NE Drought Conditions CARC Update: June 28, 2016

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

Current Conditions around Nebraska and the region…

NIDIS

University of Nebraska Lincoln

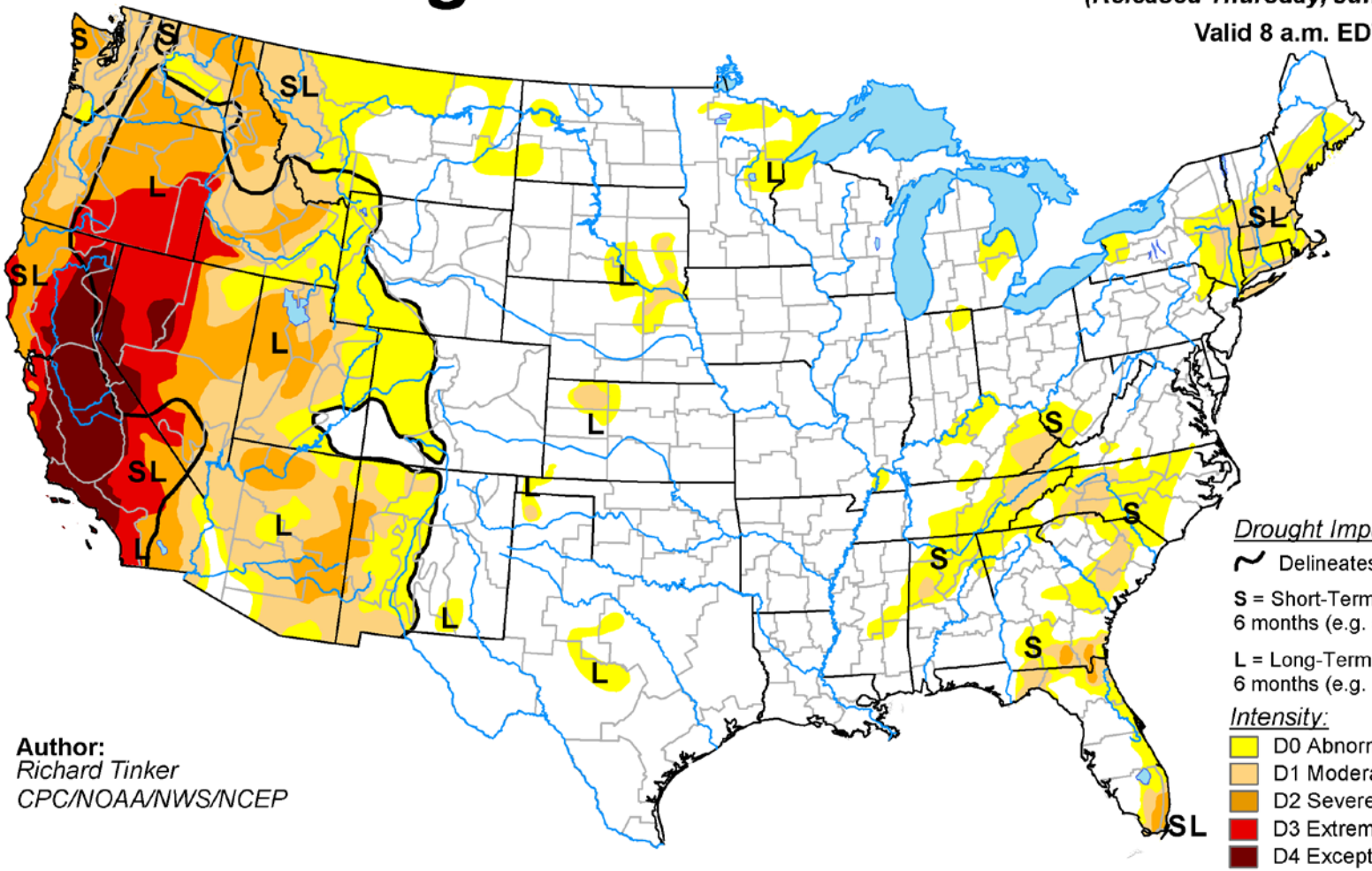
National Drought Mitigation Center

U.S. Drought Monitor

June 23, 2015

(Released Thursday, Jun. 25, 2015)

Valid 8 a.m. EDT



Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

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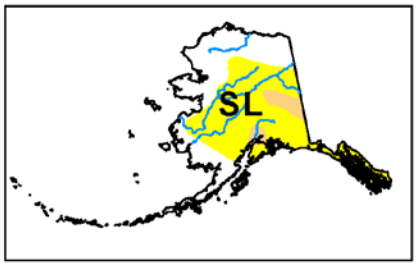
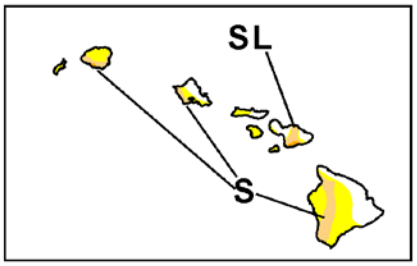
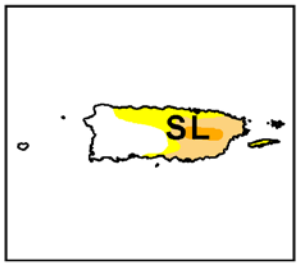
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.







USDA

National Drought Mitigation Center

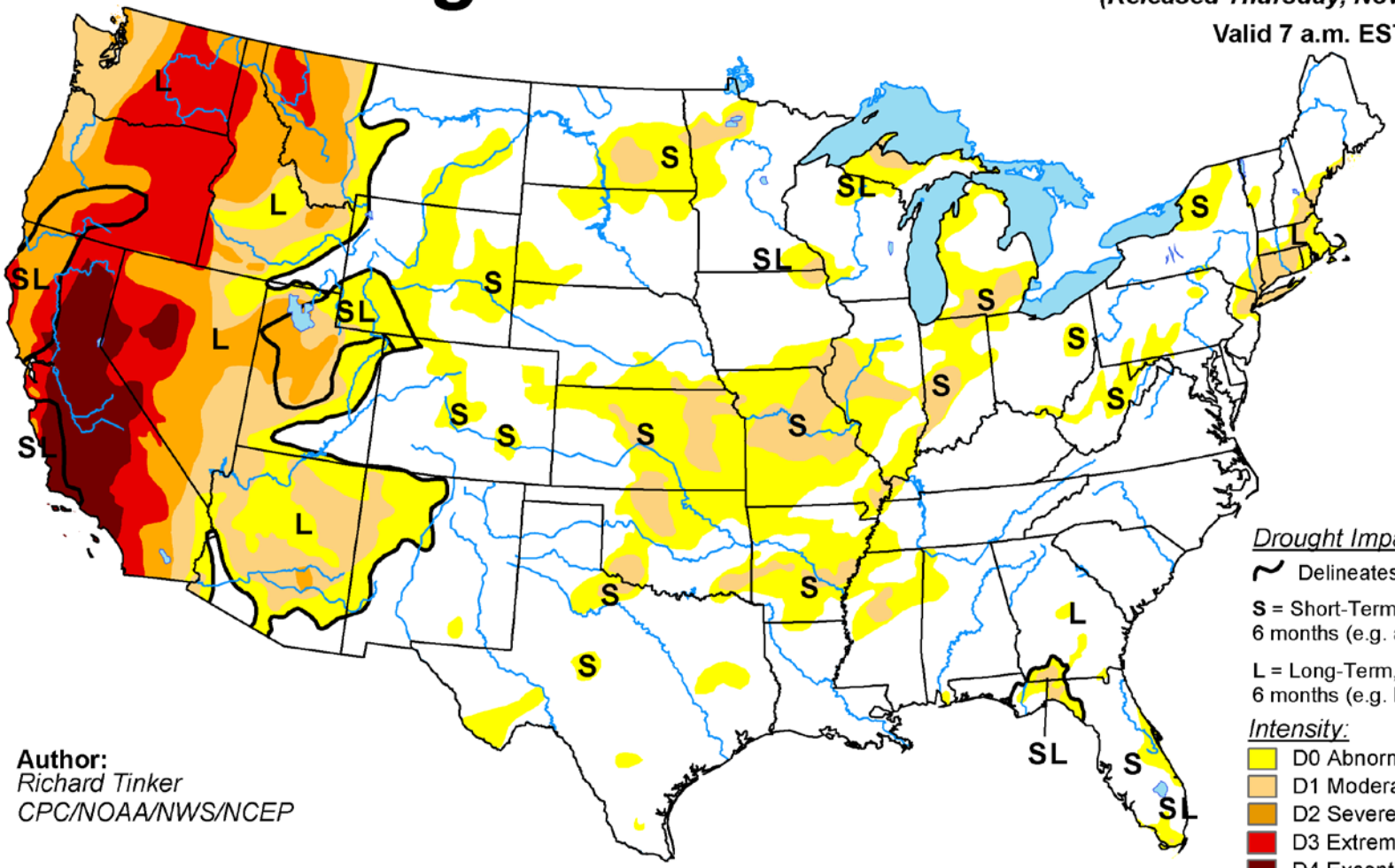
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

November 10, 2015

(Released Thursday, Nov. 12, 2015)

Valid 7 a.m. EST



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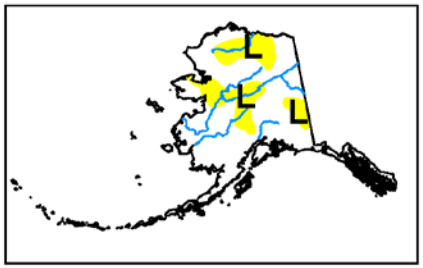
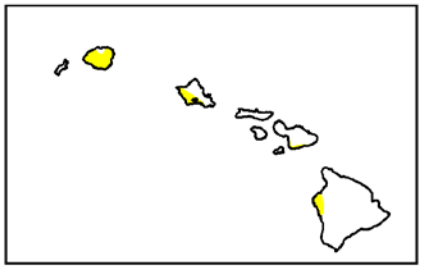
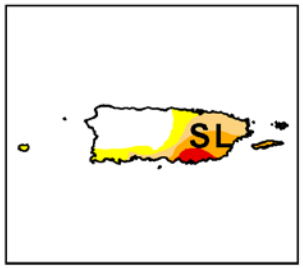






USDA National Drought Mitigation Center

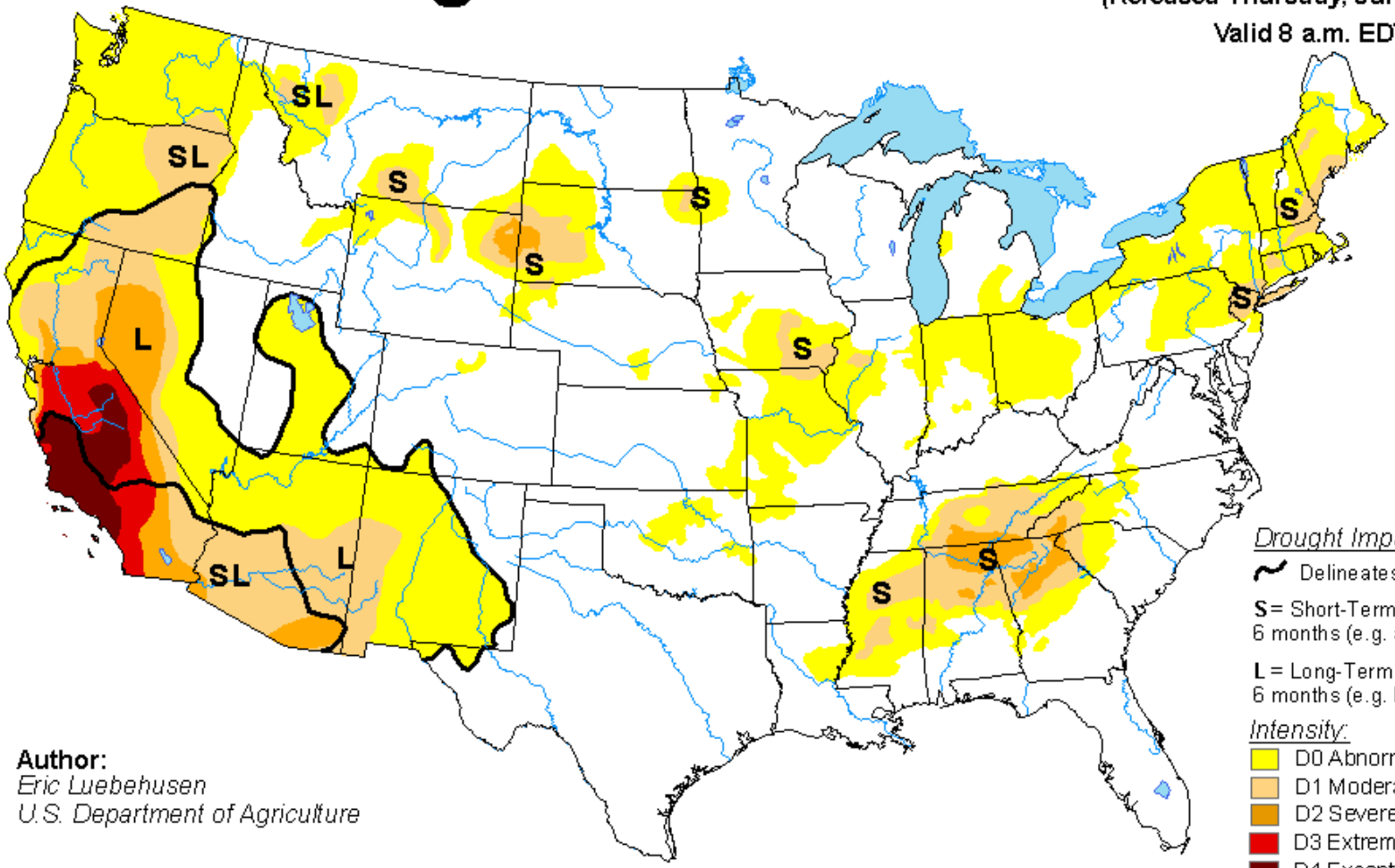
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

