NE Drought Conditions CARC Update: June 6, 2012

Brian Fuchs
National Drought Mitigation Center
University of Nebraska-Lincoln

Current Conditions around Nebraska and the region…

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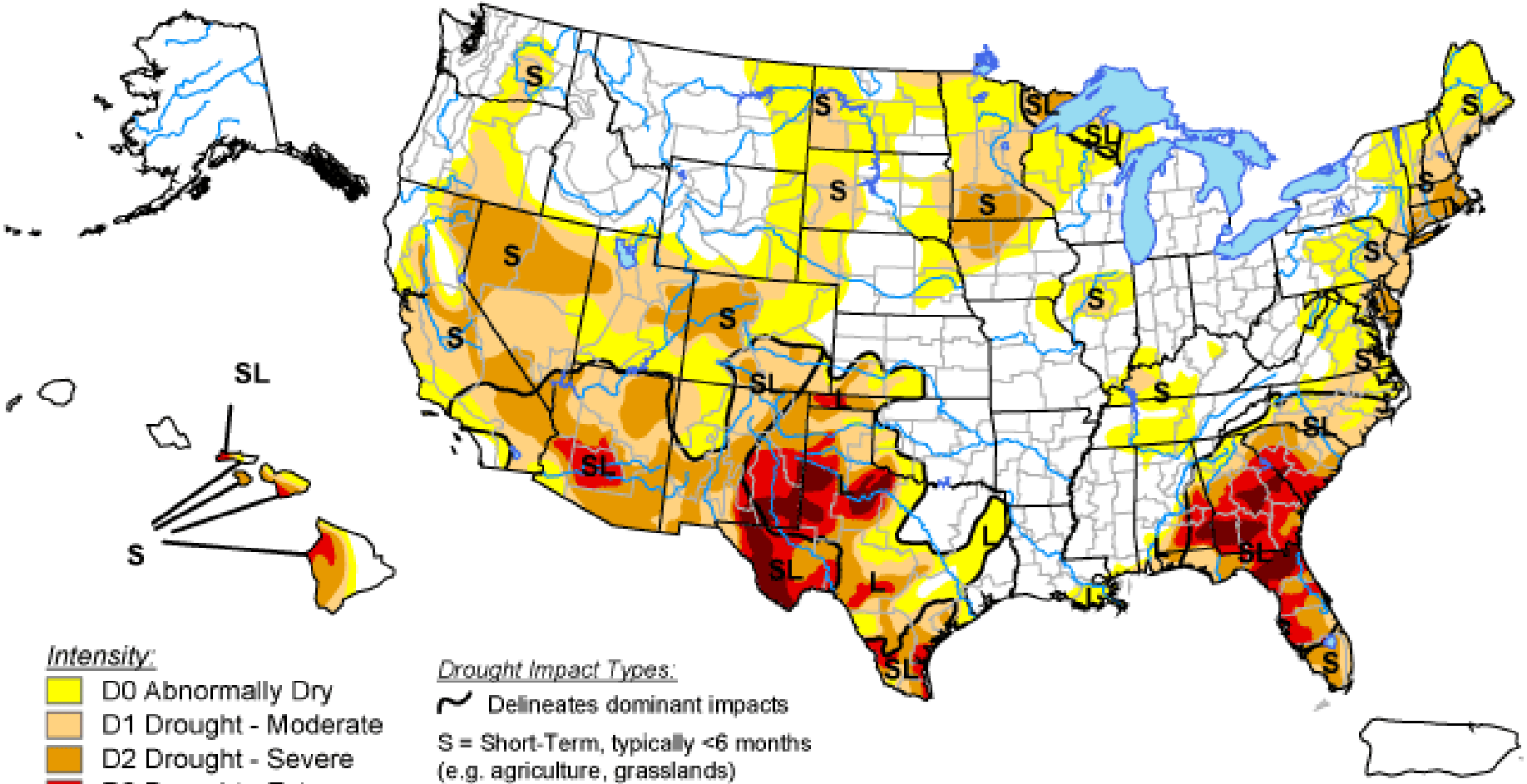
National Drought Mitigation Center

U.S. Drought Monitor

April 17, 2012
Valid 7 a.m. EDT



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

Drought Impact Types:

Delineates dominant impacts

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

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

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

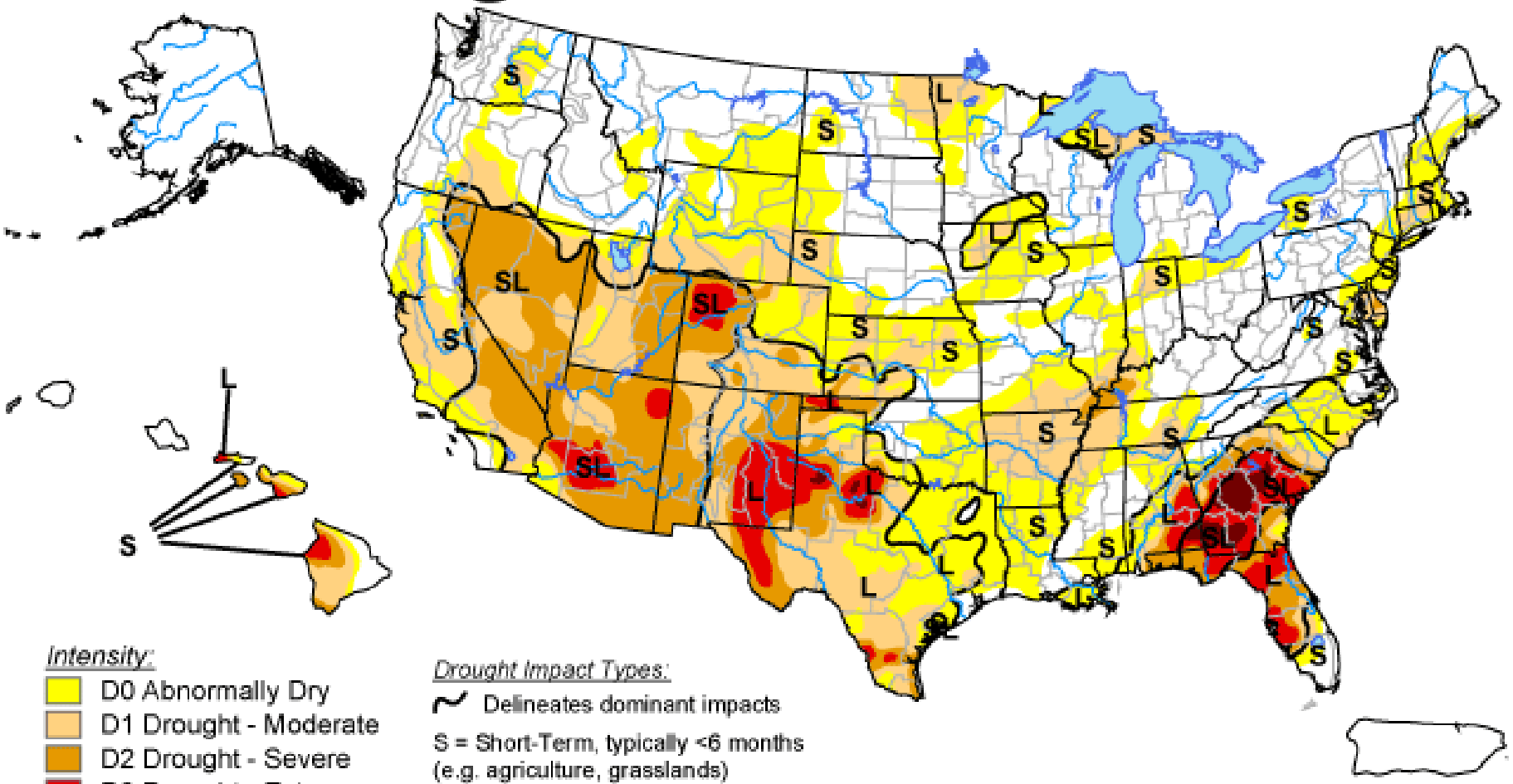
http://droughtmonitor.unl.edu/

Released Thursday, April 19, 2012

Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

U.S. Drought Monitor

May 29, 2012
Valid 7 a.m. EDT



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http://droughtmonitor.unl.edu/

