

# North Central U.S. Climate Summary & Outlook

## April 21, 2016



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Anderson Creek, KS  
"largest fire in KS history"



# 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**

- May 19<sup>th</sup>, 2016, Martha Shulski

- **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

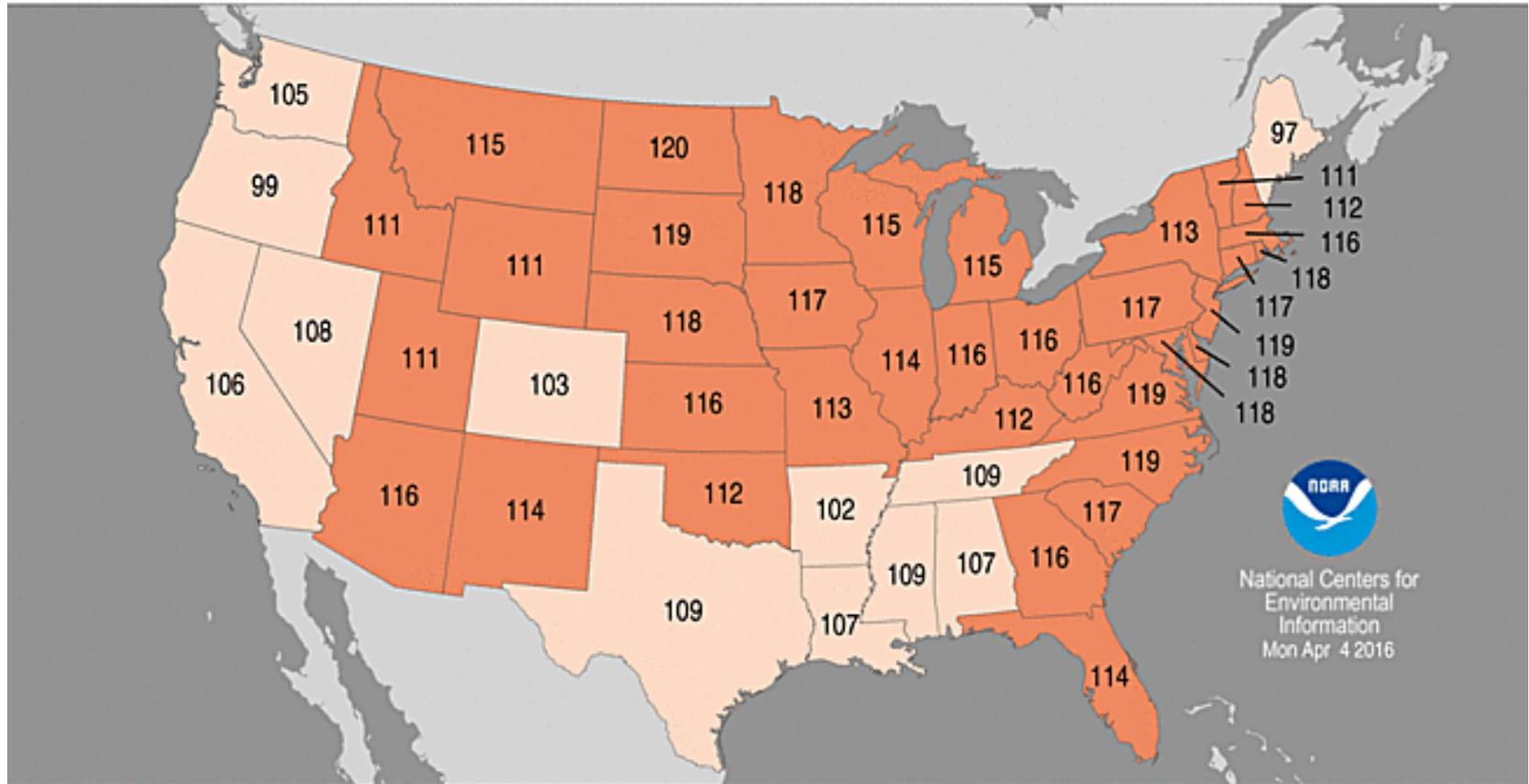
- **March Recap**
- **April and Current Conditions**
- **Impacts**
- **Climate Outlooks**
- **Questions/Comments**

The contiguous United States average March temperature was 6.0°F above the 20<sup>th</sup> century average, making it the 4<sup>th</sup> warmest March and warmest March since 2012.

