

North Central U.S. Climate Summary & Outlook

May 19, 2016



Golf course
Lincoln, NE

Image courtesy Terry Sohl



Hailstones
Lincoln, NE
Image courtesy
Andrew Ozaki

Martha Shulski

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University of Nebraska - Lincoln

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NSCO Nebraska State
Climate Office



EF1 tornado
Lincoln, NE
May 9
Photo by Bill Sorensen

General Information

- **Providing climate services to the Central Region**

- Collaboration activity between:
 - Doug Kluck (NOAA)
 - American Association of State Climatologists
 - Midwest and High Plains Regional Climate Centers
 - NOAA's Climate Prediction Center
 - National Drought Mitigation Center

- **Next Climate/Drought Outlook Webinar**

- June 16th 2016, Brian Fuchs (National Drought Mitigation Center)

- **Access to Future Climate Webinars and Information**

- <http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>

- **Past recorded presentations and slides can be found here:**

- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu/webinars.php>

- **Open for questions at the end**

Agenda for Today

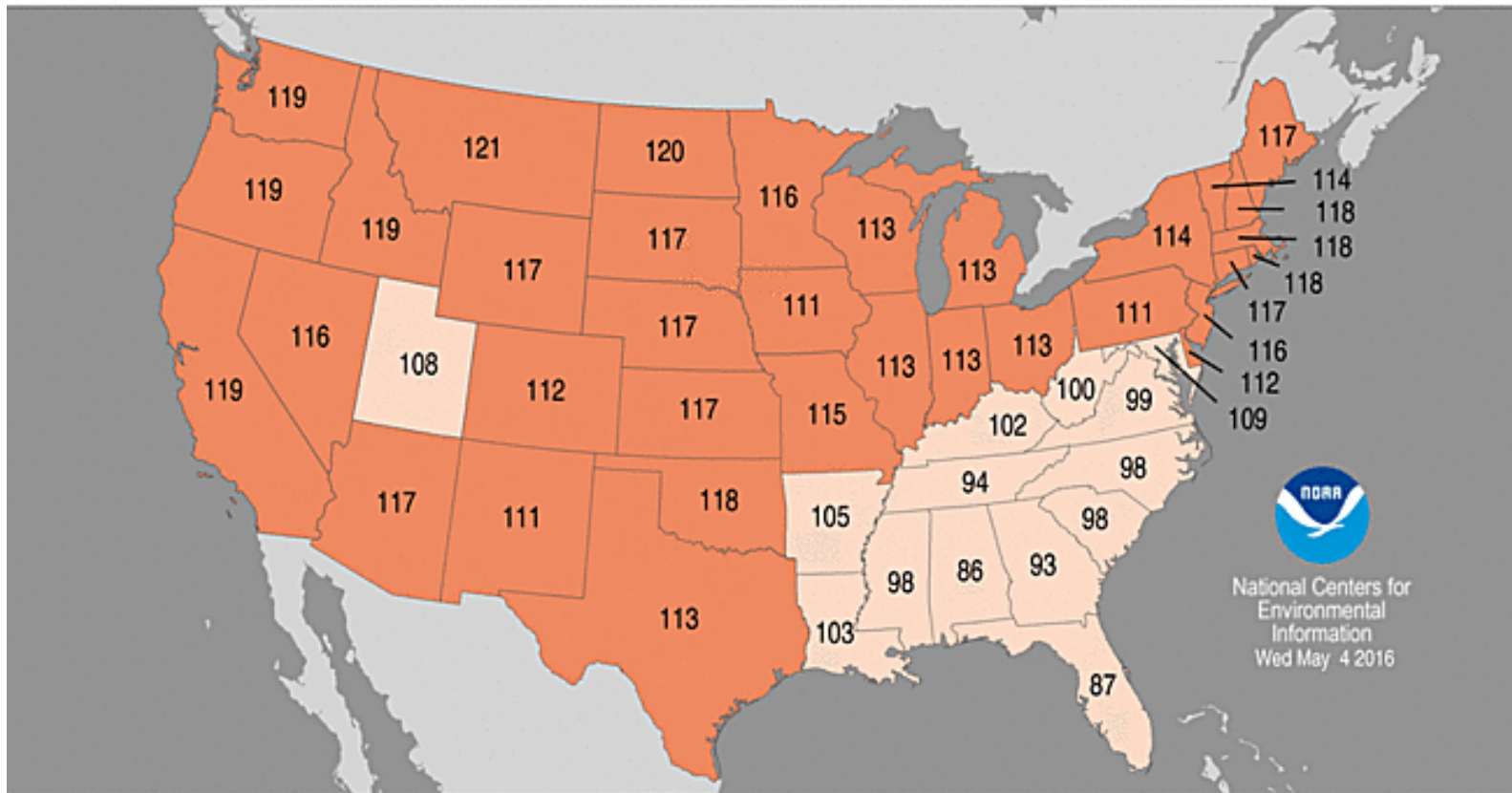
- **Conditions since first of the year**
- **April recap**
- **May and current conditions**
- **Impacts**
- **Climate outlooks**
- **Questions/Comments**

The contiguous United States average temperature since January 1 was the warmest on record.

Statewide Average Temperature Ranks

January–April 2016

Period: 1895–2016



National Centers for
Environmental
Information
Wed May 4 2016

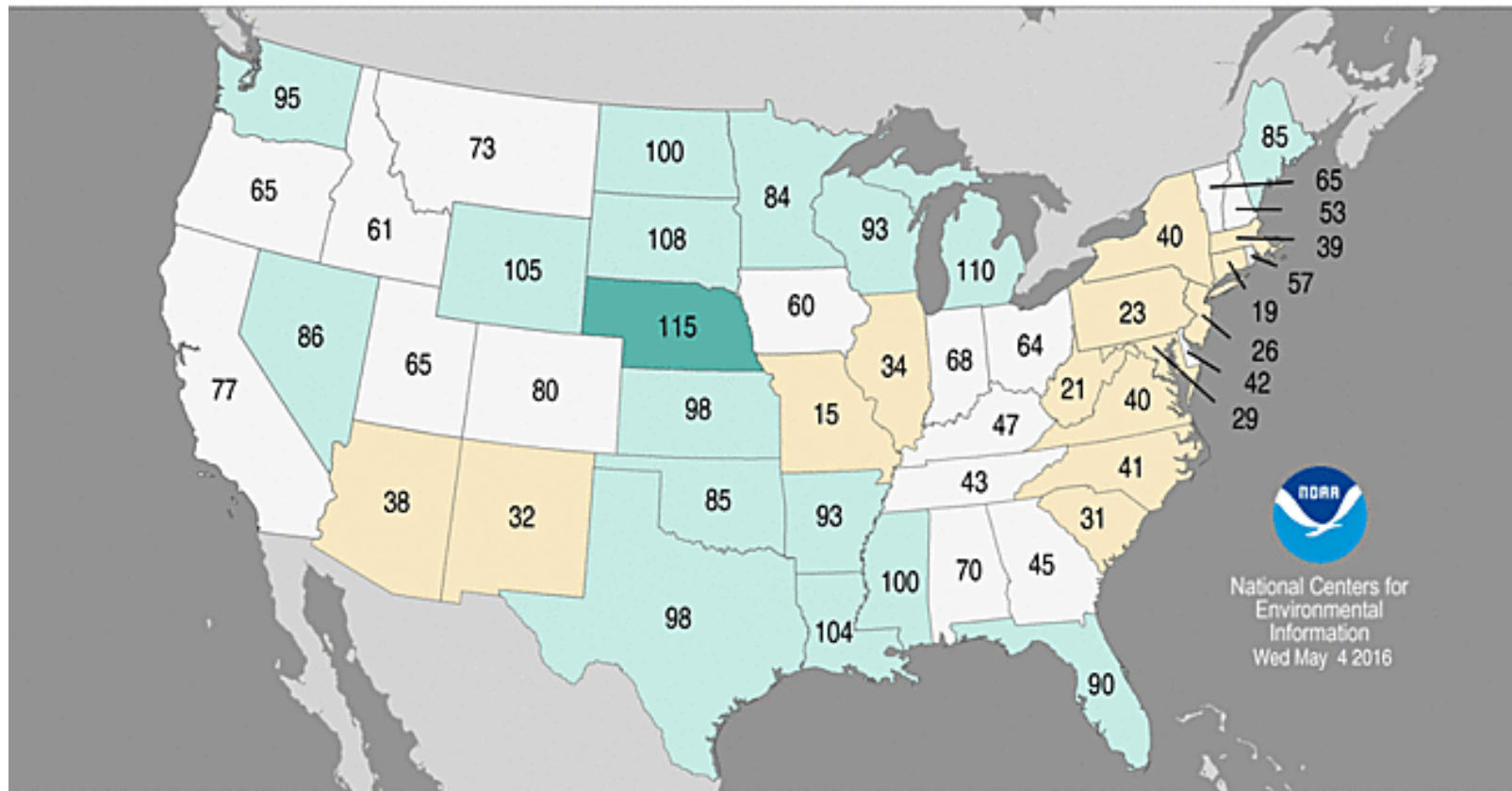
<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

The contiguous United States precipitation since January 1 was in the above average category.

Statewide Precipitation Ranks

January–April 2016

Period: 1895–2016



National Centers for
Environmental
Information
Wed May 4 2016

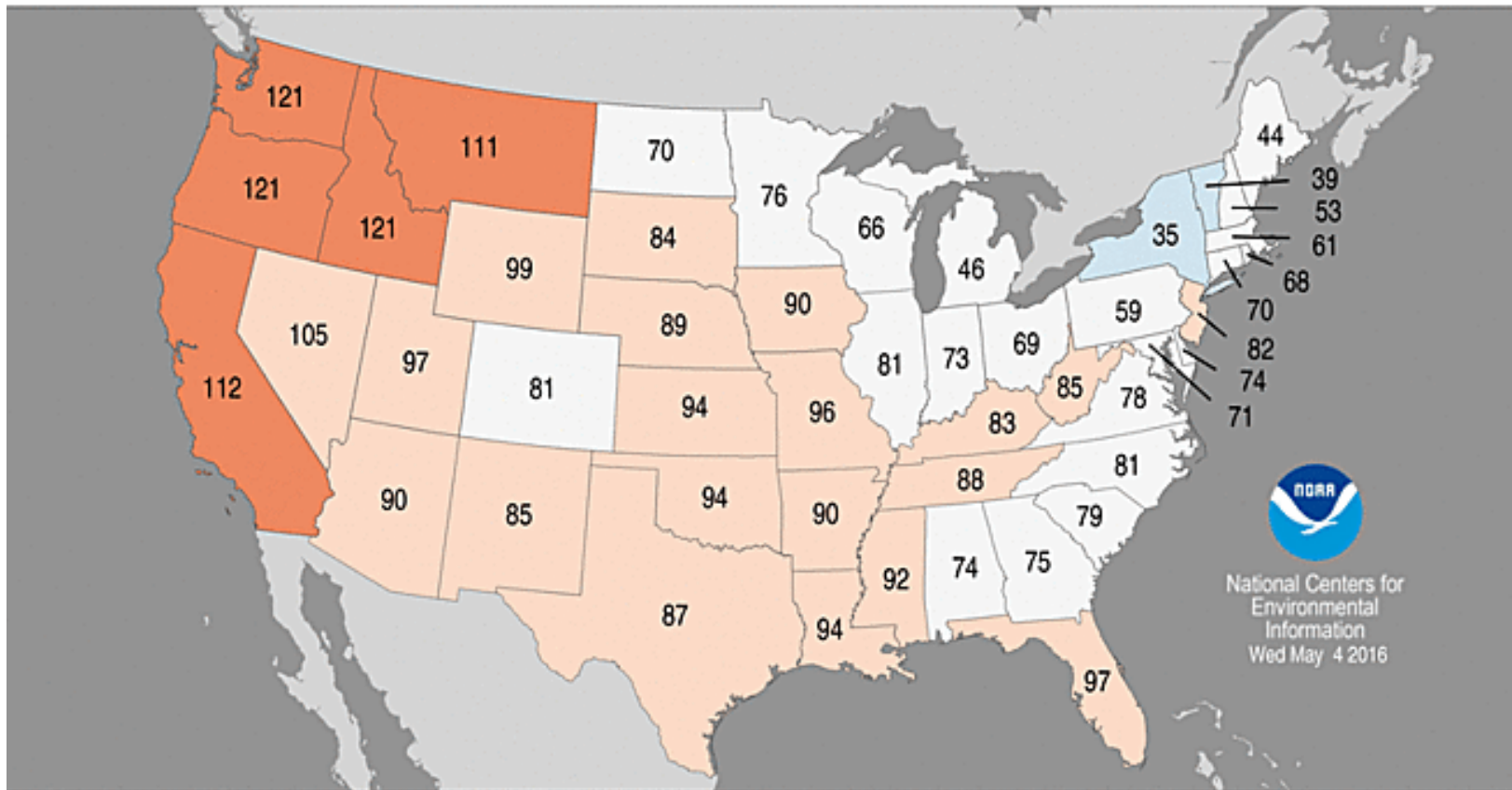
<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

The contiguous United States average April temperature was 2.1°F above the 20th century average, making it the 24th warmest April.

Statewide Average Temperature Ranks

April 2016

Period: 1895–2016

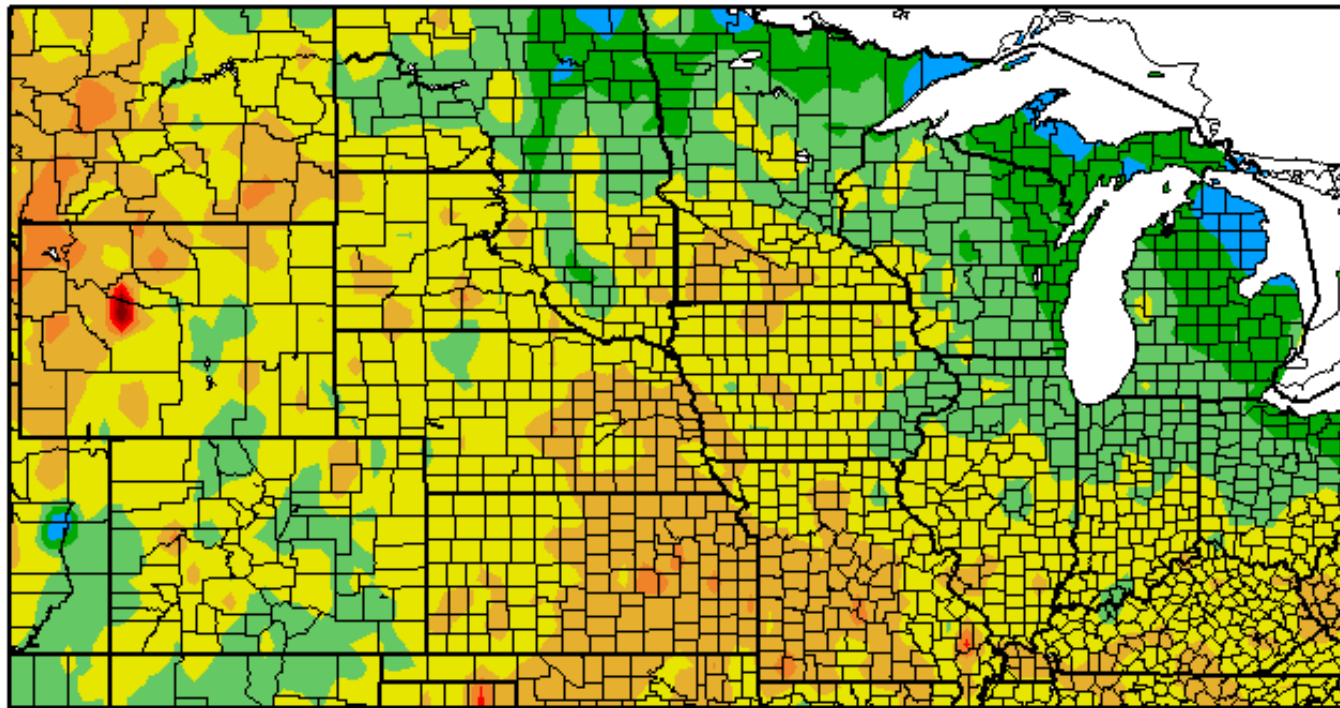


National Centers for
Environmental
Information
Wed May 4 2016

<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

The North Central U.S. experienced a split personality this April with warmth in the south and west and cool conditions in the north and east.