Released Thursday, May 31, 2012

Author: Brad Rippey, U.S.Department of Agriculture

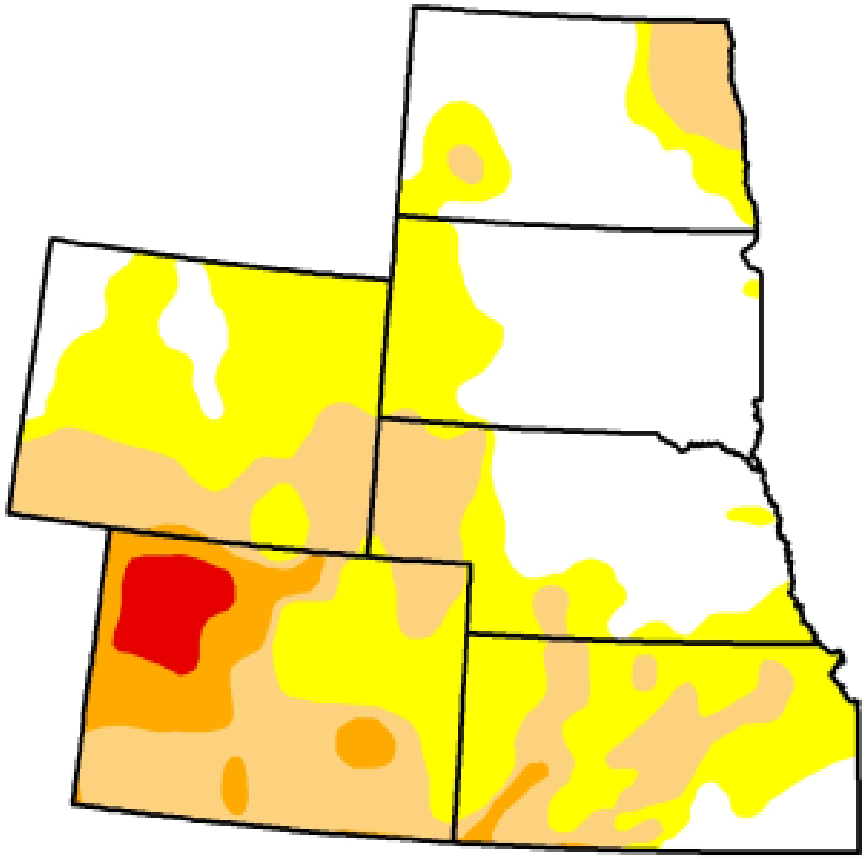
U.S. Drought Monitor

High Plains

May 29, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.45	65.55	31.55	7.60	2.03	0.00
Last Week (05/22/2012 map)	36.54	63.46	27.23	6.57	1.49	0.00
3 Months Ago (02/28/2012 map)	44.79	55.21	21.93	5.70	1.56	0.04
Start of Calendar Year (12/27/2011 map)	61.66	38.34	18.12	7.22	2.07	0.04
Start of Water Year (09/27/2011 map)	70.09	29.91	17.44	11.97	6.22	2.96
One Year Ago (05/24/2011 map)	77.40	22.60	16.73	11.20	3.42	0.34



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USDA National Drought Mitigation Center

Released Thursday, May 31, 2012
Brad Rippey, U.S. Department of Agriculture

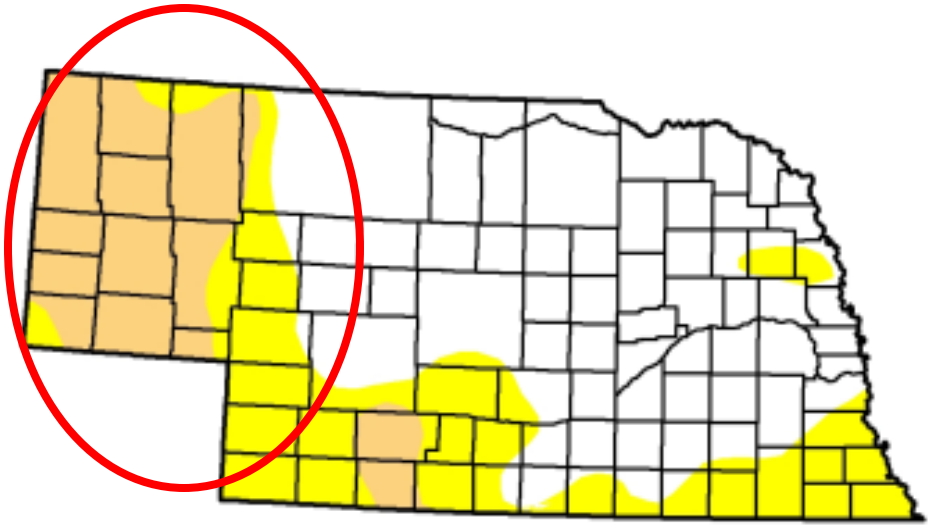
U.S. Drought Monitor

May 29, 2012
Valid 7 a.m. EST

Nebraska

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	56.19	43.81	18.79	0.00	0.00	0.00
Last Week (05/22/2012 map)	57.68	42.32	11.57	0.00	0.00	0.00
3 Months Ago (02/28/2012 map)	80.83	19.17	3.06	0.03	0.00	0.00
Start of Calendar Year (12/27/2011 map)	71.68	28.32	13.81	0.65	0.00	0.00
Start of Water Year (09/27/2011 map)	75.70	24.30	0.00	0.00	0.00	0.00
One Year Ago (05/24/2011 map)	96.59	3.41	0.00	0.00	0.00	0.00



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USDA National Drought Mitigation Center

Released Thursday, May 31, 2012
Brad Rippey, U.S. Department of Agriculture

Drought Monitor Archives

Nebraska

Drought Severity

- D0 - Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
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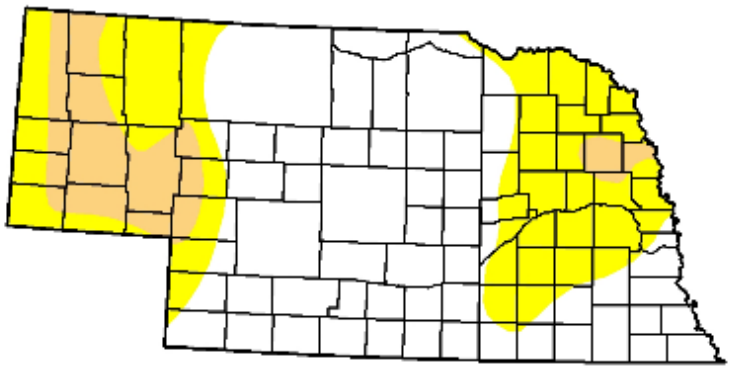
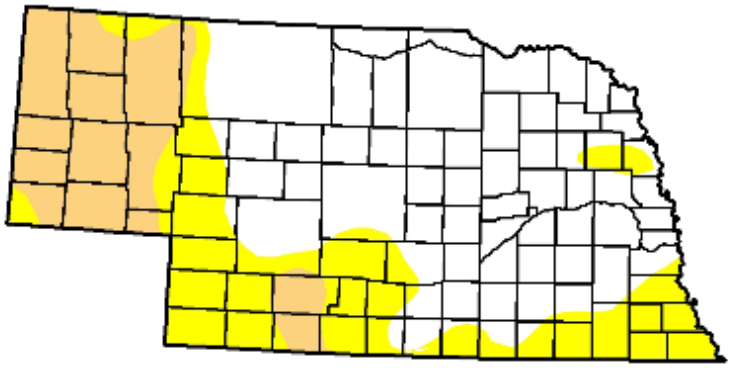


