NE Drought Conditions CARC Update: May 20, 2015

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

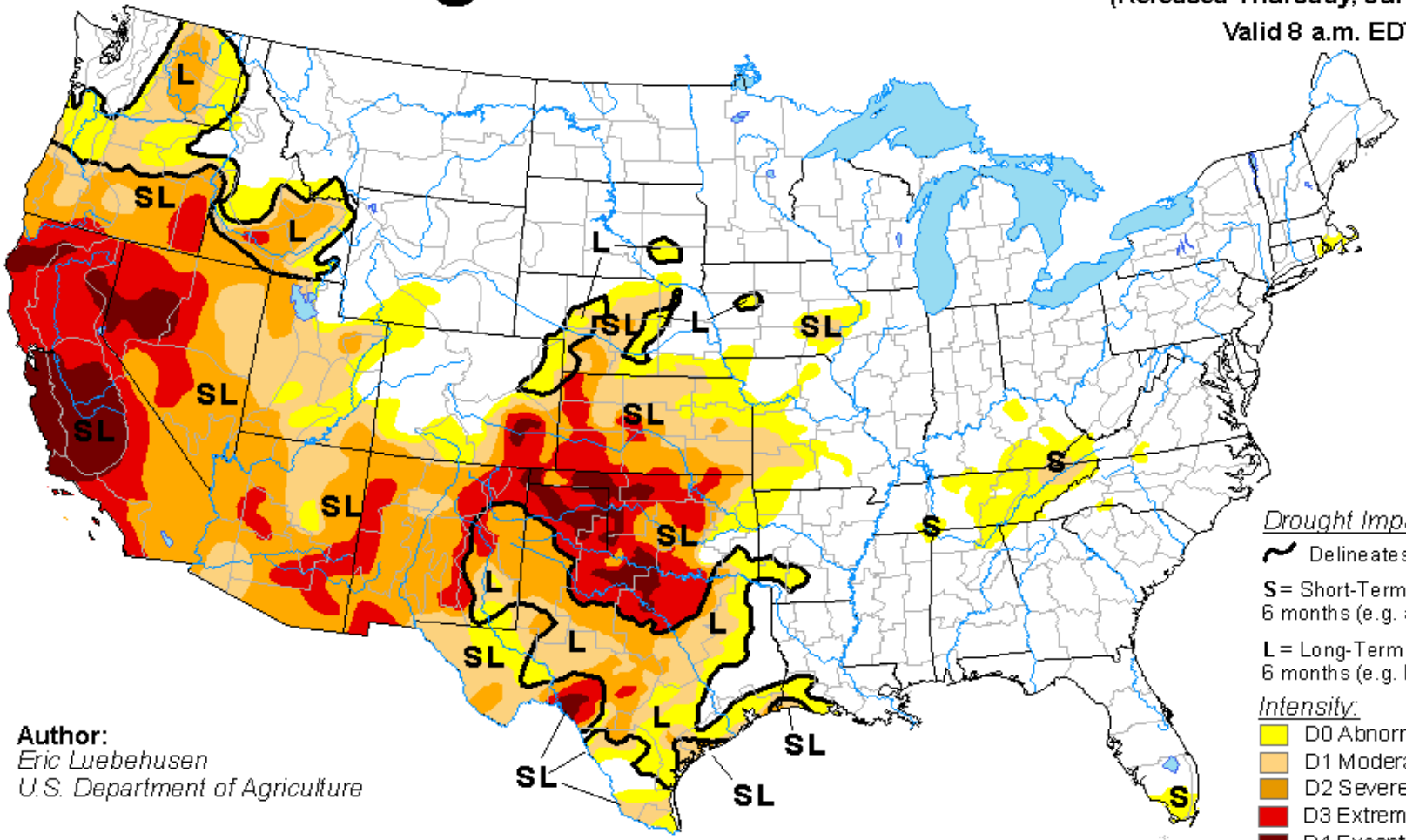
Current Conditions around Nebraska and the region…

U.S. Drought Monitor

June 17, 2014

(Released Thursday, Jun. 19, 2014)

Valid 8 a.m. EDT



Author:
Eric Luebehusen
U.S. Department of Agriculture

Drought Impact Types:

Delineates dominant impacts

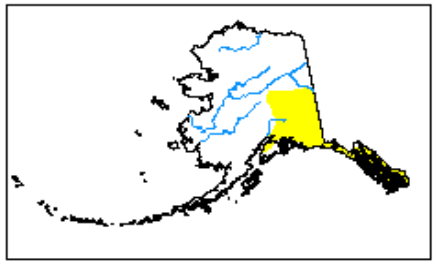
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

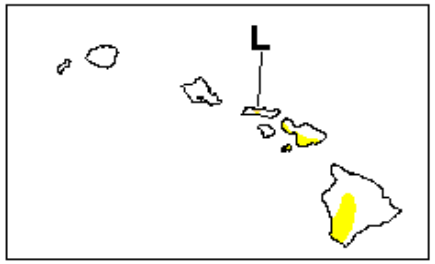
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

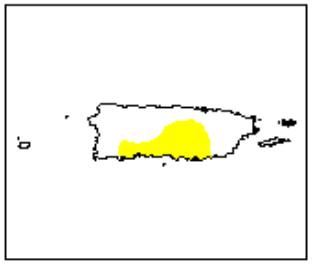
Intensity:

- 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.







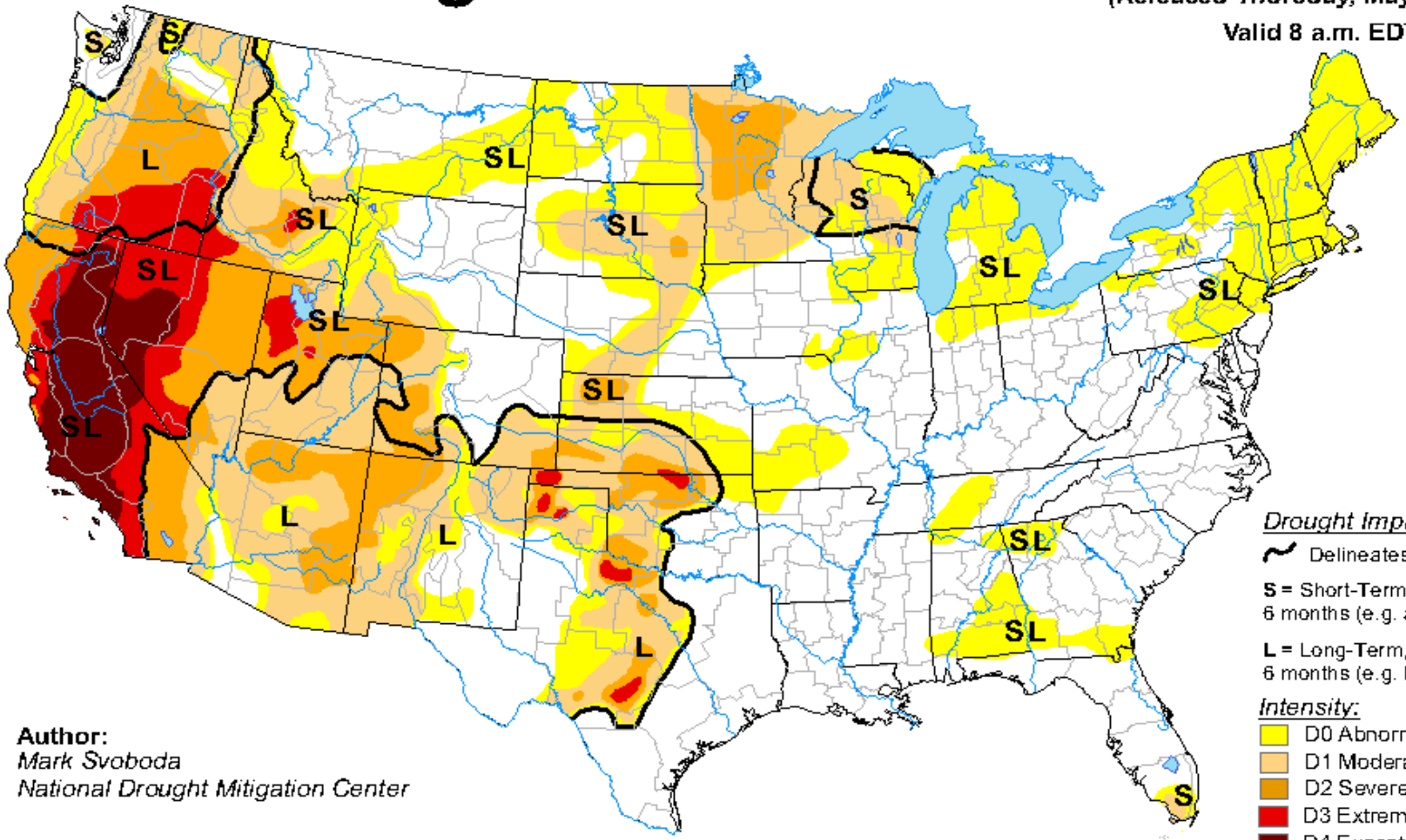
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

May 12, 2015

(Released Thursday, May. 14, 2015)

Valid 8 a.m. EDT



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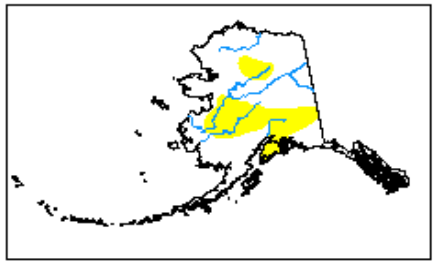

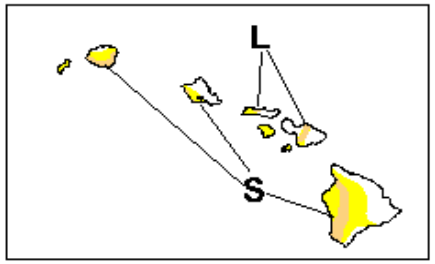

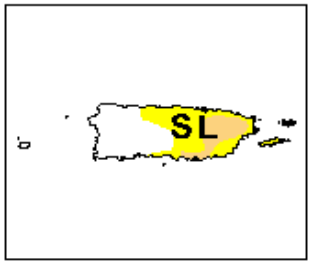

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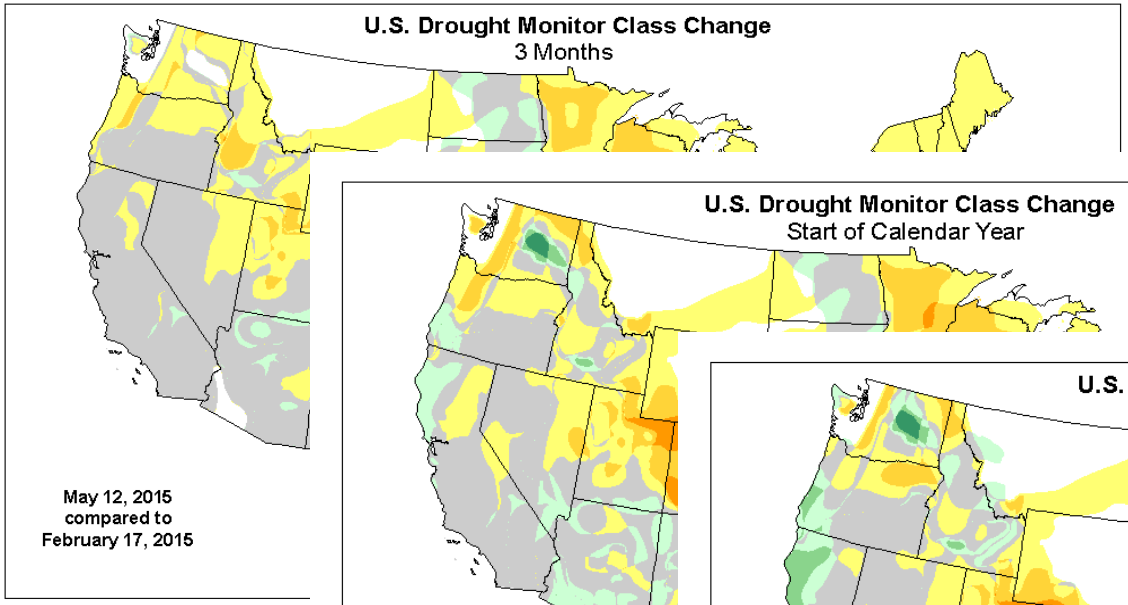

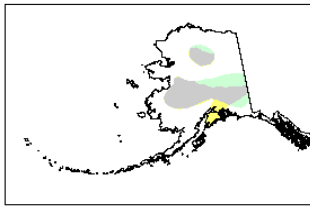

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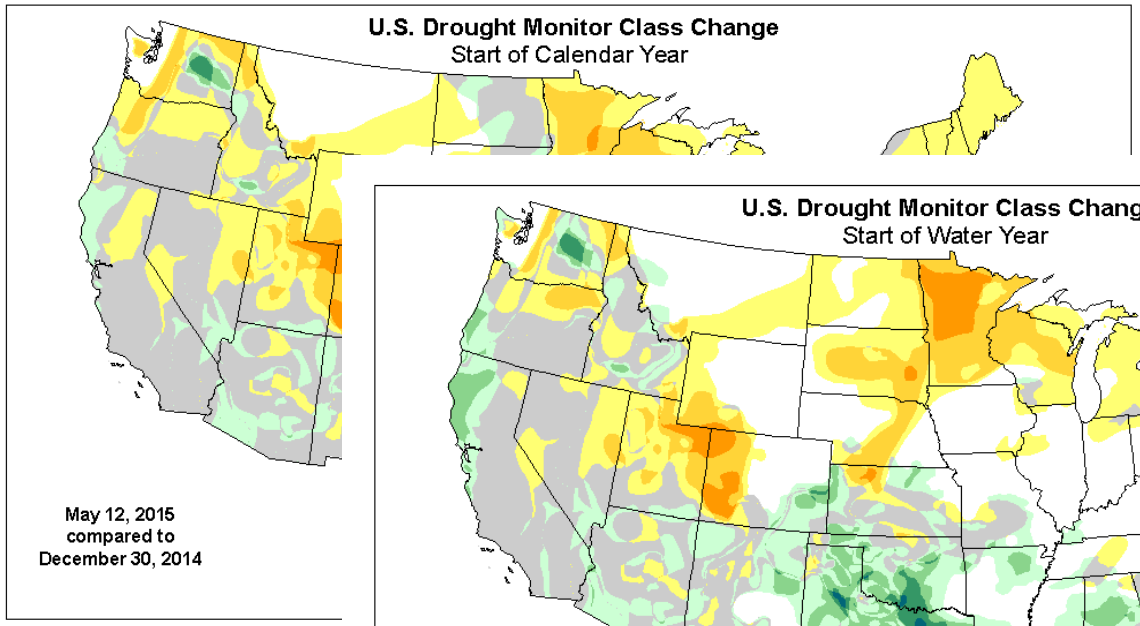

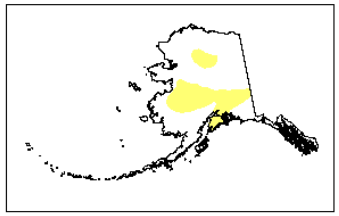

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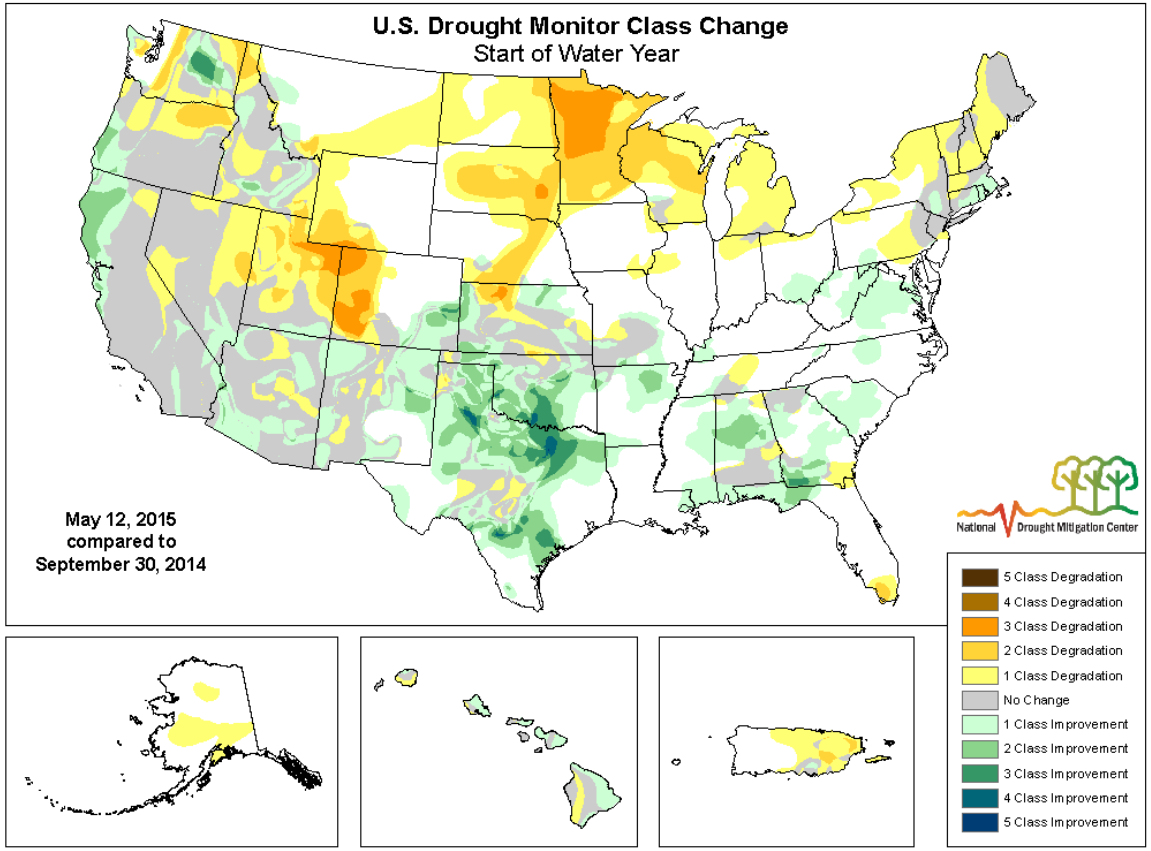