Departure from Normal Temperature (F)
4/1/2016 – 4/30/2016



Generated 5/11/2016 at HPRCC using provisional data. Regional Climate Centers

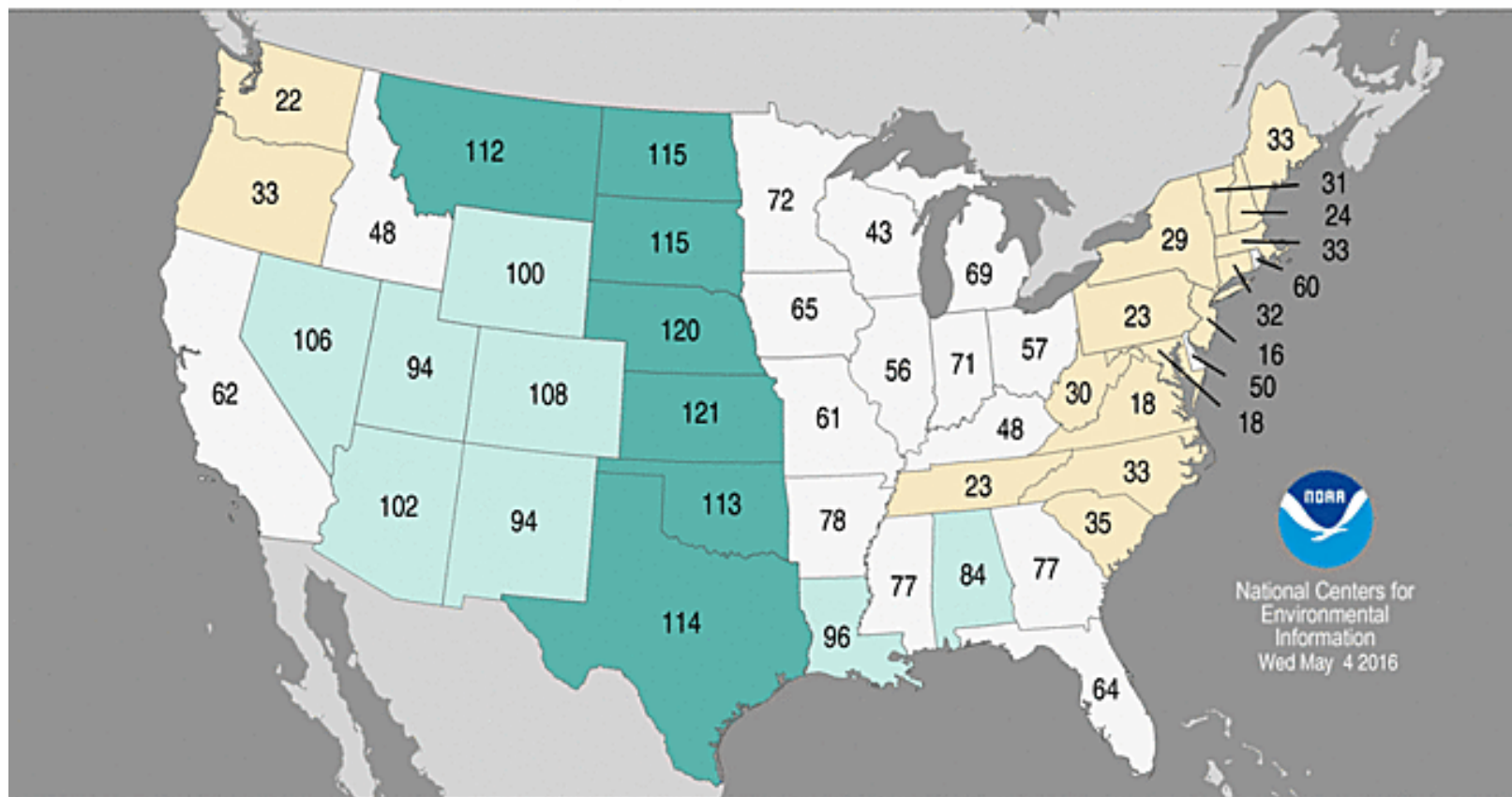
<http://hprcc.unl.edu>

The contiguous United States April precipitation average was 2.95 inches, which is 0.43 inches above the 20th century average.

Statewide Precipitation Ranks

April 2016

Period: 1895–2016



National Centers for
Environmental
Information
Wed May 4 2016

Record
Driest
(1)

Much
Below
Average

Below
Average

Near
Average

Above
Average

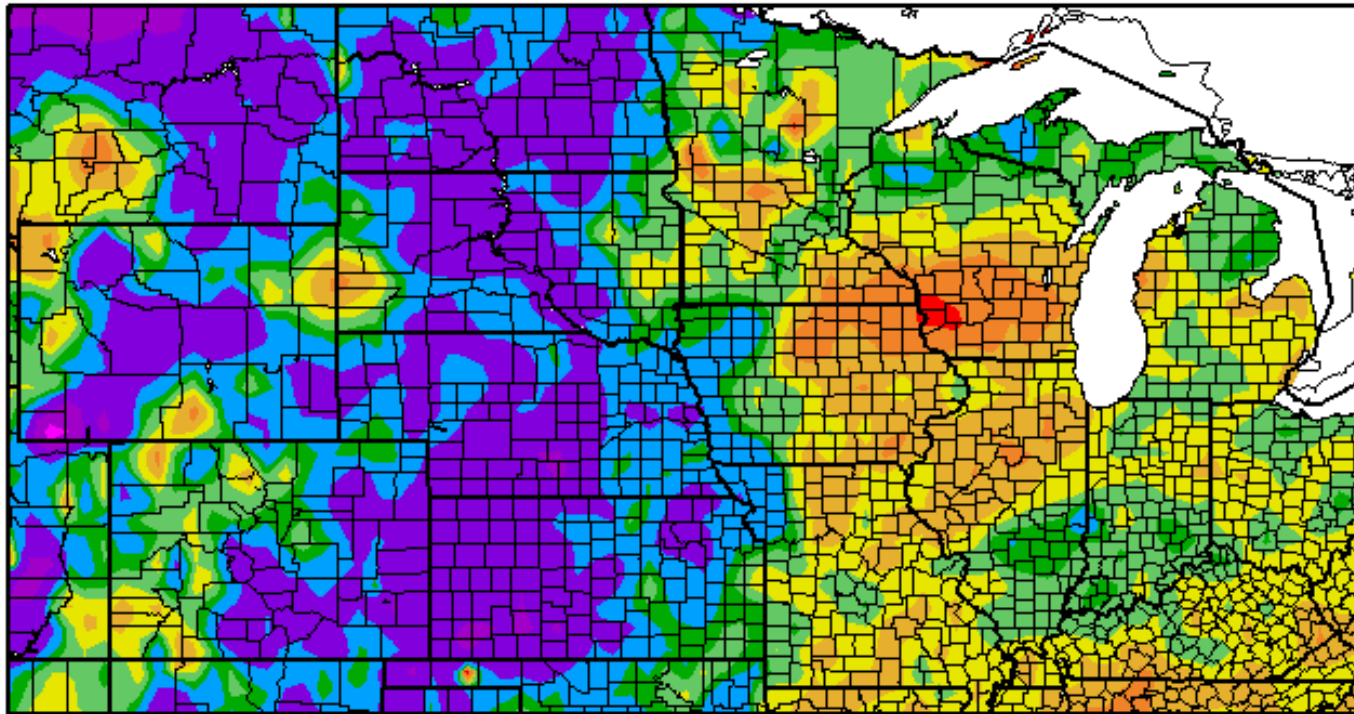
Much
Above
Average

Record
Wettest
(122)

<http://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

Precipitation conditions were much above normal in most of the west
with pockets of dryness in the east.

Percent of Normal Precipitation (%)
4/1/2016 – 4/30/2016

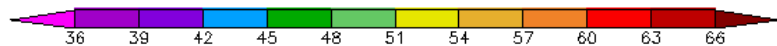
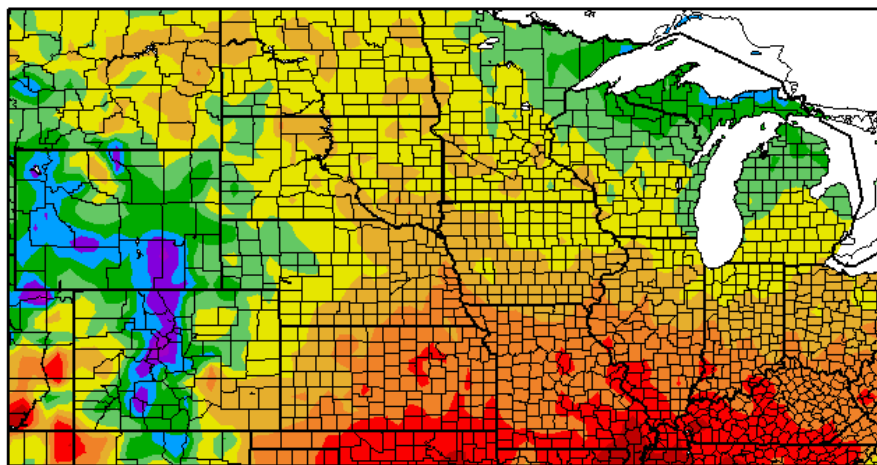


2 5 25 50 75 100 125 150 200 400 800
Generated 5/11/2016 at HPRCC using provisional data. Regional Climate Centers

<http://hprcc.unl.edu/maps.php?map=ACISClimateMaps>

Average temperature and departure from mean for May 1-18, 2016

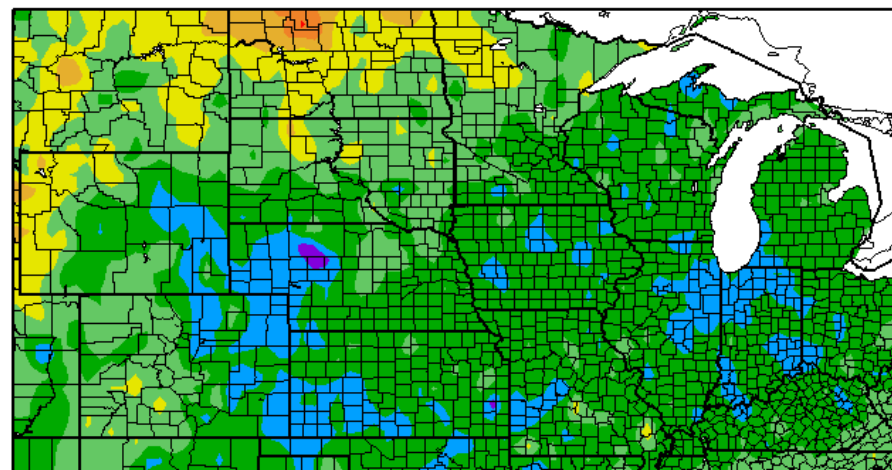
Temperature (F)
5/1/2016 – 5/18/2016



Generated 5/19/2016 at HPRCC using provisional data.

Regional Climate Center

Departure from Normal Temperature (F)
5/1/2016 – 5/18/2016

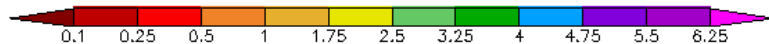
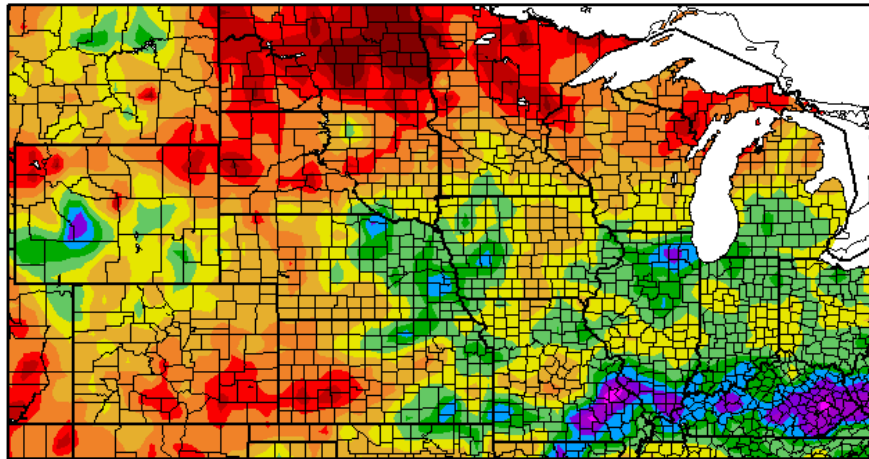


Generated 5/19/2016 at HPRCC using provisional data.

Regional Climate Centers

Accumulated precipitation and departure from mean for May 1-18, 2016

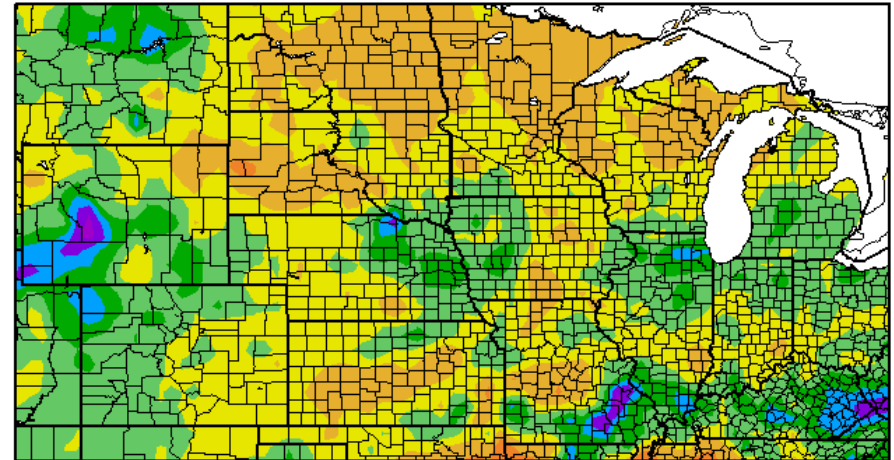
Precipitation (in)
5/1/2016 – 5/18/2016



Generated 5/19/2016 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Precipitation (in)
5/1/2016 – 5/18/2016

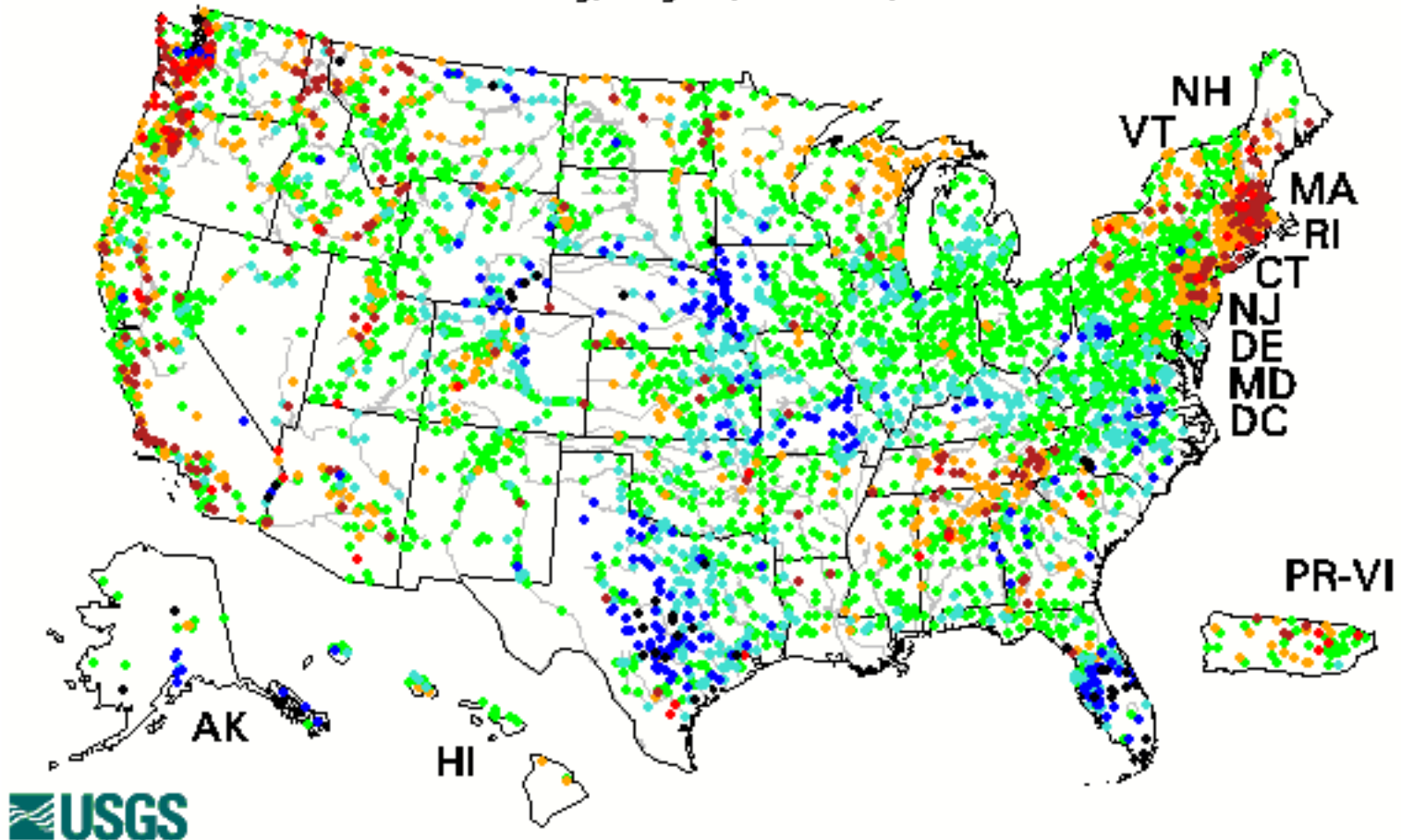


Generated 5/19/2016 at HPRCC using provisional data.