June 21, 2016

(Released Thursday, Jun. 23, 2016)

Valid 8 a.m. EDT



Author:
Eric Luebehusen
U.S. Department of Agriculture

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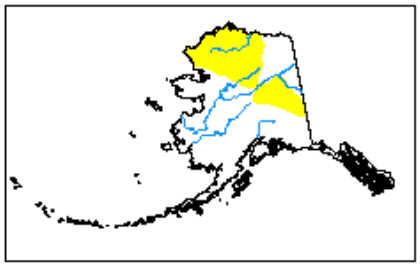

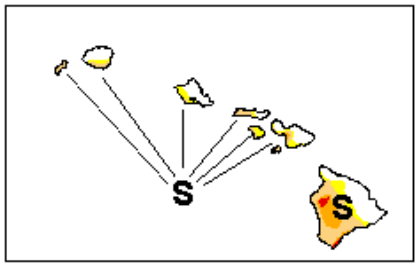

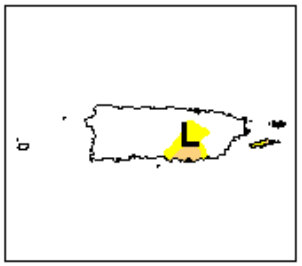

USDA

National Drought Mitigation Center

NOAA

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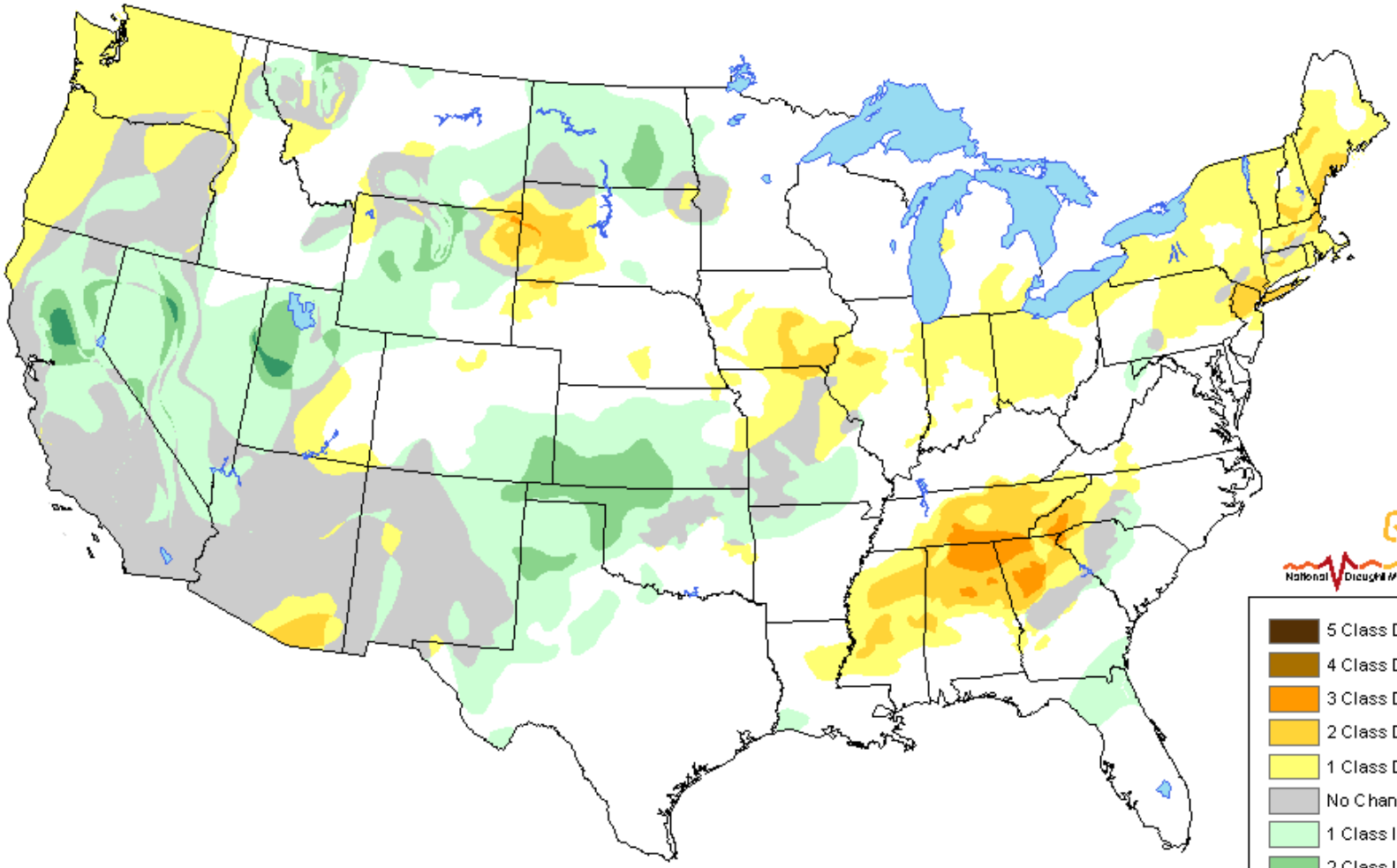
U.S. Drought Monitor Class Change

3 Months



National Drought Mitigation Center

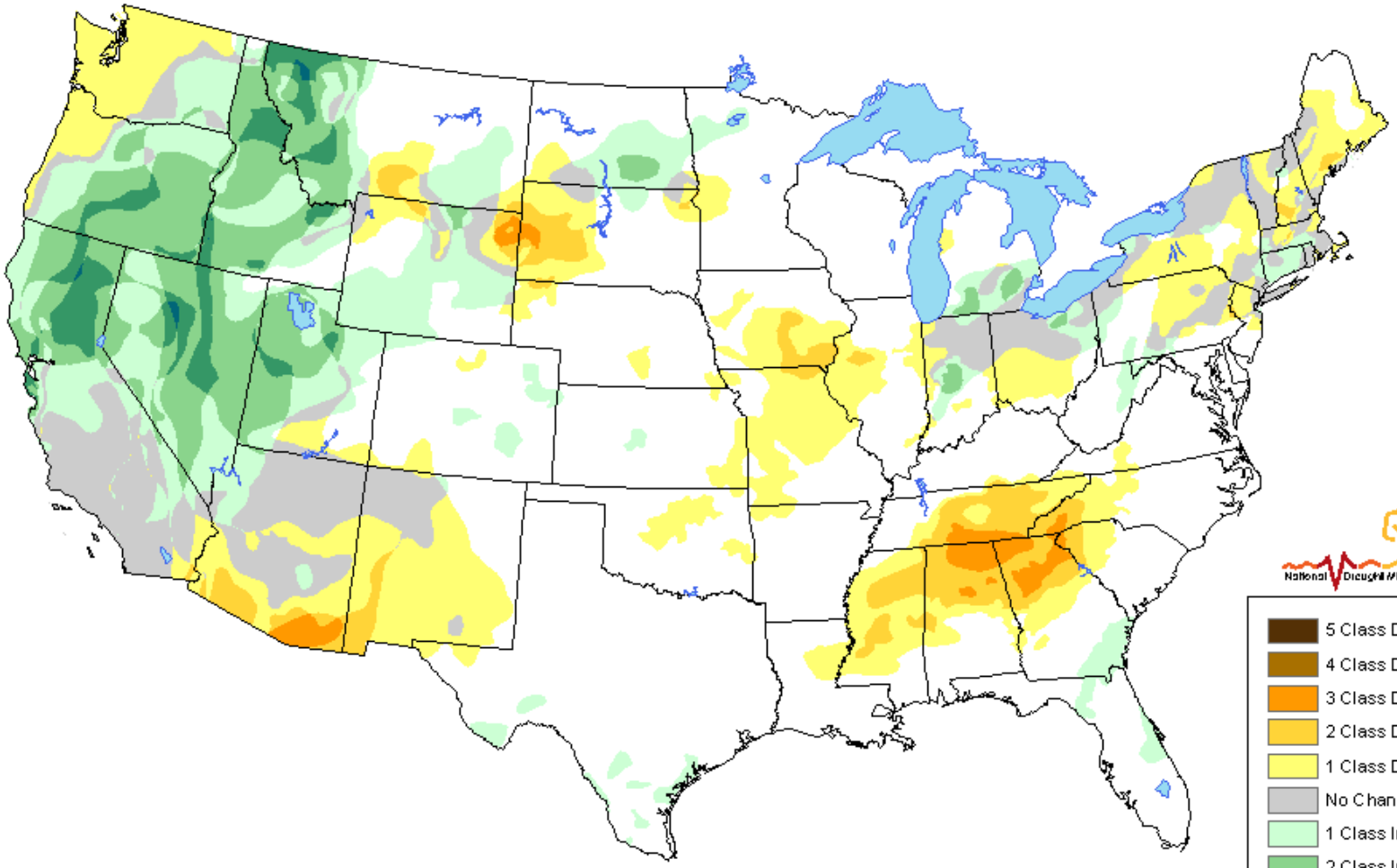
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

June 21, 2016
compared to
March 29, 2016

http://droughtmonitor.unl.edu

U.S. Drought Monitor Class Change

Start of Calendar Year



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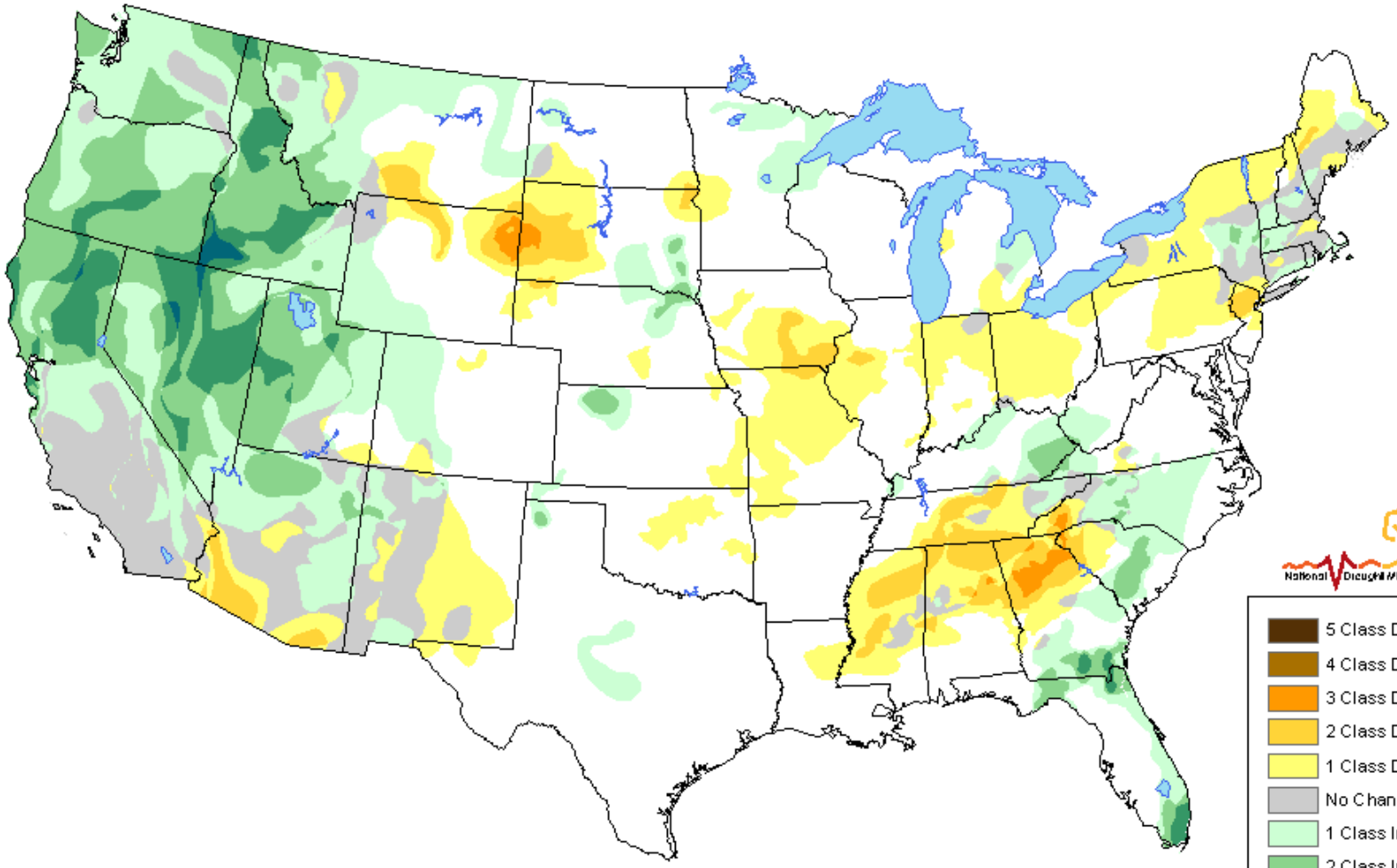
June 21, 2016
compared to
December 29, 2015