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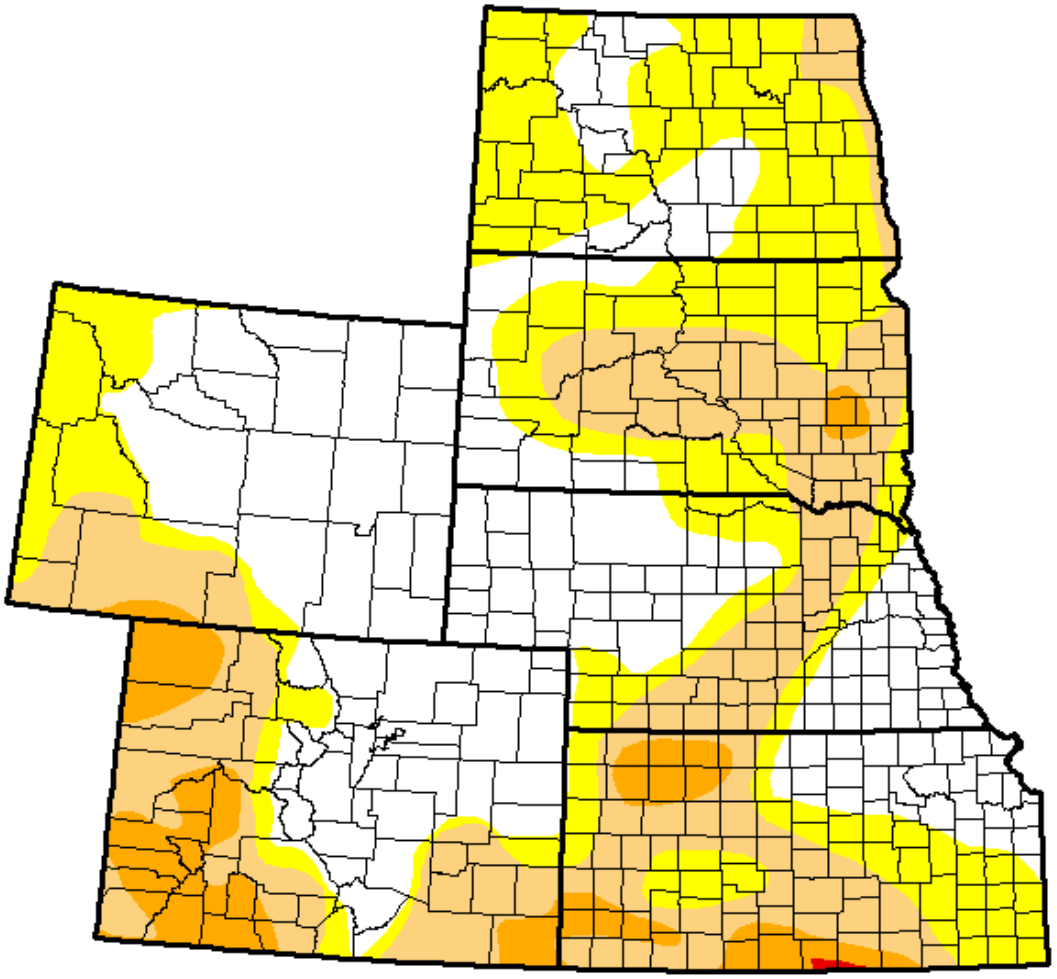
National Drought Mitigation Center

U.S. Drought Monitor

High Plains



May 12, 2015

(Released Thursday, May. 14, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	40.32	59.68	30.90	7.02	0.08	0.00
Last Week 5/5/2015	33.23	66.77	43.94	15.01	0.24	0.00
3 Months Ago 2/10/2015	46.61	53.39	12.64	5.51	0.30	0.00
Start of Calendar Year 12/30/2014	59.44	40.56	11.28	5.46	0.36	0.00
Start of Water Year 9/30/2014	78.99	21.01	12.14	5.98	0.86	0.00
One Year Ago 5/13/2014	57.22	42.78	33.46	20.67	11.09	0.84

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.

Author:
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National Drought Mitigation Center

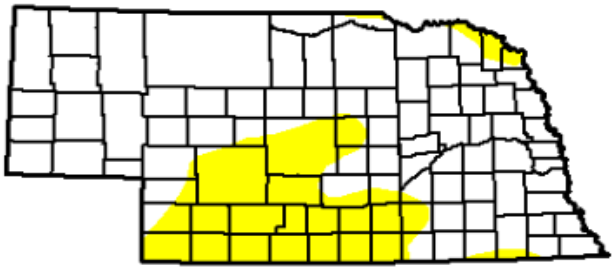
http://droughtmonitor.unl.edu/

U.S. Drought Monitor Weekly Comparison

Nebraska

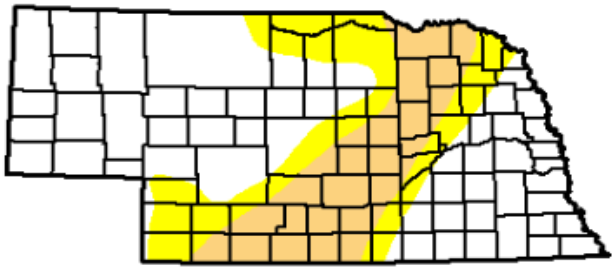
Drought Severity

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



PNG PDF JPG

December 30, 2014



PNG PDF JPG

May 12, 2015

Statistics | Time Series | Narrative | Population Data

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

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2014-12-30	75.78	24.22	0	0	0	0
2015-05-12	61.37	38.63	19.95	0	0	0

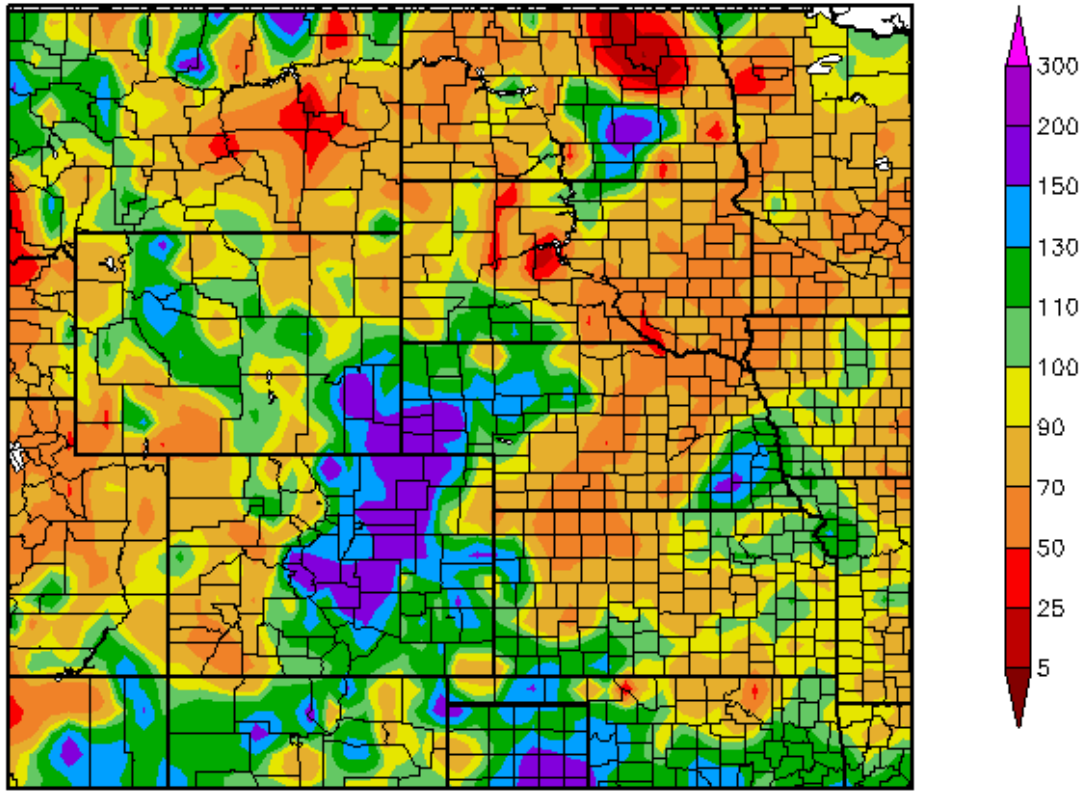
The National Drought Mitigation Center | 3310 Holdrege Street | P.O. Box 830988 | Lincoln, NE 68583–0988
phone: (402) 472–6707 | fax: (402) 472–2946 | Contact Us