Regional Climate Centers

Current streamflow

Thursday, May 19, 2016 09:30ET



● High = The estimated streamflow is the highest value ever measured for the day of the year.

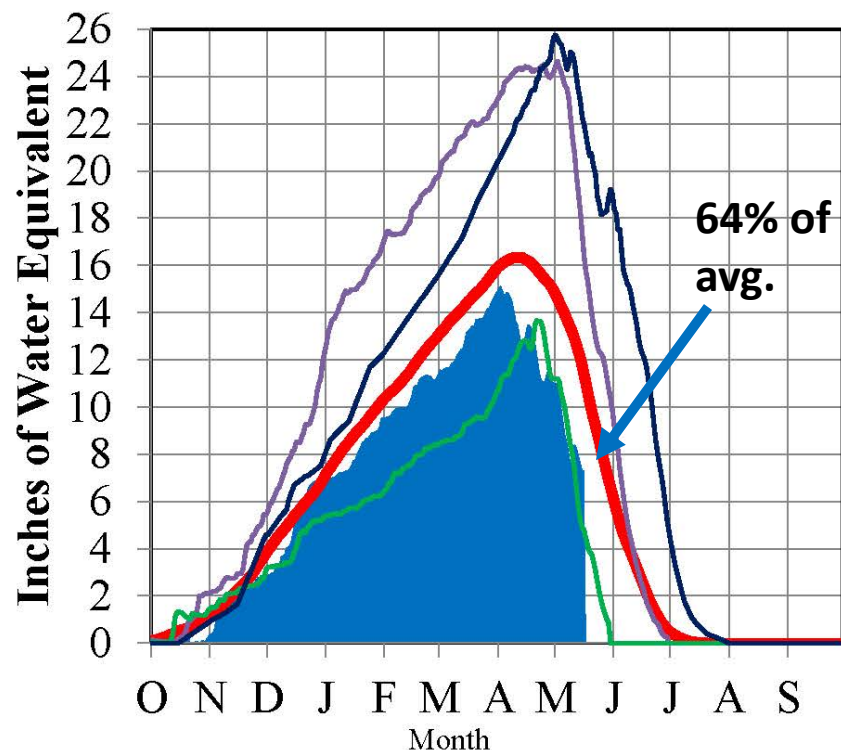
Explanation - Percentile classes						
●	●	●	●	●	●	●
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

http://waterwatch.usgs.gov/?id=ww_current

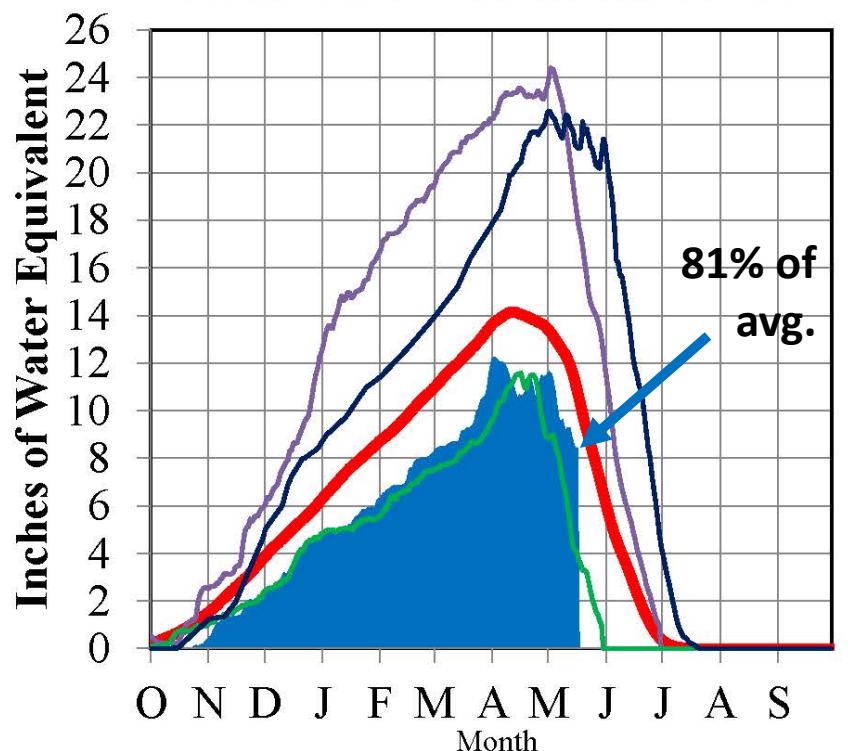
Missouri River Basin – Mountain Snowpack Water Content 2015-2016 with comparison plots from 1997*, 2001*, and 2011

May 19, 2016

Total above Fort Peck



Total Fort Peck to Garrison



The Missouri River Basin mountain snowpack normally peaks near April 15. On May 19, 2016 the mountain Snow Water Equivalent (SWE) in the “Total above Fort Peck” reach is currently 6.5”, 64% of average and 43% of this year’s peak. The mountain SWE in the “Total Fort Peck to Garrison” reach is currently 8.0”, 81% of average and 66% of this year’s peak. The mountain snowpack has peaked in both reaches - on April 1 for the “Total above Fort Peck” reach with 15.0” SWE, 95% of average, and on April 2 for the “Total Fort Peck to Garrison” reach with 12.2” SWE, 89% of average.

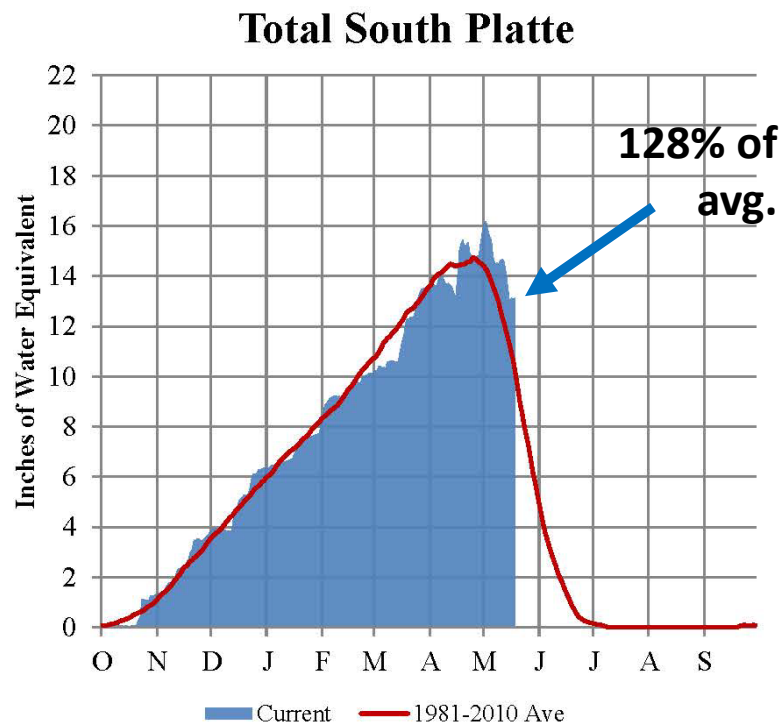
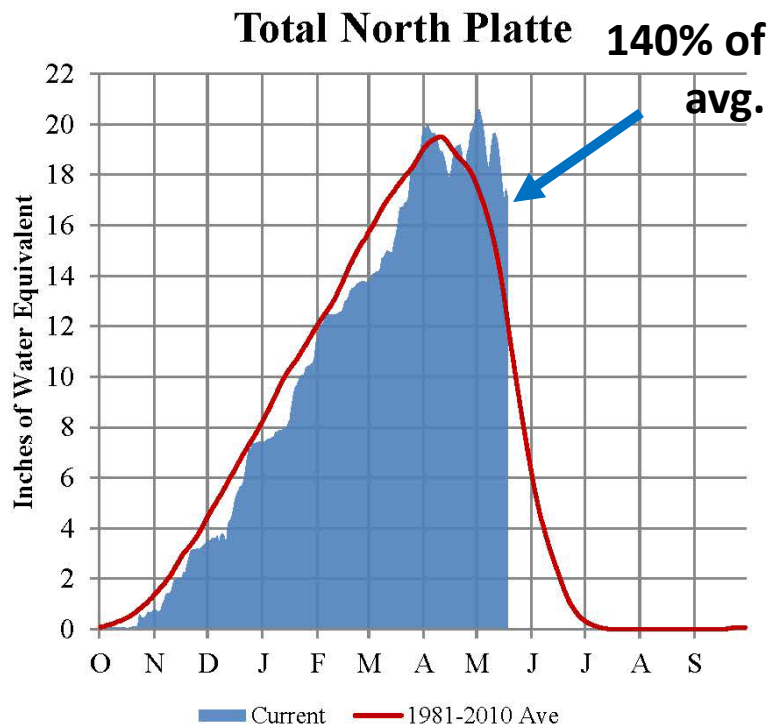
*Generally considered the high and low year of the last 20-year period.

Provisional data. Subject to revision.

<http://www.nwd-mr.usace.army.mil/rcc/reports/snow.pdf>

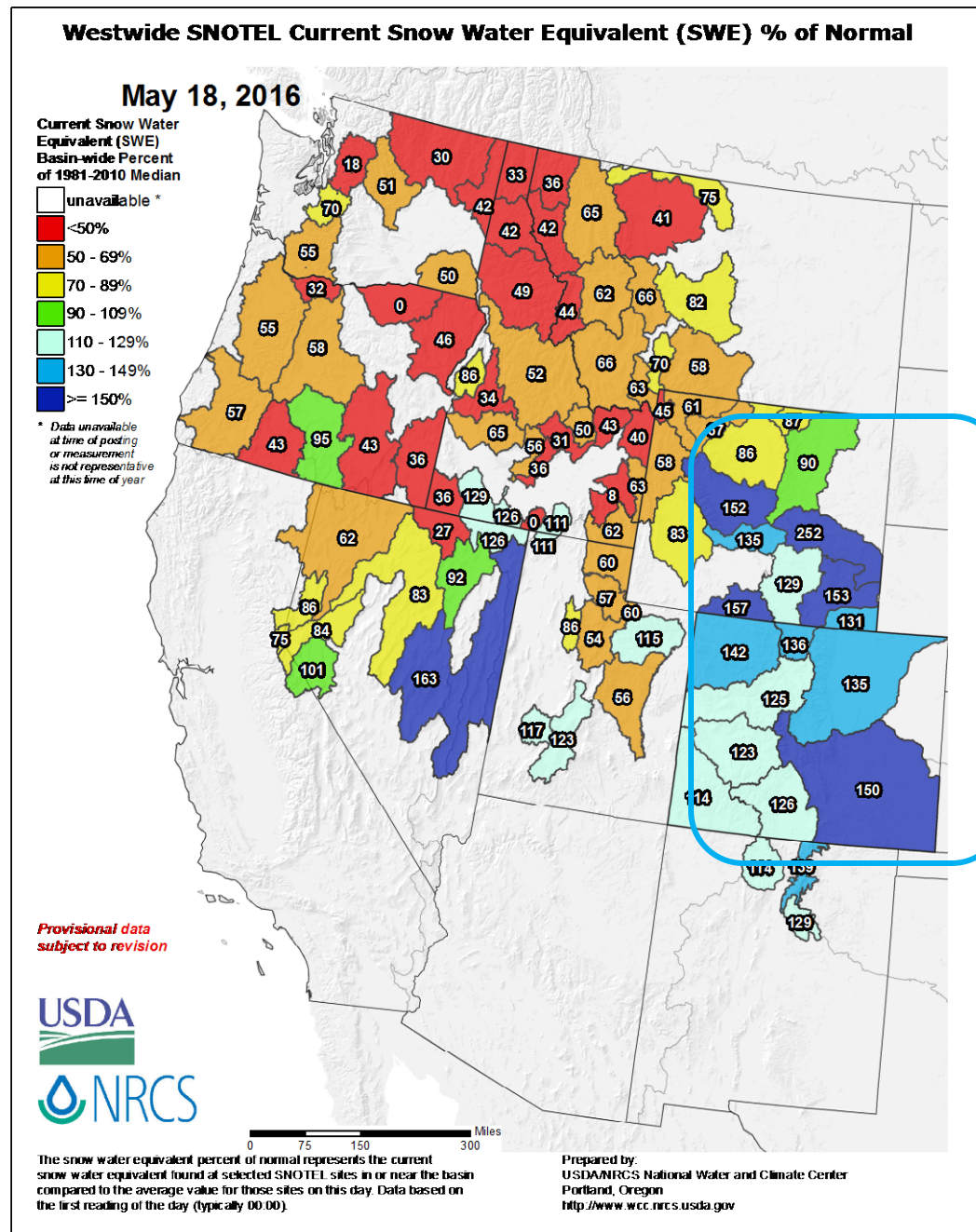
Platte River Basin - Mountain Snowpack Water Content Water Year 2015-2016

5/19/2016



The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of May 18, 2016, the mountain snowpack SWE in the "Total North Platte" reach is currently 17.1", 140% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 13.1", 128% of average.

Western U.S. snow water equivalent



<http://www.wcc.nrcs.usda.gov/gis/snow.html>

Missouri River Basin conditions

May 18, 2016 Observed River Conditions

NWS- Missouri Basin River Forecast Center

Weather.gov > Missouri Basin, Pleasant Hill

Missouri Basin, Pleasant Hill

River Forecast Center

[River Observations and Forecasts](#)

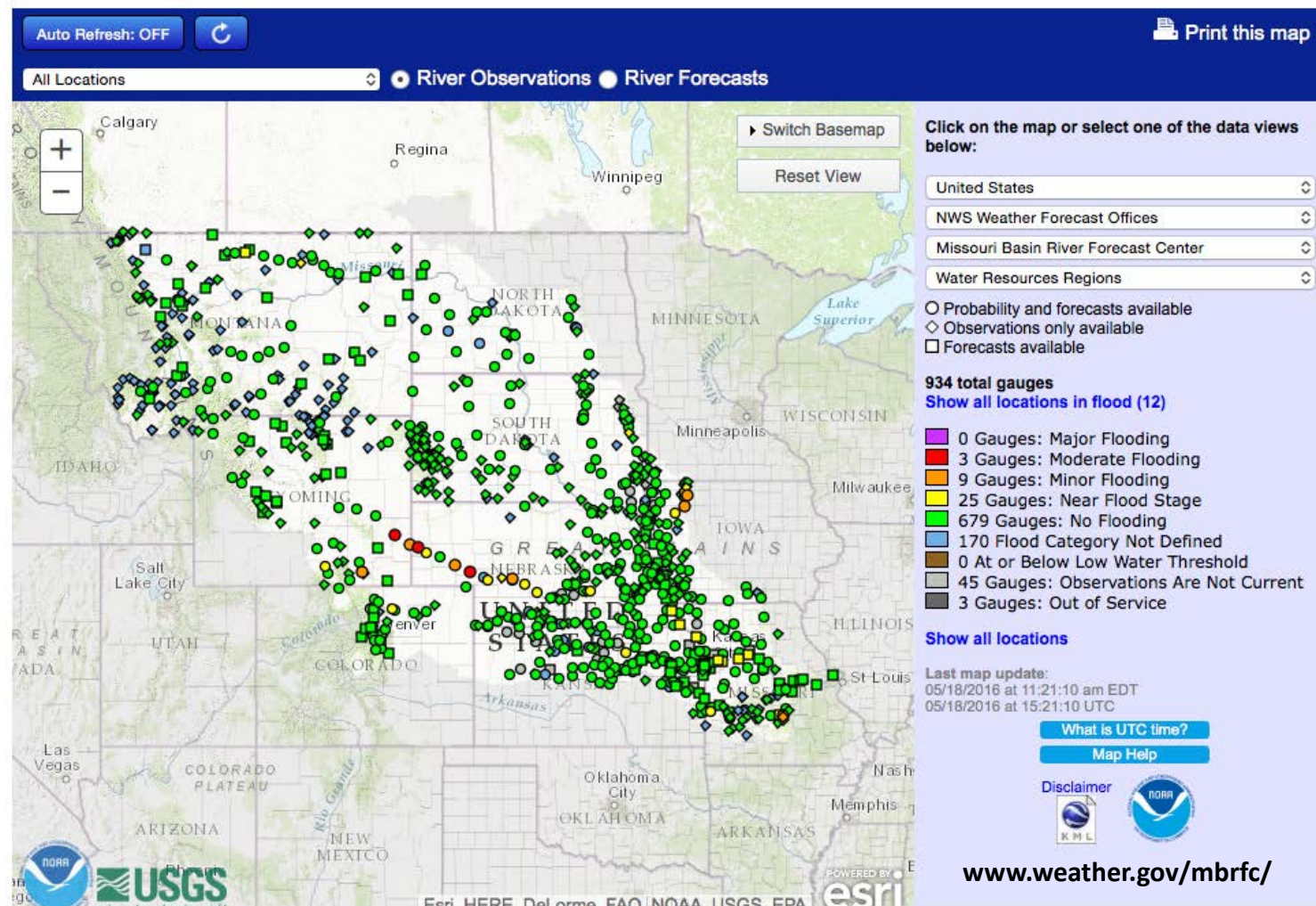
[Weather Observations and Forecasts](#)