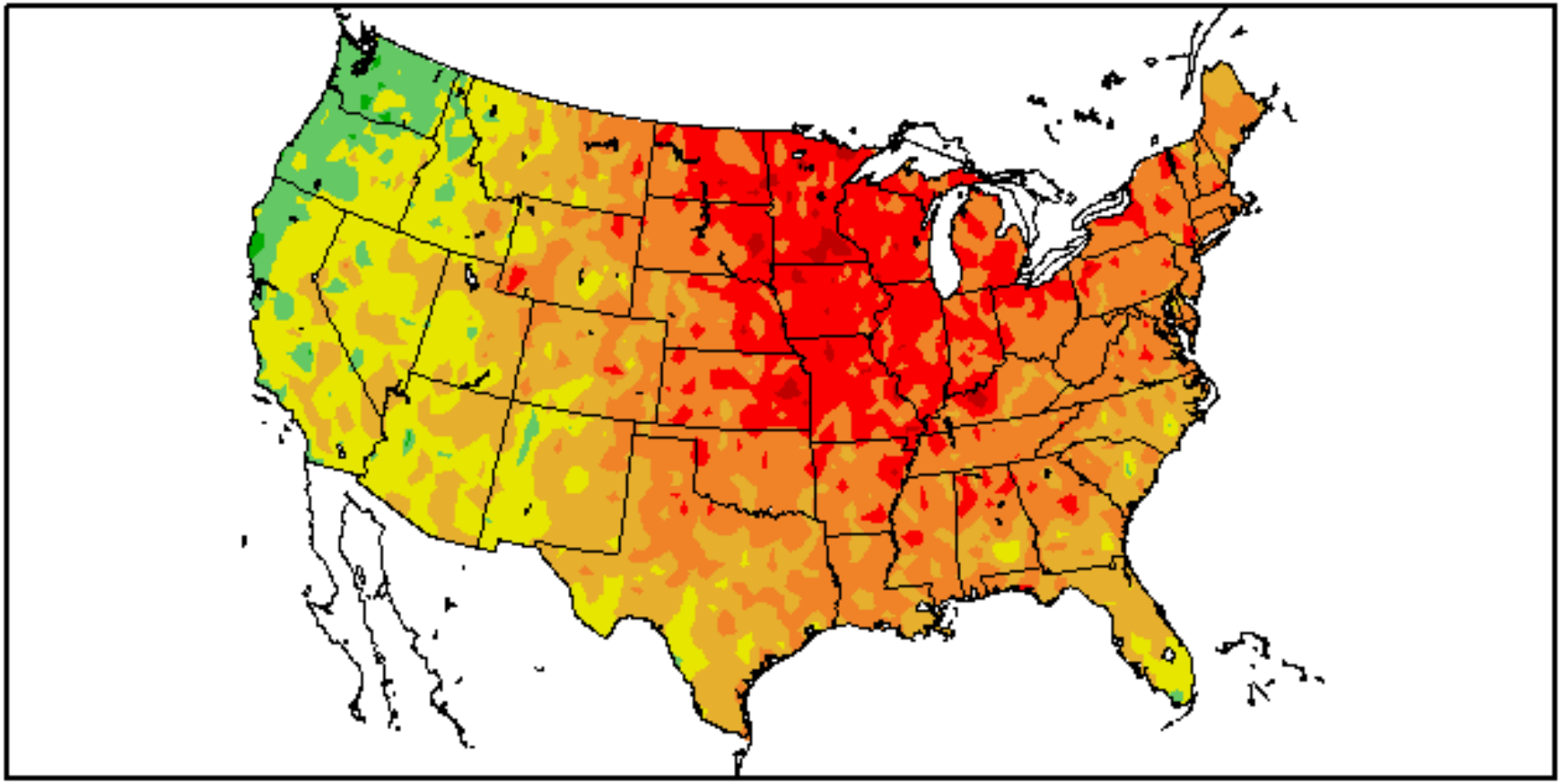


April 17, 2012

May 29, 2012

Week	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
April 17, 2012	57.82	42.18	11.93	0.00	0.00	0.00
May 29, 2012	56.19	43.81	18.79	0.00	0.00	0.00

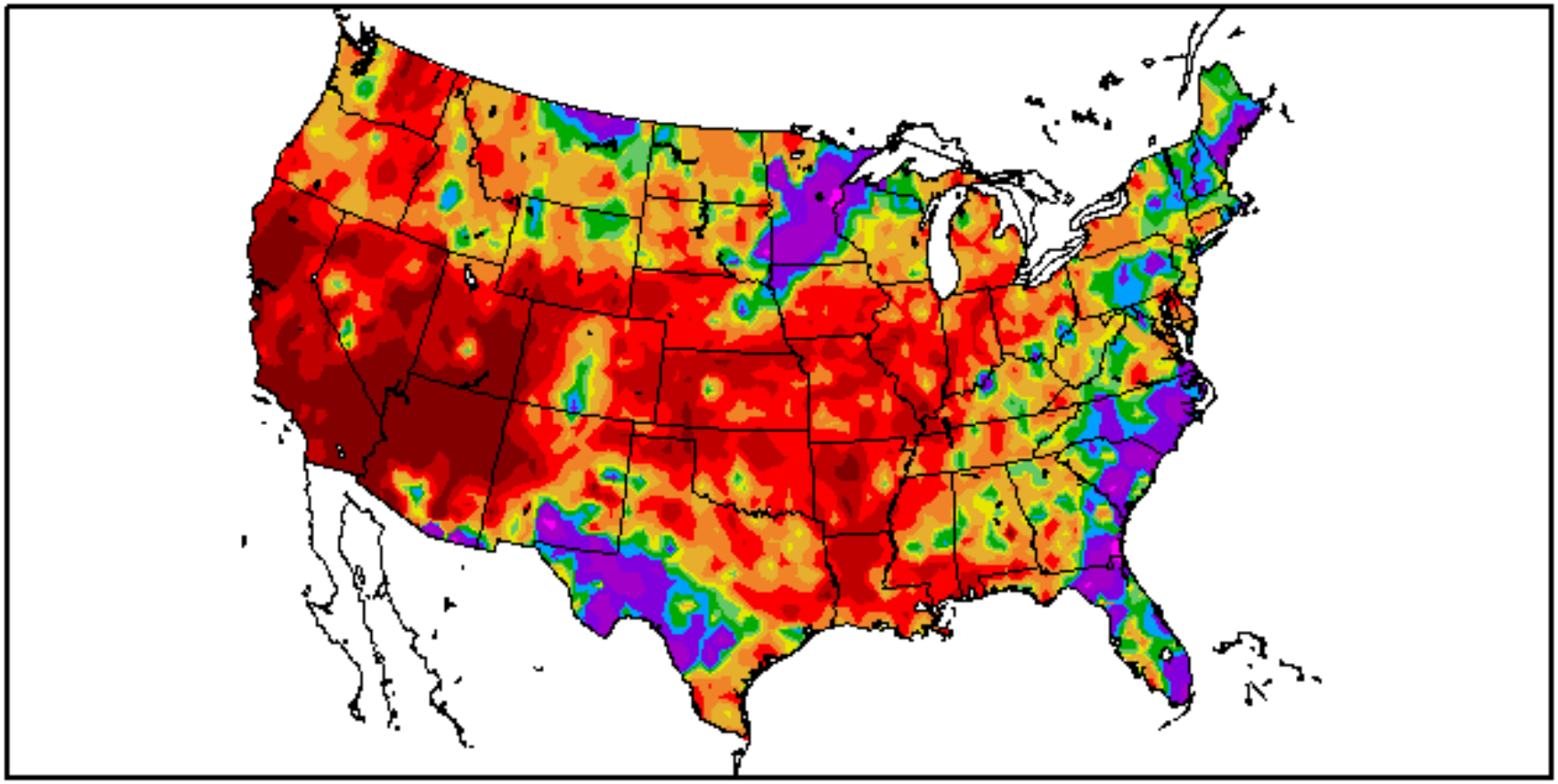
Departure from Normal Temperature (F)
1/1/2012 – 6/3/2012

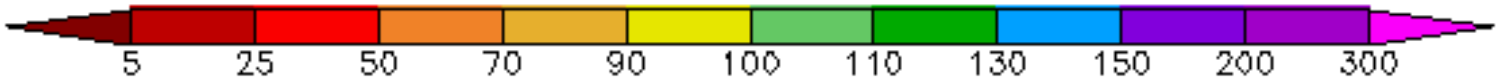


Generated 6/4/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
5/5/2012 – 6/3/2012