Departure from Normal Precipitation (in)
4/19/2015 – 5/18/2015

Percent of Normal Precipitation (%)
4/19/2015 – 5/18/2015

Percent of Normal Precipitation (%)
1/1/2015 – 5/18/2015

Percent of Normal Precipitation (%)
10/1/2014 – 5/18/2015



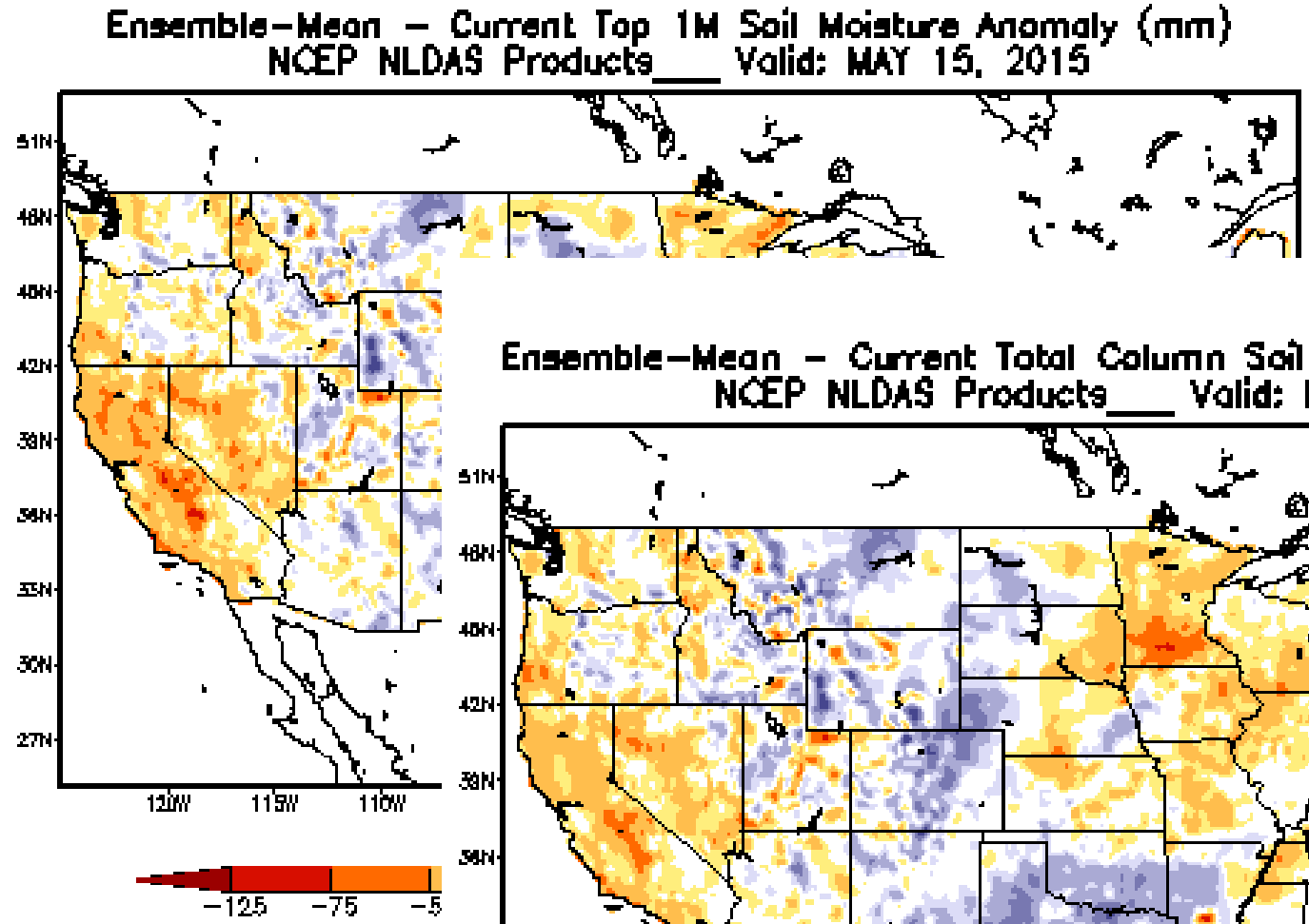
Generated 5/19/

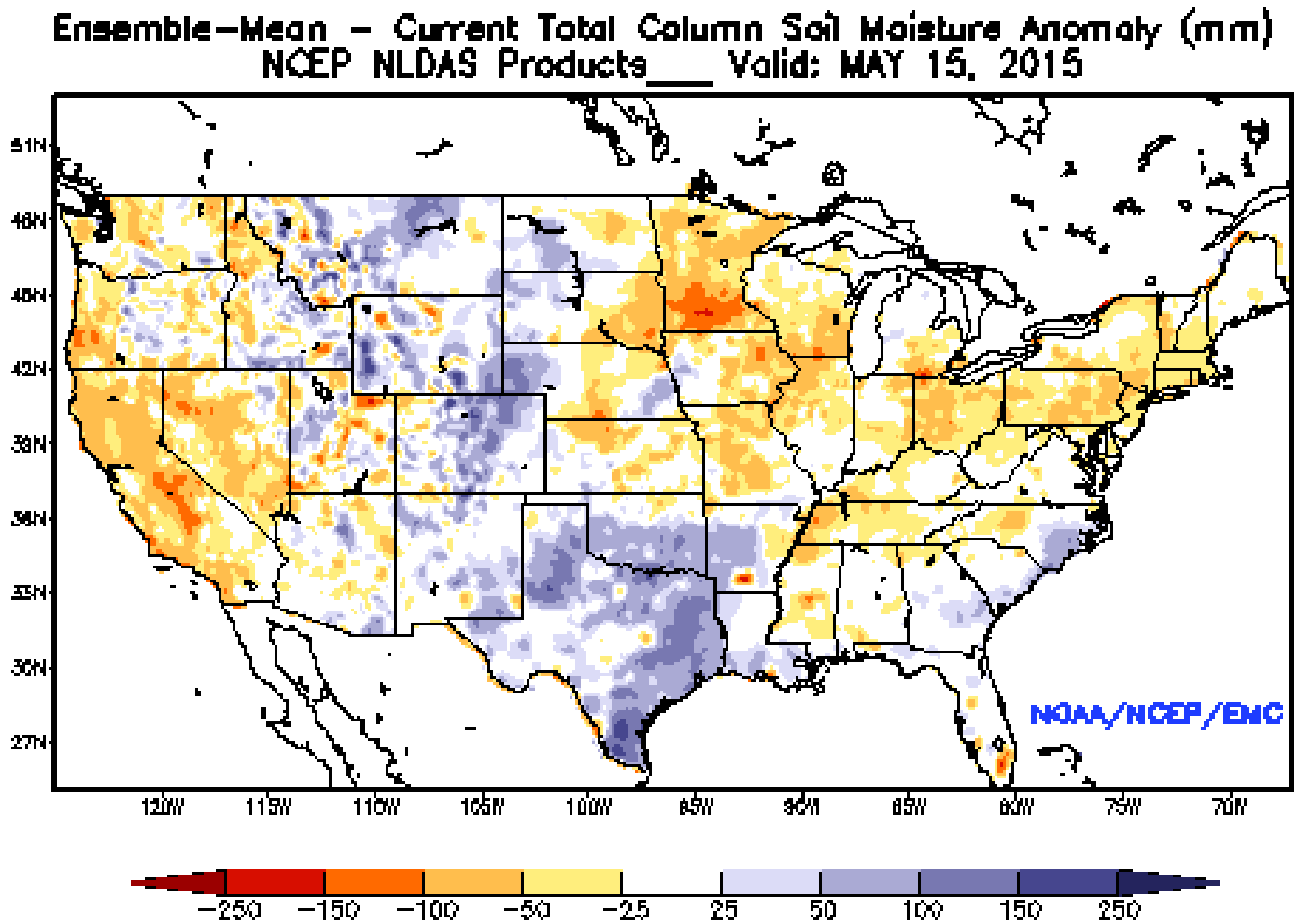
Generated 5/1

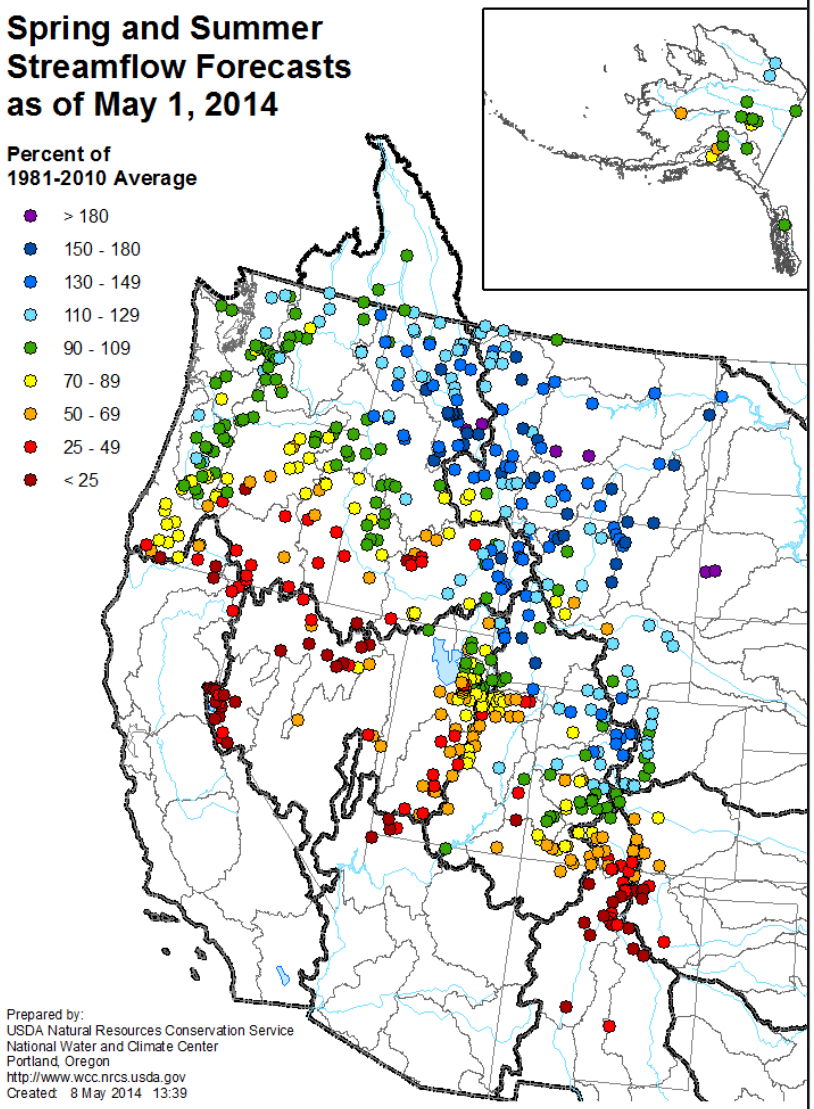
Generated 5/19/

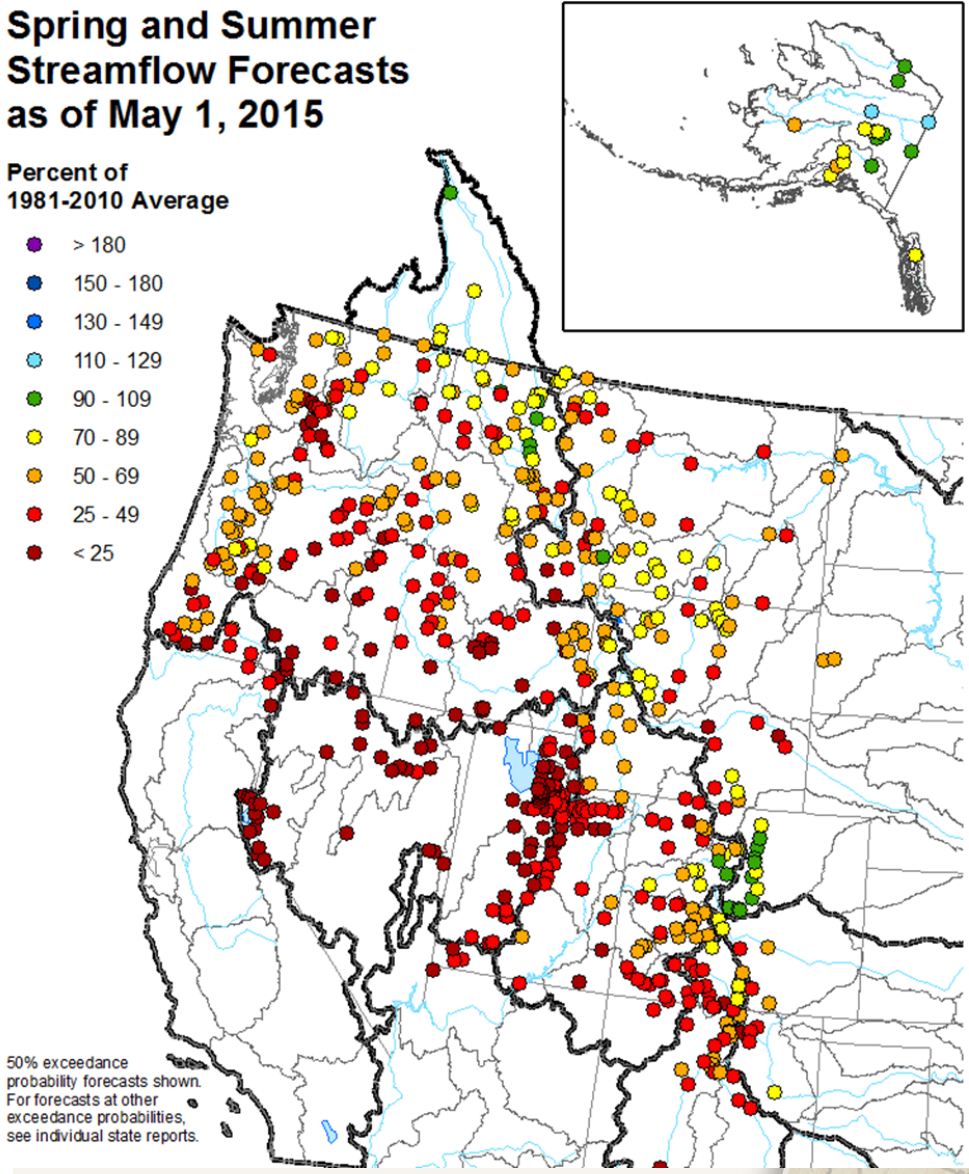
Generated 5/19/2015 at HPRCC using provisional data.

Regional Climate Centers


Ensemble-Mean - Current Top 1M Soil Moisture Anomaly (mm)
NCEP NLDAS Products___ Valid: MAY 15, 2015
51N
48N
45N
42N
39N
36N
33N
30N
27N
120W
115W
110W
-125
-75
-5


Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products___ Valid: MAY 15, 2015
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



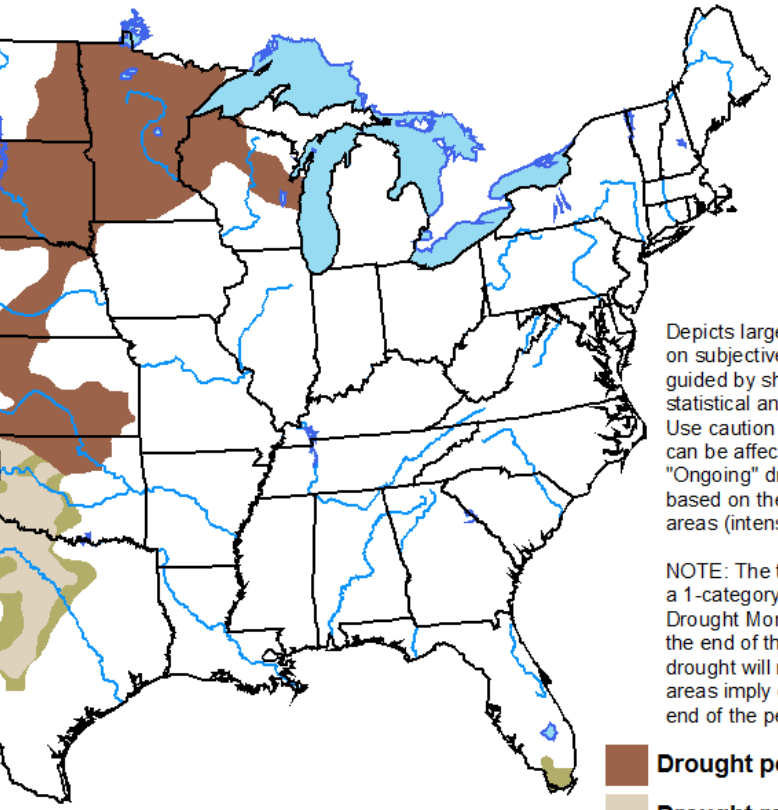


University of Nebraska Lincoln

National Drought Mitigation Center

nt Outlook
e Valid Period

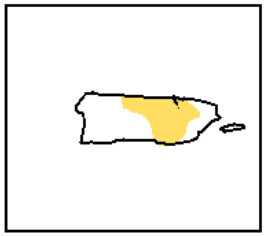
Valid for May 201
Released April 30, 201



Depicts large-scale trends base
on subjectively derived probabili
guided by short- and long-range
statistical and dynamical forecas
Use caution for applications that
can be affected by short lived ev
"Ongoing" drought areas are
based on the U.S. Drought Moni
areas (intensities of D1 to D4).

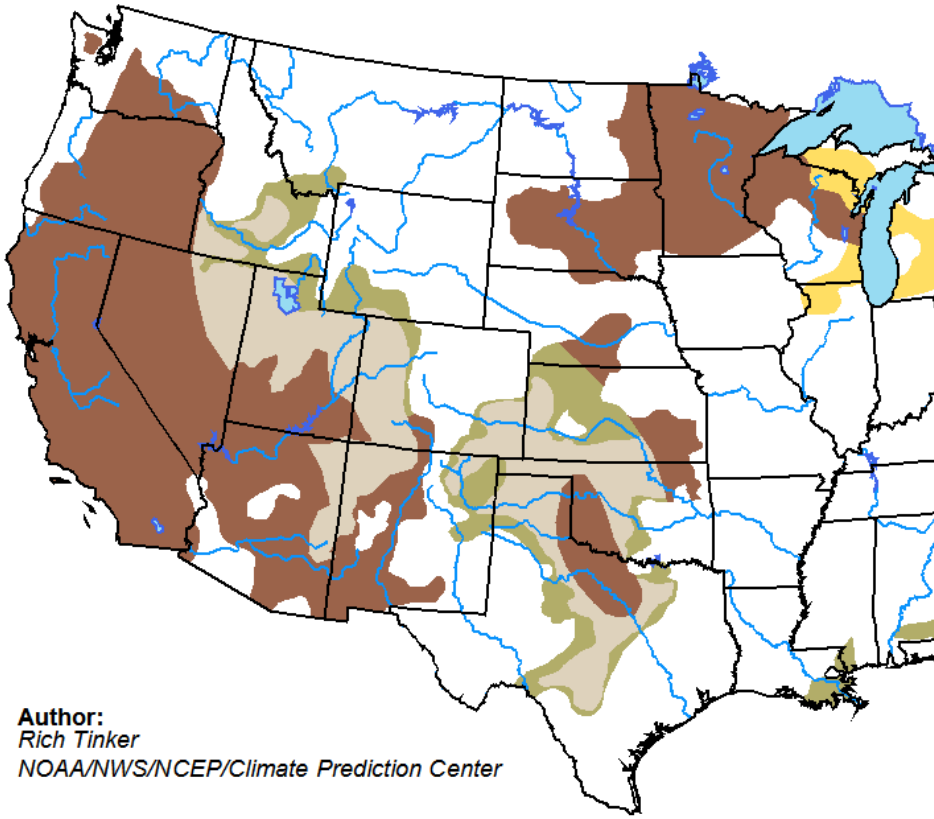
NOTE: The tan areas imply at le
a 1-category improvement in the
Drought Monitor intensity levels
the end of the period, although
drought will remain. The green
areas imply drought removal by
end of the period (D0 or none).

- **Drought persists/intensifi**
- **Drought remains but impr**
- **Drought removal likely**
- **Drought development like**

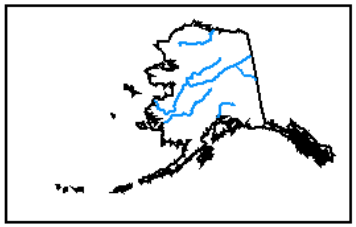


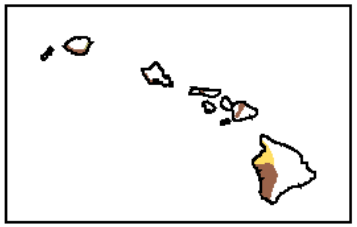
http://go.usa.gov/h6jh

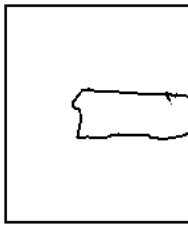
U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period



Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center







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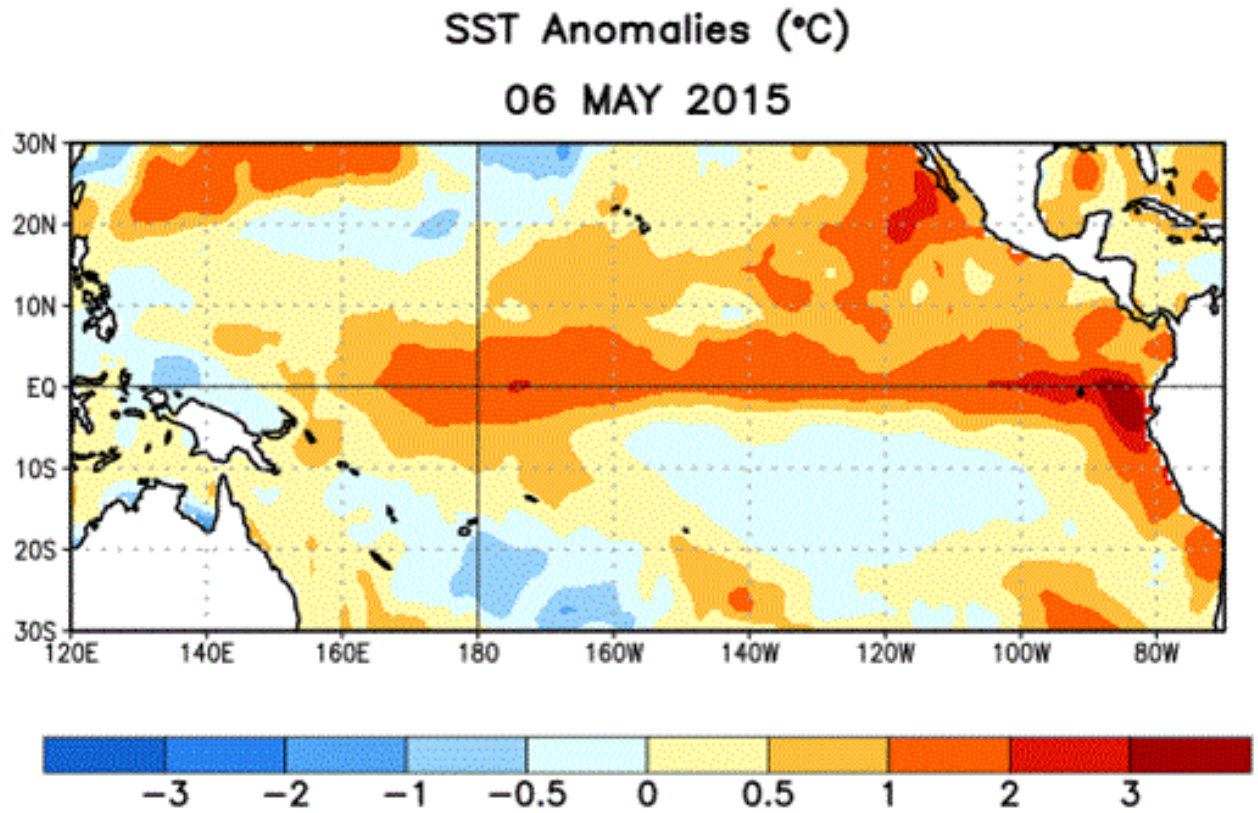


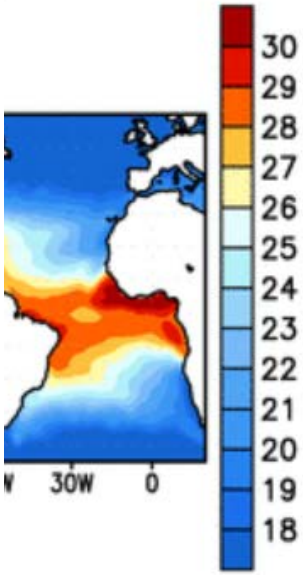
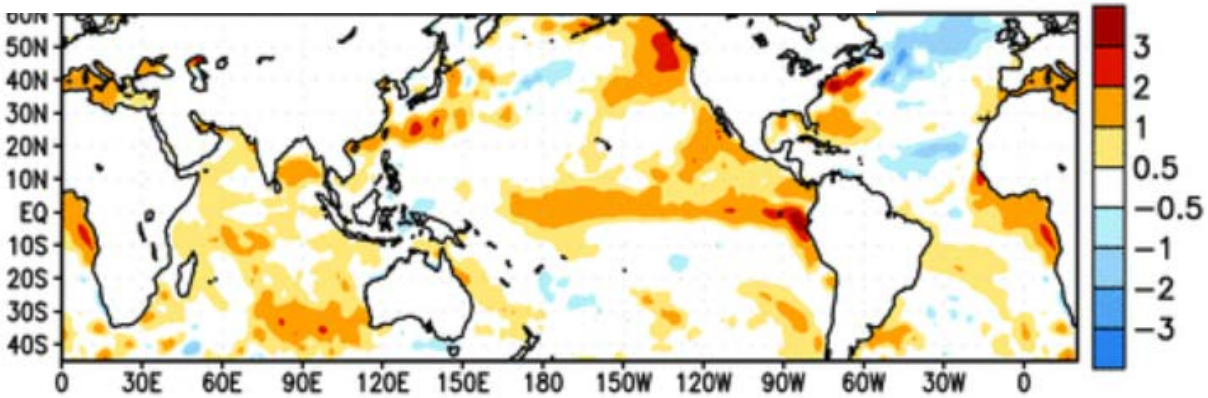
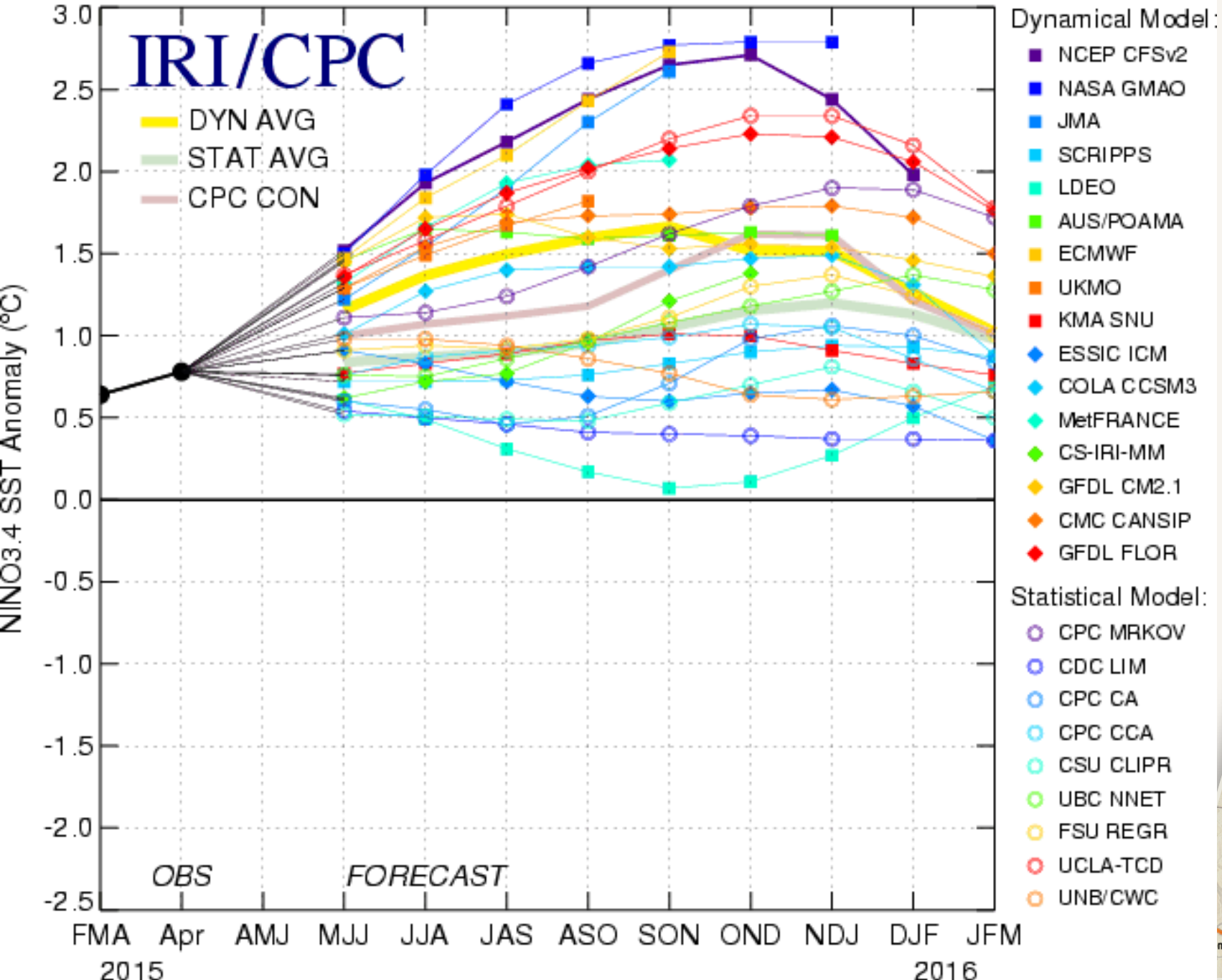