[Water Supply](#)

[Climate and History](#)

[Seasonal Interest](#)

[Local Information](#)



Mississippi River Basin conditions

May 18, 2016 Observed River Conditions

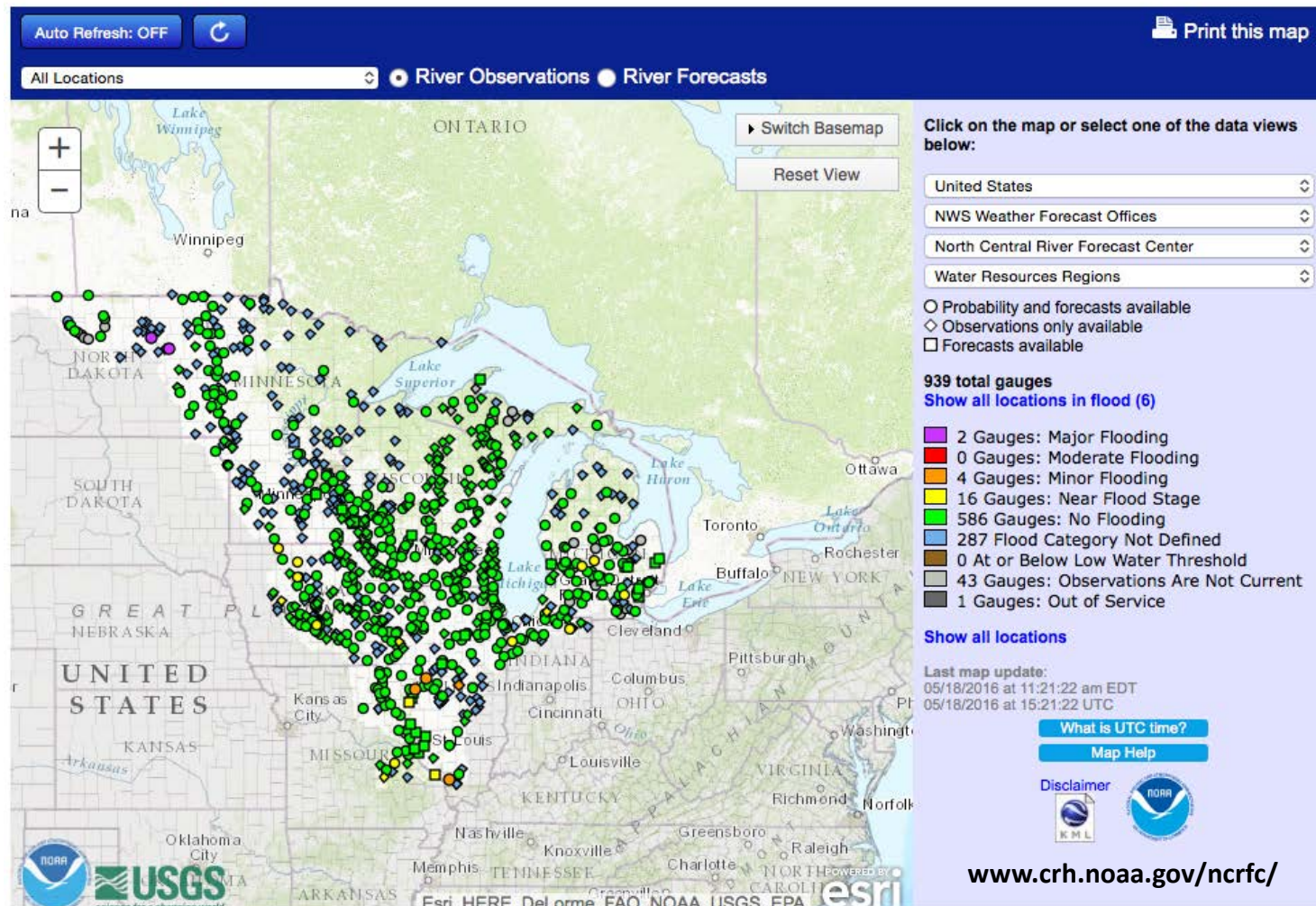
NWS North Central River Forecast Center

Weather.gov > North Central River Forecast Center

North Central River Forecast Center

River Forecast Center

[River Observations and Forecasts](#) [Weather Observations and Forecasts](#) [Water Supply](#) [Climate and History](#) [Seasonal Interest](#) [Local Information](#)



Ohio River Basin conditions

May 18, 2016 Observed River Conditions

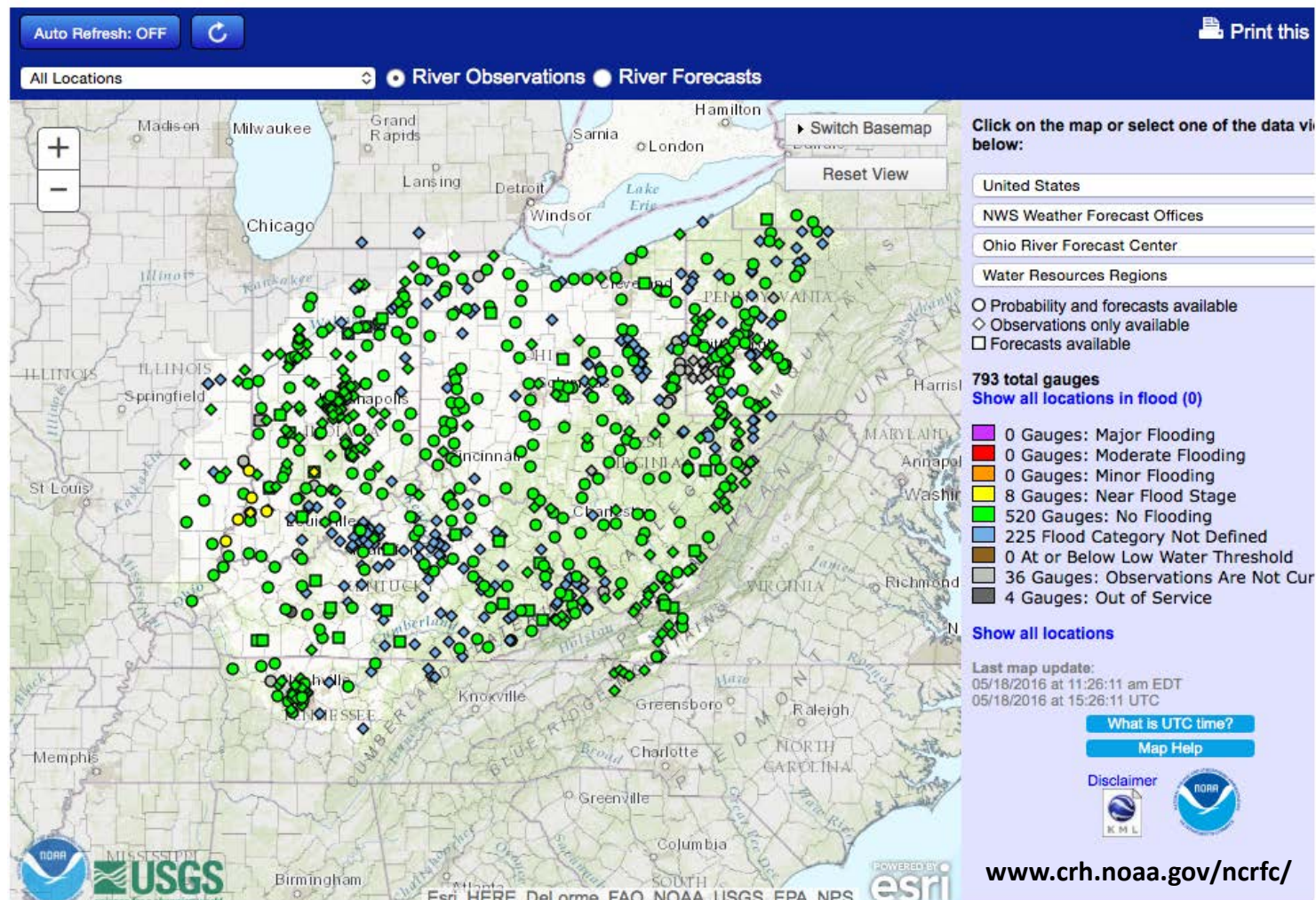
NWS North Central River Forecast Center

Weather.gov > North Central River Forecast Center

North Central River Forecast Center

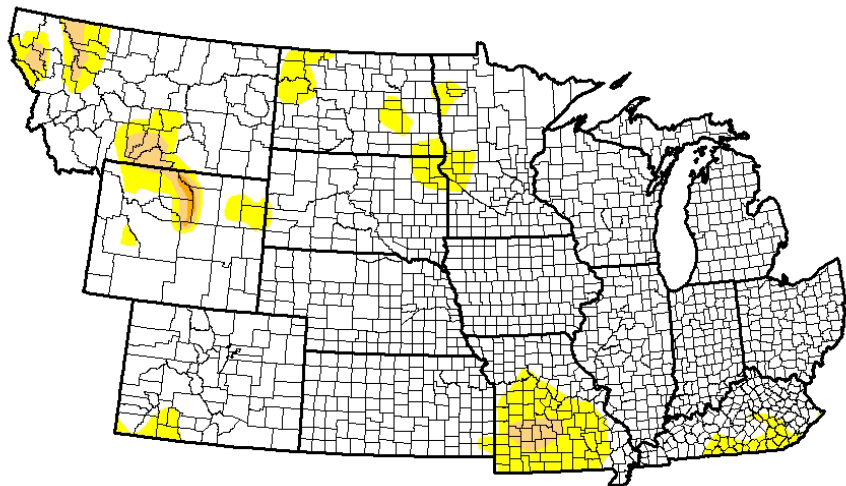
River Forecast Center

[River Observations and Forecasts](#) [Weather Observations and Forecasts](#) [Water Supply](#) [Climate and History](#) [Seasonal Interest](#) [Local Information](#)

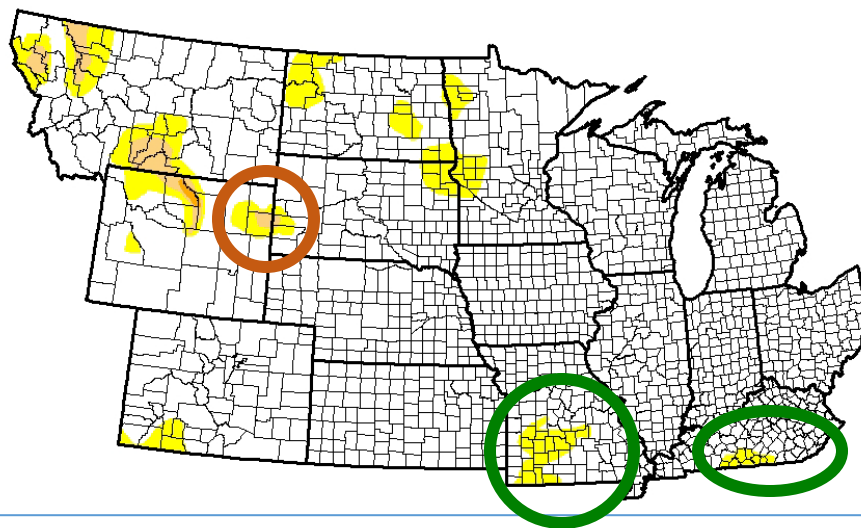


U.S. Drought Monitor

May 10, 2016



May 17, 2016



Intensity:

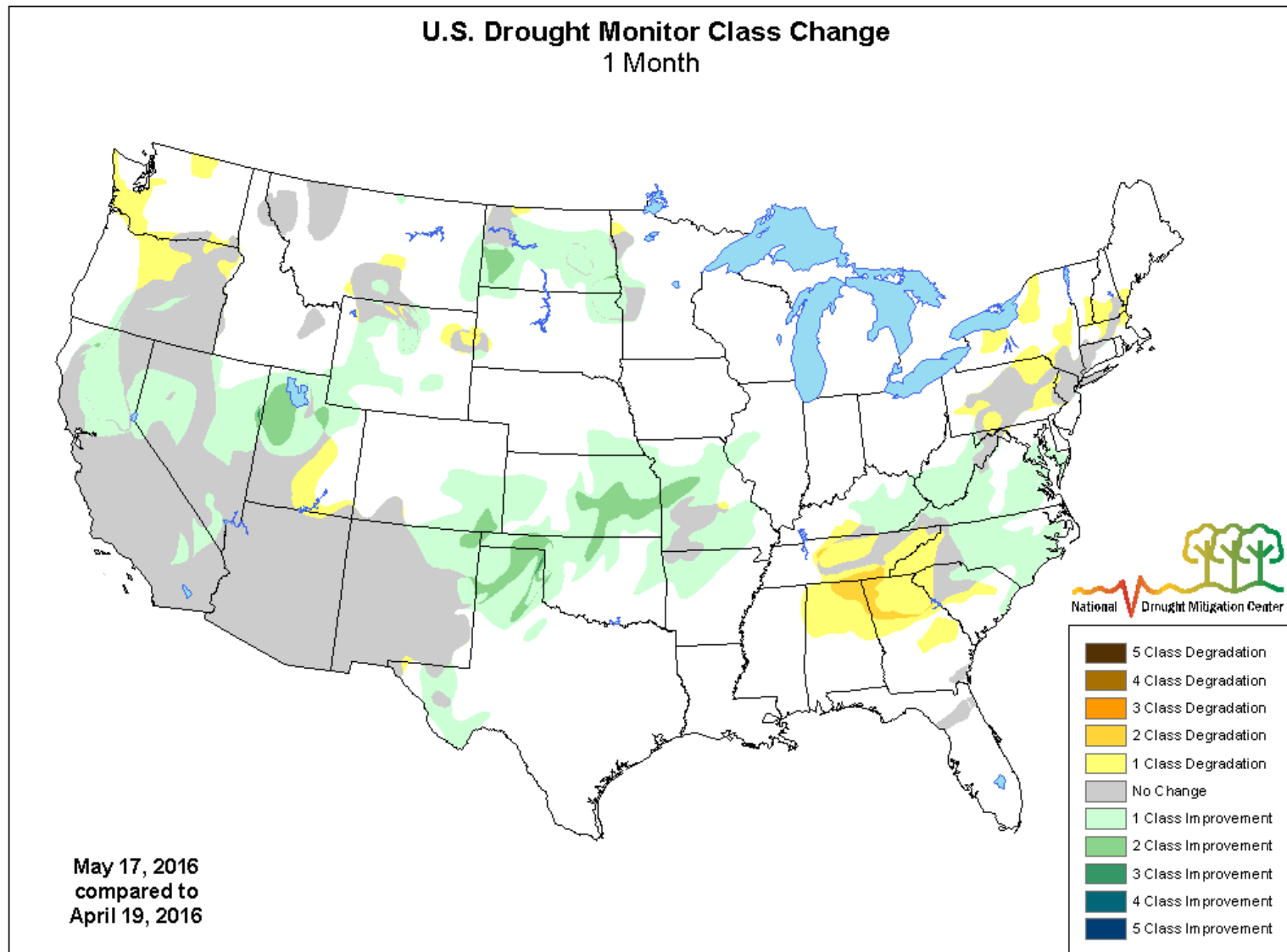


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



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

U.S. Drought Monitor



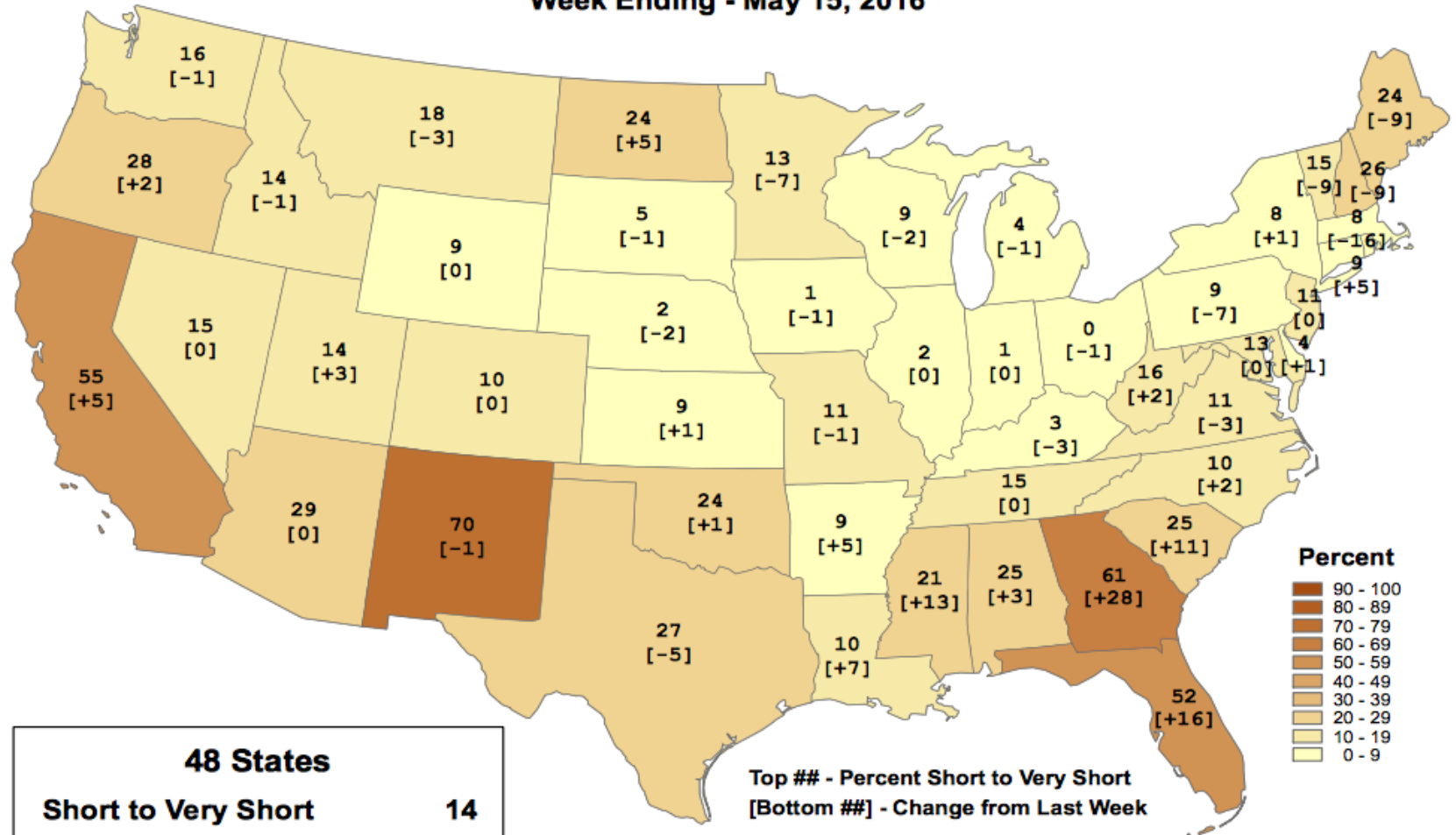
Extent of Topsoil Moisture – Short or Very Short