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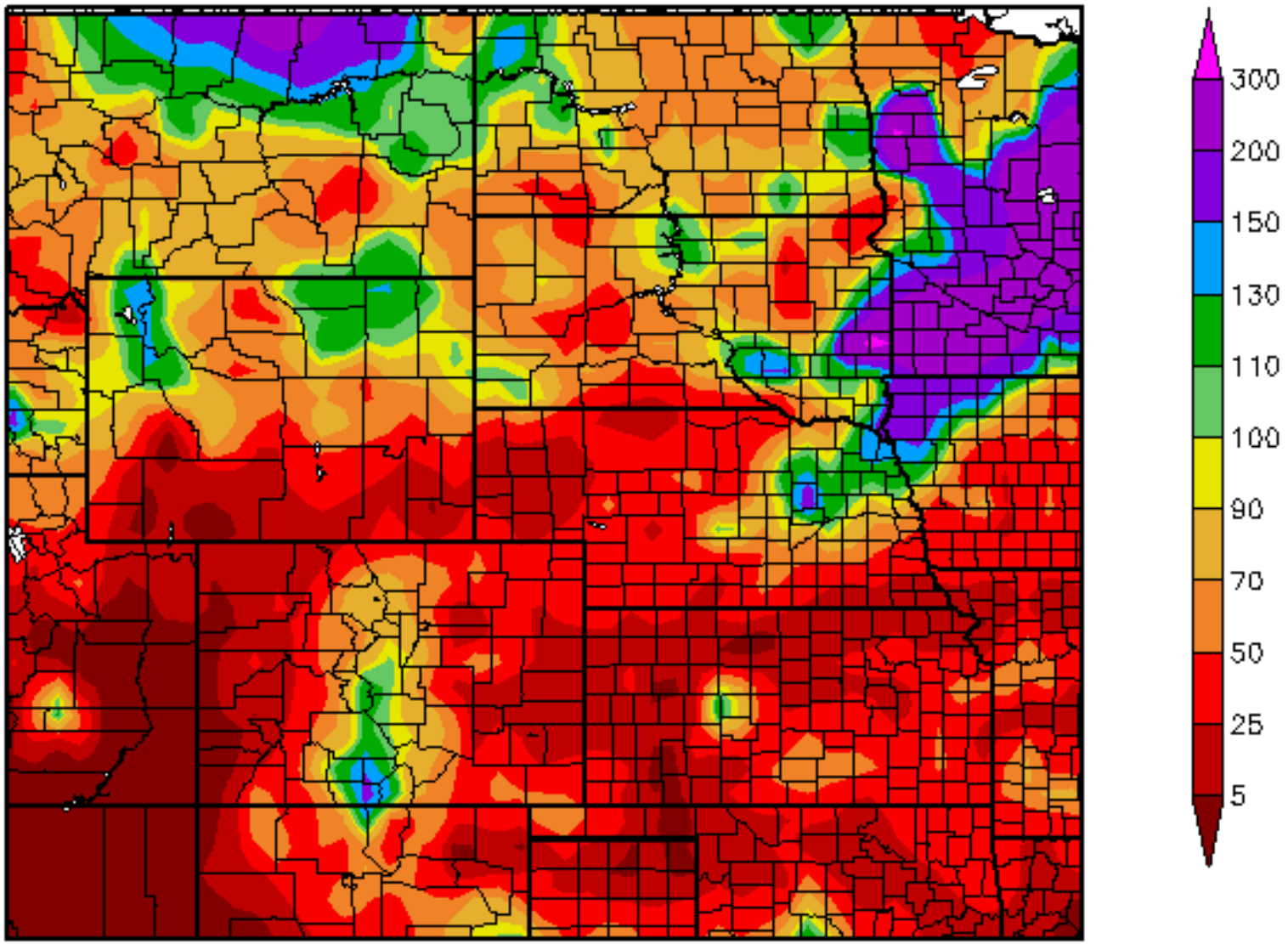

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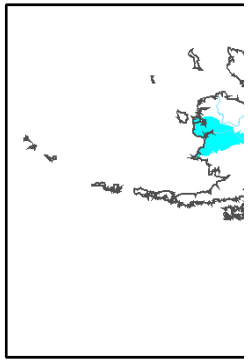
Regional Climate Centers

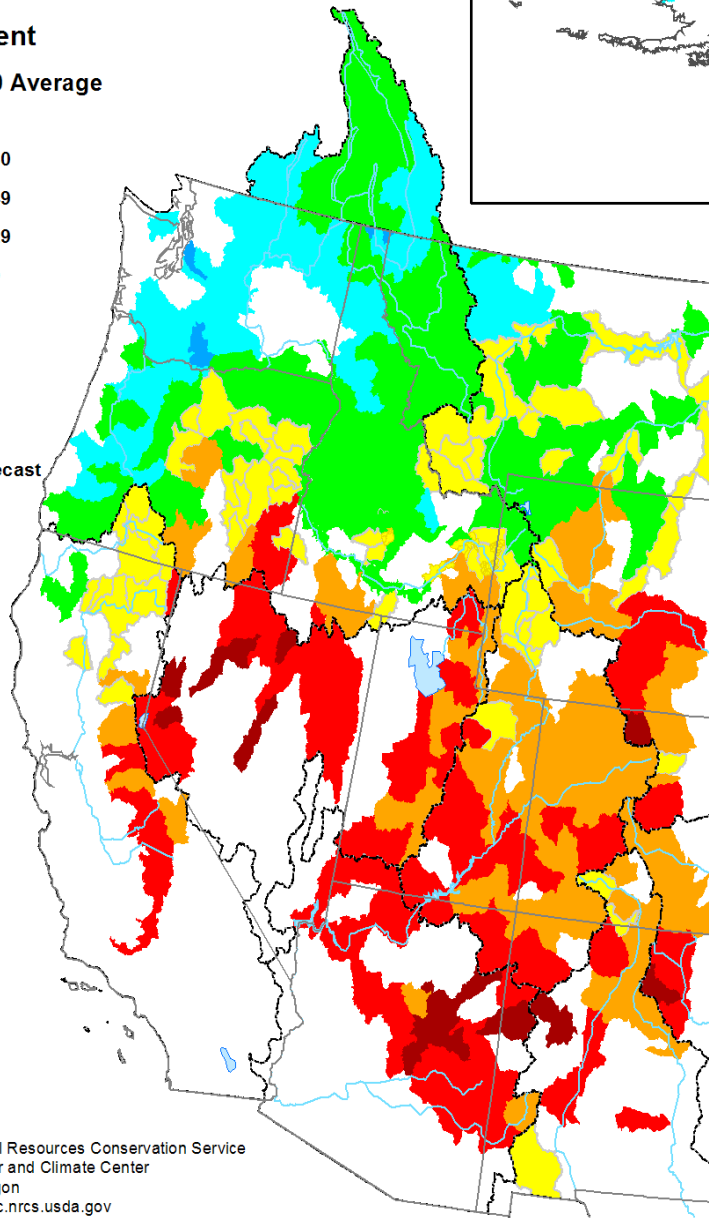
Spring and Summer Streamflow Forecasts as of April 1, 2012



Percent

71 to 2000 Average

- > 180
- 150 - 180
- 130 - 149
- 110 - 129
- 90 - 109
- 70 - 89
- 50 - 69
- 25 - 49
- < 25
- No Forecast



Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

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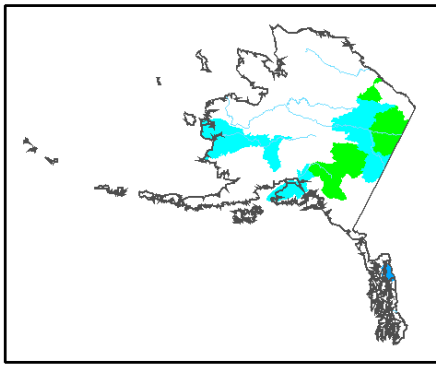