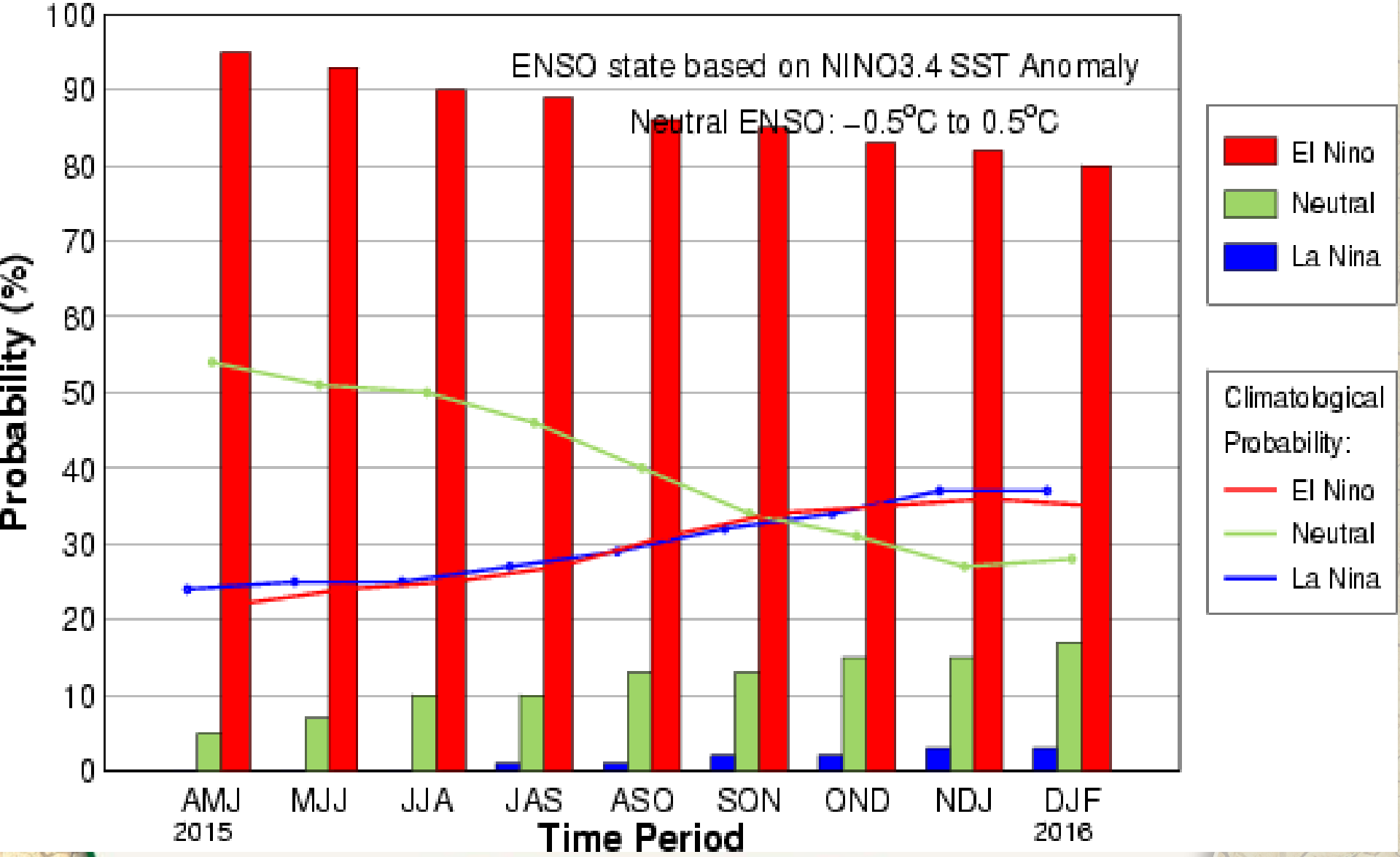
Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 6 May 2015. Anomalies are computed with respect to the 1981-2010 base period weekly means.



Mid-May 2015 Plume of Model ENSO Predictions



Early–May CPC/IRI Consensus Probabilistic ENSO Forecast



National Drought Mitigation Center

Climate/Drought Summary

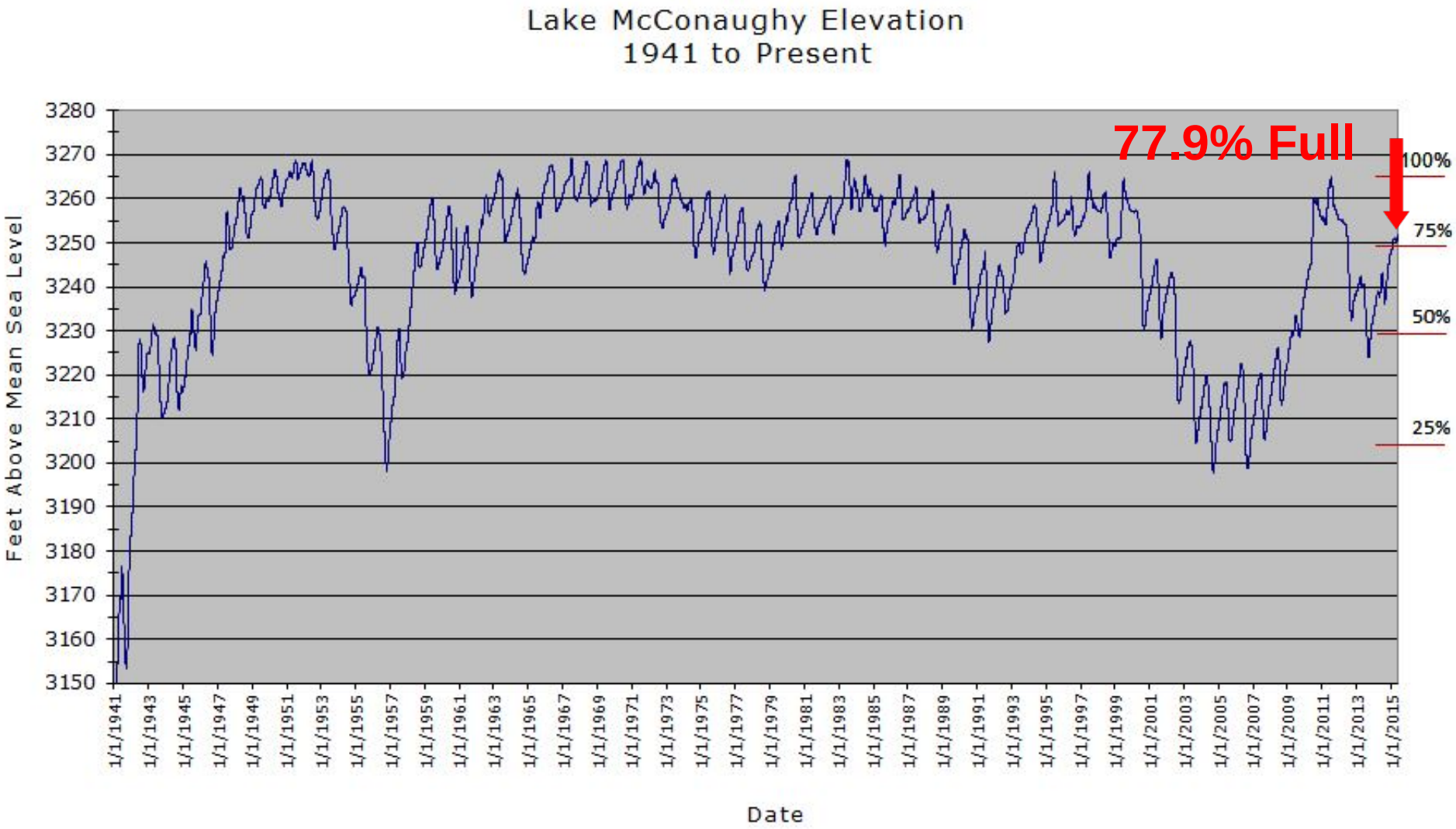
- We have had a **good/great late spring** rainfall-wise across most of the region…
  - 150-200% of normal precipitation over the past 30 days and slightly cooler
  - Too much moisture in some places…leading to **flooding** along w/ **recent severe weather outbreaks**
- **34.6% of the contiguous U.S.** is currently in drought (D1 or worse) as of 5/12/2015
  - This time last year it was at **38.1%**.
  - **Down nearly 6%** Year-to-Date (28.7% on Dec. 30, 2014)
- Current USDM (5/12/2015) **for NE** shows **20%** of the state in drought **(D1 only), up from 0% on January 1, 2015**
  - **October 1: 0% of NE was in drought**

Climate / Drought Summary

- The Climate Prediction Center's Seasonal Drought Outlook ***calls for improvement or removal of drought*** across the ***Central and Southern Plains*** by the end of July (w/ some exceptions in sc NE)
  - **Large fetch** of moisture from the Pacific region and Gulf of Mexico has led to the recent favorable rains.
  - Despite early-period wetness, precipitation for the upcoming wet season is enough of a question mark that persistence is forecast in southern Nebraska and eastern Kansas.
  - ***Low*** confidence for this period in the Central Plains region

- **CPC / IRI ENSO Alert System Status: El Niño Advisory**
  - ***Synopsis*: There is an *approximately 90% chance* that El Niño will continue through Northern Hemisphere summer 2015, and a *greater than 80% chance* it will last through 2015.**
  - More important for **southern Plains in winter**
  - Influence on **Tropical Storm / Hurricane season** (reduced activity/reduced rains)
  - **Monsoon?** Onset timing/intensity the key

Nebraska Water Supply Update…



SOURCE: CNPPID www.cnppid.com

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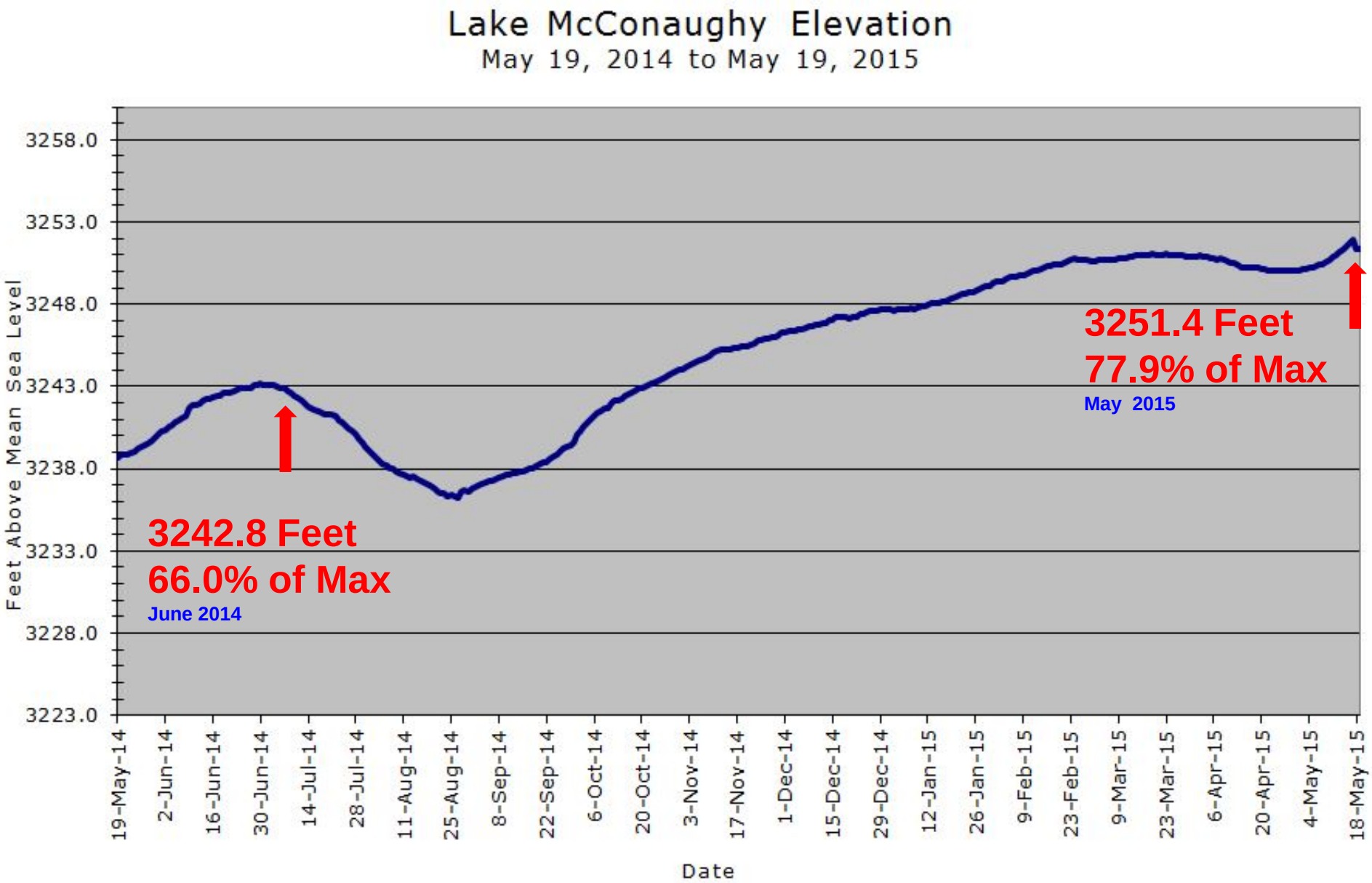


SOURCE: CNPPID www.cnppid.com

National Drought Mitigation Center

May 2015 CARC Meeting

Stream flow in cubic feet per second (cfs). Spot reading for current day; daily average for week, month, and year ago.