United States
Department of
Agriculture

This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Topsoil Moisture Percent Short to Very Short Week Ending - May 15, 2016



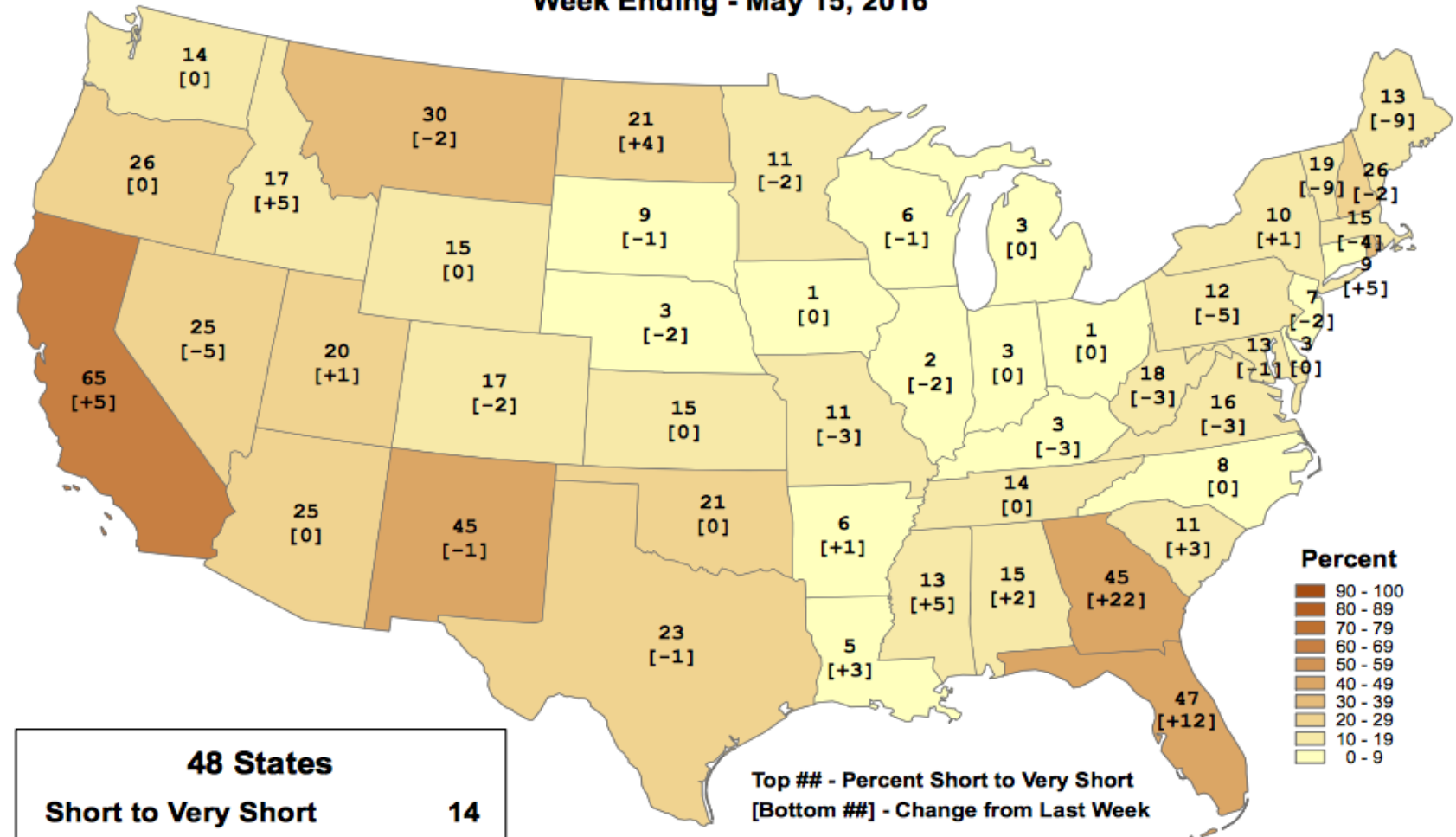
Extent of Subsoil Moisture – Short or Very Short



United States
Department of
Agriculture

This product was prepared by the
USDA Office of the Chief Economist (OCE)
World Agricultural Outlook Board (WAOB)

Subsoil Moisture Percent Short to Very Short Week Ending - May 15, 2016



Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports. These reports are available through <http://www.nass.usda.gov/Publications/>.

Impacts

Frost damage to field peas in South Dakota.



Air quality alerts issued in early May due to wildfires

Lake Michigan stages impressive rebound, rise of 4ft since Jan, 2013 (precipitation, ice cover, evaporation cited as causes).

Freeze damage being assessed. Crop progress is good.

Freeze damage to corn is not expected.

Freeze damage being assessed.

No major concerns. Crop progress is good.

Cool temps and recent wetness led to planting delay.

Flooding impacts in Fremont Co with heavy rains. Winter wheat and rangeland in good condition.

Concerns of high flow coming into Platte as snowmelt progresses.

Crop progress is good.

No significant impacts to report. Moisture received when needed.

Possibility of frost damage to wheat in the west.

No major concerns. Received needed moisture.

Some reports of stripe rust in wheat.

No major concerns.

Alleviation of some of dryness in southeast.

Water supplies from mountain snowmelt on track to be good this year.

Impacts

Crop Progress as of May 15, 2016

Corn Percent Planted				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
CO	53	36	64	67
IL	92	78	83	76
IN	68	38	45	61
IA	89	80	88	78
KS	75	63	80	76
KY	79	74	82	67
MI	71	18	34	51
MN	96	89	93	64
MO	81	94	96	78
NE	82	53	74	81
NC	92	88	94	95
ND	68	51	76	43
OH	71	30	34	54
PA	64	39	52	52
SD	81	39	62	65
TN	90	89	94	83
TX	74	69	78	86
WI	80	56	76	47
18 Sts	82	64	75	70
These 18 States planted 93% of last year's corn acreage.				

Corn Percent Emerged				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
CO	24	1	8	19
IL	66	46	64	45
IN	32	15	28	31
IA	53	28	51	35
KS	49	38	51	43
KY	46	49	63	44
MI	35	2	6	16
MN	63	25	53	25
MO	60	76	85	54
NE	47	15	30	35
NC	79	66	82	85
ND	10	4	22	10
OH	36	12	21	24
PA	30	13	21	17
SD	39	4	17	21
TN	60	69	81	63
TX	70	57	64	72
WI	32	6	17	11
18 Sts	48	27	43	34
These 18 States planted 93% of last year's corn acreage.				

Winter Wheat Condition by Percent					
	VP	P	F	G	EX
AR	3	6	37	43	11
CA	0	0	15	35	50
CO	1	11	23	52	13
ID	1	1	10	68	20
IL	3	4	31	51	11
IN	1	4	20	56	19
KS	1	8	34	50	7
MI	2	4	20	57	17
MO	1	3	28	57	11
MT	1	5	30	45	19
NE	0	3	30	55	12
NC	6	18	35	35	6
OH	0	1	18	55	26
OK	1	5	29	56	9
OR	1	2	34	53	10
SD	0	1	25	68	6
TX	2	10	40	40	8
WA	1	3	15	67	14
18 Sts	1	7	30	51	11
Prev Wk	1	6	31	51	11
Prev Yr	6	13	36	37	8

Impacts

Crop Progress as of May 15, 2016

Soybeans Percent Planted				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
AR	51	48	62	45
IL	43	19	29	31
IN	31	11	15	31
IA	45	29	43	37
KS	15	6	14	25
KY	20	15	21	18
LA	75	45	72	74
MI	45	7	14	28
MN	76	46	63	32
MS	76	57	72	64
MO	15	23	31	22
NE	36	13	29	43
NC	22	10	24	21
ND	30	25	52	21
OH	39	8	10	28
SD	39	10	28	24
TN	32	22	35	22
WI	43	18	33	18
18 Sts	41	23	36	32
These 18 States planted 95% of last year's soybean acreage.				

< 10% emergence

Oats Percent Planted				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
IA	99	99	100	96
MN	98	93	97	70
NE	100	89	92	98
ND	81	64	83	50
OH	88	81	84	79
PA	88	93	95	87
SD	97	92	96	88
TX	100	100	100	100
WI	95	75	91	68
9 Sts	95	88	94	83
These 9 States planted 68% of last year's oat acreage.				

Barley Percent Emerged				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
ID	79	72	79	63
MN	84	37	73	37
MT	77	50	74	43
ND	46	24	52	24
WA	80	59	74	69
5 Sts	68	47	68	42
These 5 States planted 82% of last year's barley acreage.				

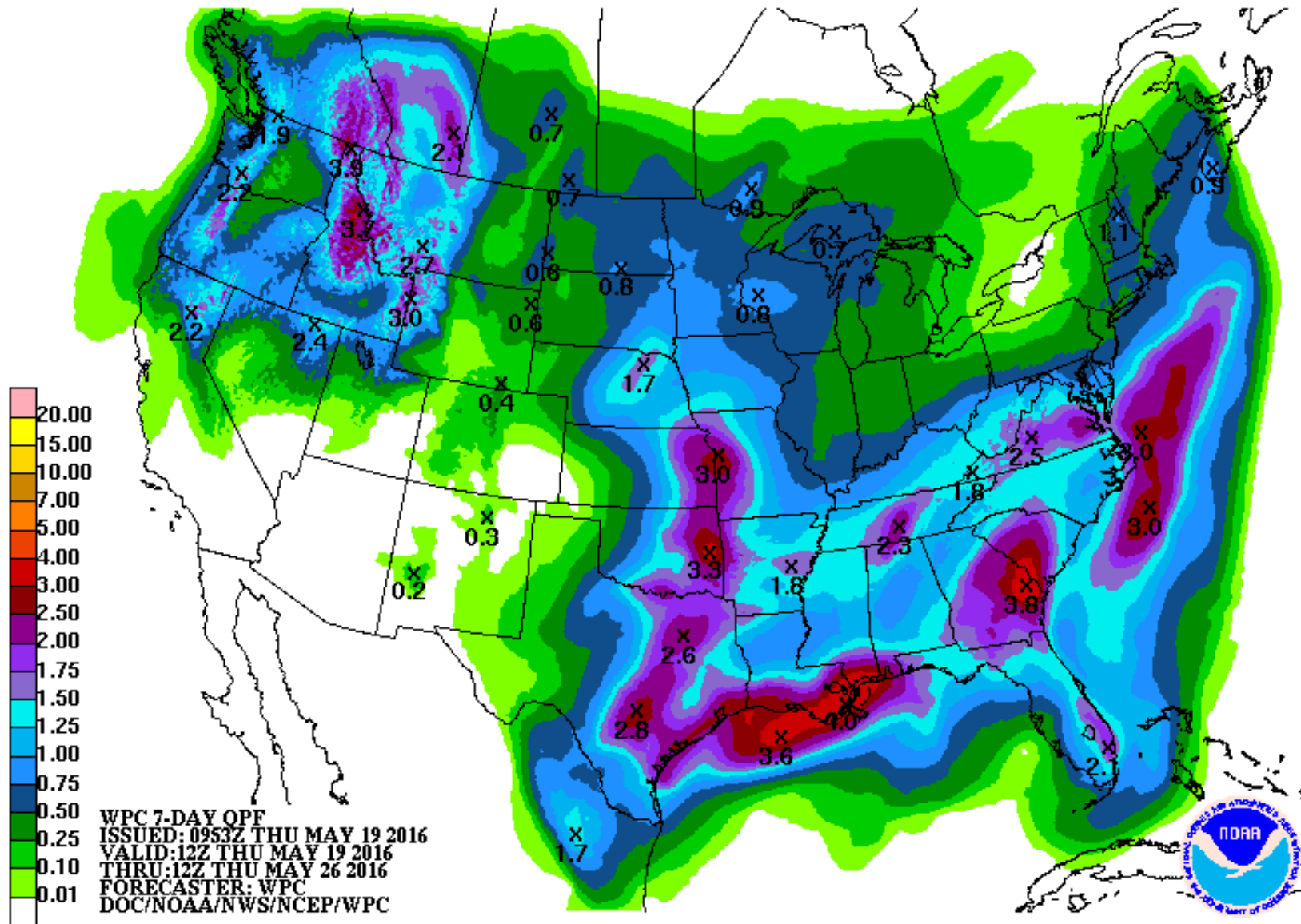
Oats Percent Emerged				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
IA	89	84	94	82
MN	86	71	84	44
NE	94	79	86	84
ND	35	25	43	22
OH	63	52	68	55
PA	68	75	86	63
SD	81	78	89	59
TX	100	100	100	100
WI	75	39	63	43
9 Sts	80	70	81	66
These 9 States planted 68% of last year's oat acreage.				

Sugarbeets Percent Planted				
	Prev Year	Prev Week	May 15 2016	5-Yr Avg
ID	100	81	87	99
MI	99	90	95	89
MN	100	99	100	65
ND	99	97	100	61
4 Sts	100	94	97	74
These 4 States planted 84% of last year's sugarbeet acreage.				