http://droughtmonitor.unl.edu

U.S. Drought Monitor Class Change

1 Year

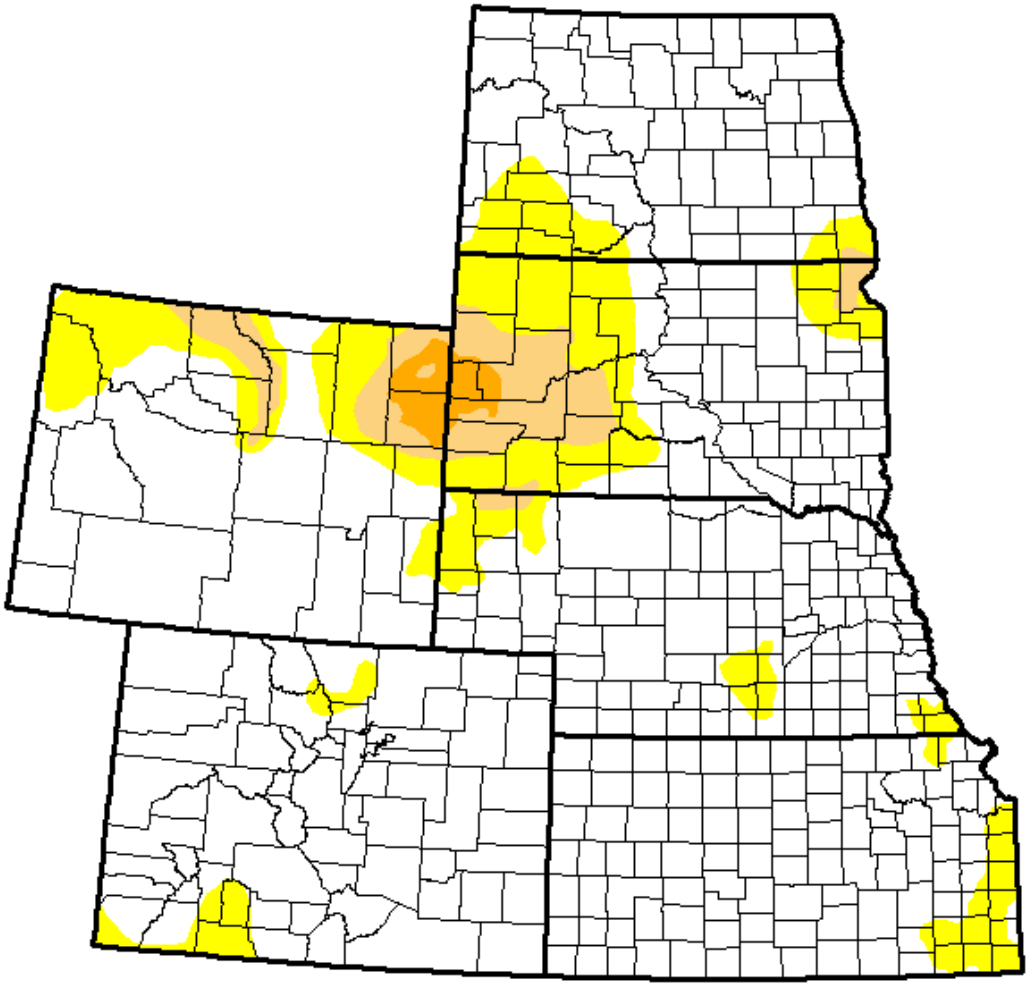


June 21, 2016
compared to
June 23, 2015

http://droughtmonitor.unl.edu

U.S. Drought Monitor

High Plains



June 21, 2016

(Released Thursday, Jun. 23, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	81.43	18.57	5.18	1.04	0.00	0.00
Last Week 6/14/2016	83.91	16.09	3.47	0.25	0.00	0.00
3 Months Ago 3/22/2016	53.51	46.49	5.90	0.41	0.00	0.00
Start of Calendar Year 12/29/2015	78.82	21.18	1.58	0.00	0.00	0.00
Start of Water Year 9/29/2015	75.58	24.42	0.82	0.00	0.00	0.00
One Year Ago 6/23/2015	82.60	17.40	1.38	0.00	0.00	0.00

Intensity:

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Author:

Eric Luebehusen

U.S. Department of Agriculture

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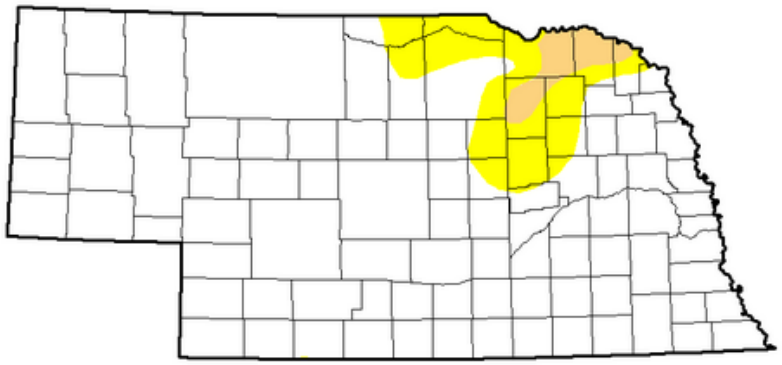
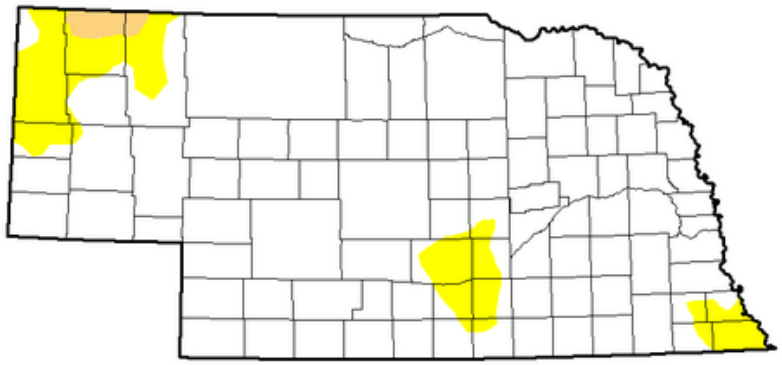
U.S. Drought Monitor Weekly Comparison

State | Nebraska | Statistics type: Traditional Percent Area | Legend



PNG PDF JPG June 23, 2015

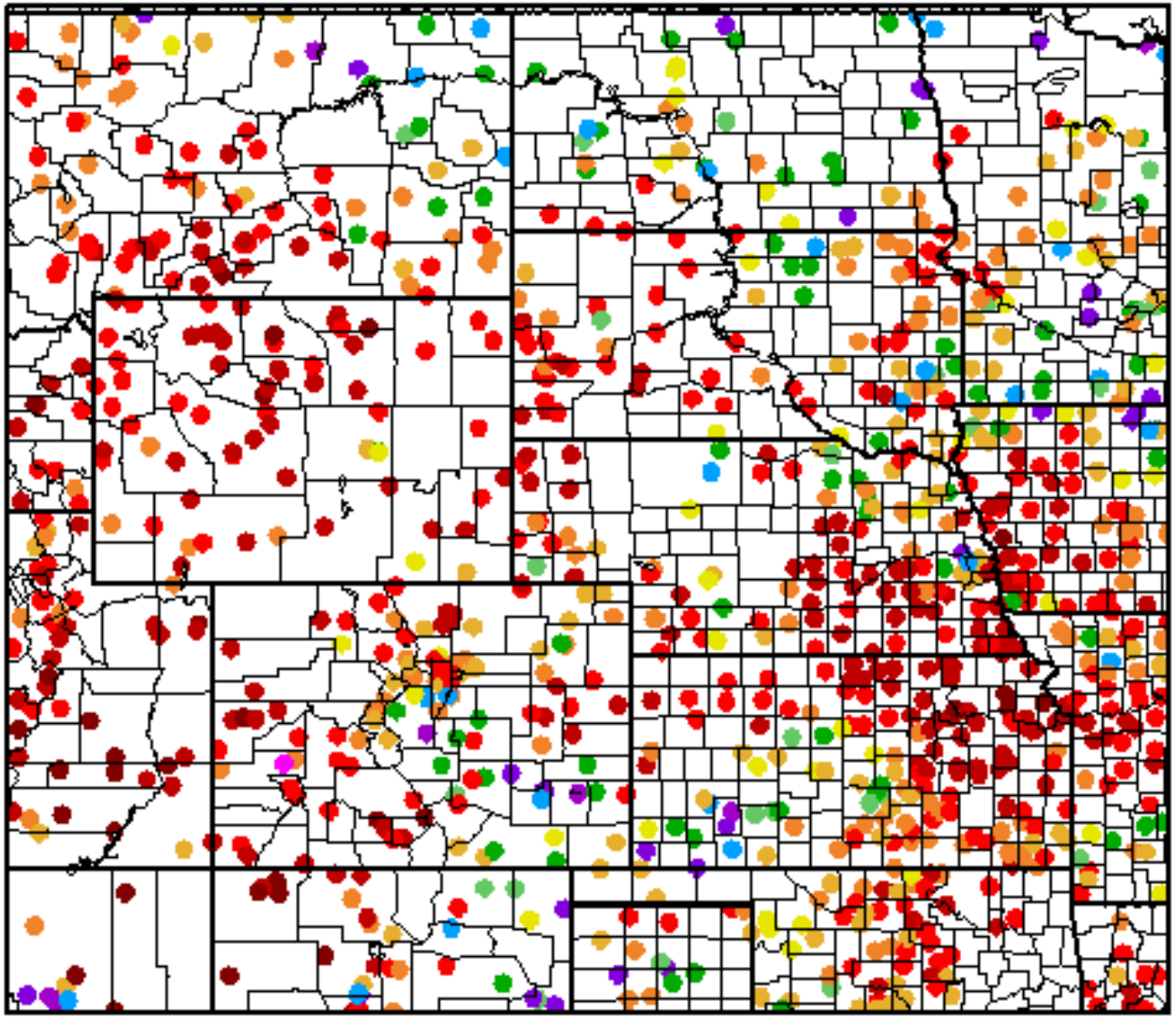


PNG PDF JPG June 21, 2016

Statistics Comparison

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2015-06-23	89.32	10.68	2.19	0.00	0.00	0.00
2016-06-21	89.38	10.62	0.91	0.00	0.00	0.00

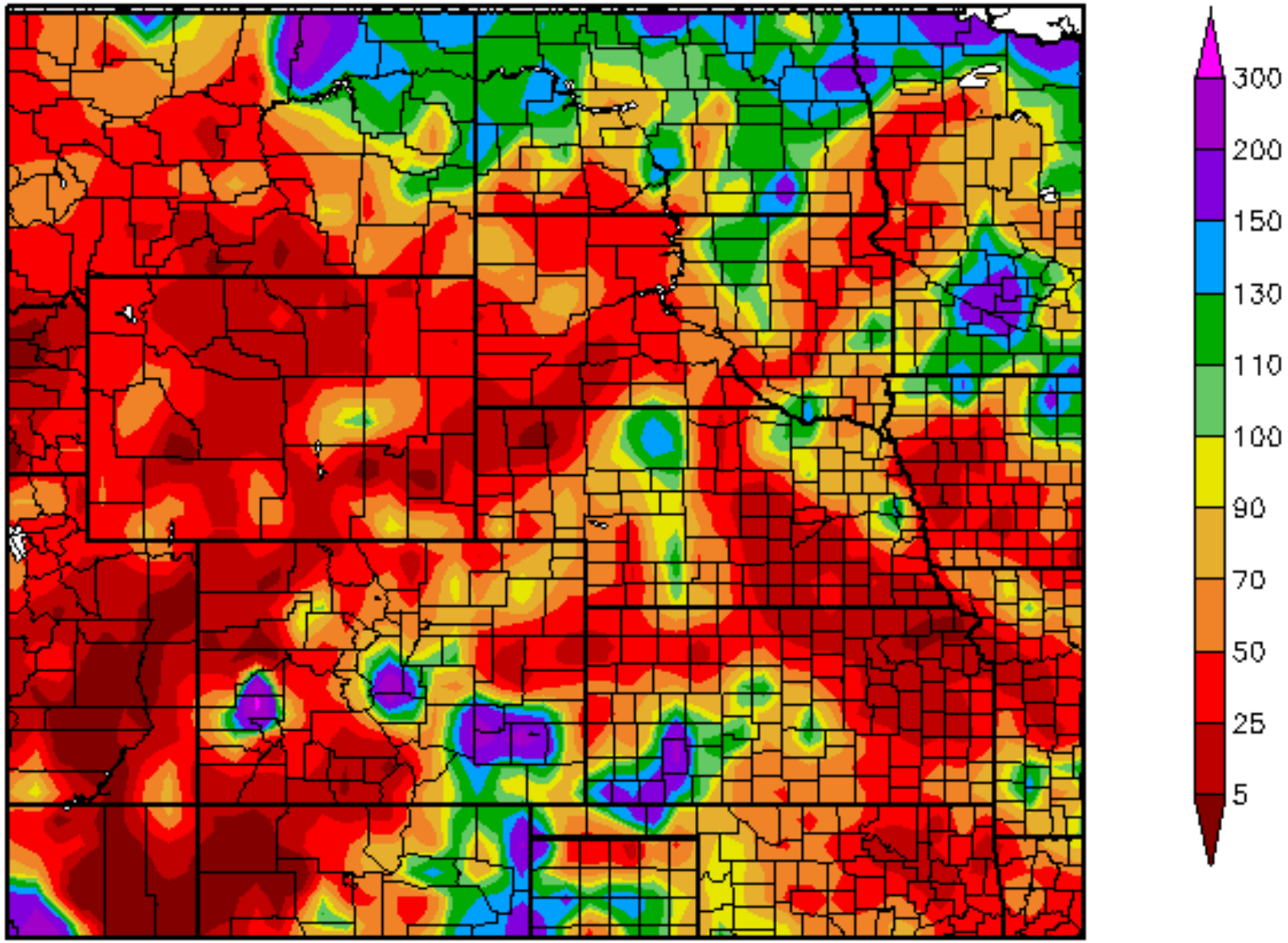
Percent of Normal Precipitation (%)
5/29/2016 – 6/27/2016



Generated 6/28/2016 at HPRCC using provisional data.