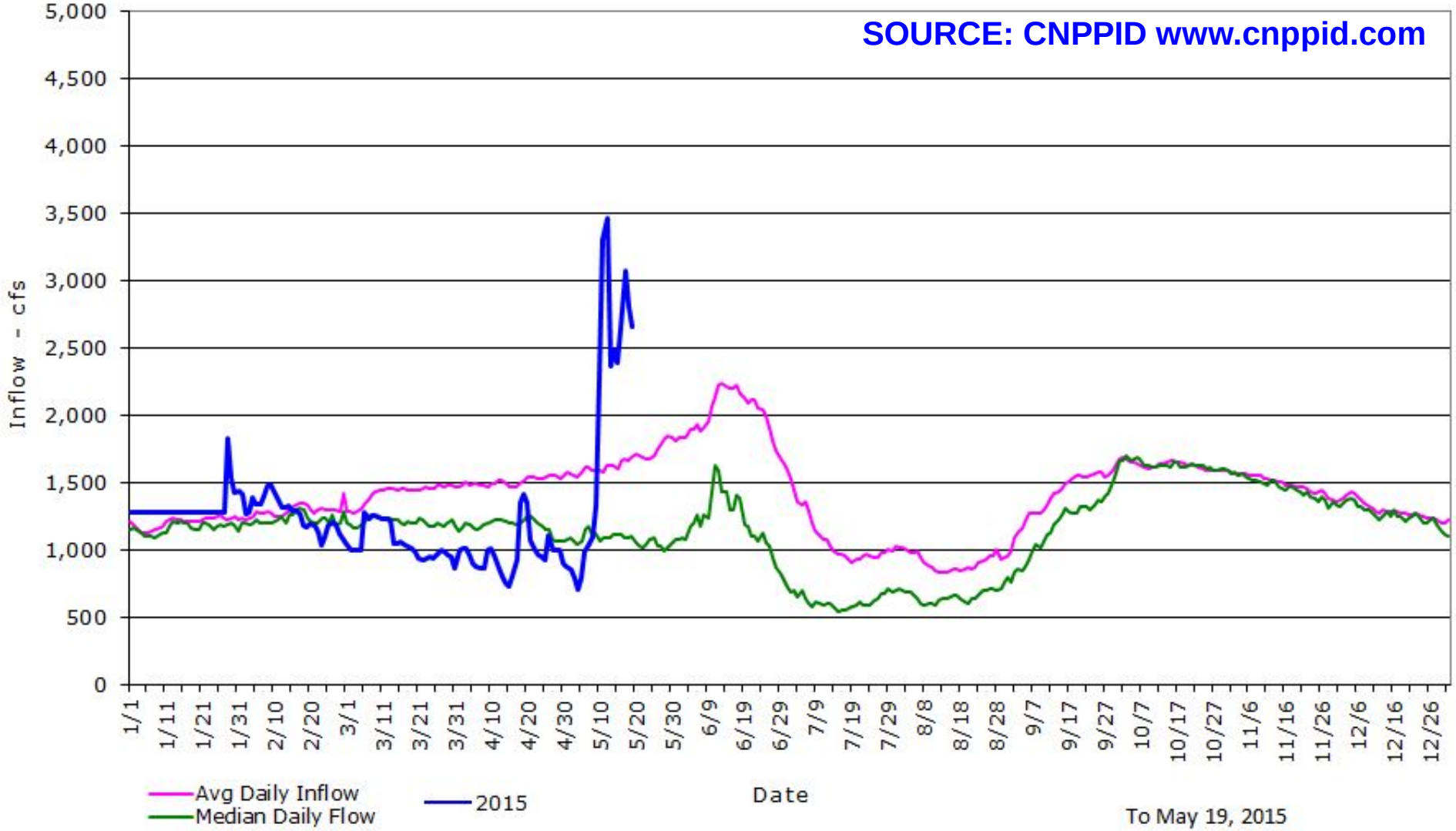
	Today (7 a.m.)	Week Ago	Month Ago	Year Ago
Inflows to Lake McConaughy (Current, Average & Median Inflow graph)	2,664	3,461	1,415	2,010
Total Lake McConaughy Outflow	400	406	1,764	325
North Platte below Keystone Dam	30	25	25	4
Keystone Dam Diversion	295	304	1,752	525
North Platte at North Platte	333	515	655	238
South Platte at Roscoe	10,400	954	329	145
South Platte at North Platte	6,380	2,875	430	393
Diversion to CNPPID Supply Canal	2,181	2,220	2,232	803
Platte River at Overton	7,880	2,636	2,133	298
Platte River at Kearney	8,220	2,171	2,408	221
Platte River at Grand Island	6,140	2,084	2,659	315

** Percent of capacity is dependent upon maximum elevations/operating levels at different times of the year. Lower maximum levels were established in 1974 after a 1972 storm caused damage to the dam's face. The limits are in effect for periods when high winds and waves are most likely to occur. (See Lake McConaughy Maximum Operating Levels table) ** Flow too low for gauge to measure @ - Yesterday's average flow # - Ice affecting stream gauges; readings may not be accurate N/A - Data temporarily unavailable (data not reported from gauge)*

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

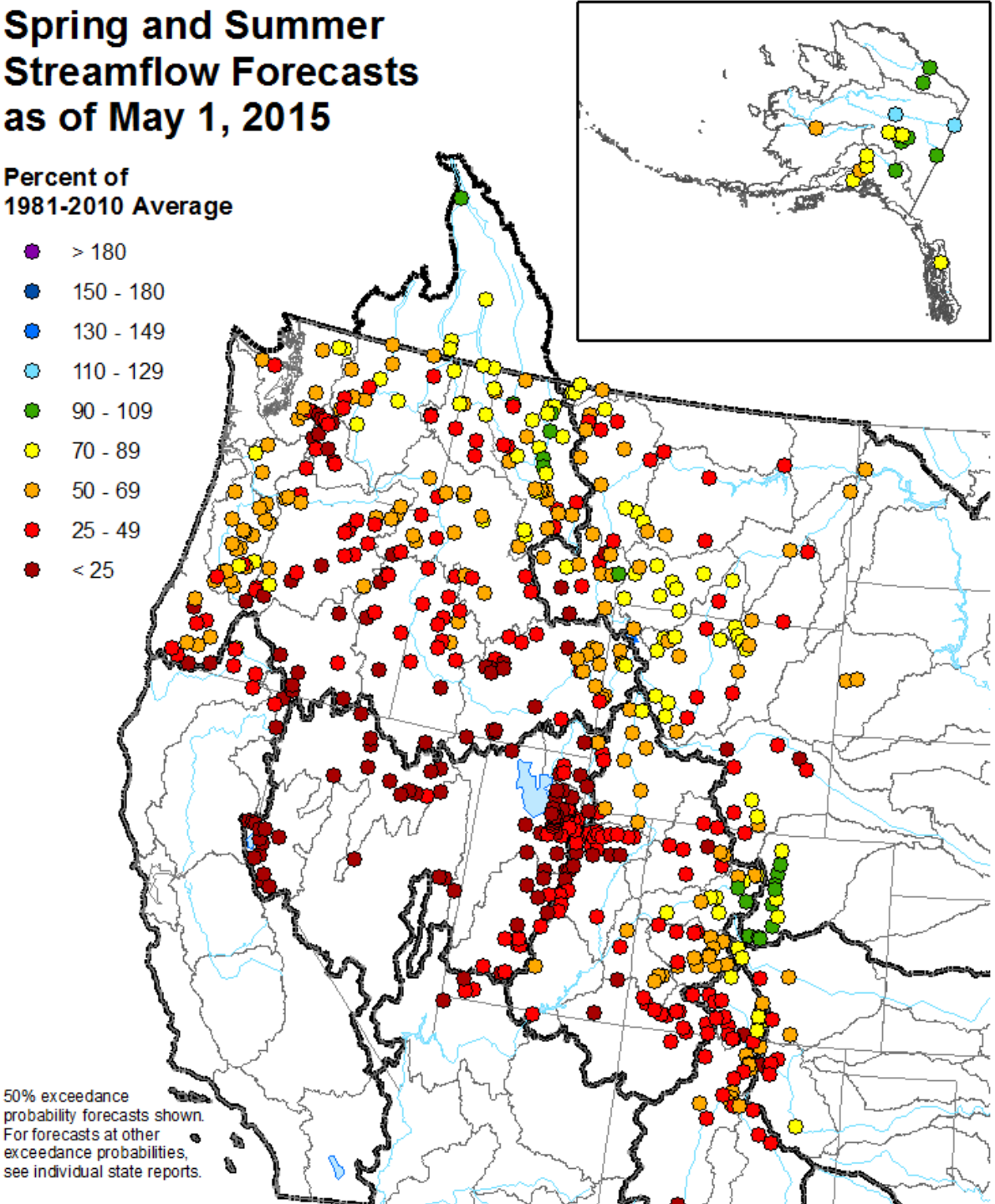
Lake McConaughy

At Lake McConaughy has 1.359 million acre-feet in storage (77.9% of capacity). Inflows have increased recently and ranged from 1,100 cubic feet per second to 3,251 cubic feet per second, which is above normal for historical inflows for this time of year.

Snowpack in the upper North Platte River Basin is 62 percent of normal and 39 percent of normal in the lower basin with declining values, a few weeks ahead of normal. Snowpack in the South Platte River Basin is at 90 percent of normal.

SOURCE: CNPPID www.cnppid.com

Spring and Summer Streamflow Forecasts as of May 1, 2015



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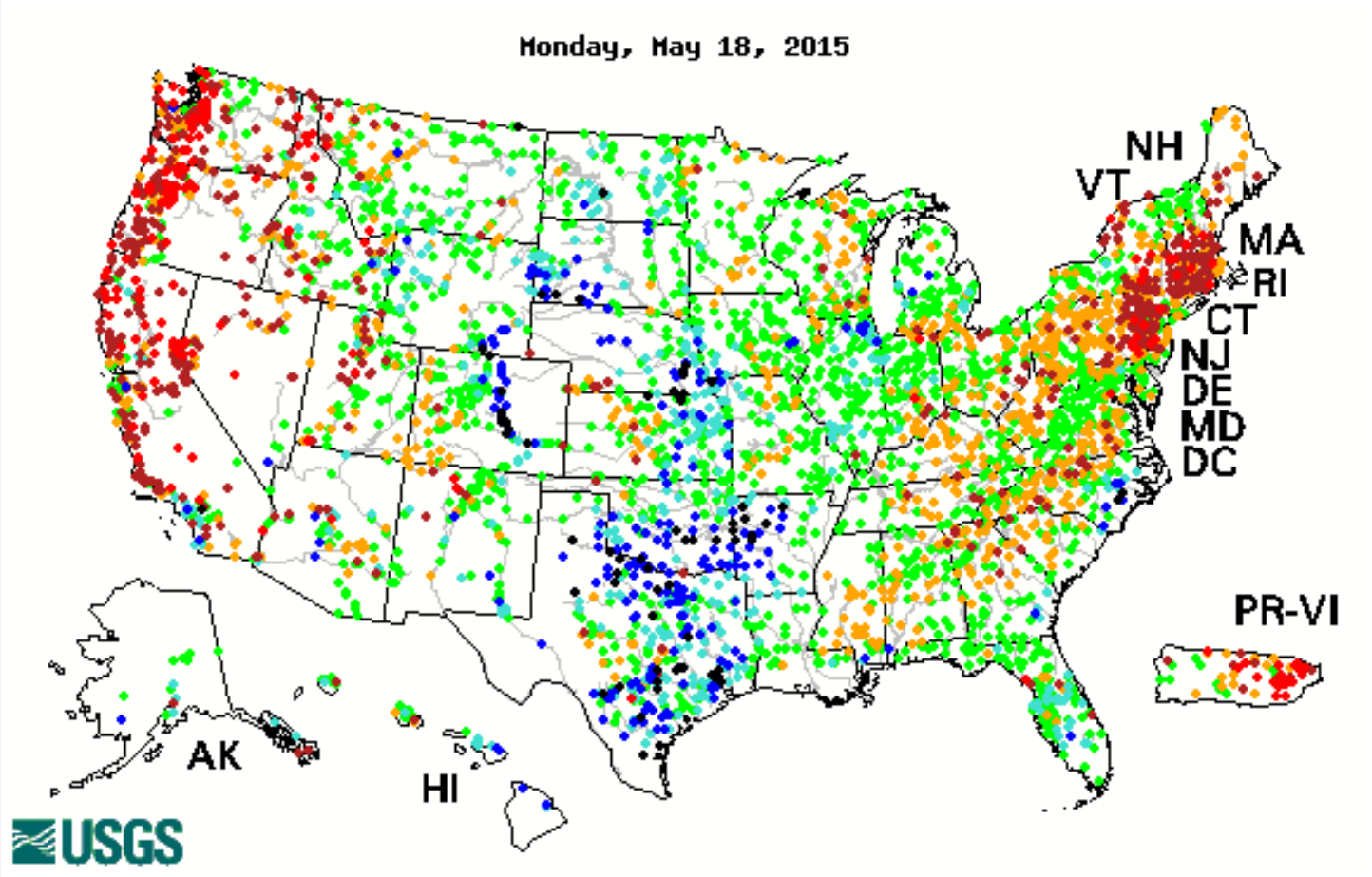
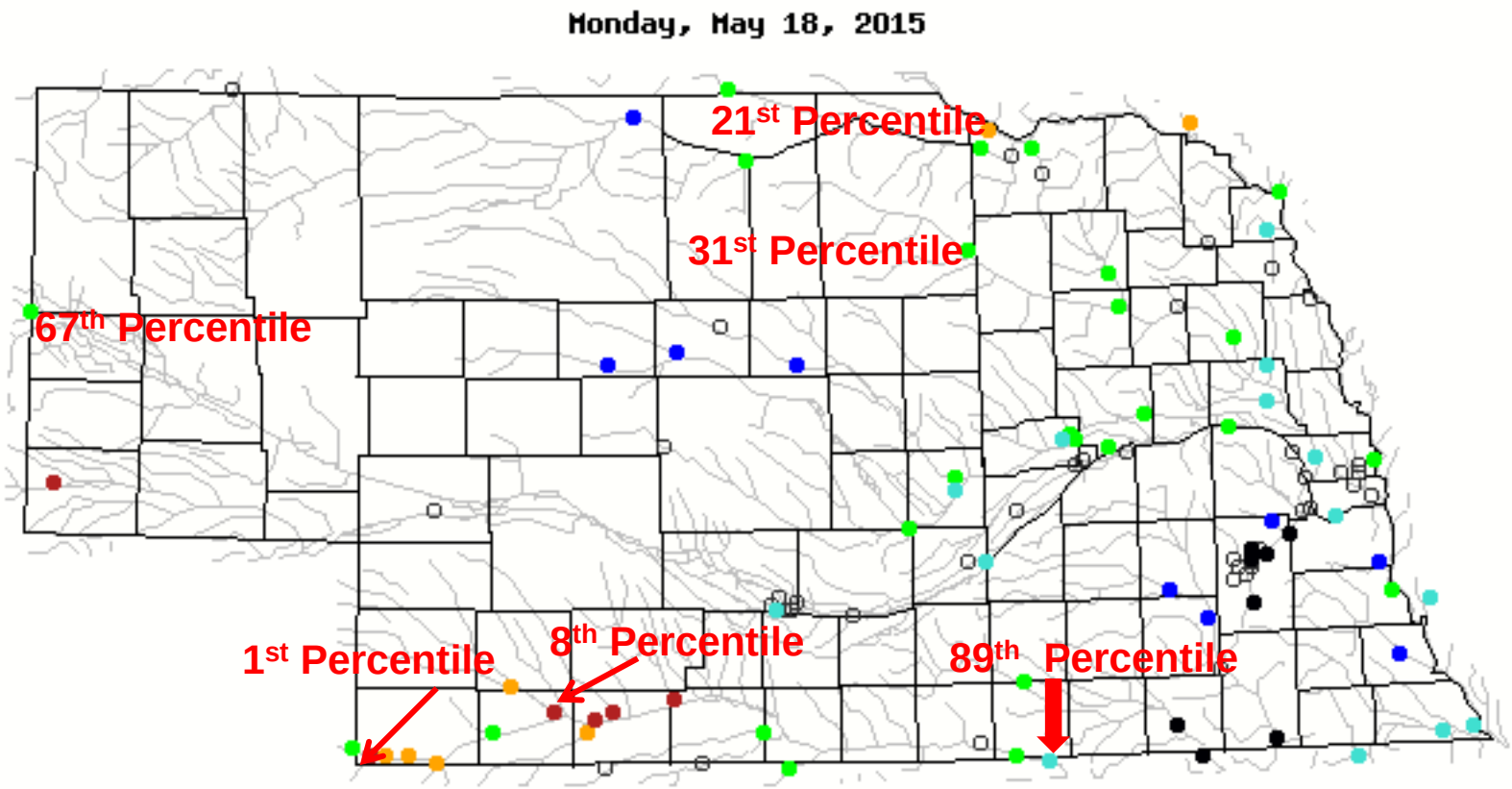
14-day average streamflow compared to historical streamflow for the day of year



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

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



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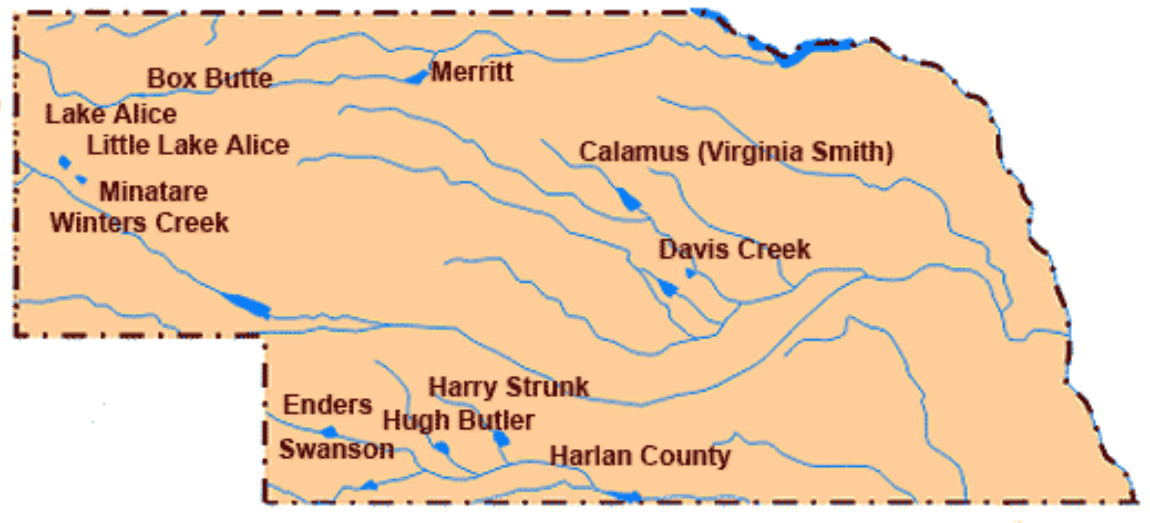
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Republican River Basin

- **Hugh Butler:** 28.6%(19.7%) of conservation pool
- **Enders:** 24.2% (21.0%) of conservation pool
- **Harry Strunk:** 100%(62.7%) of conservation pool
- **Swanson:** 40.8% (27.9%) of conservation pool



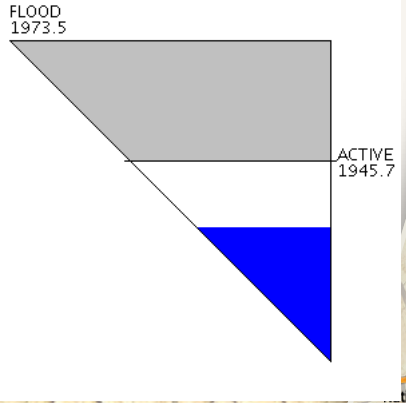
*values in red are from the last CARC meeting in June 2014.