Climate Outlooks

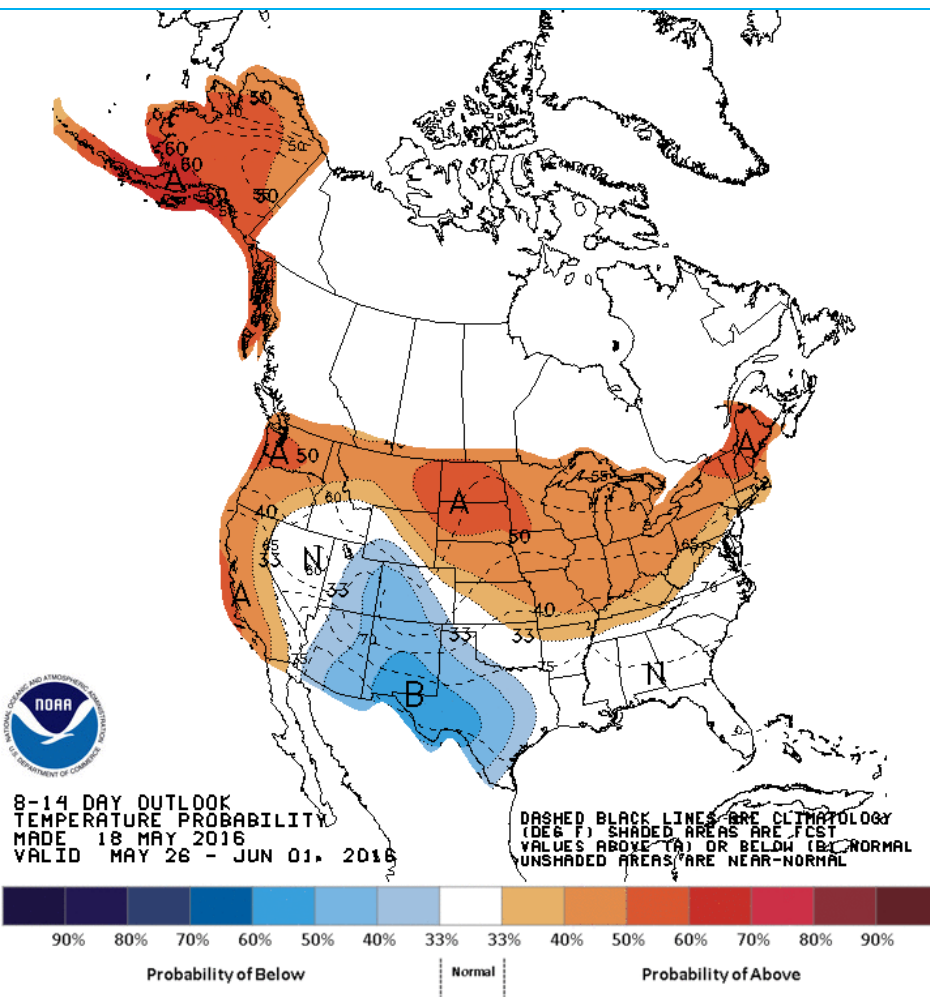
- **7-day precipitation forecast**
- **8-14 day outlook**
- **Significant river flood outlook**
- **La Niña watch**
- **Drought outlook**
- **Summer and fall outlook**

Forecast Precipitation Amounts (7-day)

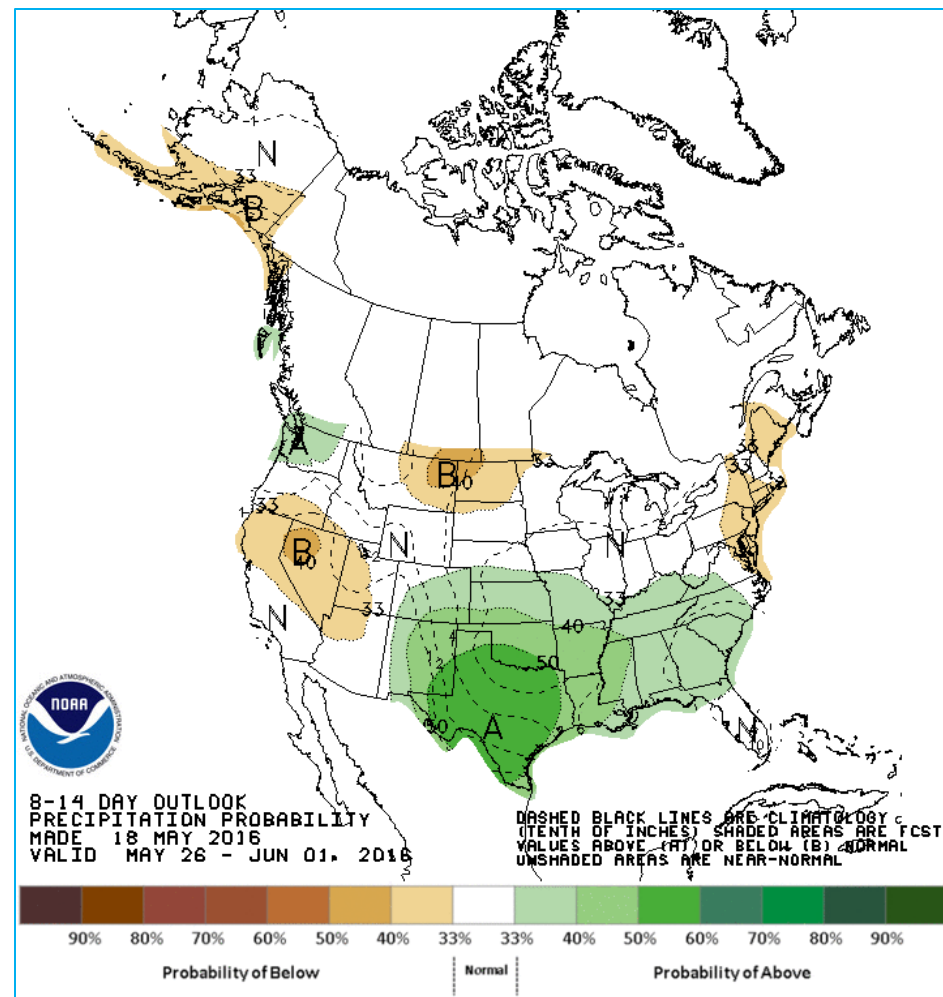


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

8-14 Day Forecast for May 26 - Jun 1, 2016



Temperature



Precipitation



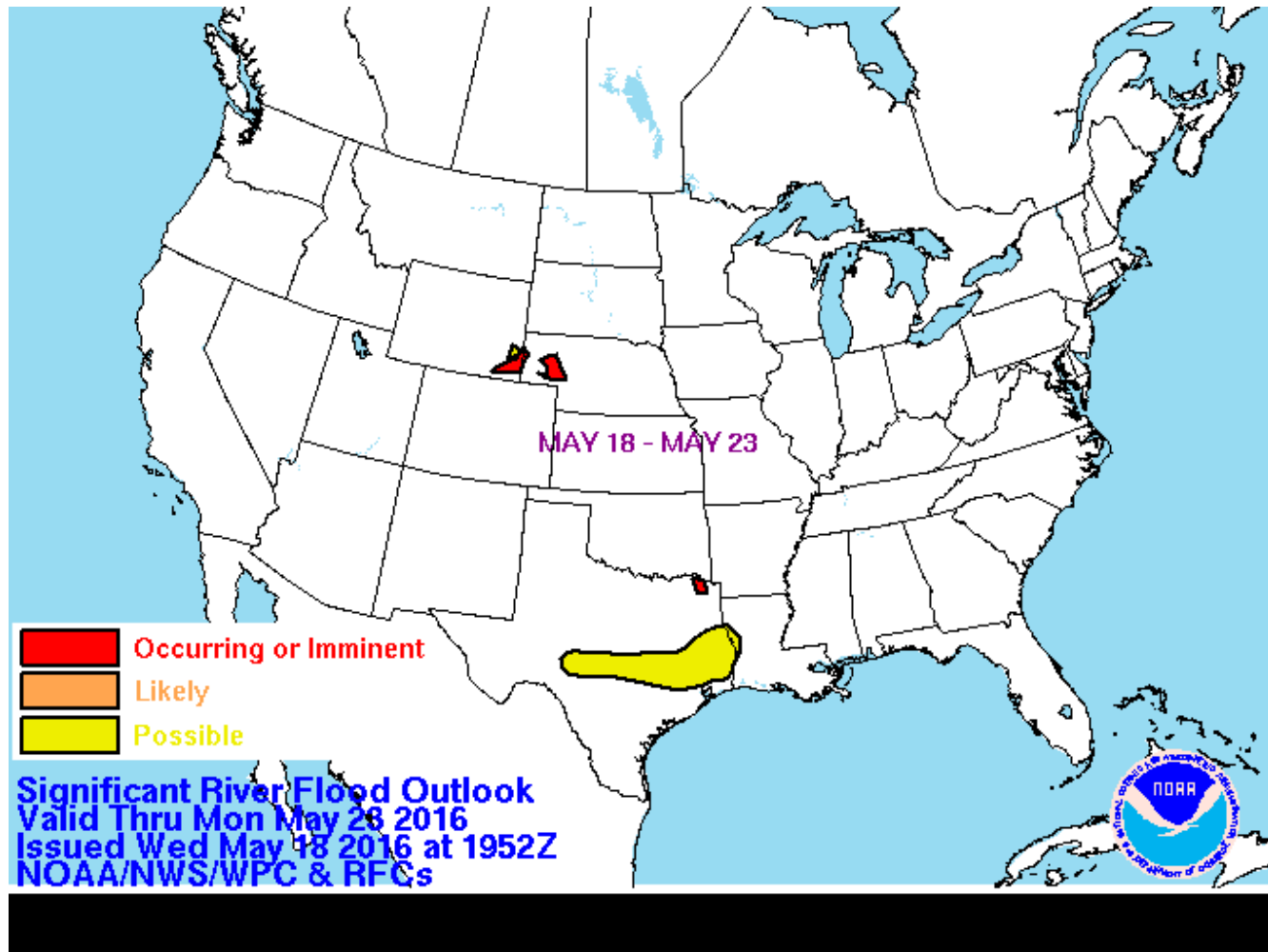
NATIONAL WEATHER SERVICE

Significant River Flood Outlook

Click a region on the national map below to access more detailed RFC data.

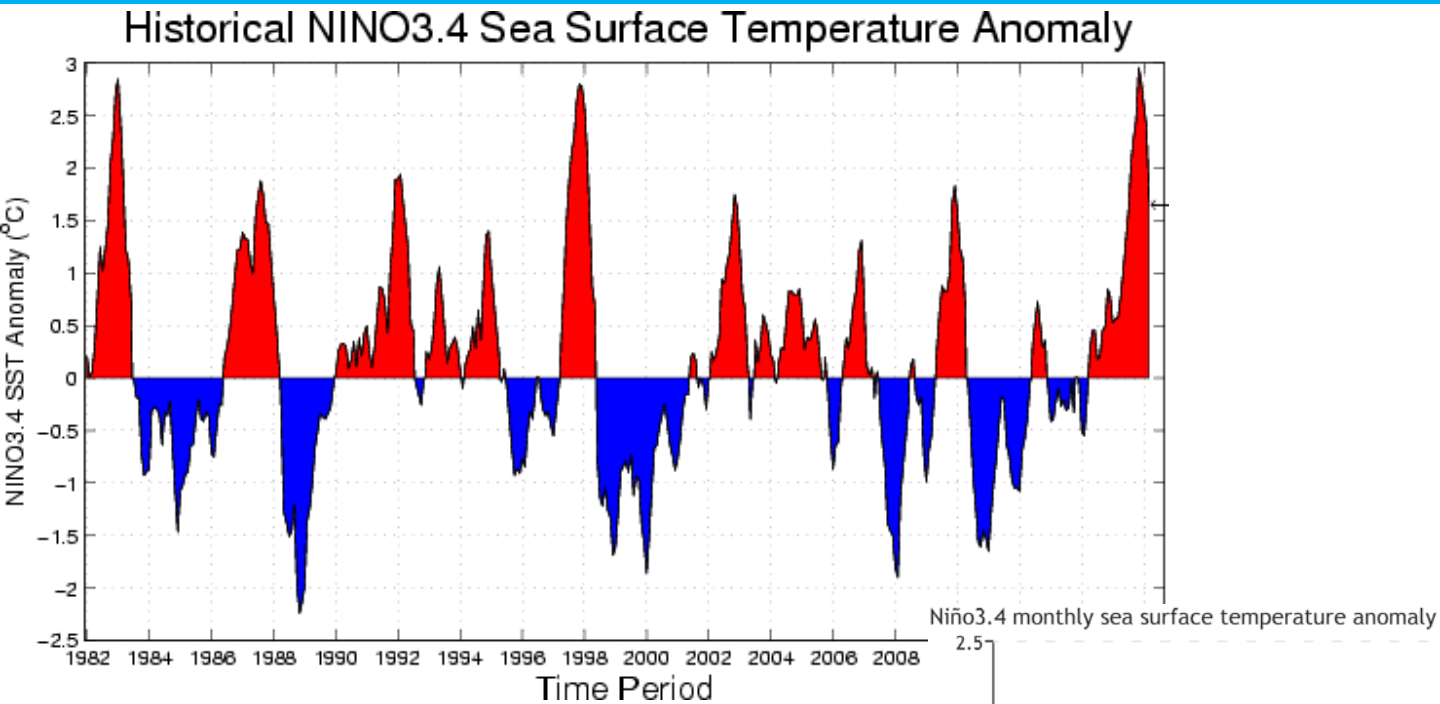


Issued Wed, May 18, 2016 and valid thru Mon May 23, 2016

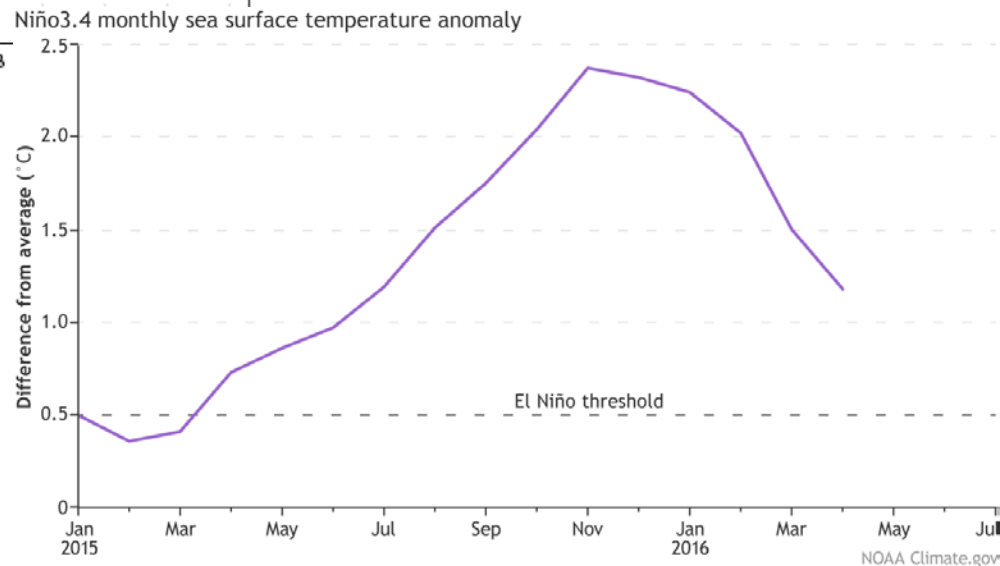


<http://www.wpc.ncep.noaa.gov/nationalfloodoutlook/>

May 2016 El Niño/La Niña update: Switcheroo!



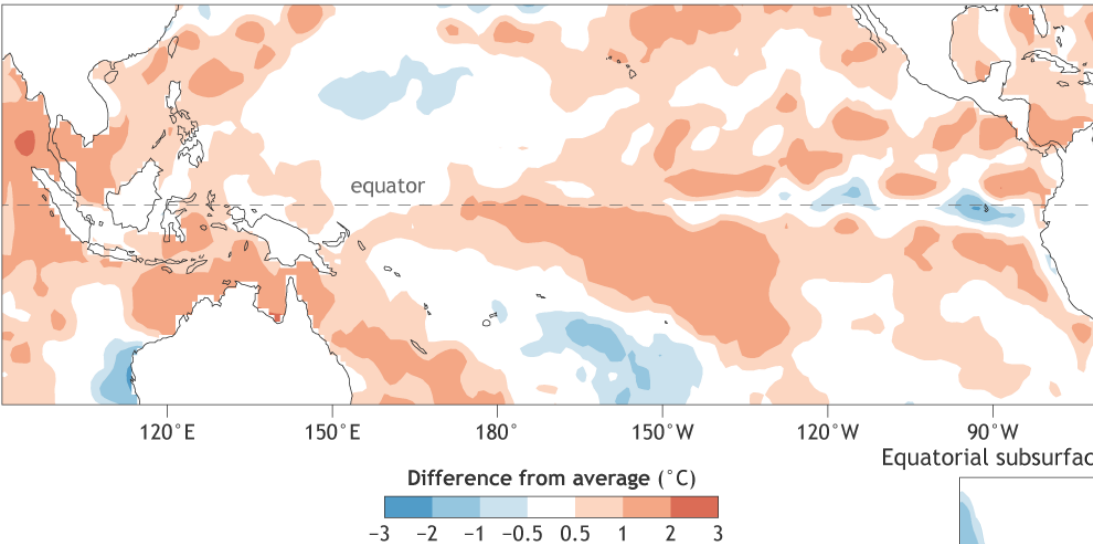
<http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>



<https://www.climate.gov/news-features/departments/enso-blog>

Most models predicting El Niño conditions will come to an end in early summer.

