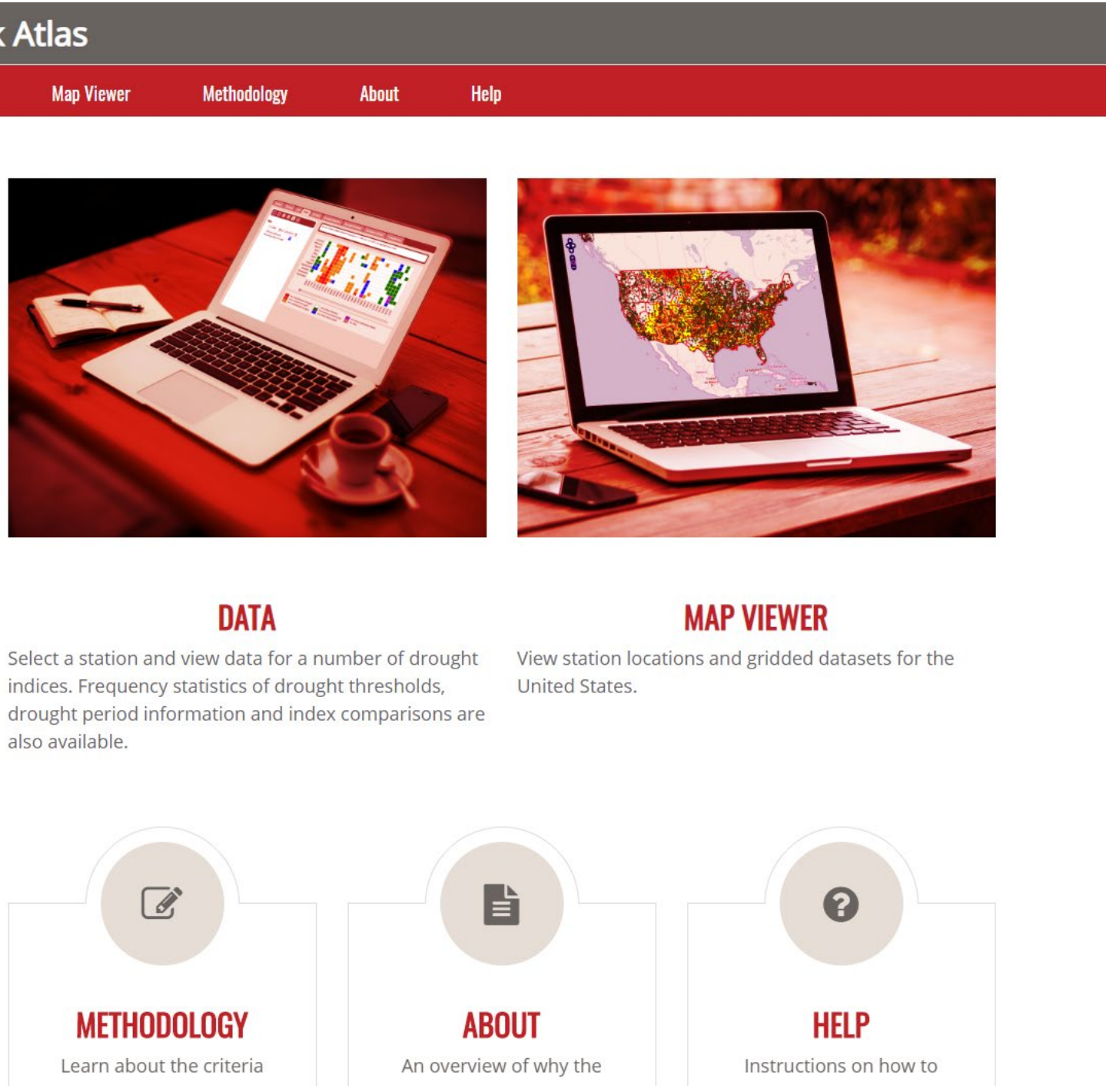
Source: BOR http://www.usbr.gov/gp/lakes_reservoirs/

Water Supply Summary

- Early snow accumulations are taking place after a very wet 2018-2019 water year.
- Lake McConaughy is currently 88.0 percent of capacity which is the same compared to levels in June 2019(last CARC meeting).
- The Republican River basin reservoirs are slightly lower than in June 2019 as water levels stabilized and water is being shifted for the winter.
- Harlan County Reservoir is holding about 16,752 acre-feet more water now than in June 2019.
- Harlan County is holding about 170,632 acre-feet more water now than at this time last year and is about 196,690 acre-feet above average for this time of year (almost double).
- All reservoir levels and storage should hold steady until or even increase through the winter depending on snow accumulation in the Rocky Mountains.

The NDMC has updated the Drought Risk Atlas with data through 2017 and added hydrology stations

https://droughtatlas.unl.edu/



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