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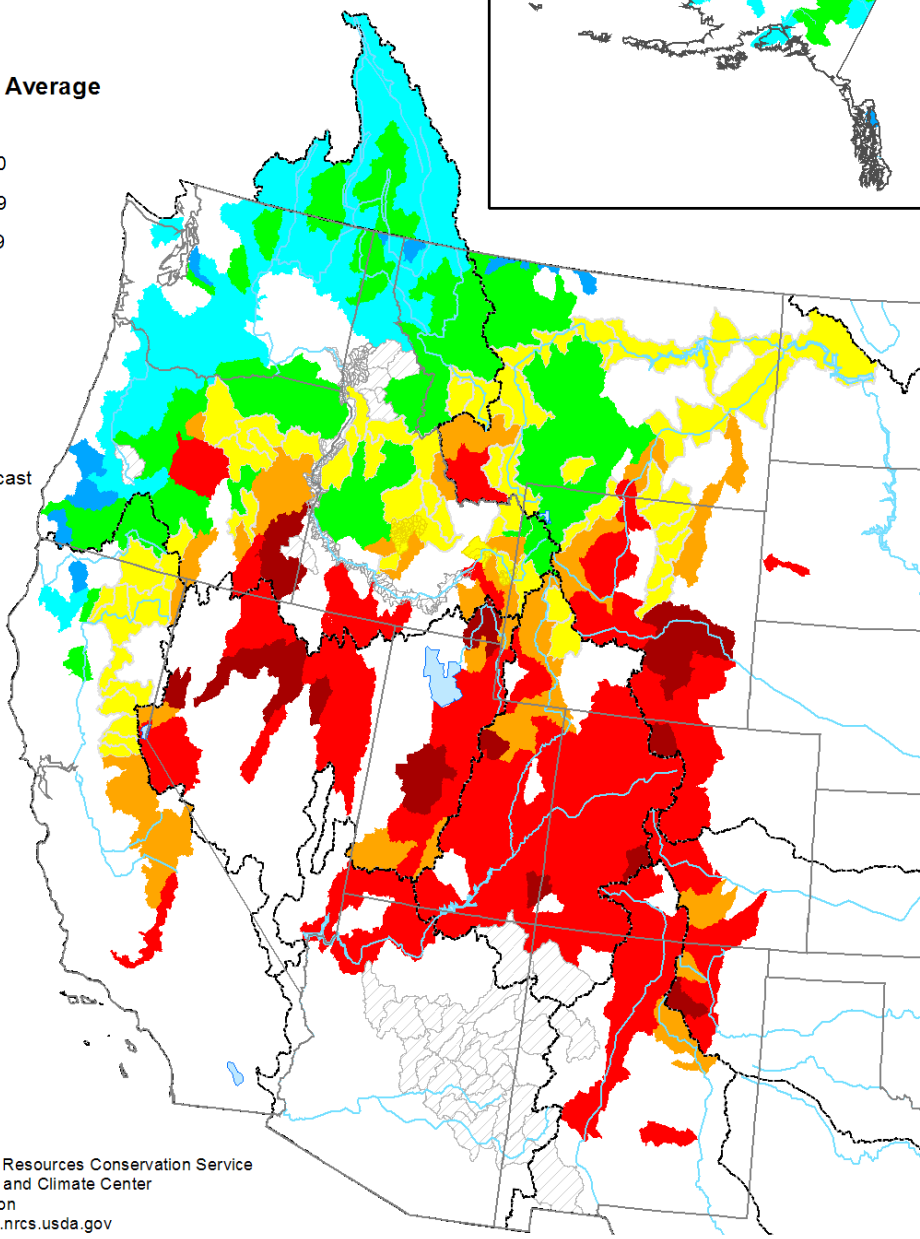

Prepared by
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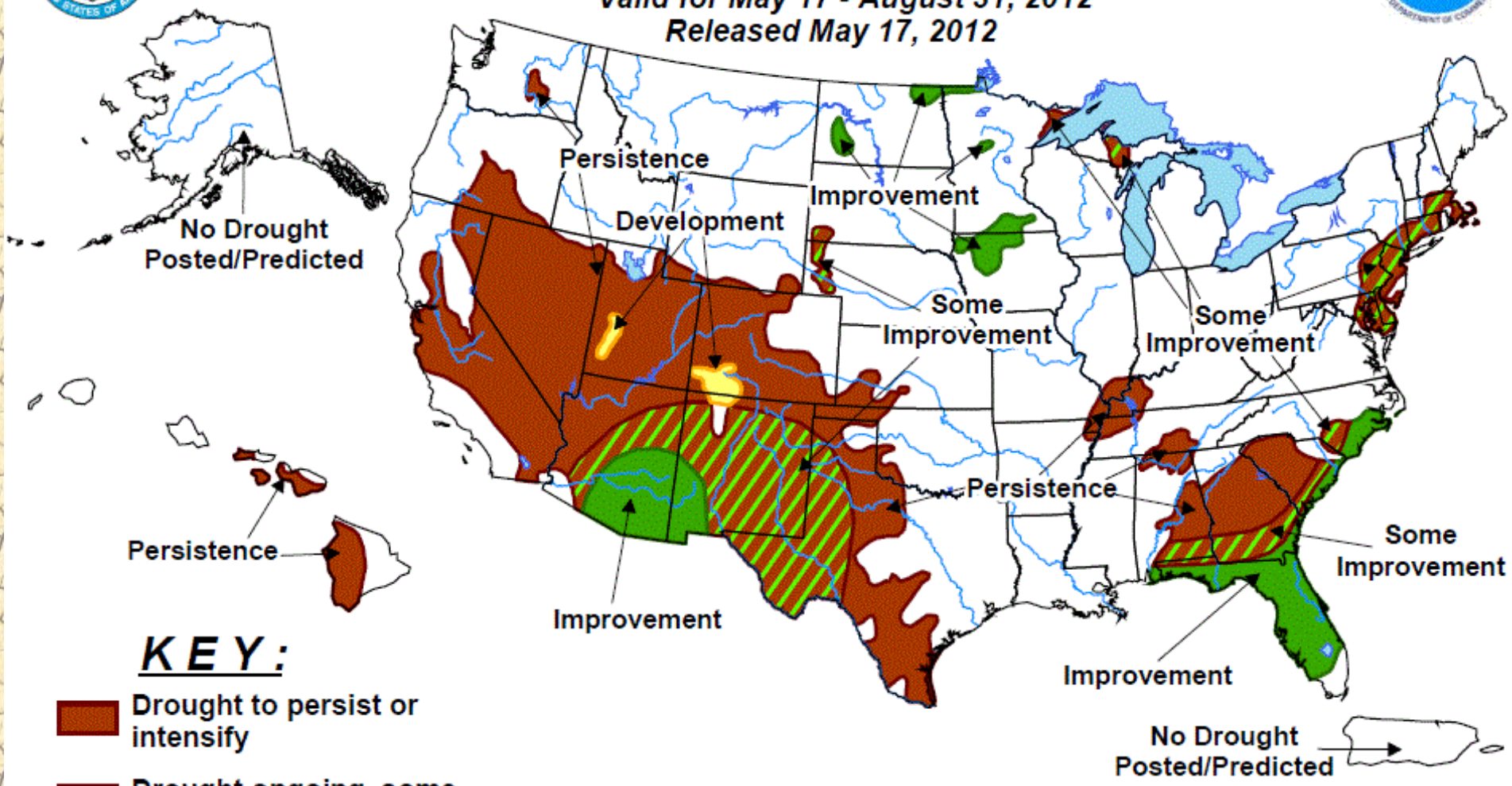
U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for May 17 - August 31, 2012