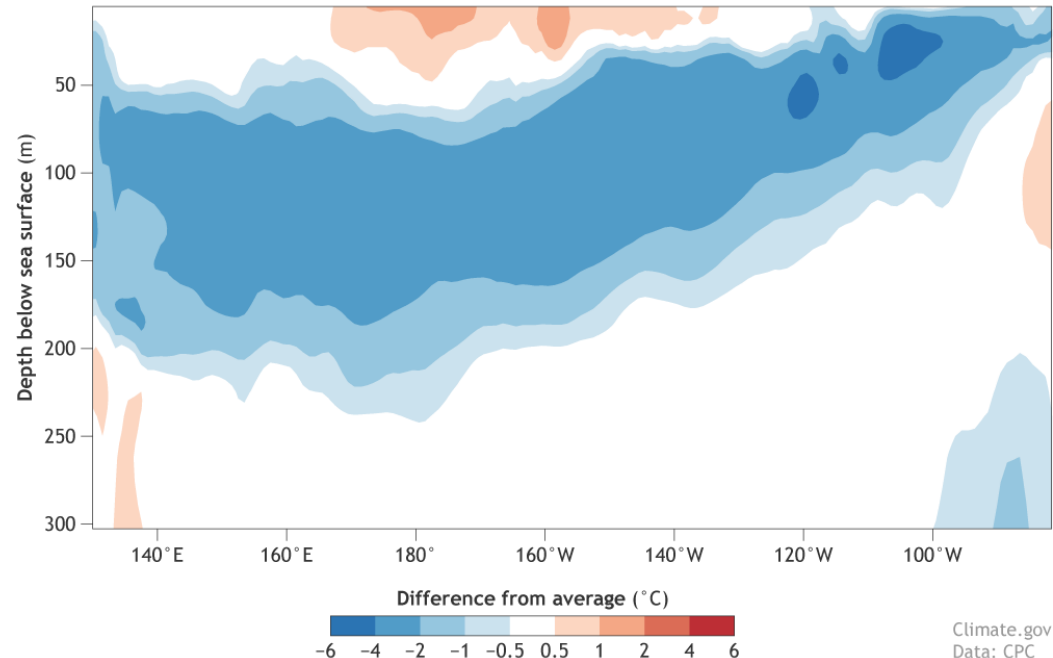
Sea surface temperature anomalies (week of May 4th, 2016)



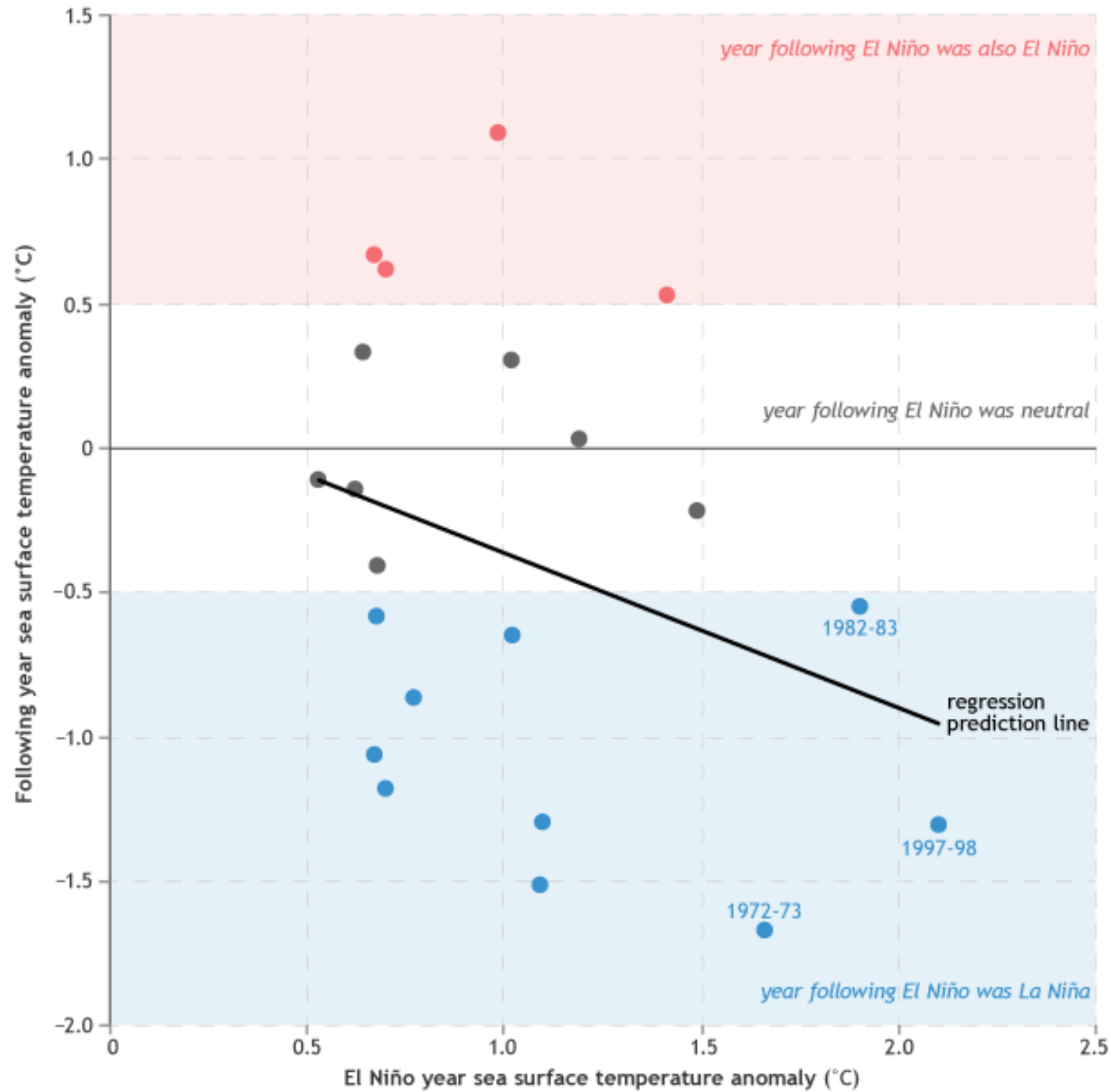
- Some areas of near or below average already appearing.

- Large pool of cool water under the surface is helping confidence of forecasts.

Equatorial subsurface temperature anomalies (May 1–5, 2016)



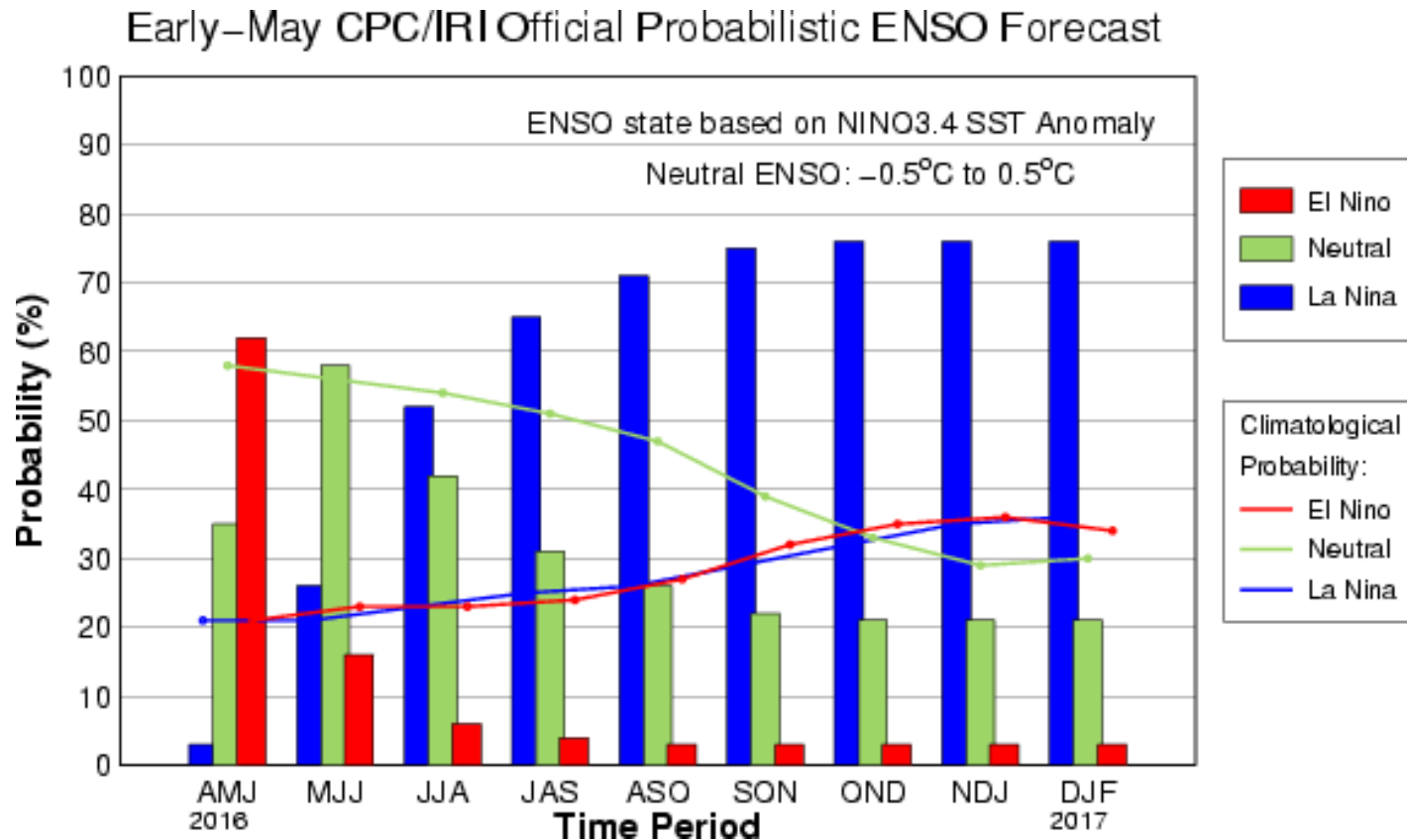
Relationship between El Niño years and the year following



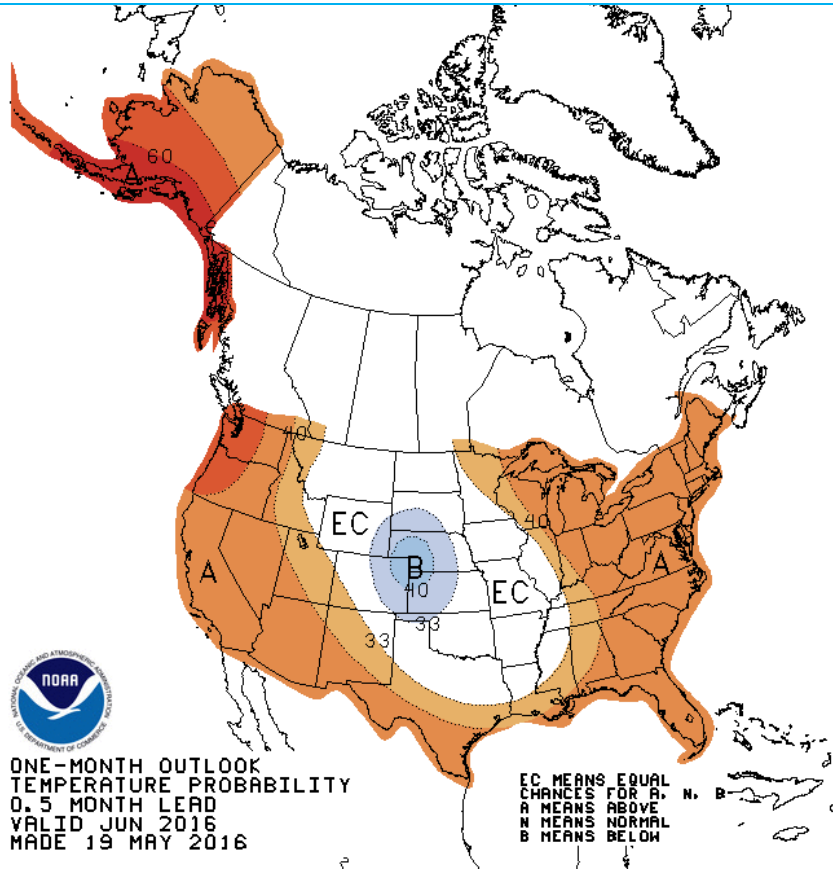
La Niña Watch

La Niña Watch: Issued when conditions are favorable for the development of La Niña conditions within the next six months. (CPC definition)

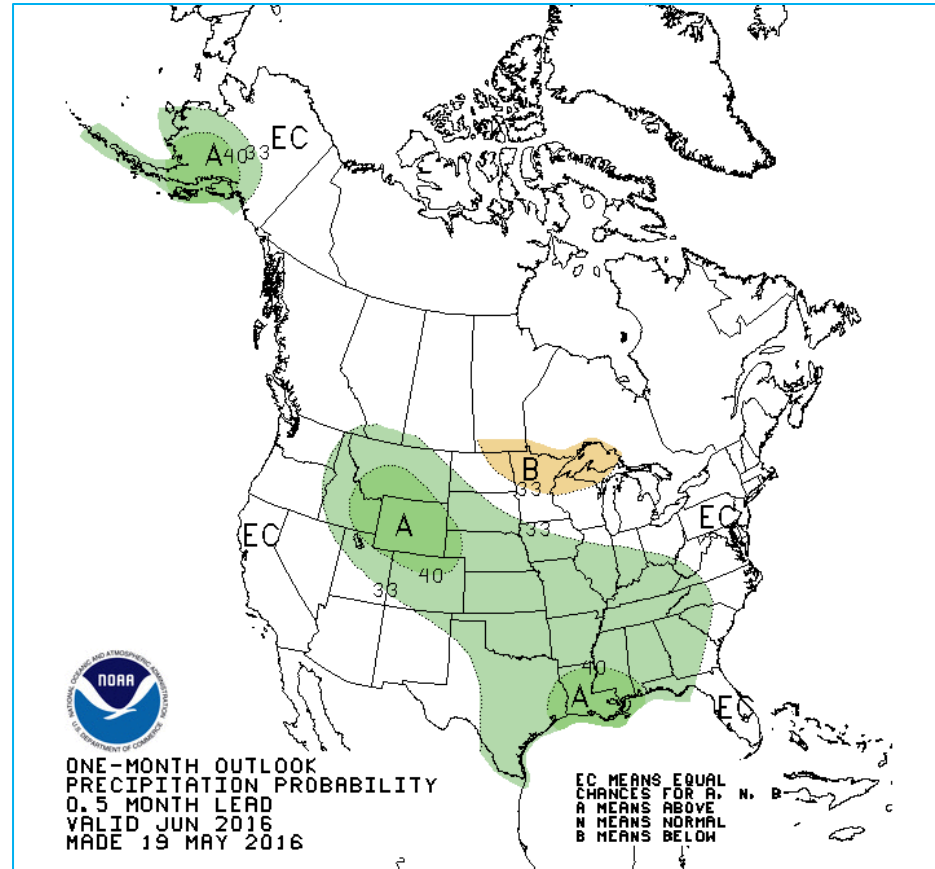
Season	La Niña
AMJ	3%
MJJ	26%
JJA	52%
JAS	65%
ASO	71%
SON	75%
OND	76%
NDJ	76%
DJF	76%