Regional Climate Centers

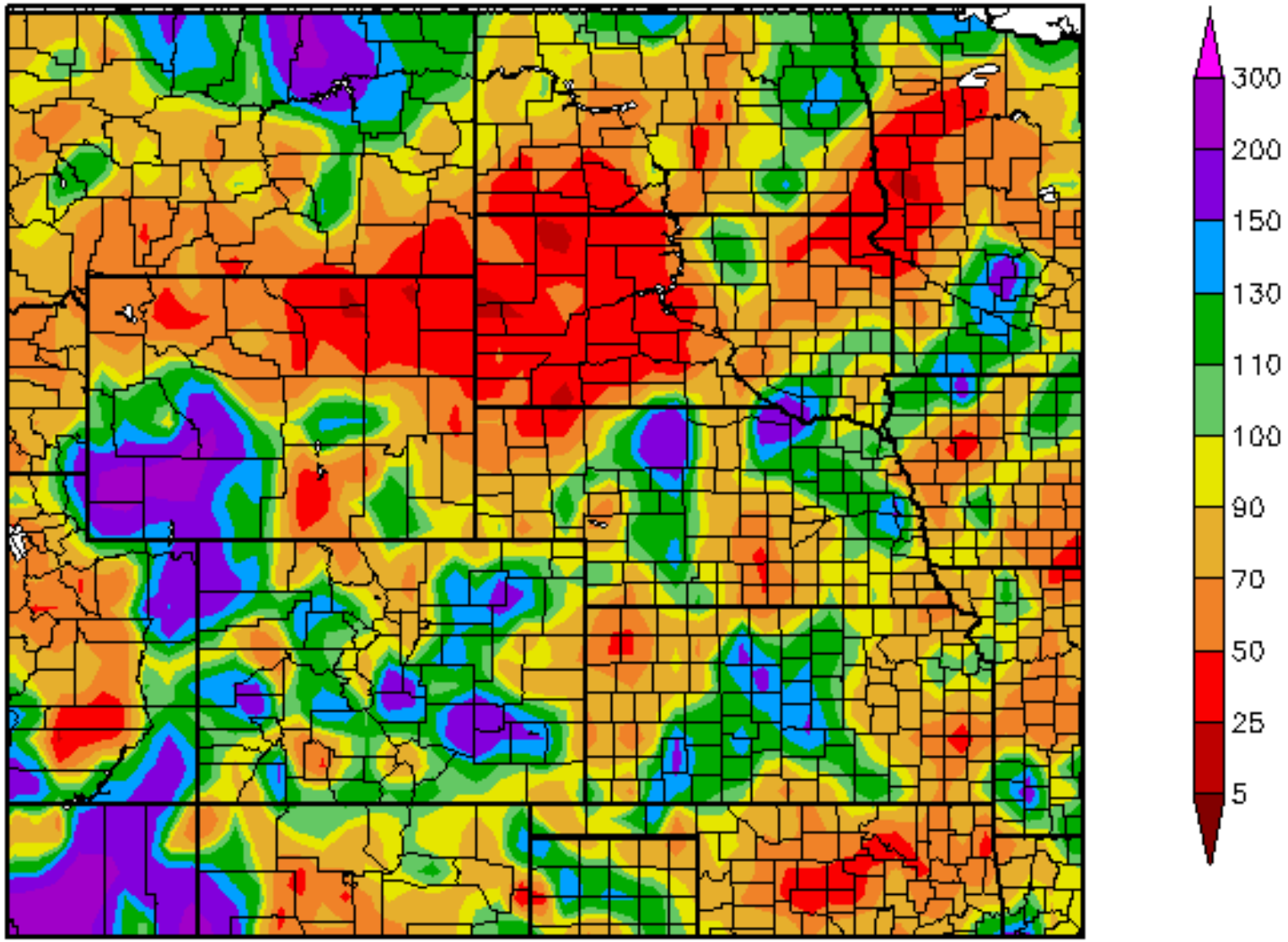
Percent of Normal Precipitation (%)
5/29/2016 – 6/27/2016



Generated 6/28/2016 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
4/29/2016 – 6/27/2016



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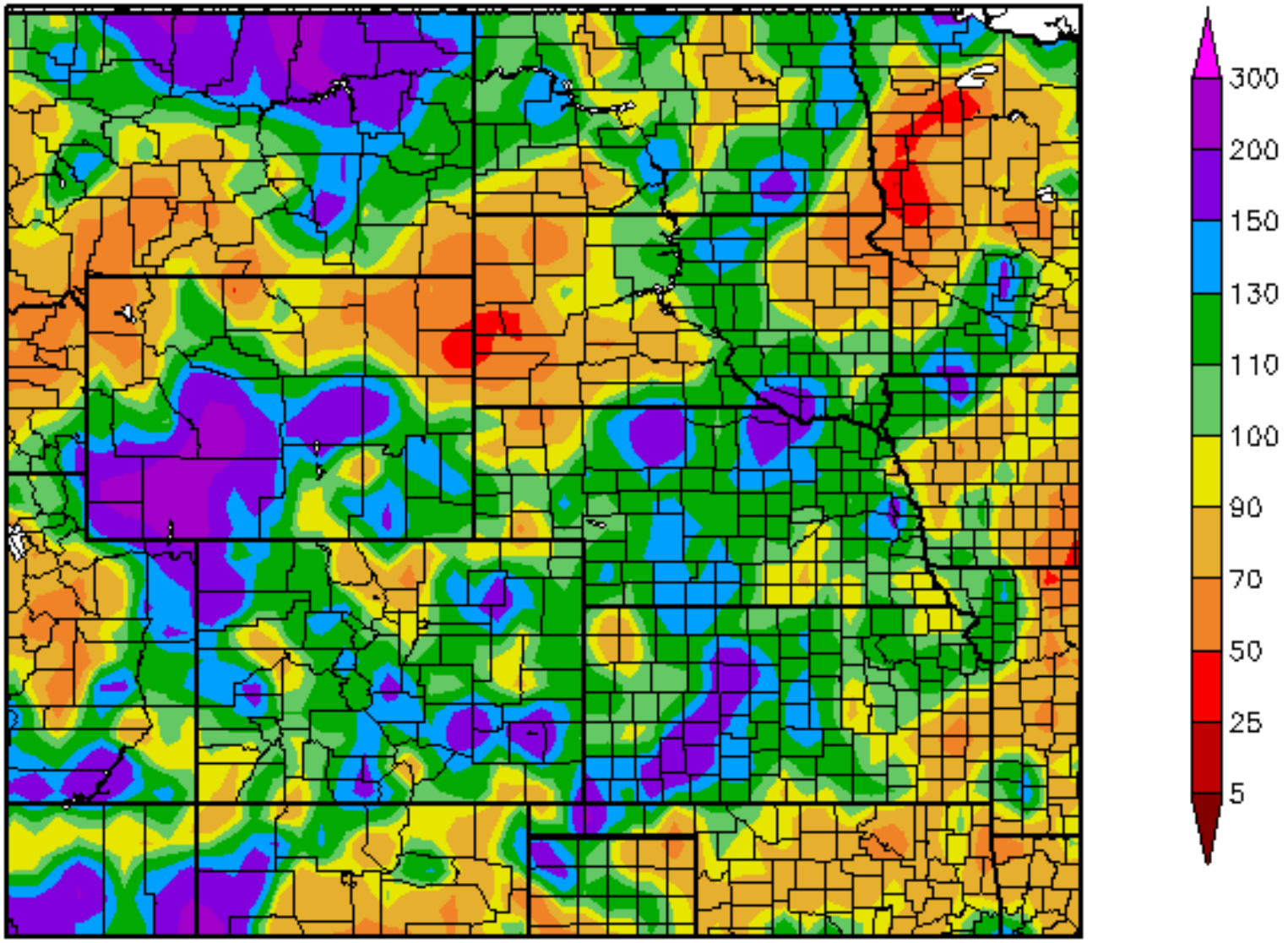
Regional Climate Centers

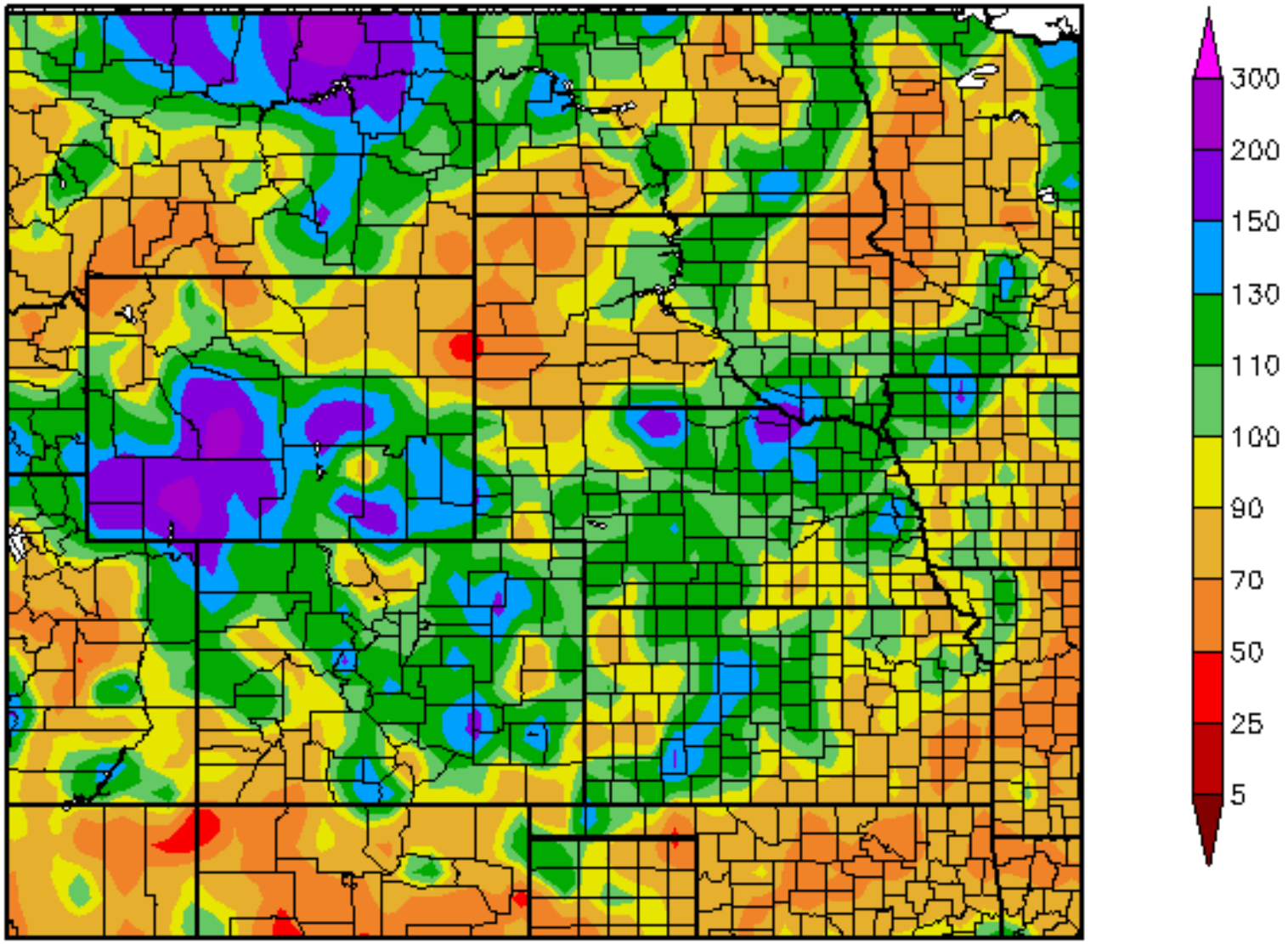
Percent of Normal Precipitation (%)
3/30/2016 – 6/27/2016



Generated 6/28/2016 at HPRCC using provisional data.