Released May 17, 2012

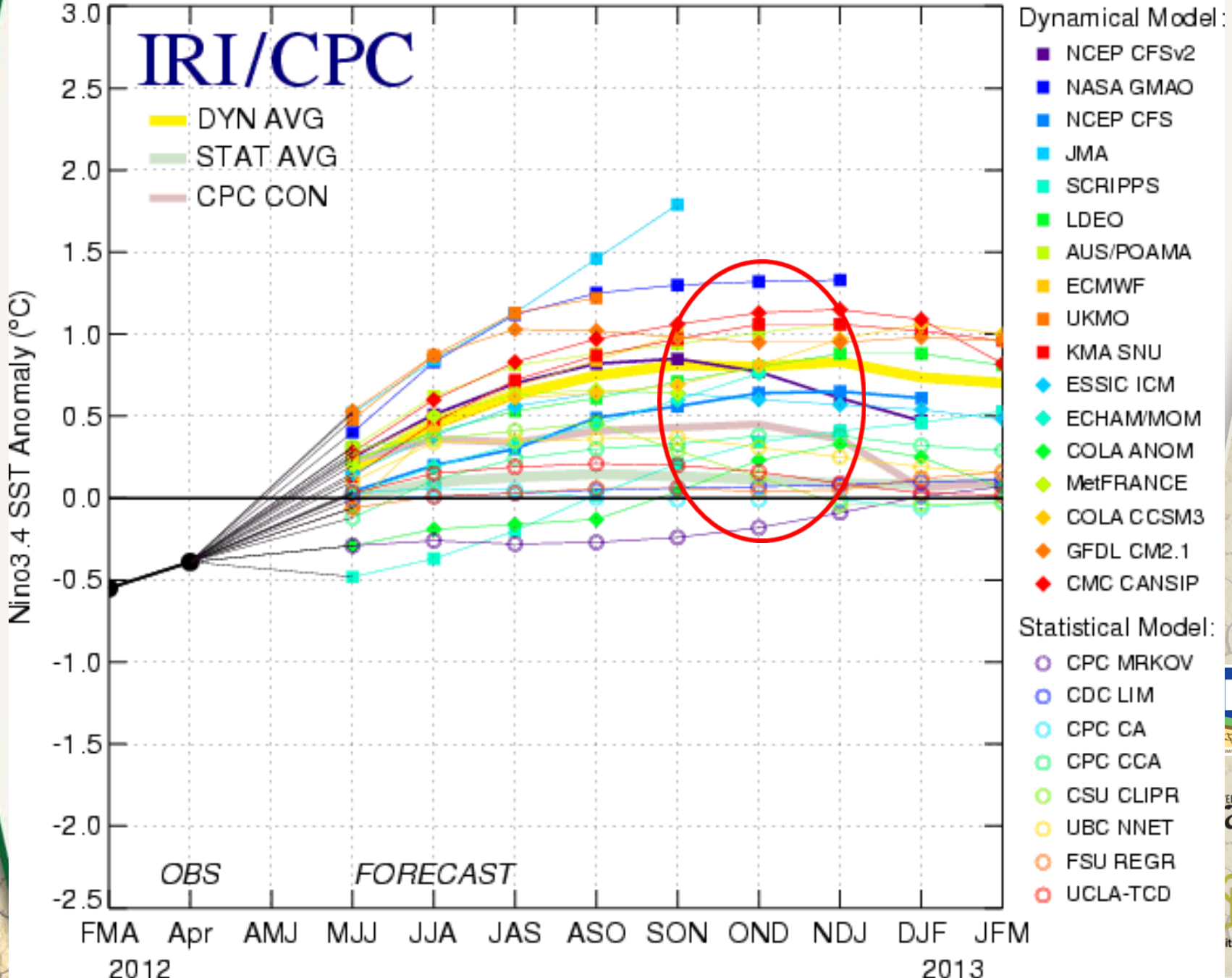


KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

Mid-May 2012 Plume of Model ENSO Predictions



Climate Summary

- **Relatively dry heading into Spring/Summer 2012**
  - ***19% of NE in D0-D1*** **(no D2-D4 at present)**
  - **Rains have helped alleviate dryness in northeast NE for now**
  - **Dryness expanding over the NE Panhandle, southwest and southeast parts of the state.**
  - **Models trending toward *Neutral/El Nino (~90%)* later this summer into fall (IRI).....**
- **Rocky Mountain snow season was *NOT* good and many locations were melted out in May.**
  - **Most basins feeding the North and South Platte basins are at *< 50% of snow water equivalent* and resultant *streamflow forecasts* are generally *below 50% of normal***
- **Climate Prediction Center's Seasonal Drought Outlook calls for *"Some Improvement" to the USDM in the Panhandle* between now and the end of August.**

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Nebraska Water Supply Update…

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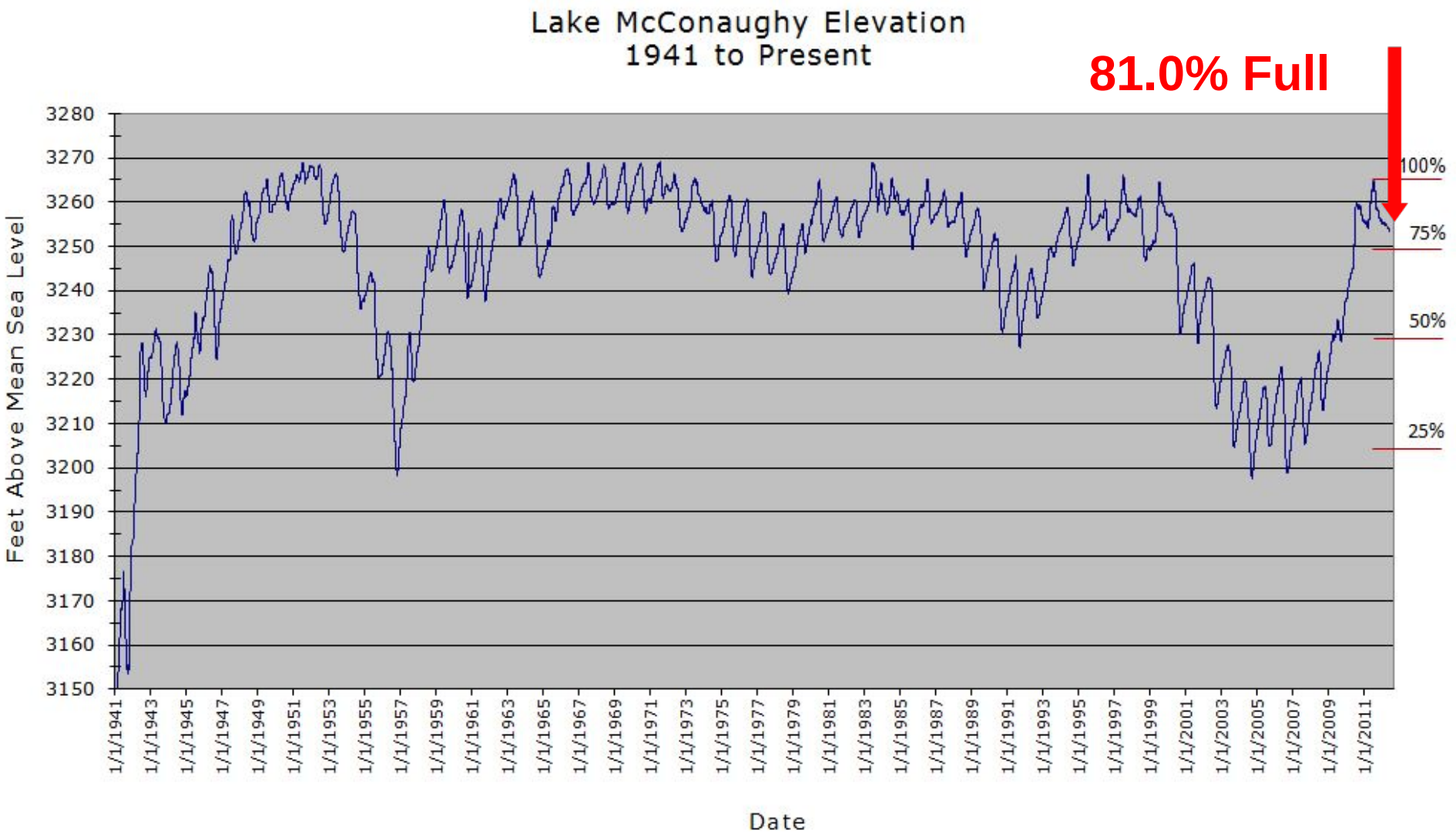