June Temperature & Precipitation Outlook

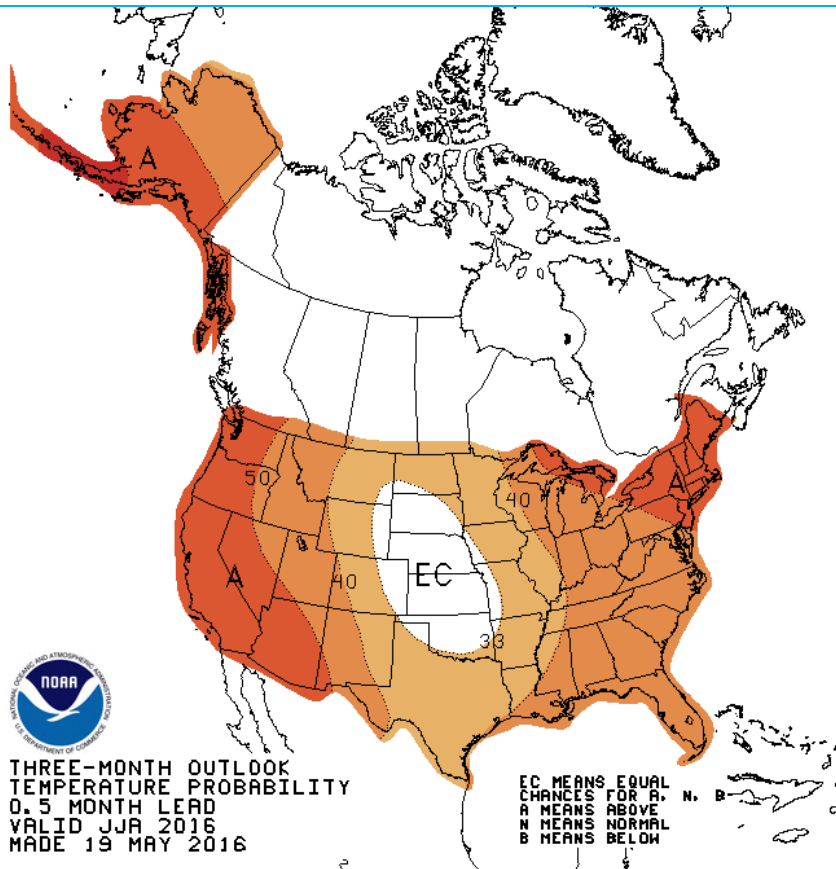


Temperature

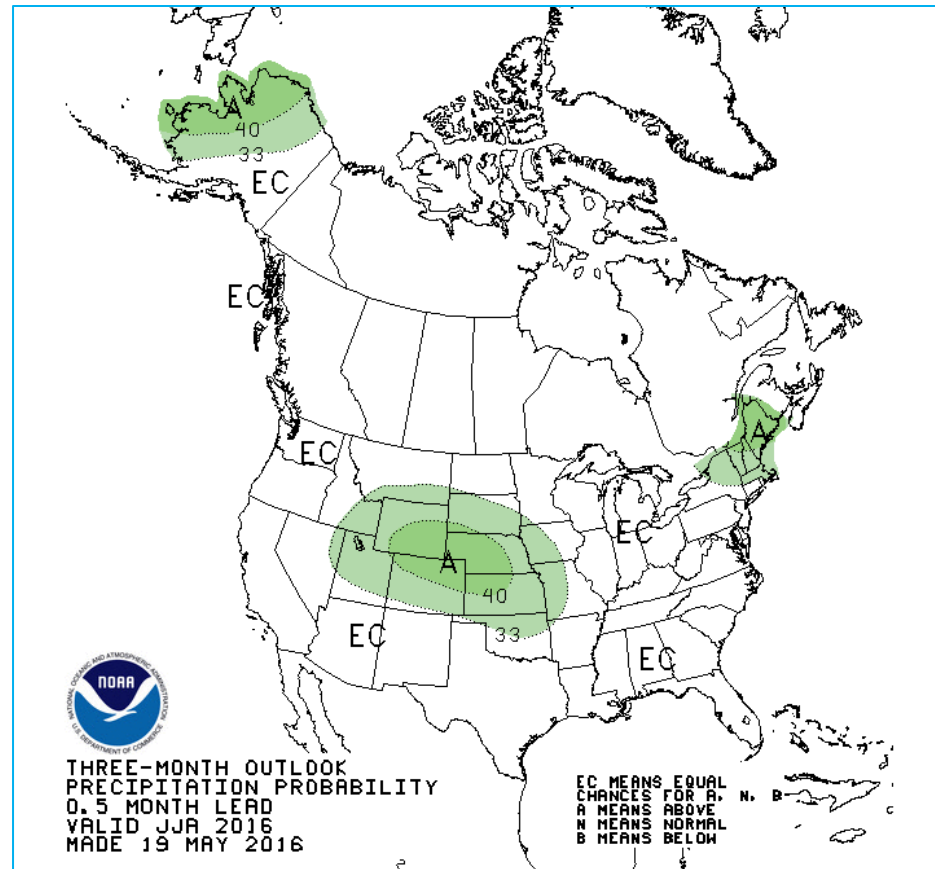


Precipitation

Jun-Jul-Aug Outlook



Temperature



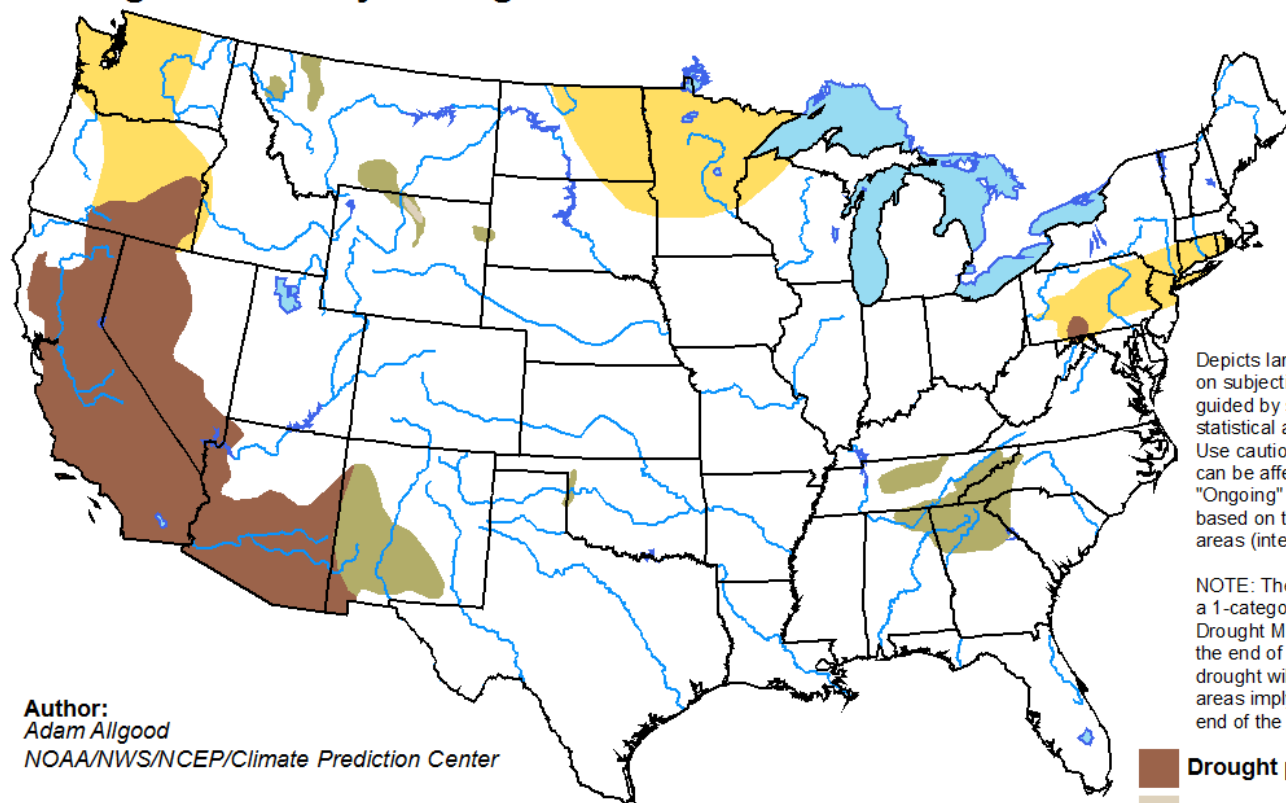
Precipitation

Drought Outlook through July 31, 2016

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

Valid for May 19 - August 31, 2016

Released May 19, 2016

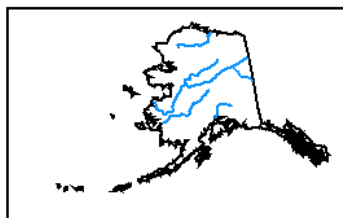


Author:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center

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).

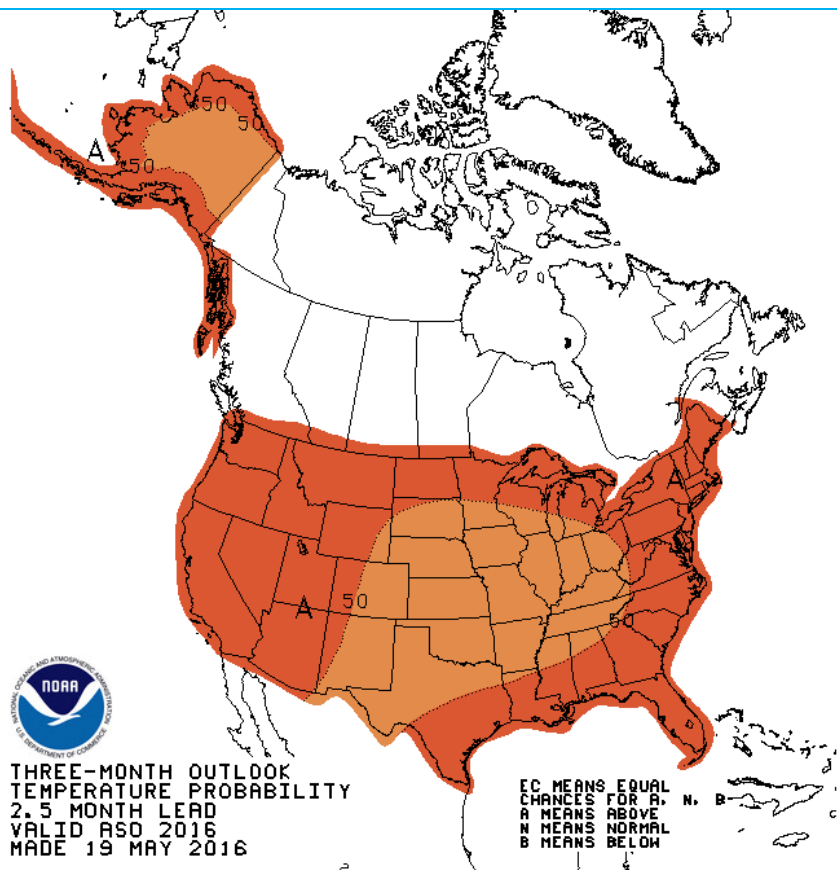
- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



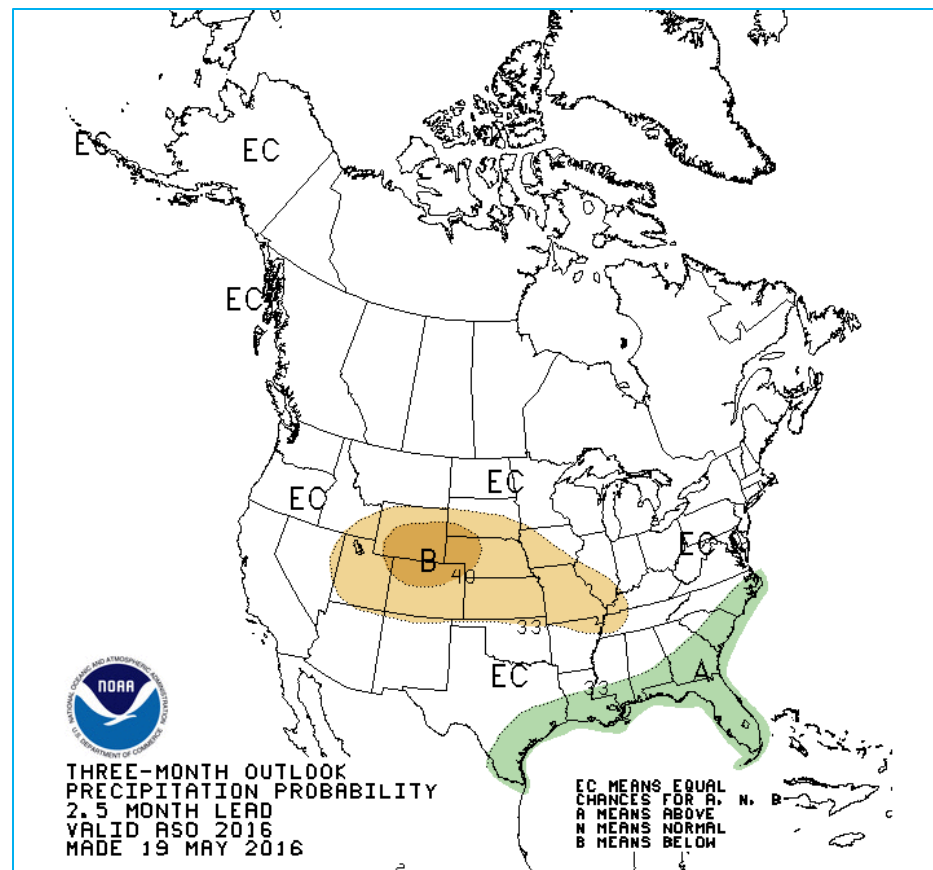
<http://go.usa.gov/3eZ73>

http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif/

Aug-Sep-Oct Outlook

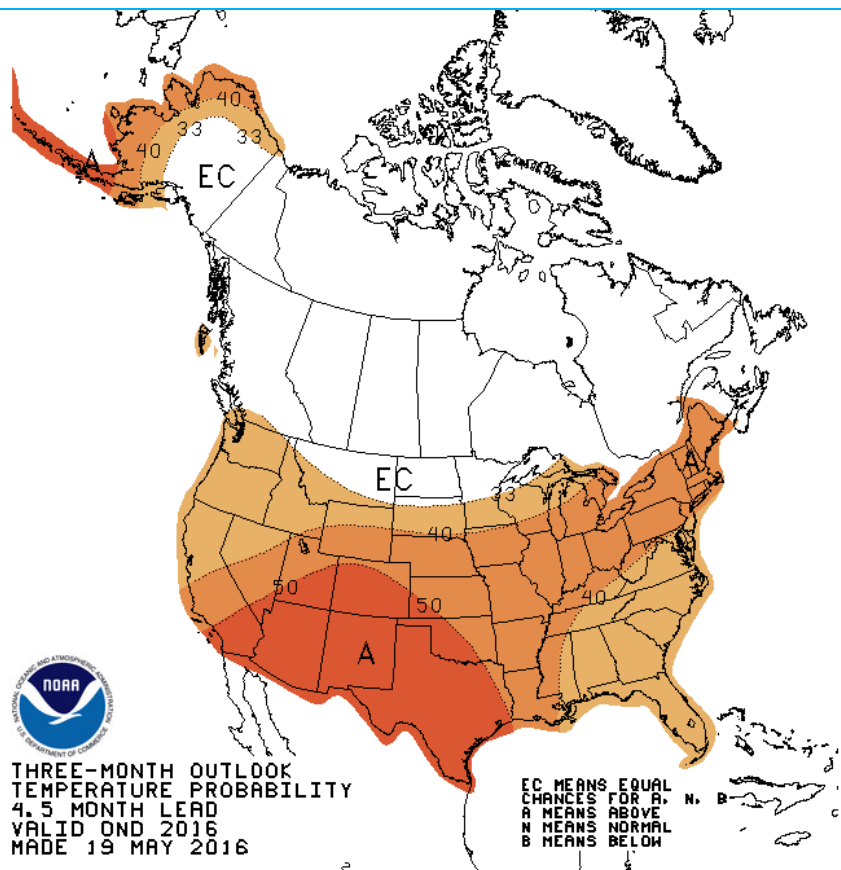


Temperature

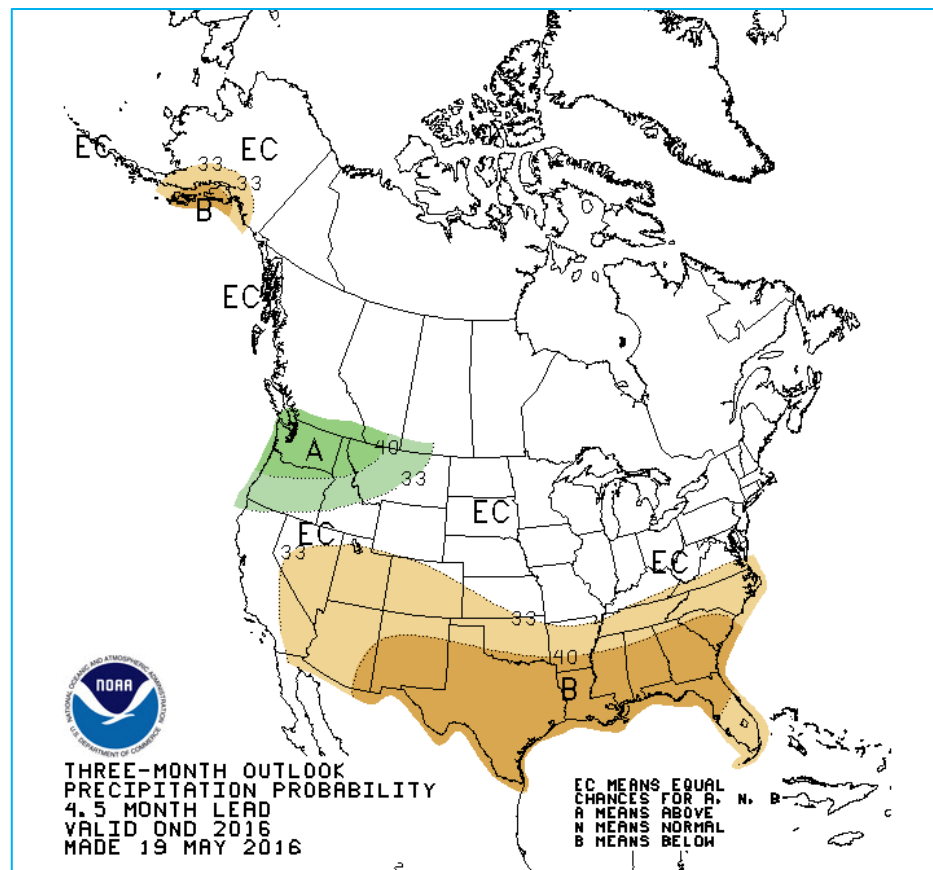


Precipitation

Oct-Nov-Dec Outlook



Temperature



Precipitation

Summary

* Recent Conditions

- * Received needed precipitation across the southern tier of the North Central Region.
- * Corn acres planted is in good shape for most of Region (MI is exception).
- * Delay for soybean planting for states except northern tier.
- * Flood concerns for the Platte River with main reservoir near capacity (Lake McConaughy at 90.9% capacity)

Summary

* **Outlooks**

- * Highest precipitation amounts expected for southern part of region over the next week.
- * For this summer, Jun-Jul-Aug, an enhanced likelihood for above normal temperatures is anticipated for northern and eastern North Central Region.
- * For this summer, Jun-Jul-Aug, an enhanced likelihood for above normal rainfall is anticipated for WY, CO, southern MT, SD, NE, KS, western IA and MO; Equal chances elsewhere.
- * An area to watch for increased dryness is eastern ND and northern MN.
- * La Niña Watch, ~ 70% likelihood La Niña will emerge by Aug-Sep-Oct.

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu>
- NOAA's National Centers for Environmental Information:
<https://www.ncdc.noaa.gov/news/national-centers-environmental-information>
- Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Current Weather Forecasts: www.weather.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: www.drought.gov
- National Drought Mitigation Center: <http://drought.unl.edu/>
- State climatologists
 - <http://www.stateclimate.org>
- Regional climate centers
 - <http://mrcc.isws.illinois.edu>
 - <http://www.hprcc.unl.edu>

Thank You and Questions?

- Questions:

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