Regional Climate Centers

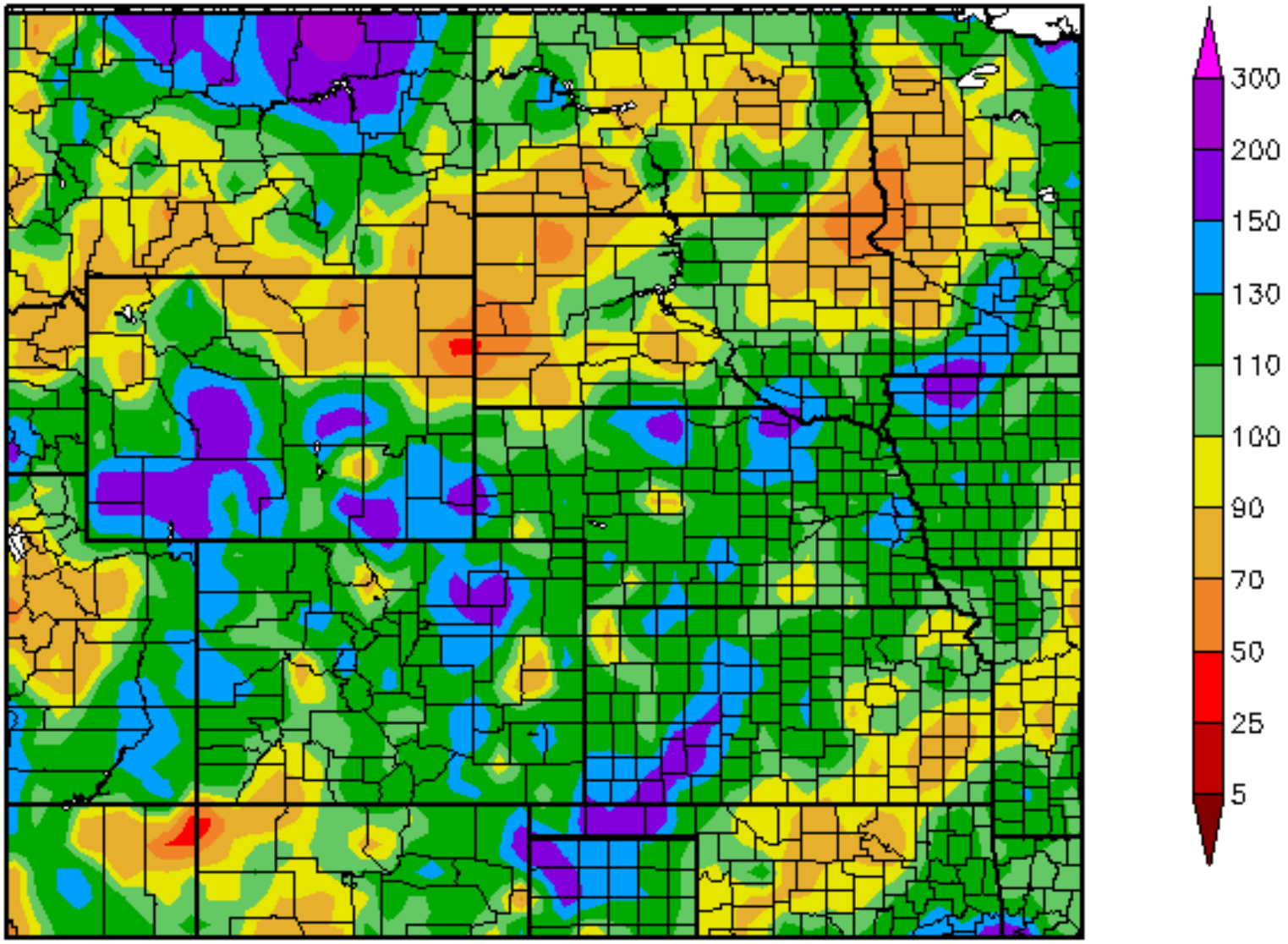
Percent of Normal Precipitation (%)
1/1/2016 – 6/26/2016



Generated 6/27/2016 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
10/1/2015 – 6/26/2016

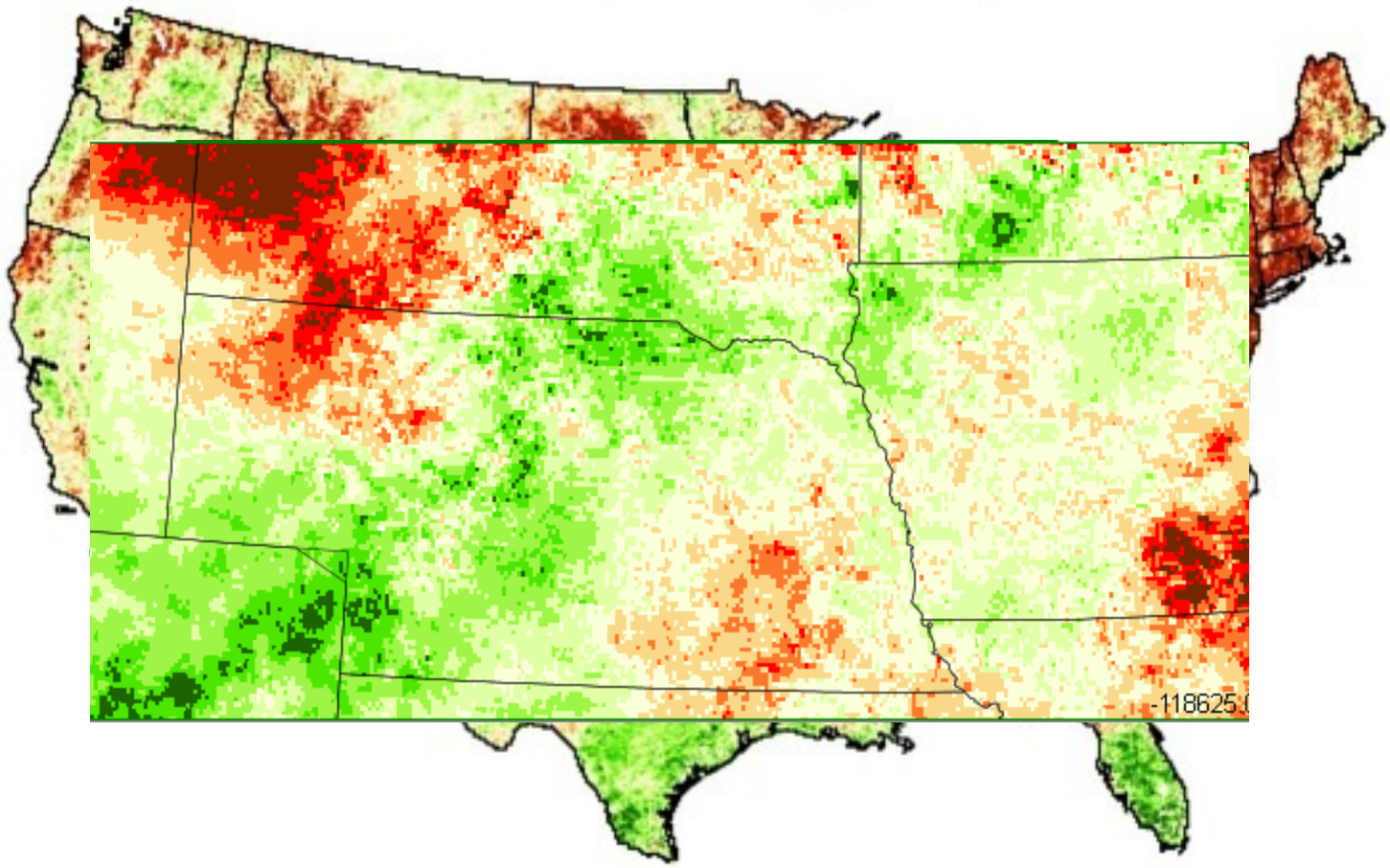


Generated 6/27/2016 at HPRCC using provisional data.

Regional Climate Centers

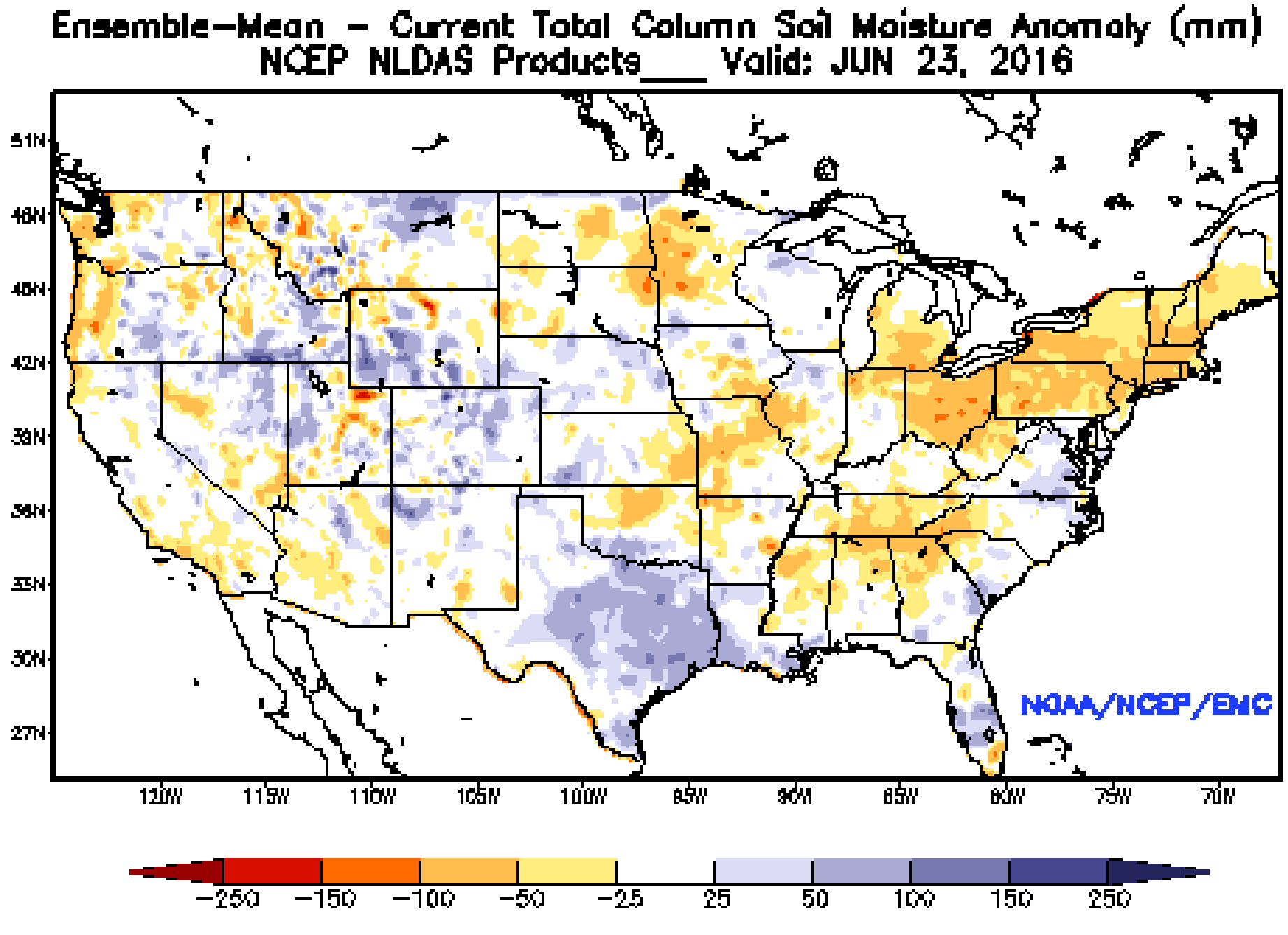
Evaporative Stress Index 4km

1 month composite ending June 26, 2016



Standardized ET/PET anomalies

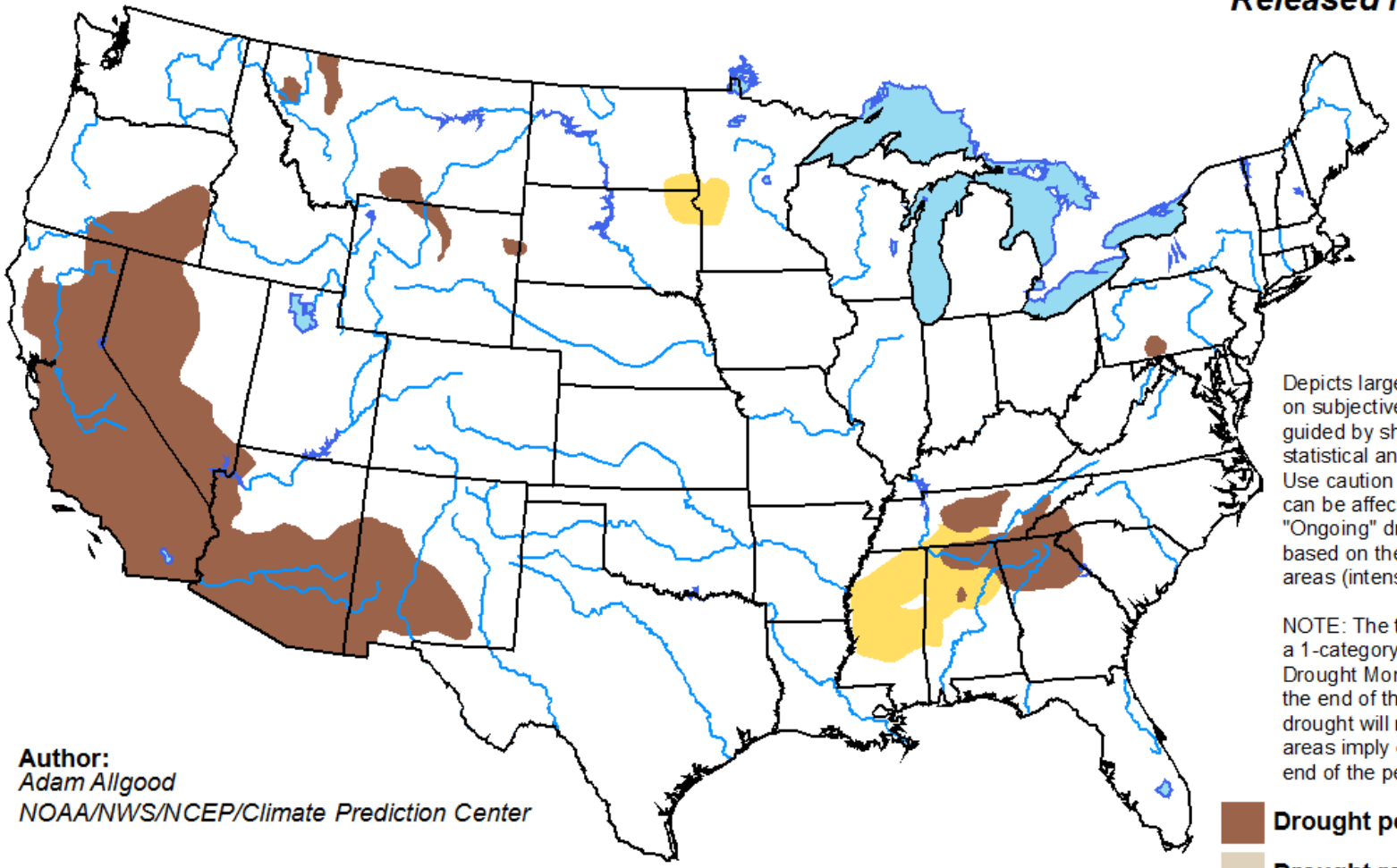
-2σ< -1σ 0 +1σ > +2σ


Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products___ Valid: JUN 23, 2016
51N
48N
45N
42N
39N
36N
33N
30N
27N
120W
115W
110W
105W
100W
95W
90W
85W
80W
75W
70W
NOAA/NCEP/EMC
-250
-150
-100
-50
-25
25
50
100
150
250

U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for June 2016
Released May 31, 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).