SOURCE: CNPPID www.cnppid.com

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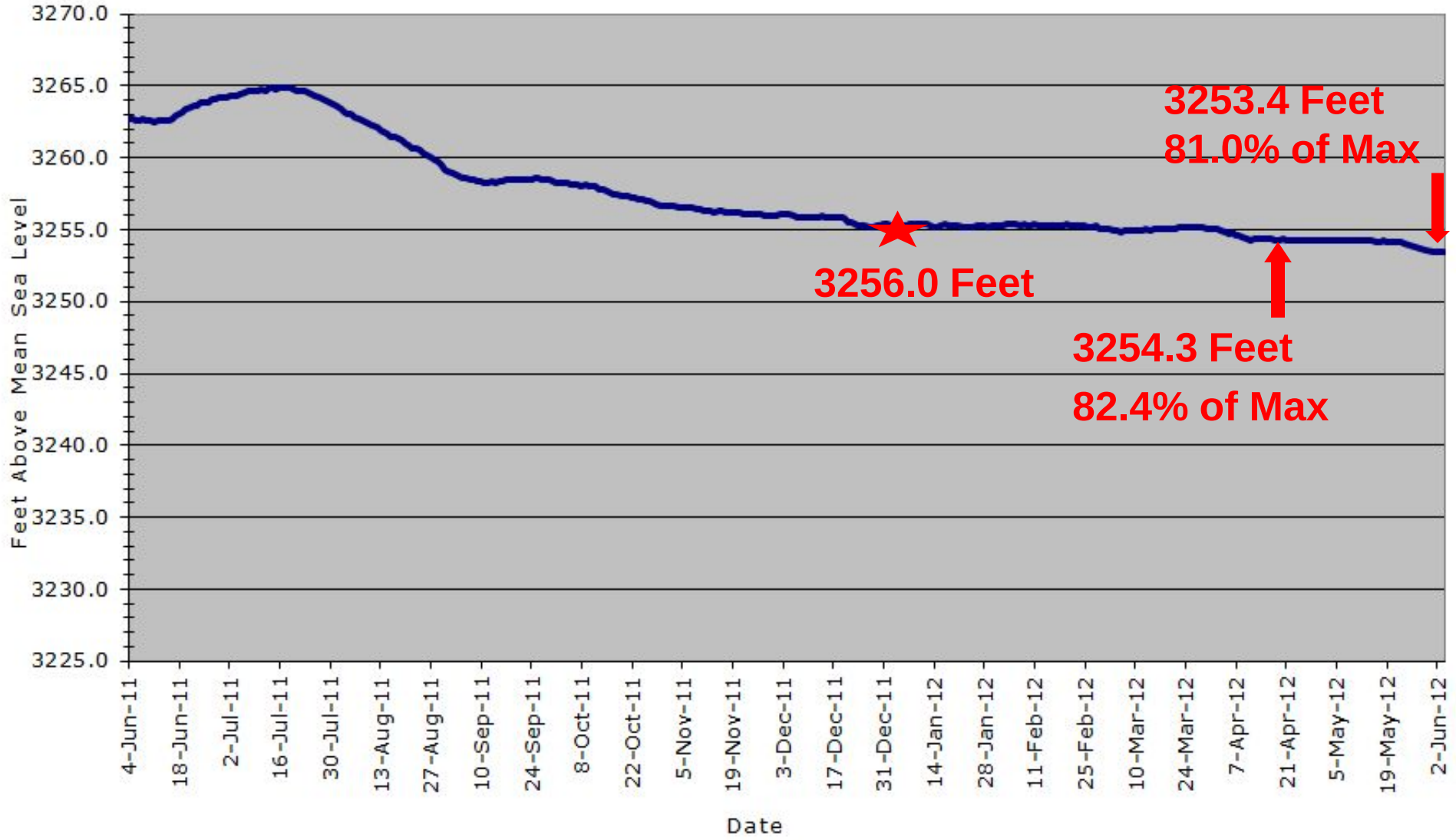
Lake McConaughy Elevation

June 4, 2011 to June 4, 2012



SOURCE: CNPPID www.cnppid.com

National Drought Mitigation Center

April 2012 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)	773	932	965	5,259
Total Lake McConaughy Outflow	1,061	596	930	2,871
North Platte below Keystone Dam	934	849	23	1,228
Keystone Dam Diversion	127	30	649	1,722
North Platte at North Platte	1,116	1,330	512	1,906
South Platte at Roscoe	185	230	338	178
South Platte at North Platte	187	223	470	236
Diversion to CNPPID Supply Canal	1,466	1,989	1,477	2,189
Platte River at Overton	2,140	2,376	1,878	3,981
Platte River at Kearney	1,530	2,250	1,724	3,691
Platte River at Grand Island	1,760	2,173	1,827	5,219

** 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

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June 2012 CARC Meeting

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	Today (7 a.m.)	Week Ago	Month Ago	Year Ago
Inflows to Lake McConaughy (Current, Average & Median Inflow graph)	773	856	591	7,314
Total Lake McConaughy Outflow	1,357	1,227	631	7,929
North Platte below Keystone Dam	153	163	808	5,801
Keystone Dam Diversion	1,204	1,209	126	1,752
North Platte at North Platte	50	455	929	5,387
South Platte at Roscoe	92	92	147	804
South Platte at North Platte	184	195	193	1,069
Diversion to CNPPID Supply Canal	1,075	1,250	1,227	2,192
Platte River at Overton	671	992	1,323	6,713
Platte River at Kearney	740	564	1,176	7,657
Platte River at Grand Island	819	651	1,534	7,607

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Lake McConaughy

While last year's snowpack was well above normal, this year's snowpack accumulation in the upper North Platte Basin is 38% of normal for this time of year, and 18% of normal in the lower basin. Snowfall accumulation all but ended in mid-March, when it typically continues to accumulate through mid-April.

Over the years, a fundamental change has occurred in the timing and amount of water available for storage in Lake McConaughy. Last year's record inflows were an exception to a developing trend of significantly lower inflows. Many factors influence return flows to the North Platte River, including more groundwater development in the Nebraska Panhandle and improving irrigation efficiencies above Lake McConaughy. The bottom line is that average annual inflows to Lake McConaughy have been declining for several years.

We can't rely on the occasional high-flow years for the reservoir to remain at healthy levels. We're in decent shape now, but future reservoir levels are much more uncertain.

We might have to stop referring to drought conditions when Lake McConaughy experiences low inflows, It may very well be a **'new normal'** inflow condition that we're going to have deal with on a more frequent basis.

SOURCE: CNPPID News Release, May 7, 2012

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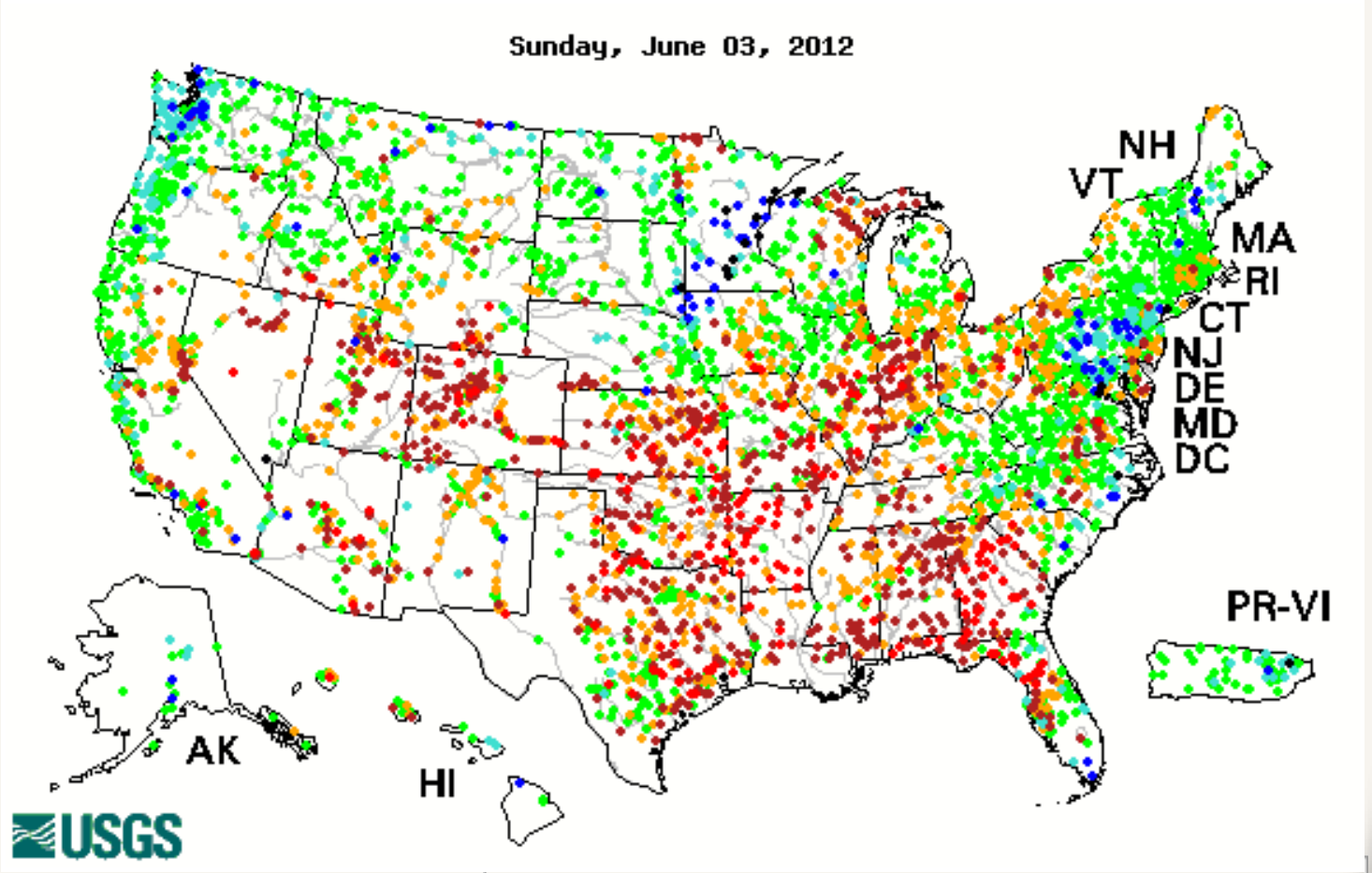
Map of 14-day average streamflow compared to historical streamflow for the day of year