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

Republican River Basin

Harlan County Current Conditions

- ✓ Conservation Pool is 60.3% full (53.7%)
- ✓ 189,484 Acre-Feet in storage compared to 168,622 Acre-Feet (AF) of water in storage during June 2014.
- ✓ Last year at this time, 156,838 AF was in storage.
- ✓ Historical storage for this time of the year is 299,153 AF



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

Water Supply Summary

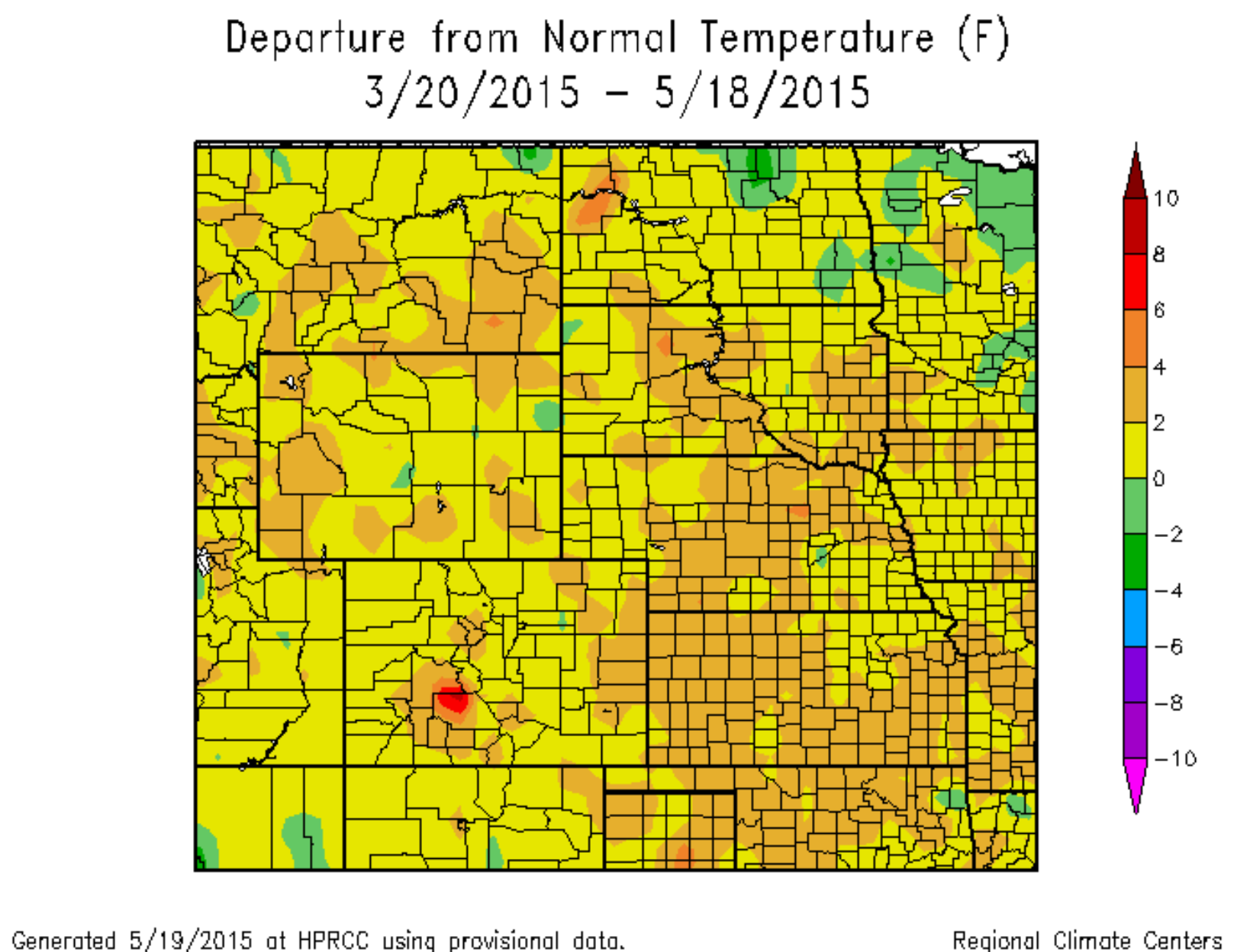
- Hydrologic conditions across the state are in good shape as we go into the summer.

- Lake McConaughy is currently:
  - 8.6 feet higher than it was during the last CARC meeting in June 2014.
  - The inflows have increased over the last few weeks as the influx of good rains and earlier runoff have combined for more available water going into the system
- Overall, storage in the Republican River basin has improved since the last CARC meeting.
  - Harlan County is currently:
    - 20,862 Acre-Feet higher than in June 2014 (last CARC meeting)
    - 109,669 AF lower than the historical average for this time of year

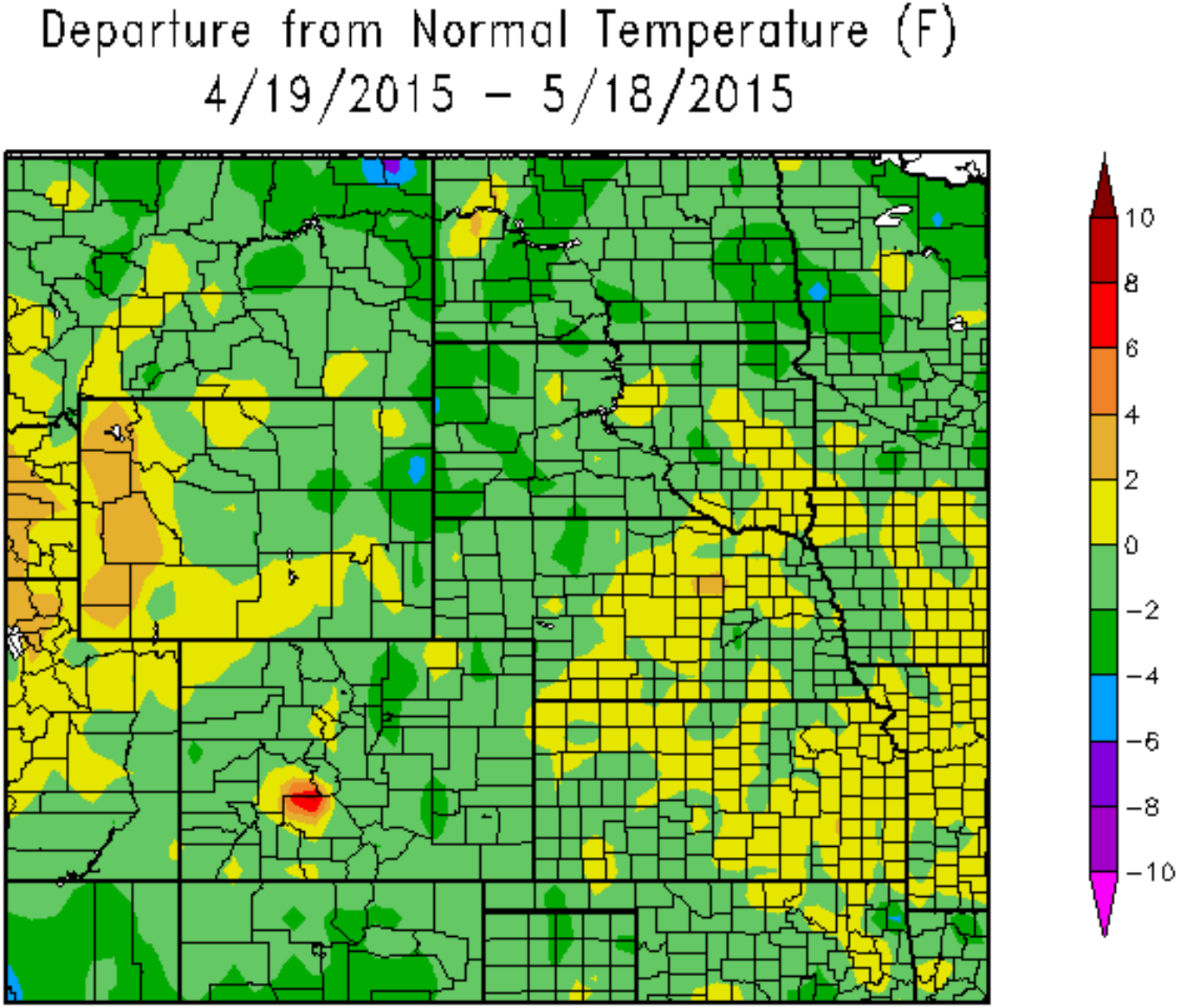
Any Questions ?

Current Conditions for Nebraska

60 Day Temperatures



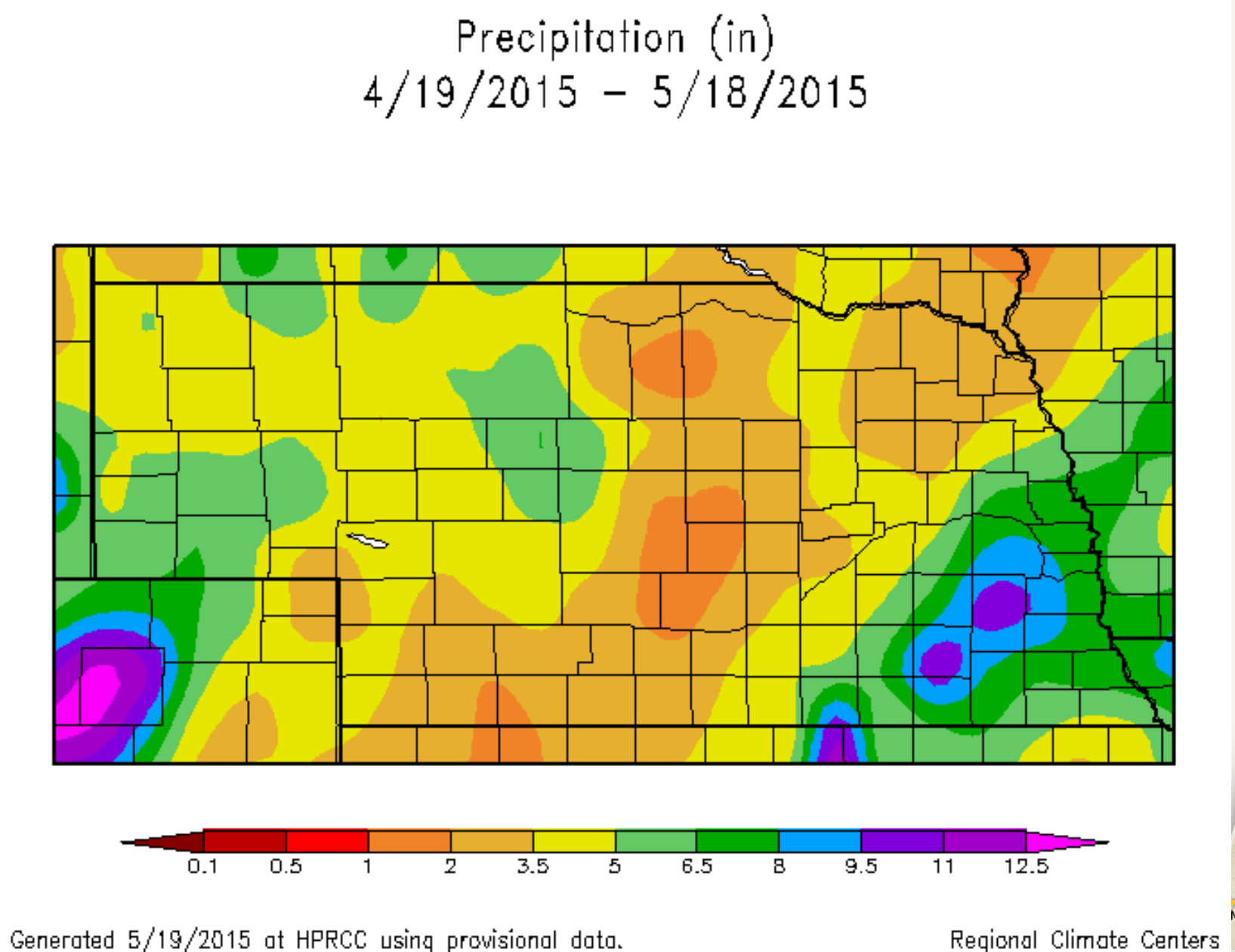
Last 30 Days



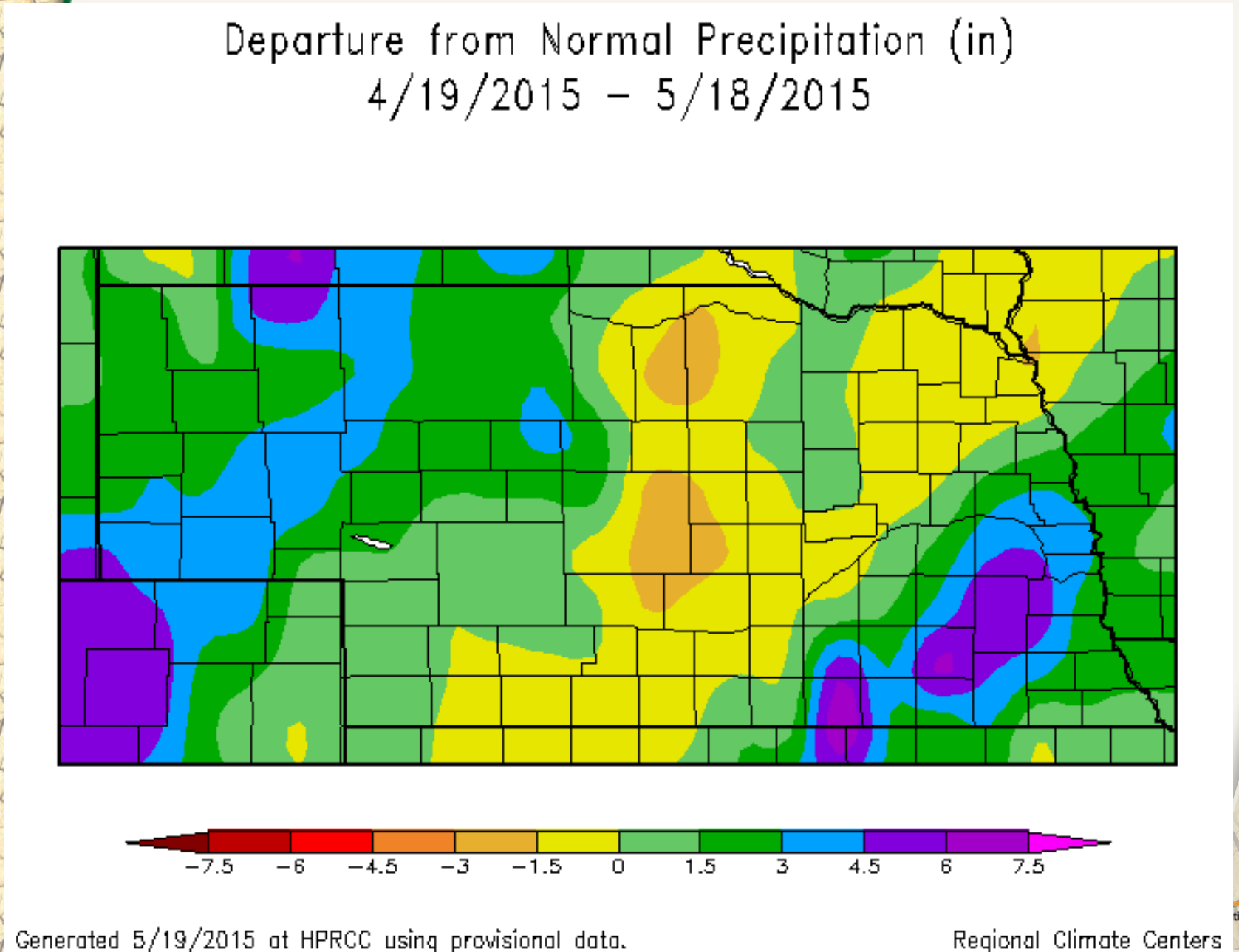
Generated 5/19/2015 at HPRCC using provisional data.