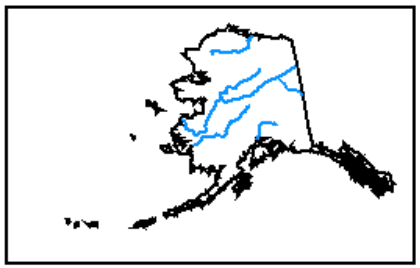
Drought persists

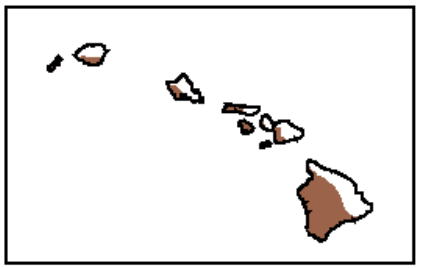
Drought remains but improves

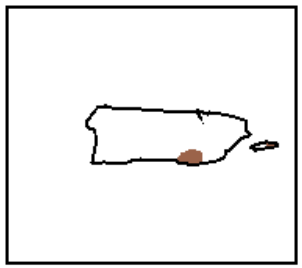
Drought removal likely

Drought development likely

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





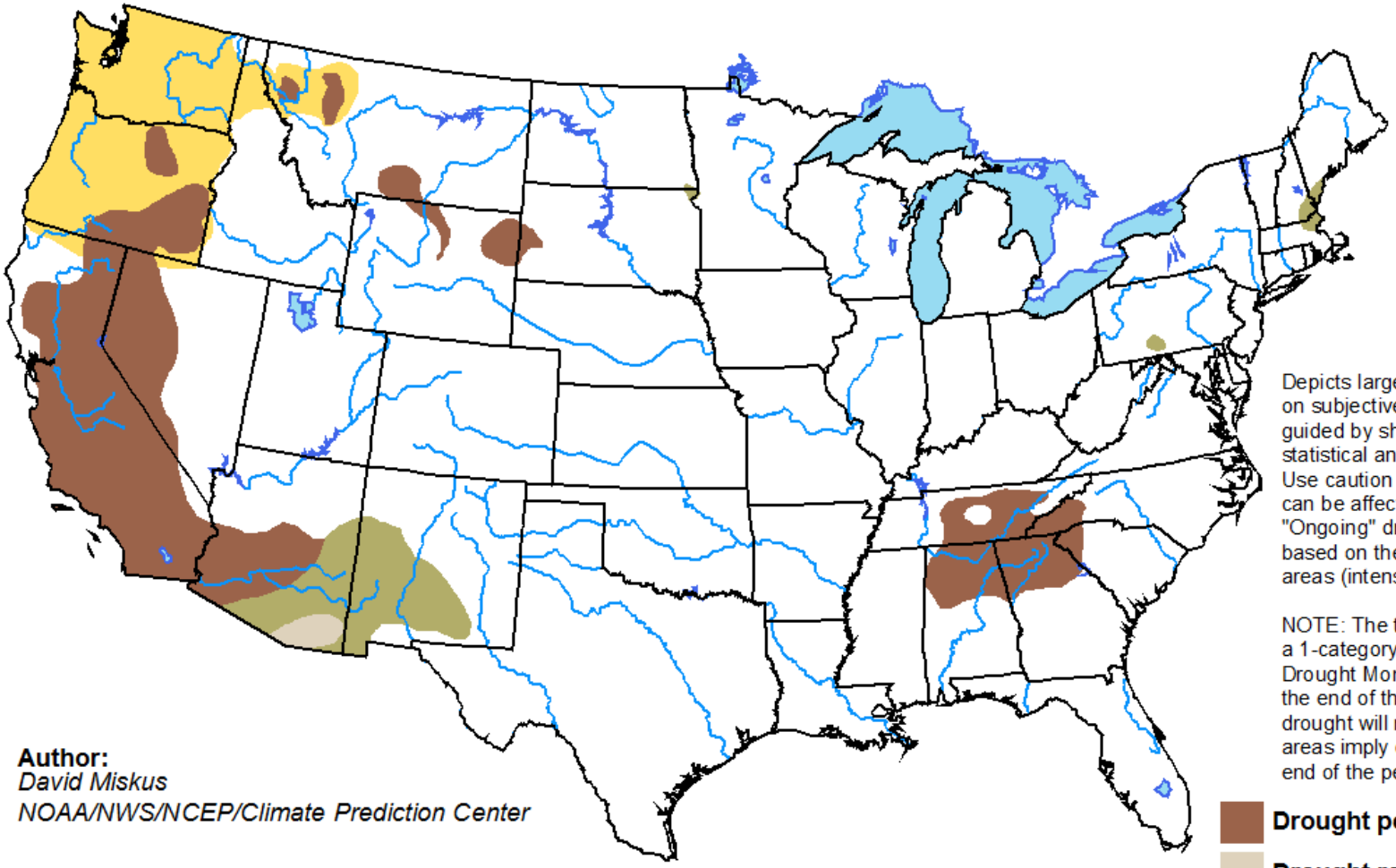


http://go.usa.gov/3eZGd

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for June 16 - September 30, 2016
Released June 16, 2016



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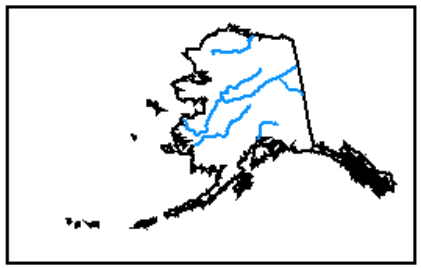
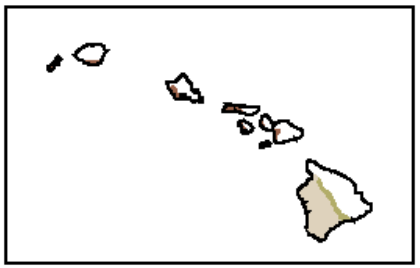
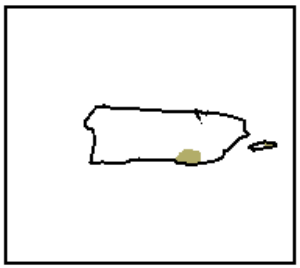
David Miskus
NOAA/NWS/NCEP/Climate Prediction Center

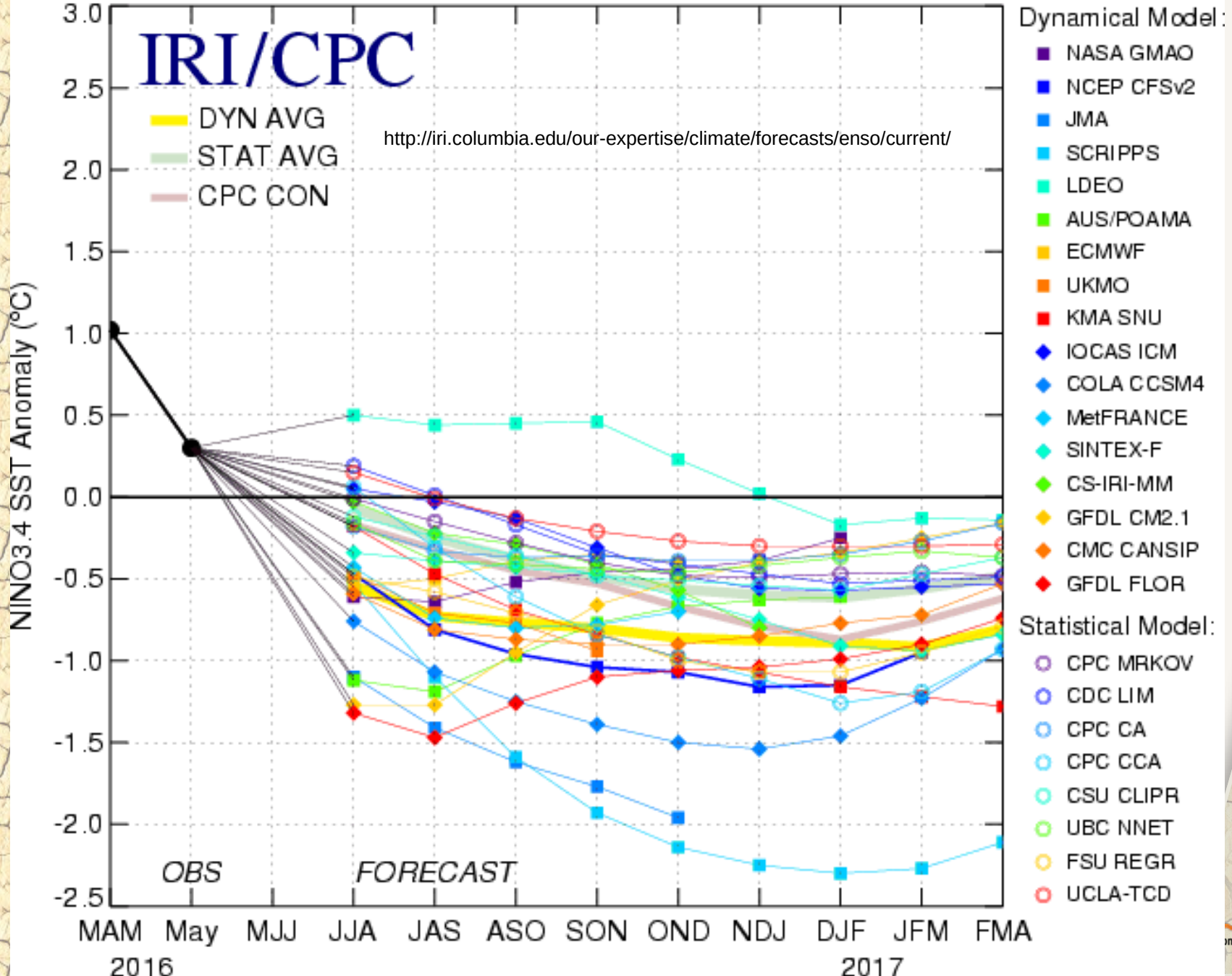






http://go.usa.gov/3eZ73

Mid-Jun 2016 Plume of Model ENSO Predictions



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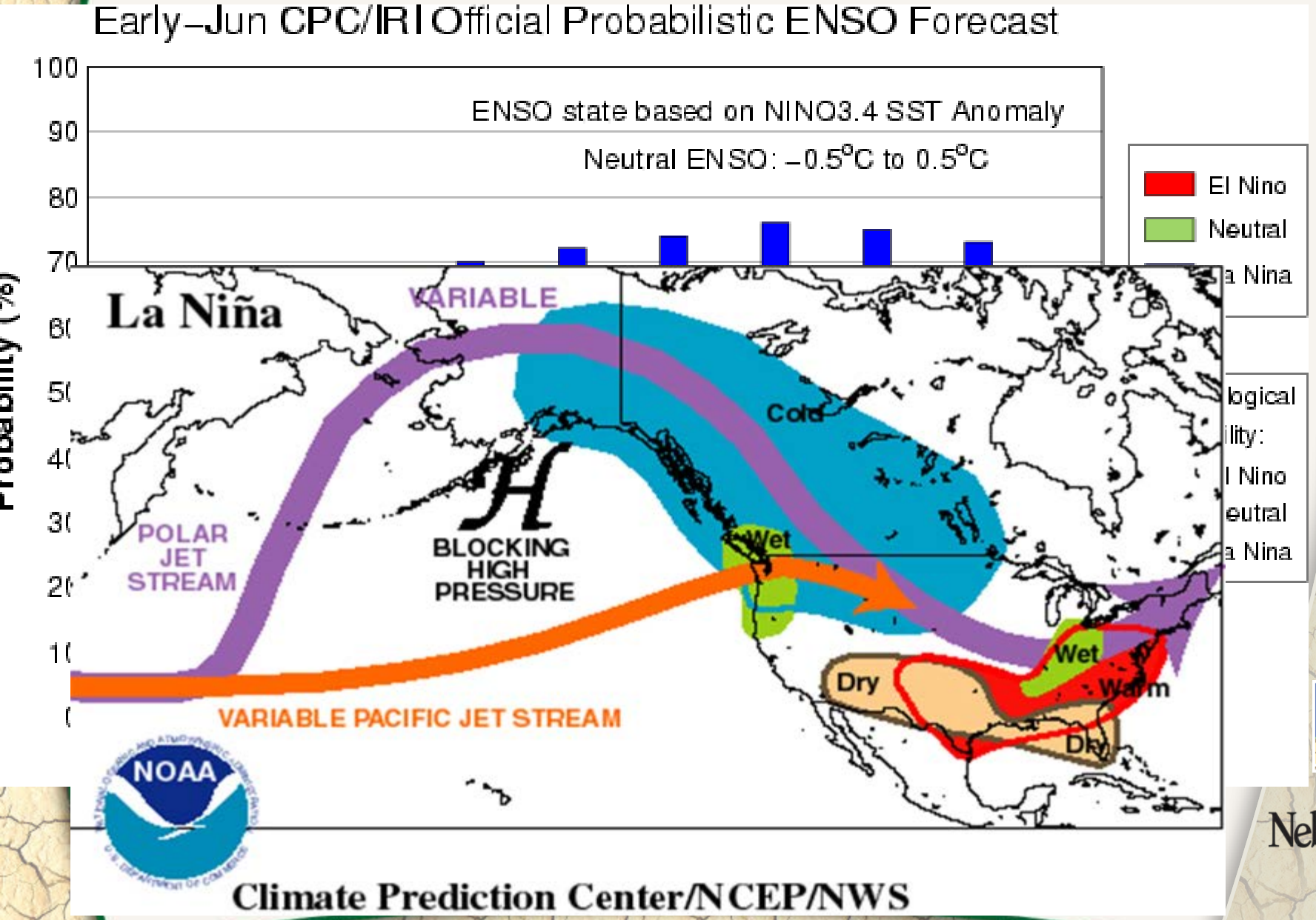
Early–Jun CPC/IRI Official Probabilistic ENSO Forecast
ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: –0.5°C to 0.5°C
El Nino
Neutral
La Niña
VARIABLE
Cold
POLAR JET STREAM
BLOCKING HIGH PRESSURE
Wet
Dry
Wet
Warm
Dry
VARIABLE PACIFIC JET STREAM
NOAA
Climate Prediction Center/NCEP/NWS

Climate/Drought Summary

- Most of the region has recorded above normal precipitation for the year, but there are pockets of dryness which do go back to last fall.
- **14.80% of the contiguous U.S.** is currently in drought (D1 or worse) as of 06/21/2016
  - This time last year it was at **25.13%**.
  - **Down nearly 4%** Year-to-Date (18.74% on Dec. 29, 2015)
- Current USDM (06/21/2016) **for NE** shows **0.91%** of the state in drought **(D1 only), up from 0% on January 1, 2016**

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National Drought Mitigation Center

Climate/Drought Summary

- The Climate Prediction Center's Seasonal Drought Outlook ***calls for improvement or removal of drought*** across the ***Southwest*** by the end of September but **drought developing across the Pacific Northwest**.