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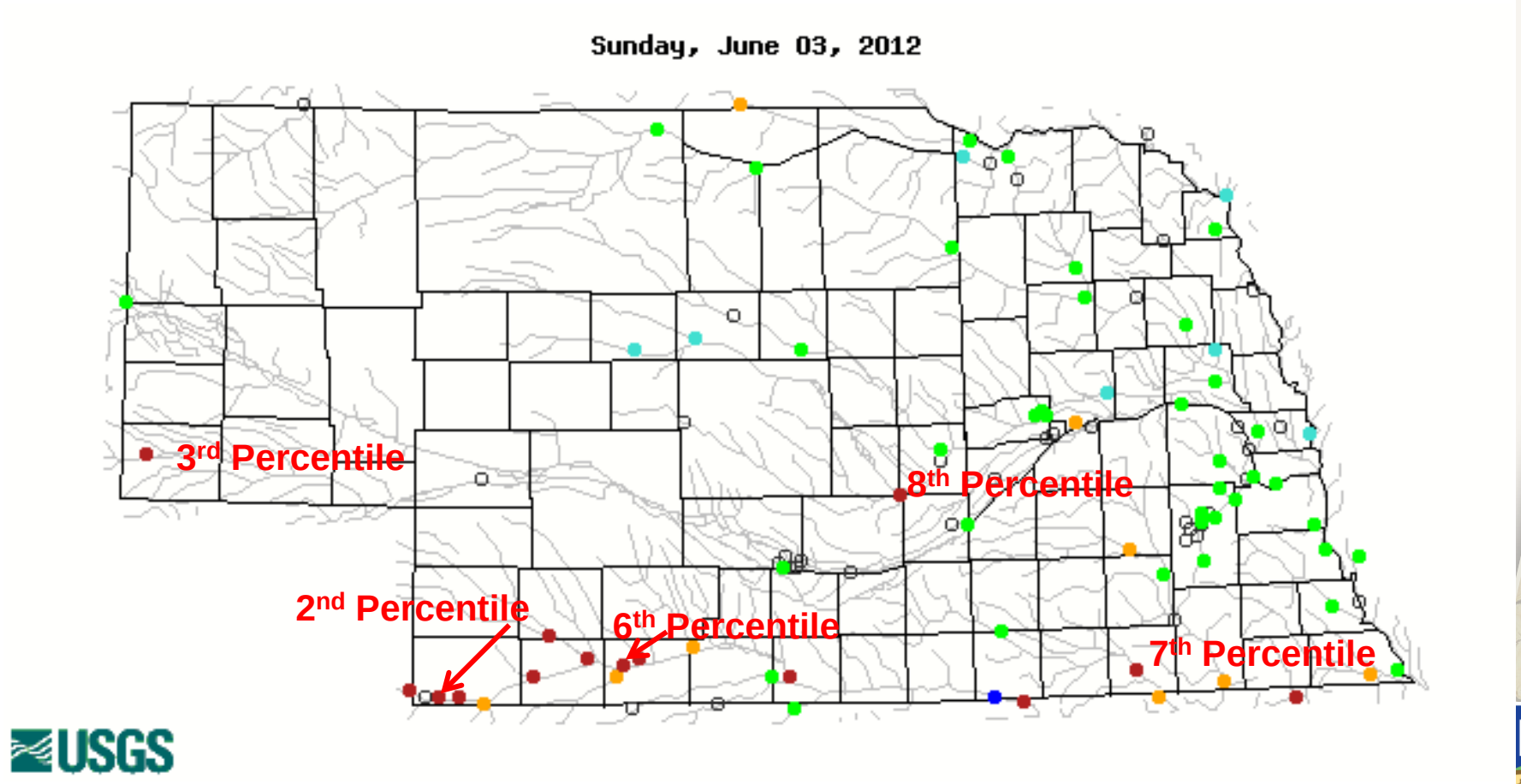
Map of 14-day average streamflow compared to historical streamflow for the day of year



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		

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Republican River Basin

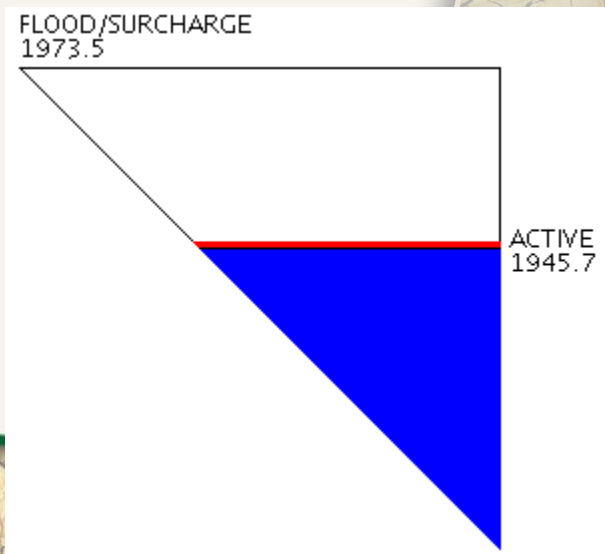
- **Hugh Butler:** 16.0% of conservation pool
- **Enders:** 42.7% of conservation pool
- **Harry Strunk:** 96.3% of conservation pool
- **Swanson:** 67.5% of conservation pool

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

Republican River Basin

Harlan County Current Conditions

- ✓ Conservation Pool is 100% Full
- ✓ 315,833 Acre-Feet in storage compared to 320,664 Acre-Feet of water in storage in April.
- ✓ Last year at this time, 335,365 AF was in storage.



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

Water Supply Summary

- Supply is stable for now, but storage levels are already declining across the state.
  - Lake McConaughy has a lower elevation and reduced inflows already compared to last year and storage has peaked for the year and has declined steadily since April.
  - Storage in the Republican River system is comparable to what it was last year at this time with Harlan County 100% full. Compared to April, most reservoirs are declining in storage.
  - Irrigation has started in places to help crops get established.
  - A combination of reduced run-off, dry soils, and higher irrigation demand will impact water supply over the next several months. Most systems are currently in good shape due to favorable conditions over the last 2 growing seasons but more than likely will see reductions during this growing season. Reduced inflows are the **"new normal"** on the Platte River system.

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Any Questions ?

Contact Information:

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