Regional Climate Centers

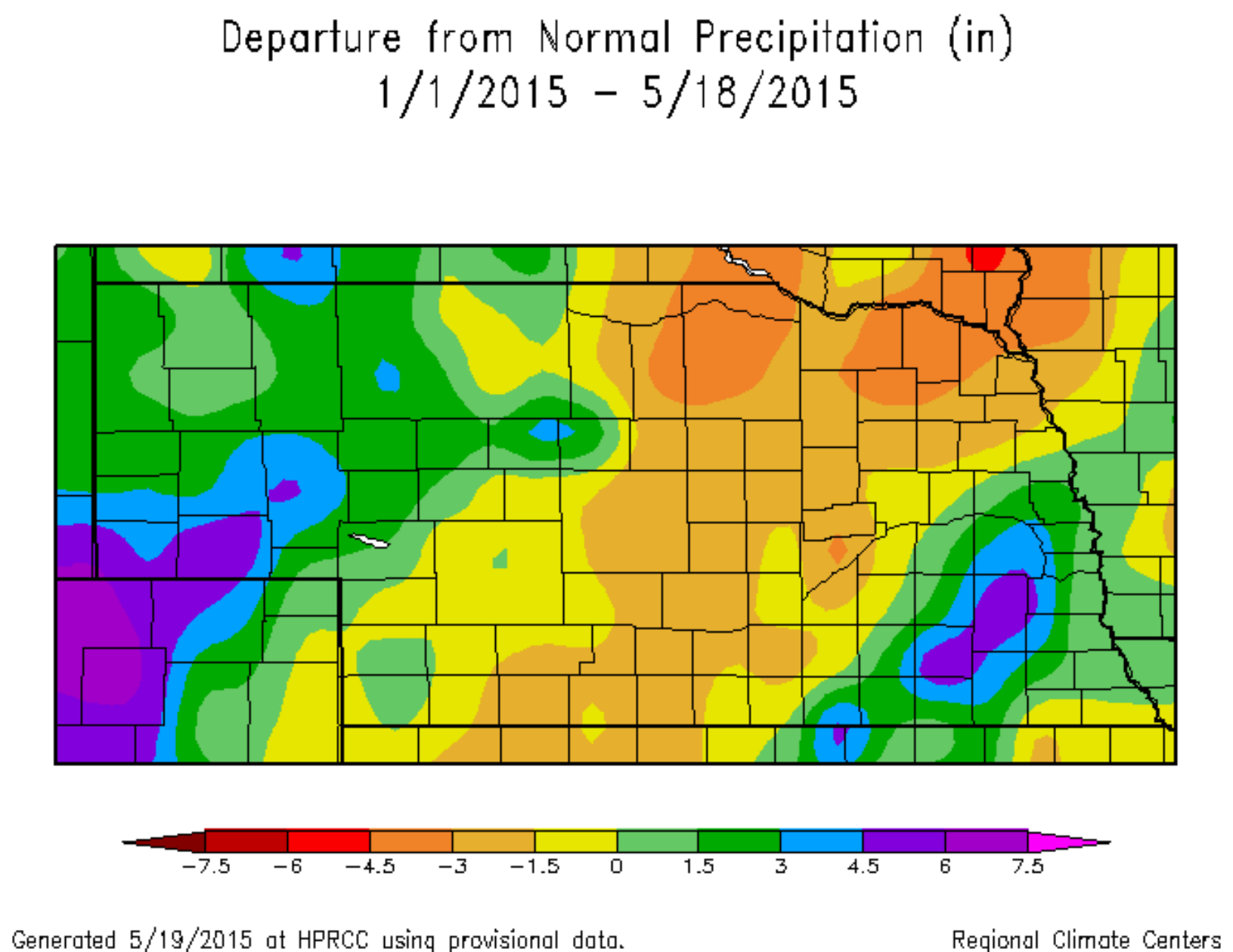
Precipitation



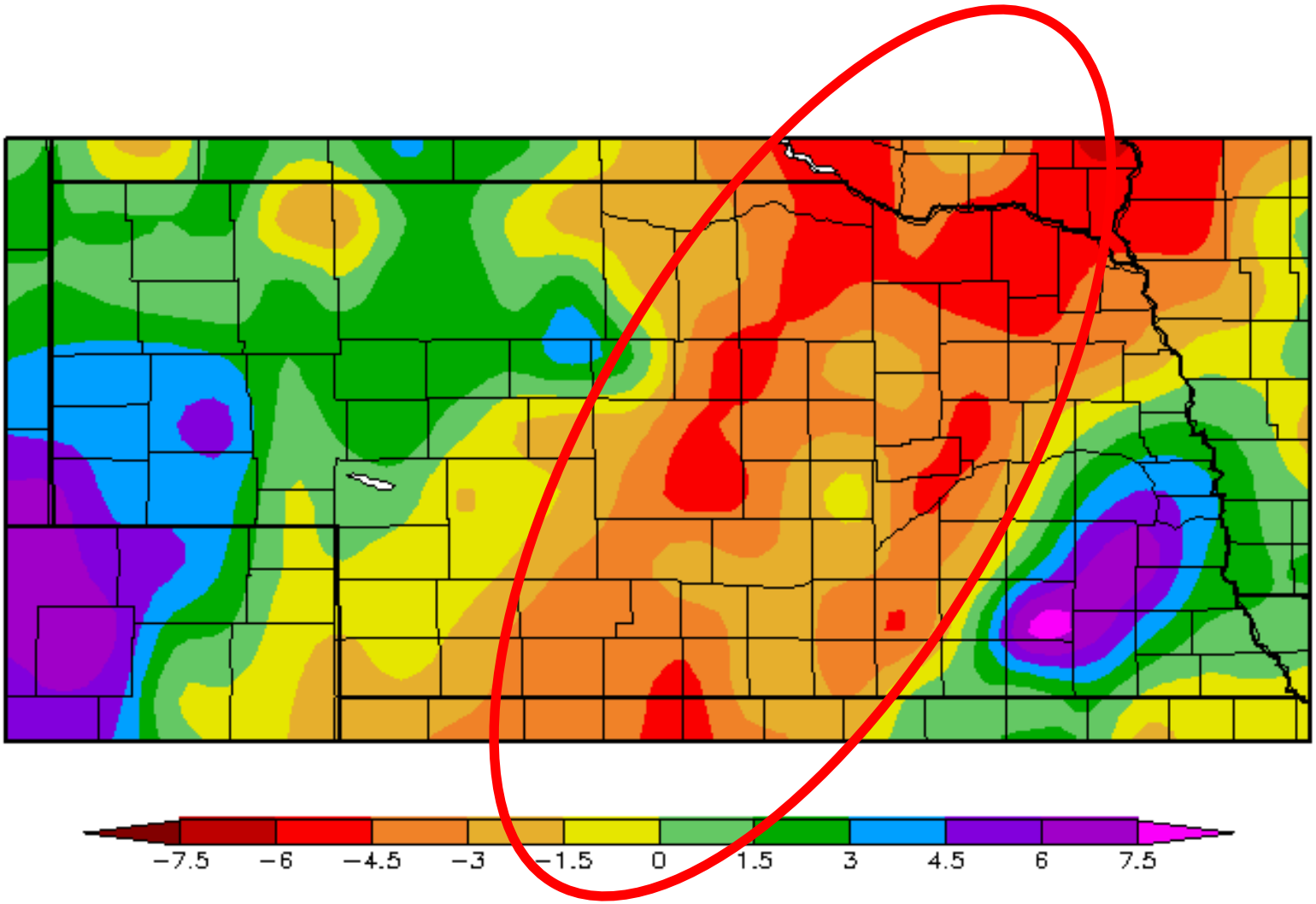
30 Day Precipitation Departure



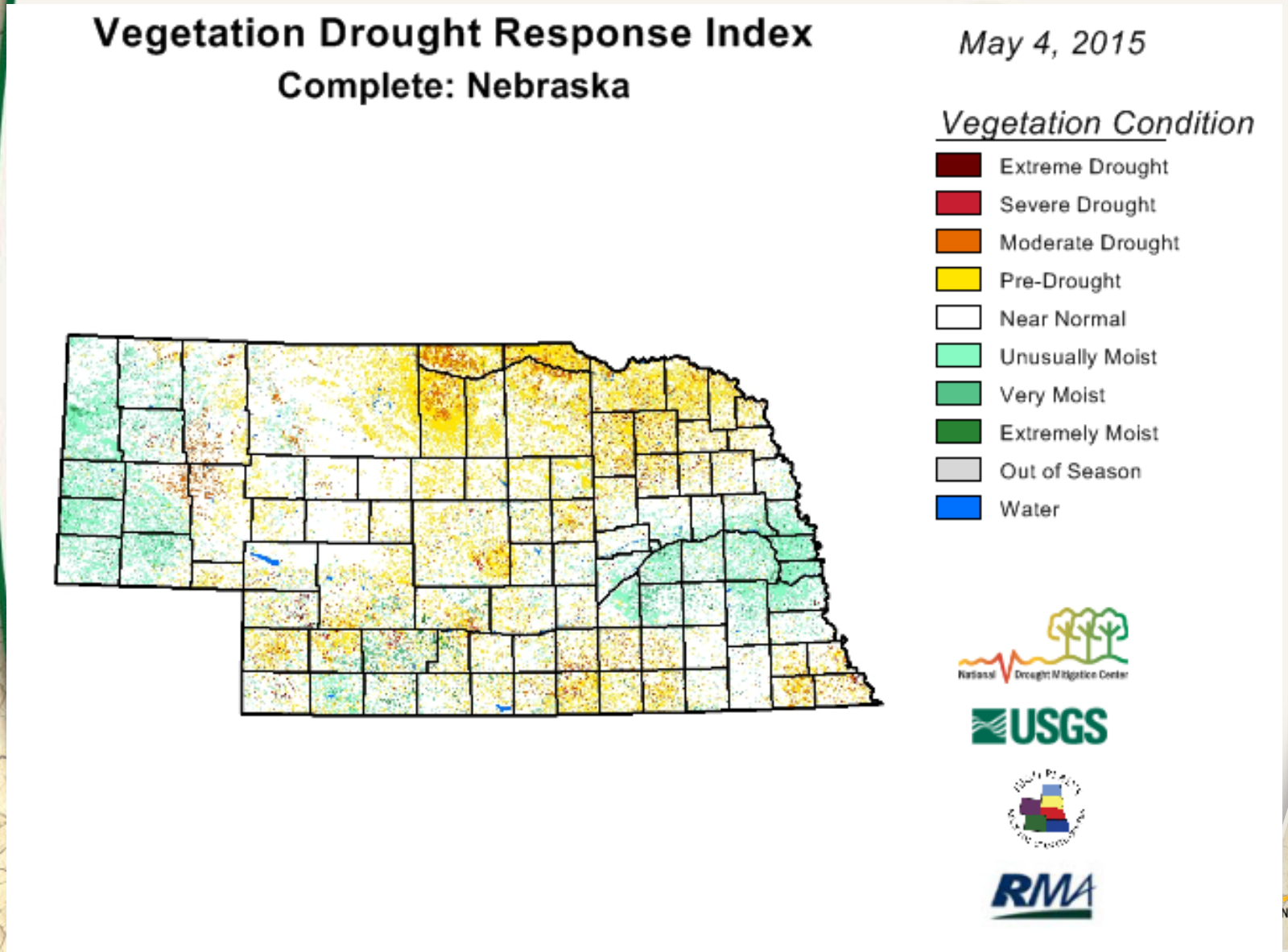
2015 Precipitation to Date



Current Recharge Period



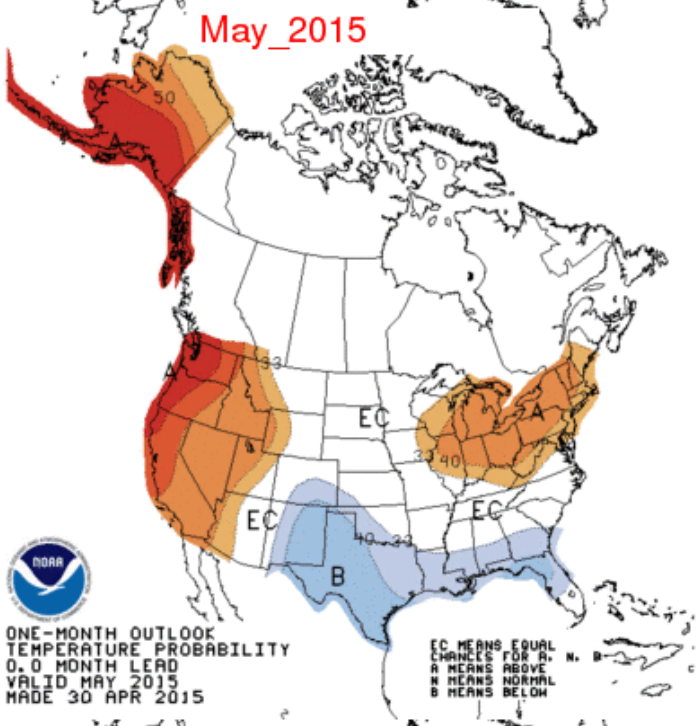
Vegetation Drought Response Index (VegDri)

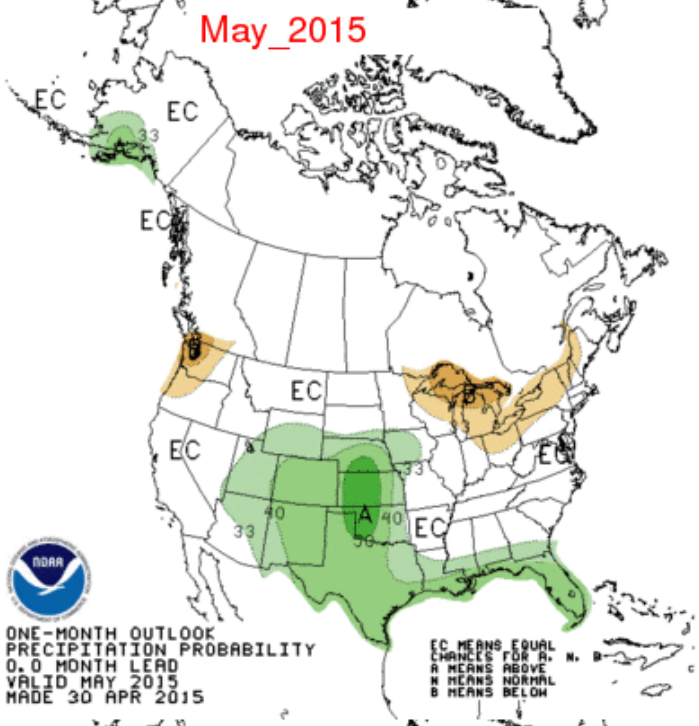


NIDIS

University of Nebraska Lincoln

National Drought Mitigation Center


May_2015
ONE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.0 MONTH LEAD
VALID MAY 2015
MADE 30 APR 2015
EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW


May_2015
ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.0 MONTH LEAD
VALID MAY 2015
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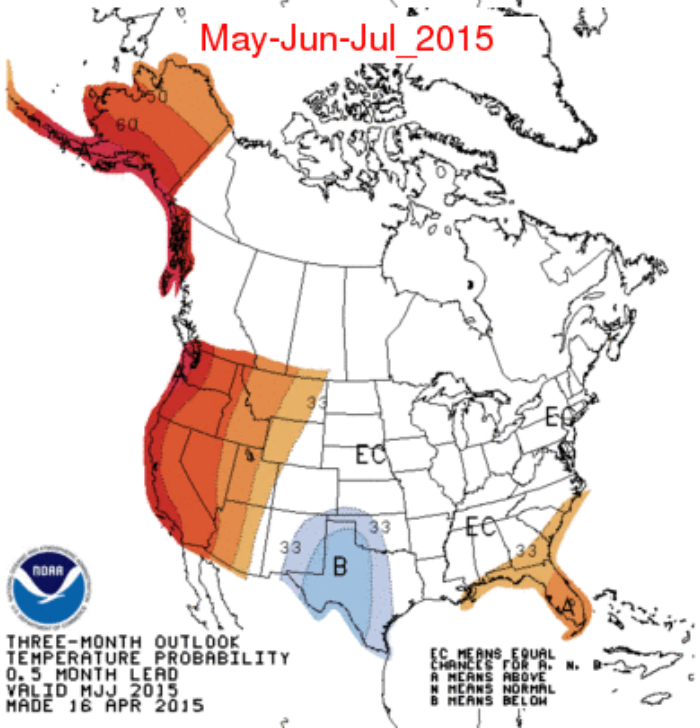
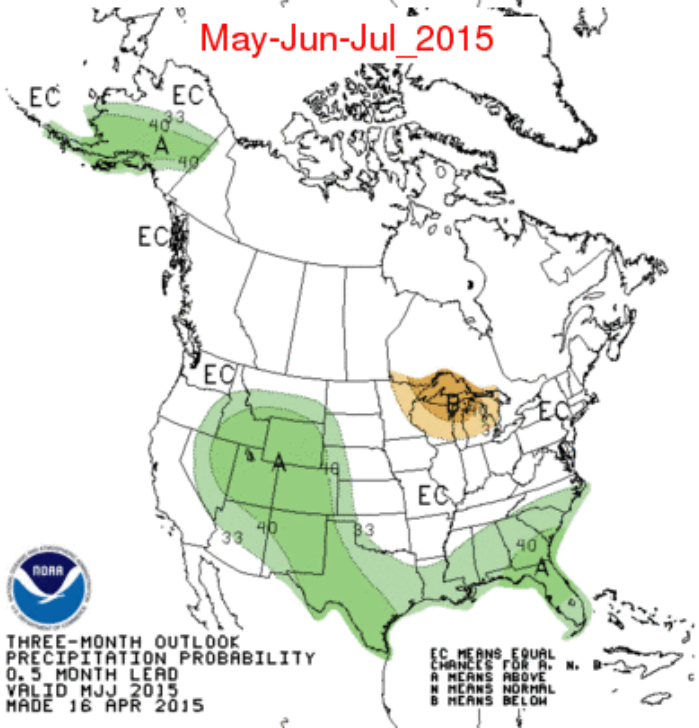

May-Jun-Jul_2015
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID MJJ 2015
MADE 16 APR 2015
EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW


May-Jun-Jul_2015
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
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MADE 16 APR 2015
EC MEANS EQUAL CHANCES FOR A, N, B
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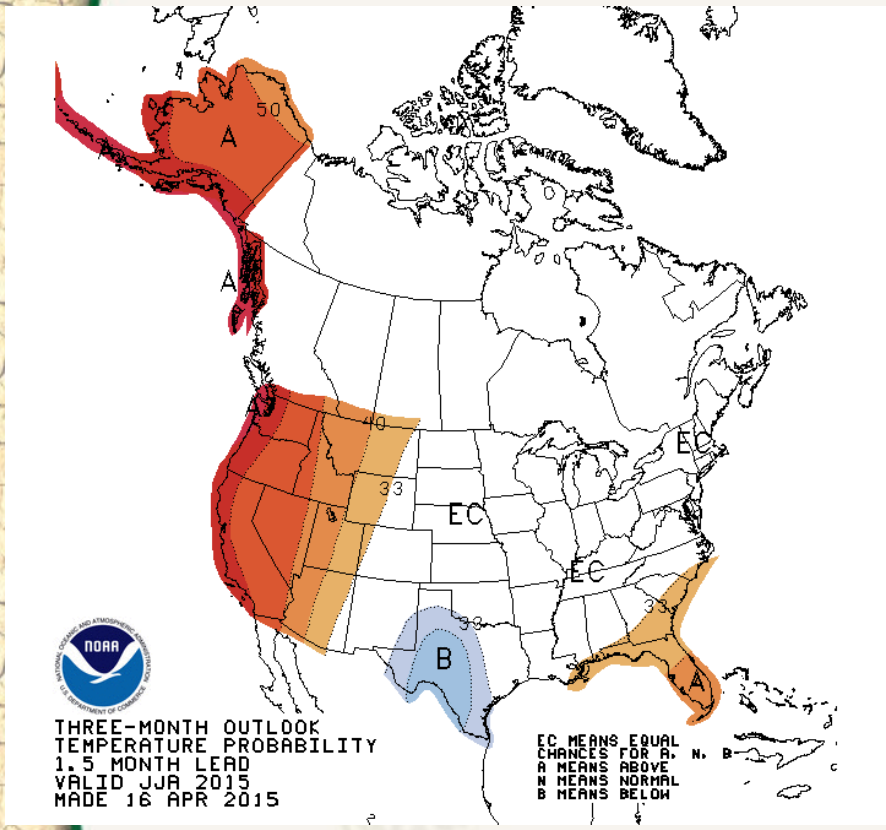
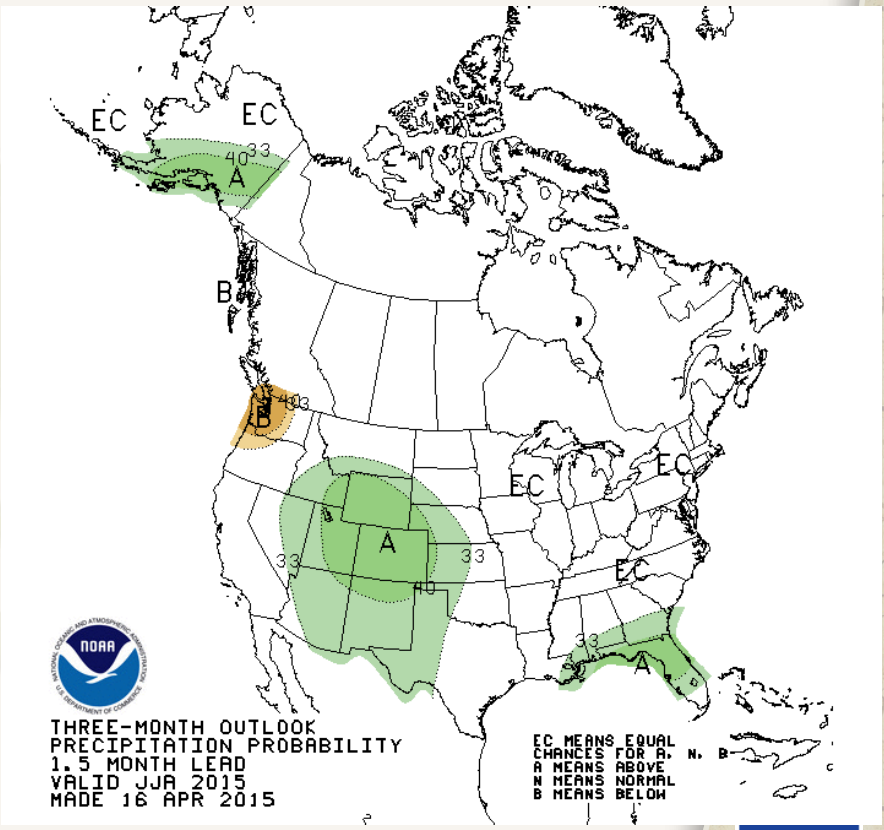
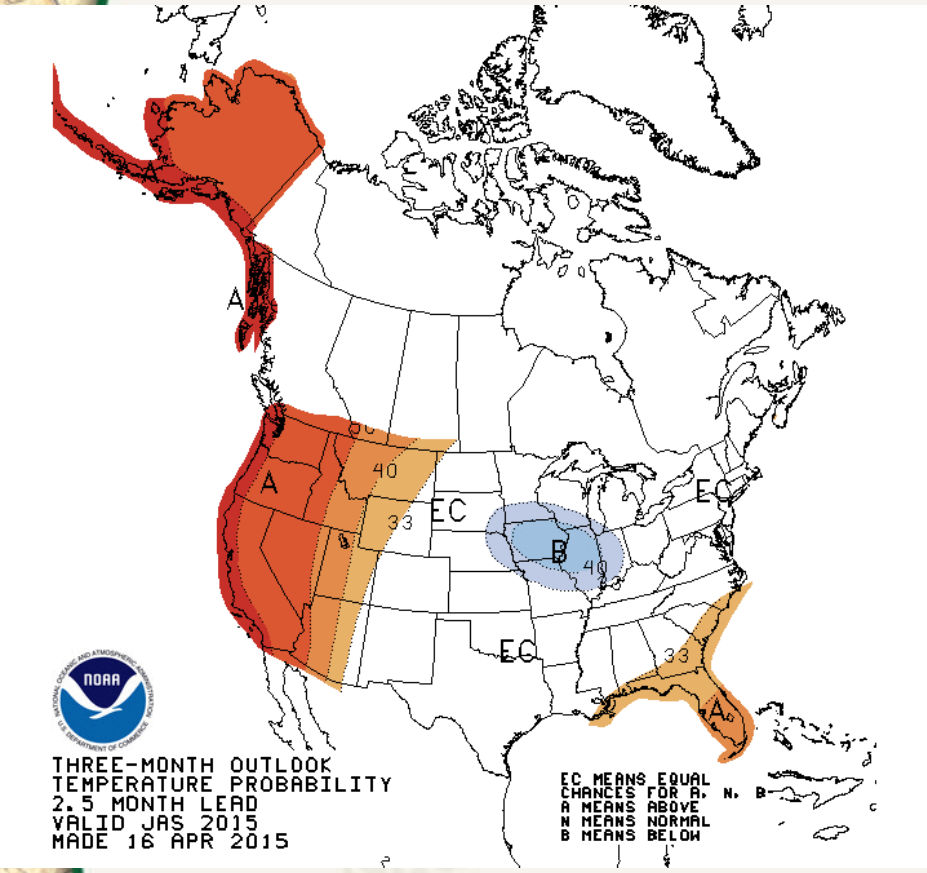
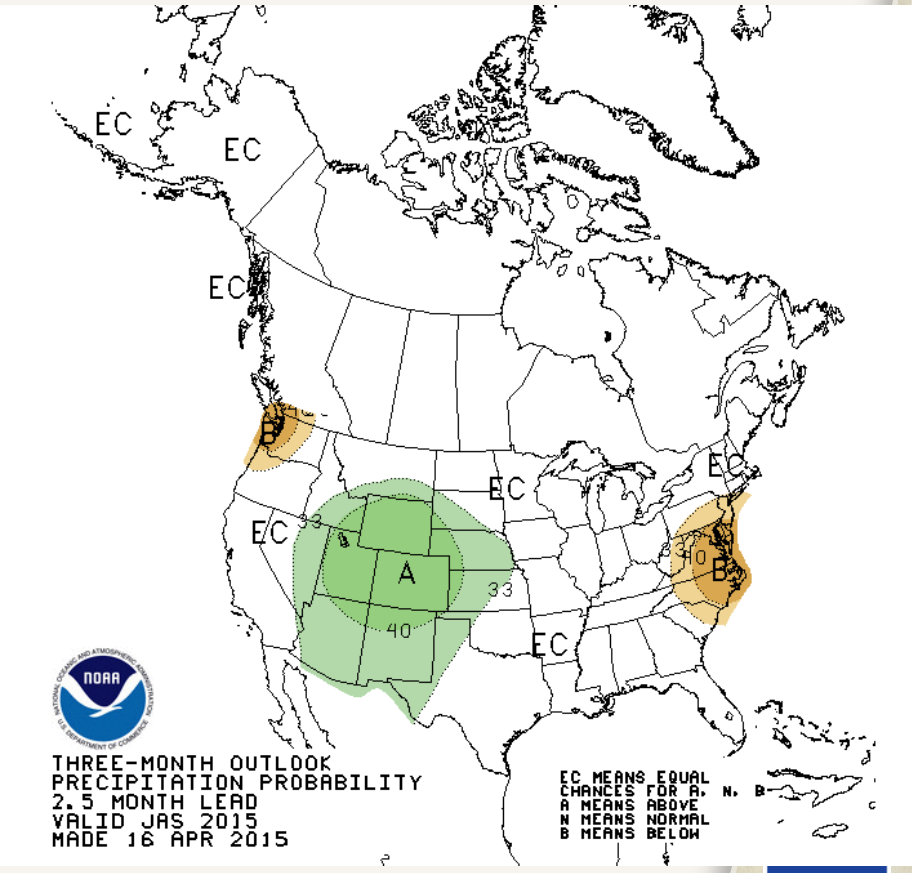
June/July/August



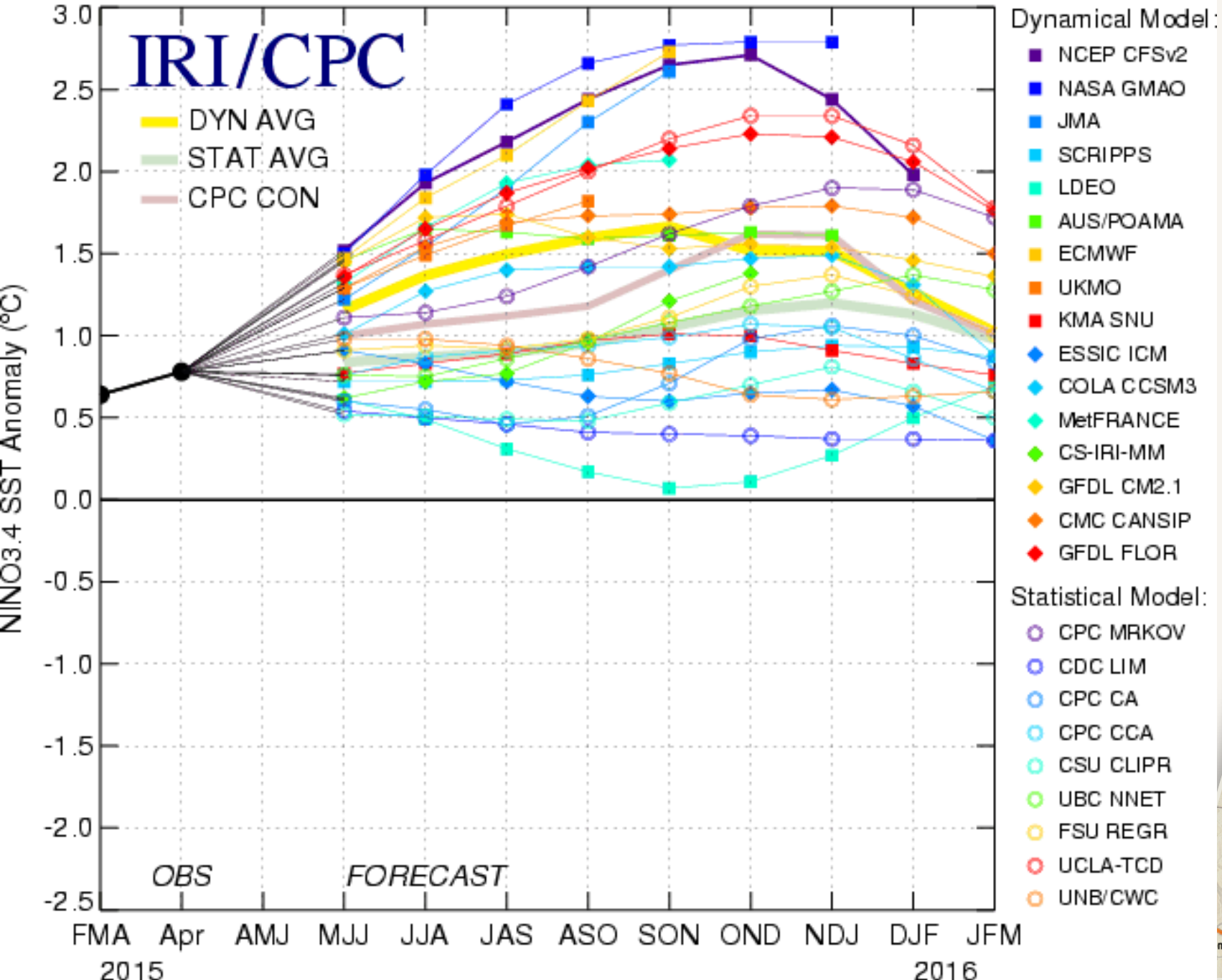


July/August/September

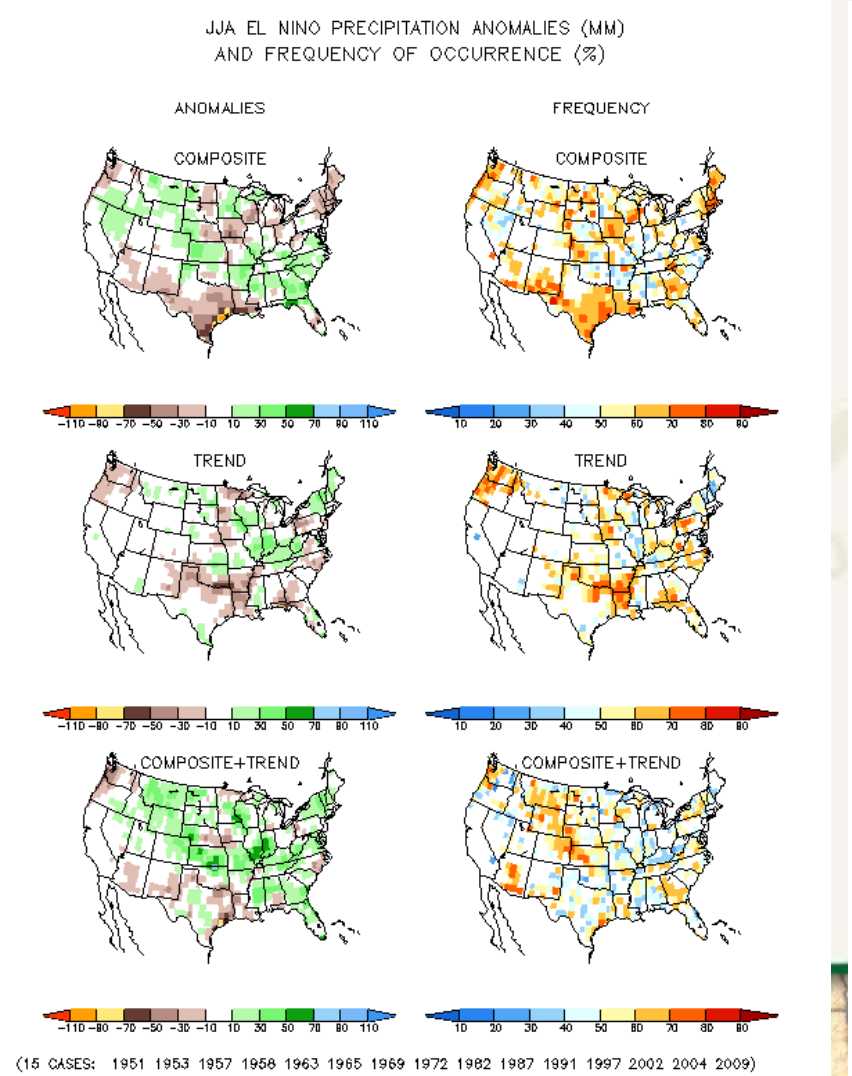


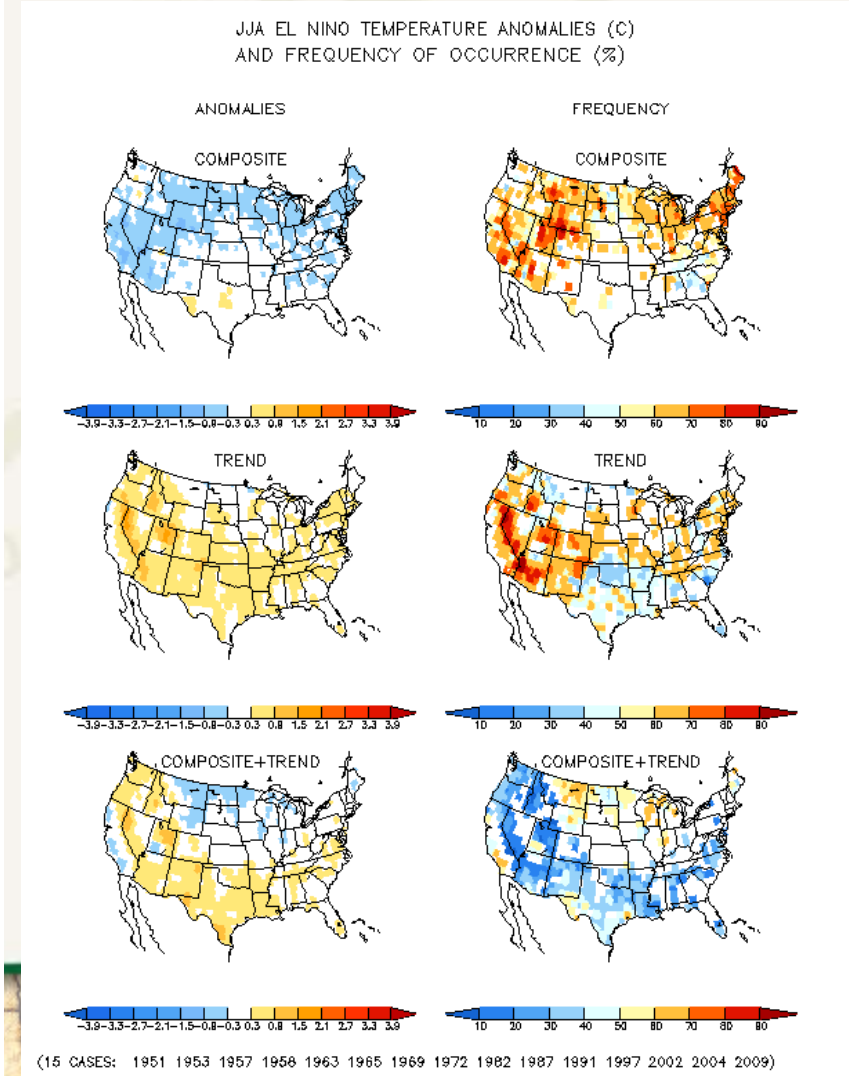


Mid-May 2015 Plume of Model ENSO Predictions



El Nino Summer Temperature and Precipitation Anomalies





Nebraska Conditions and Outlooks

- Not all areas of Nebraska have benefitted from recent rains.
- El Nino conditions are anticipated to continue developing.
- Anticipating cooler than normal and wetter than normal conditions through the end of May.

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