- **CPC/IRI ENSO Alert System Status:**
  - **La Niña Development into 2017**

  - ***Synopsis*: There is an *approximately 75% chance* that a moderate La Niña will develop through the Northern Hemisphere fall/winter of 2016-17, and a gradual decline during the spring of 2017.**

Nebraska Water Supply Update…

Pathfinder Dam in Wyoming June 2016. Photo courtesy of Chad McNutt, McNutt Ranch

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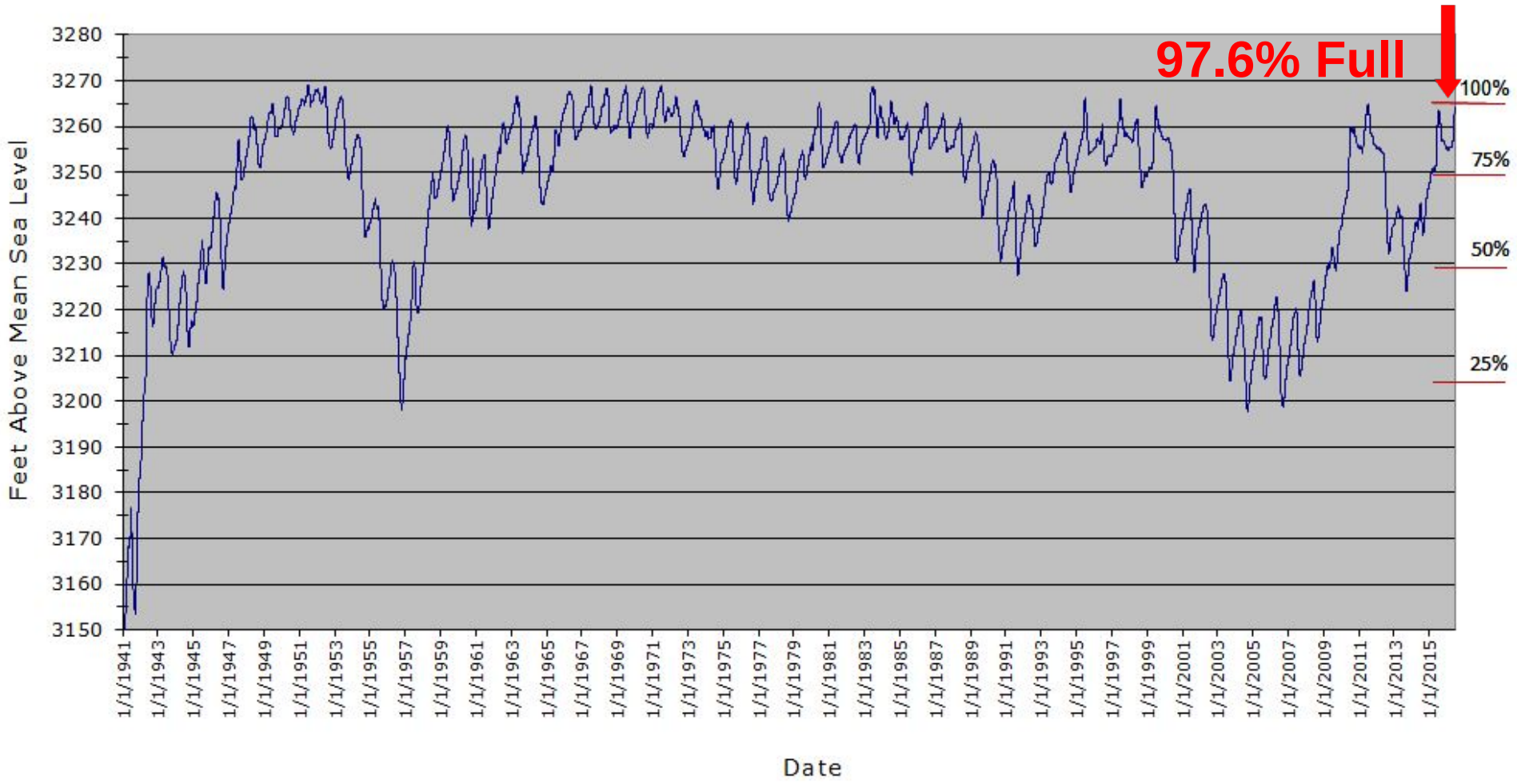
National Drought Mitigation Center

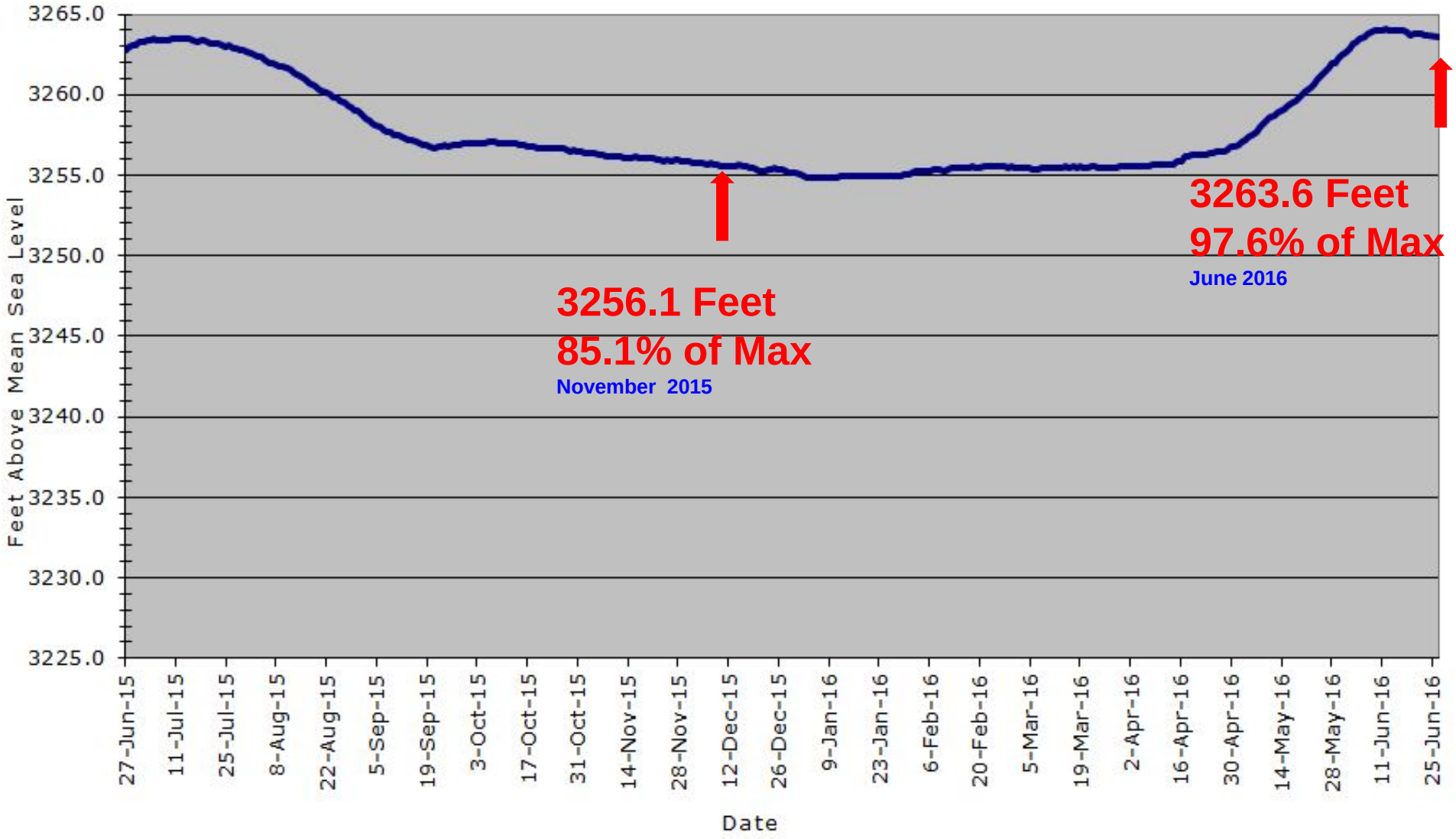
Lake McConaughy Elevation
1941 to Present



SOURCE: CNPPID www.cnppid.com

Lake McConaughy Elevation

June 27, 2015 to June 27, 2016



SOURCE: CNPPID www.cnppid.com

National Drought Mitigation Center

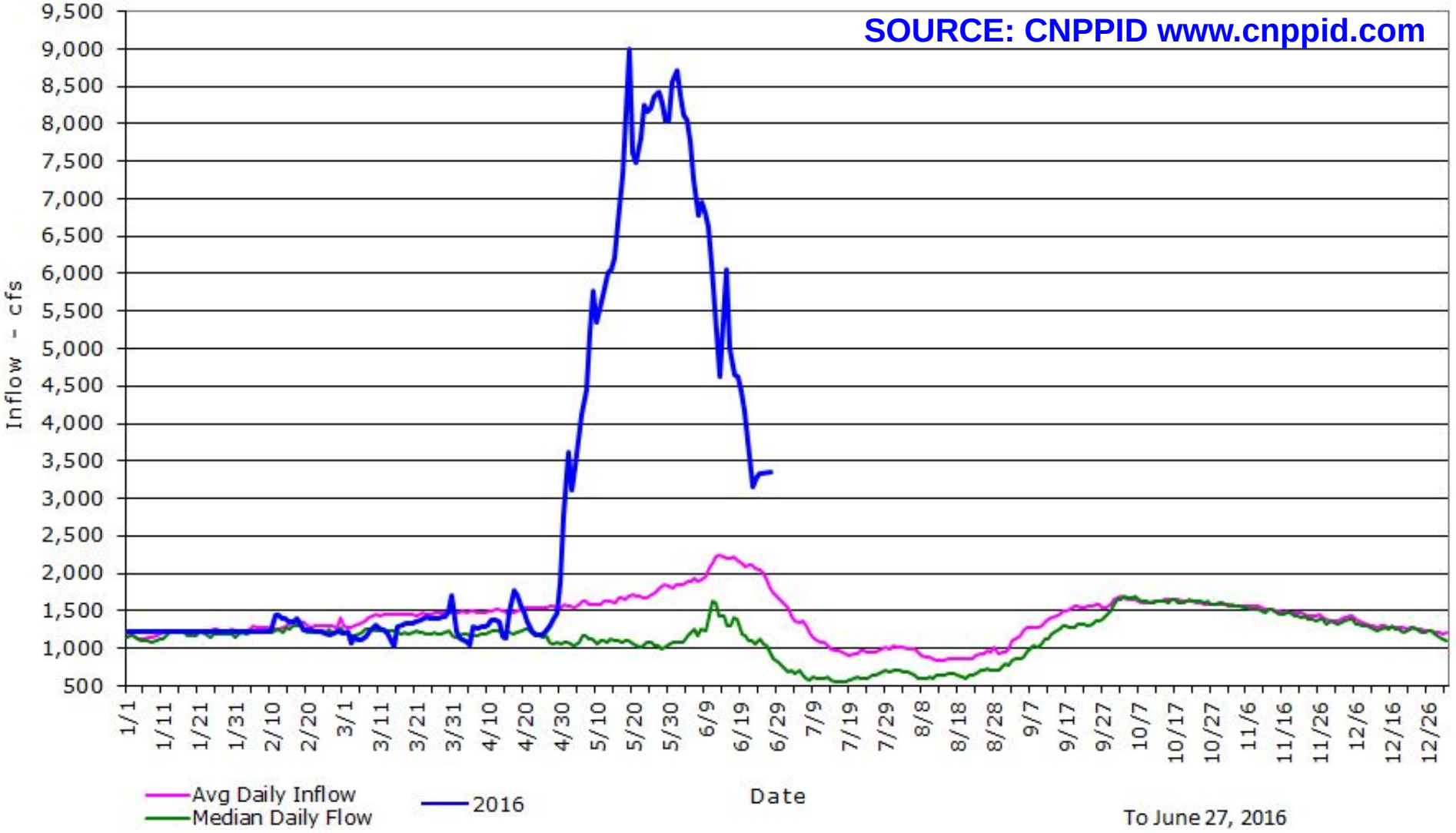
June 2016 CARC Meeting

Station	Today (Cubic Feet per Second)	1 Week Ago	1 Month Ago	1 Year Ago
Inflows to McConaughy	3,356	3,728	8,598	4,810
Total Outflows from McConaug	3,049	3,907	5,224	1,834
North Platte at Keystone	1,351	2,204	3,510	138
Keystone Diversion	1,698	1,703	1,714	1,696
North Platte at North Platte	1,142	2,889	3,095	316
South Platte at Roscoe	981	3,210	4,100	8,150
South Platte at North Platte	2,272	3,634	4,202	10,048
Supply Canal Diversion	2,265	2,285	2,259	2,297
Platte at Overton	3,133	7,293	7,723	11,715
Platte at Kearney	3,160	7,270	7,670	11,000
Platte at Grand Island	4,070	7,710	8,550	12,900

SOURCE: CNPPID www.cnppid.com

Daily Inflows - Lake McConaughy
Current, Average & Median Flows since 1941

Example to assist with reading graph: The average inflow for March 1 (measurements on every March 1 since 1941) is 1,308 cfs. Similarly, the median flow for March 1 (the middle value in the range of every March 1 reading since 1941) is 1,210 cfs.



National Drought Mitigation Center

Lake McConaughy

U.S. Army Corps of Engineers, which assumes management of Glendo Reservoir in Wyoming from the U.S. Bureau of Reclamation once the volume of water in the lake reaches the flood pool, is beginning to store additional water in the flood pool to reduce downstream impacts along the North Platte River.

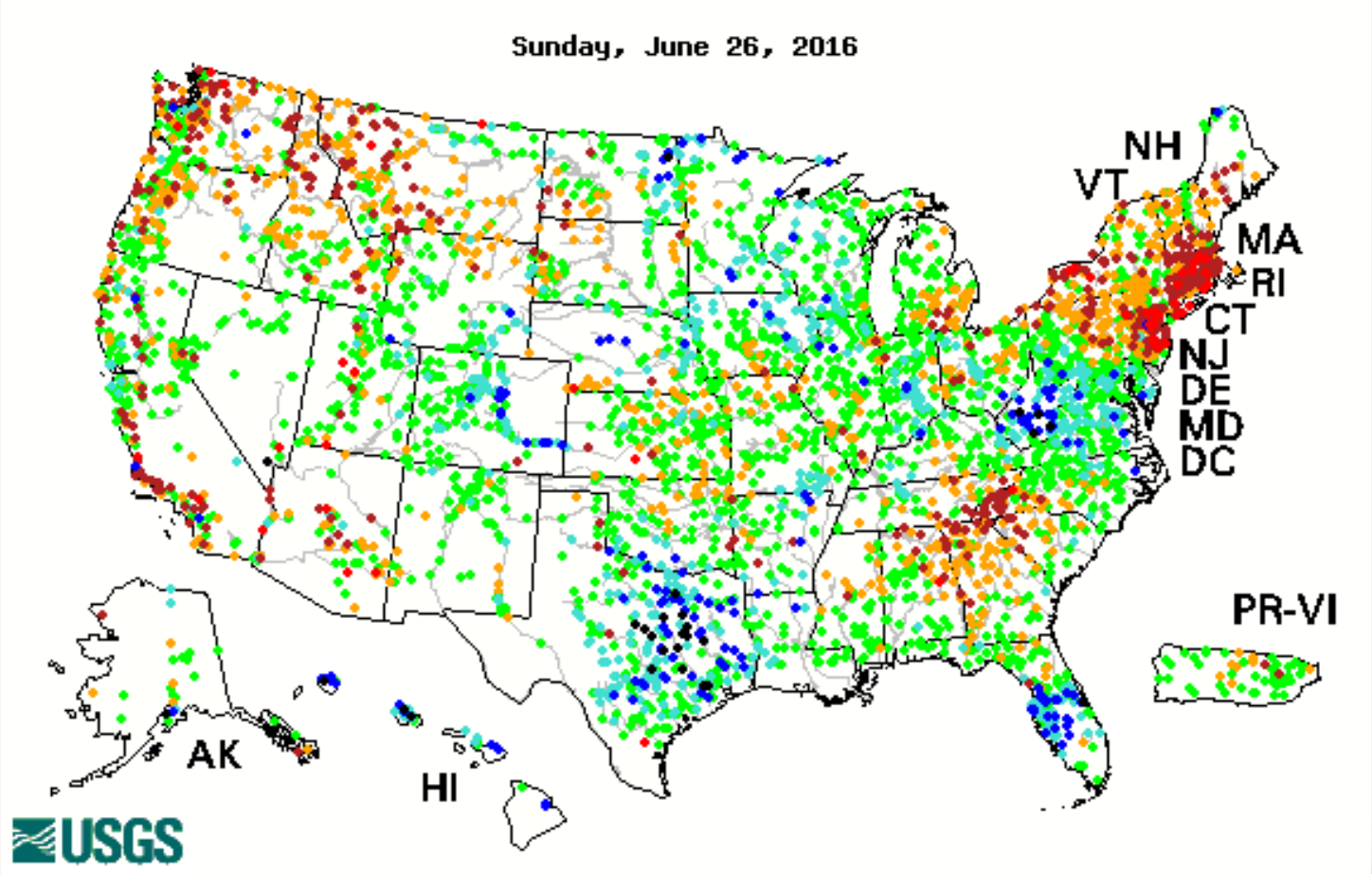
Glendo Reservoir's flood pool is currently about 20 percent full, leaving space to store additional inflows expected in the near future. Pathfinder Reservoir is currently spilling excess water over the dam's Spillway and the snowmelt above Pathfinder and Seminoe Reservoir is beginning to accelerate, so there remains plenty of water yet to come downstream.

CNPPID is working with local, state and federal agencies to address issues caused by high water in the Platte Basin. It appears that flows below Kingsley Dam have peaked, he said, unless there is a rapid change in the rate of snowmelt. The late spring rain and snowfall, as well as cooler than normal temperatures in the mountains, have combined to produce a really different year in terms of the timing of the snowmelt and conditions in the basin.

SOURCE: CNPPID News Release, June 6, 2016

www.cnppid.com

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



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

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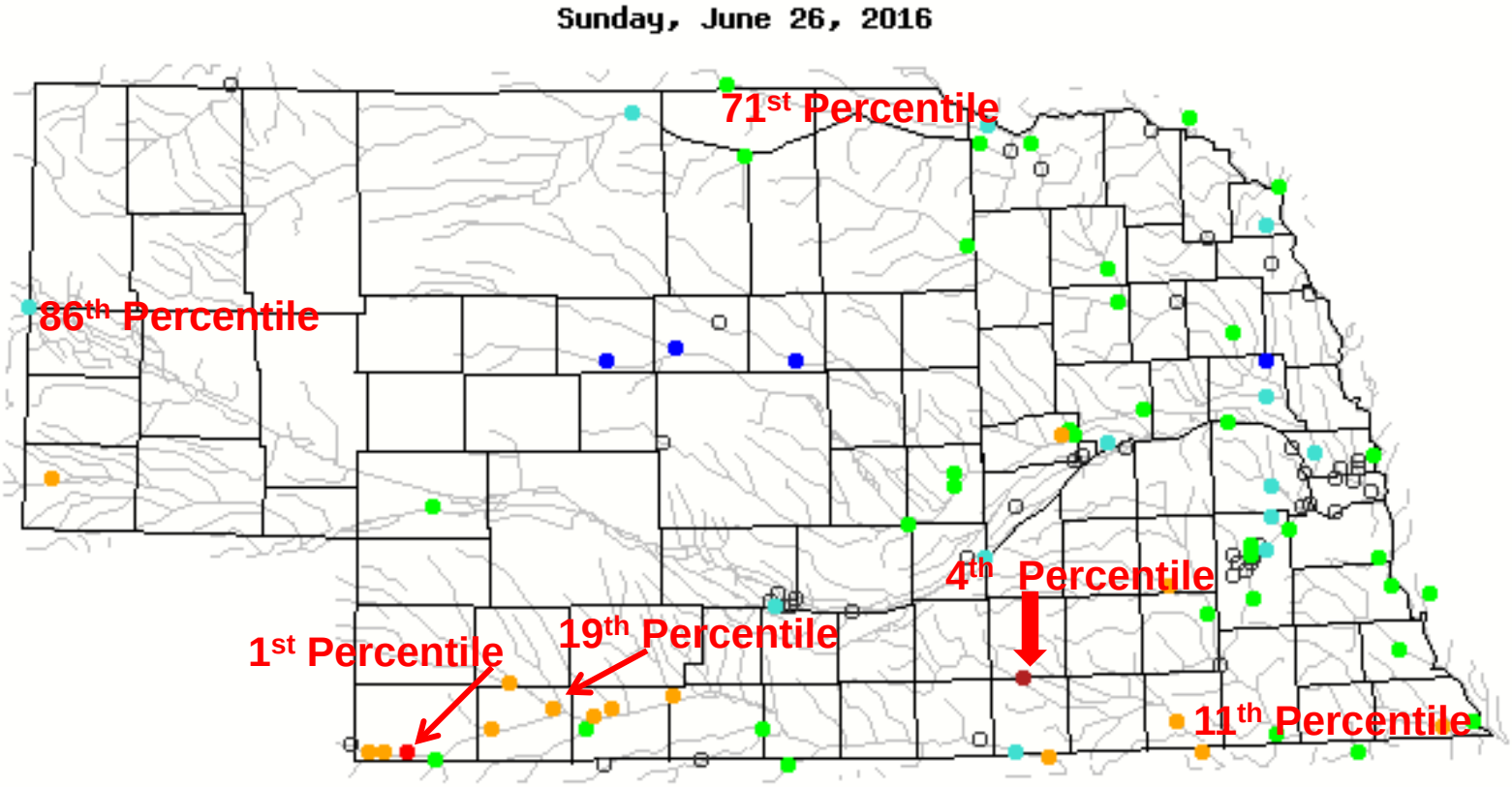
14-day average streamflow compared to historical streamflow for the day of year



USGS

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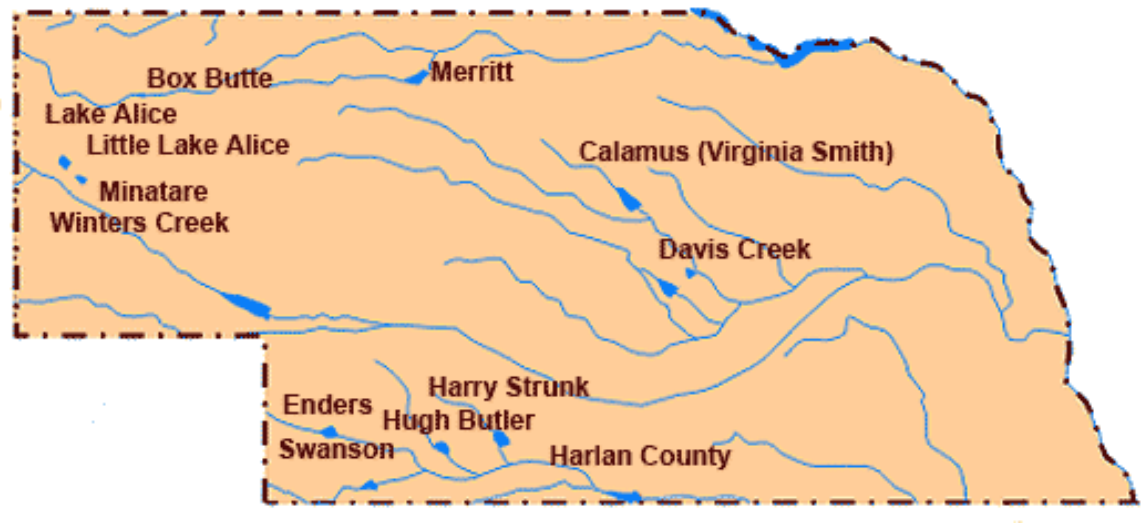
Republican River Basin

- **Hugh Butler:** 44.3%(33.6%) of conservation pool
- **Enders:** 26.7% (23.1%) of conservation pool
- **Harry Strunk:** 100%(92.4%) of conservation pool
- **Swanson:** 58.8% (36.8%) of conservation pool



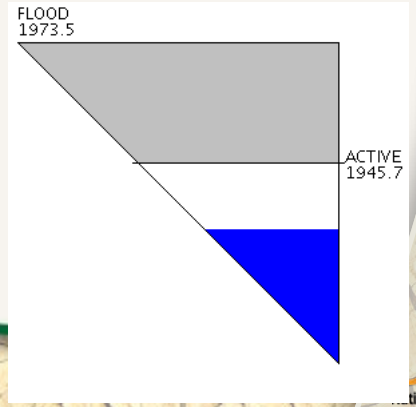
*values in red are from the last CARC meeting in November 2015.

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

Republican River Basin

Harlan County Current Conditions

- ✓ Conservation Pool is 76.7% full (48.3%)
- ✓ 241,024 Acre-Feet in storage compared to 151,824 Acre-Feet (AF) of water in storage during November 2015
- ✓ Last year at this time, 201,044 AF was in storage
- ✓ Historical average storage for this time of the year is 260,566 AF



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

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Water Supply Summary

- No hydrological issues in the state as we have had significant run-off into the Platte basin due to a good snow season and spring rains.

- **Lake McConaughy** is currently:
  - 7.5 feet higher than it was during the last CARC meeting in November 2015.
  - The inflows have decreased over the last few weeks and are about two-thirds less than the peak in May.
  - Elevation is about the same as it was last year at this time.

- Overall, storage in the Republican River basin has improved since the last CARC meeting due to the impact of seasonal run-off.
  - **Harlan County** is currently:
    - 89,200 Acre-Feet higher than in November 2015 (last CARC meeting)
    - 19,542 AF lower than the historical average for this time of year

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Any Questions ?

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