## Statewide Average Temperature Ranks

March 2016

Period: 1895–2016



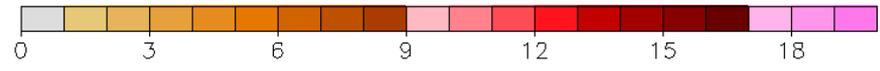
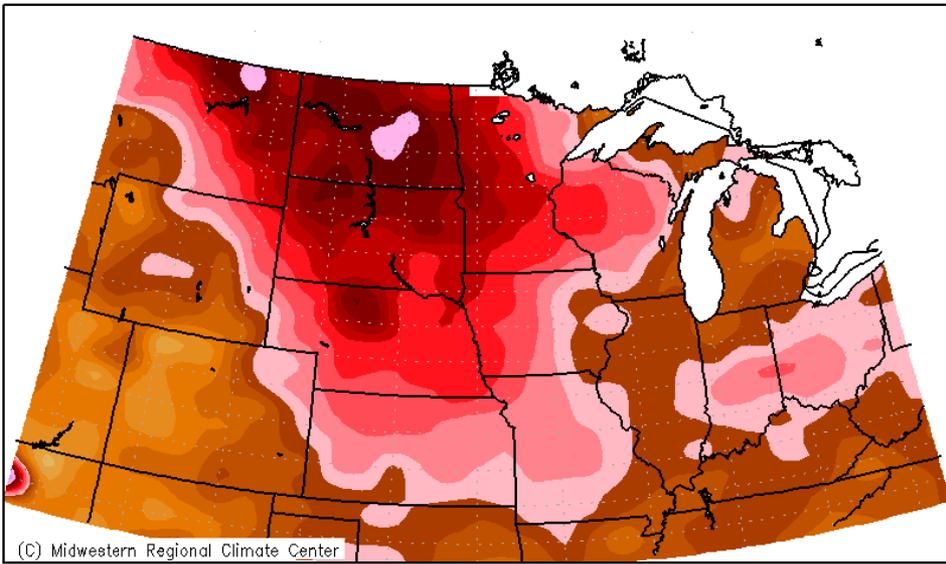
National Centers for  
Environmental  
Information  
Mon Apr 4 2016



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

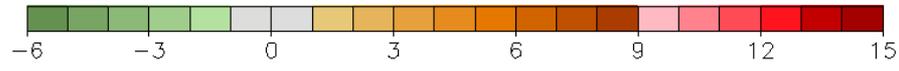
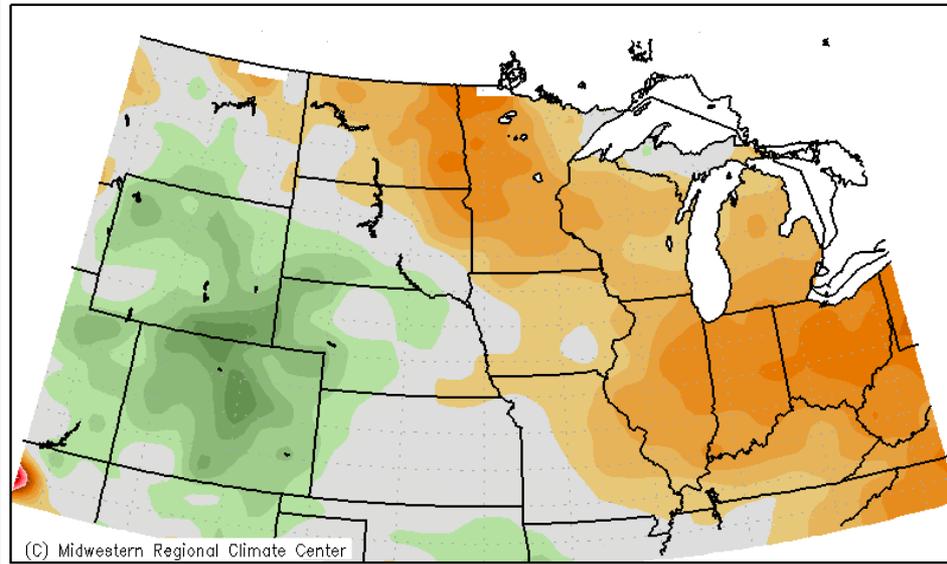
The North Central U.S. was on pace to surpass the warmth of 2012 after the first half of the month, but a cooler weather pattern ended that possibility.

### Average Temp (°F) Departure from Mean March 1 to March 15, 2016



Midwestern Regional Climate Center

### Average Temp (°F) Departure from Mean March 15 to March 31, 2016



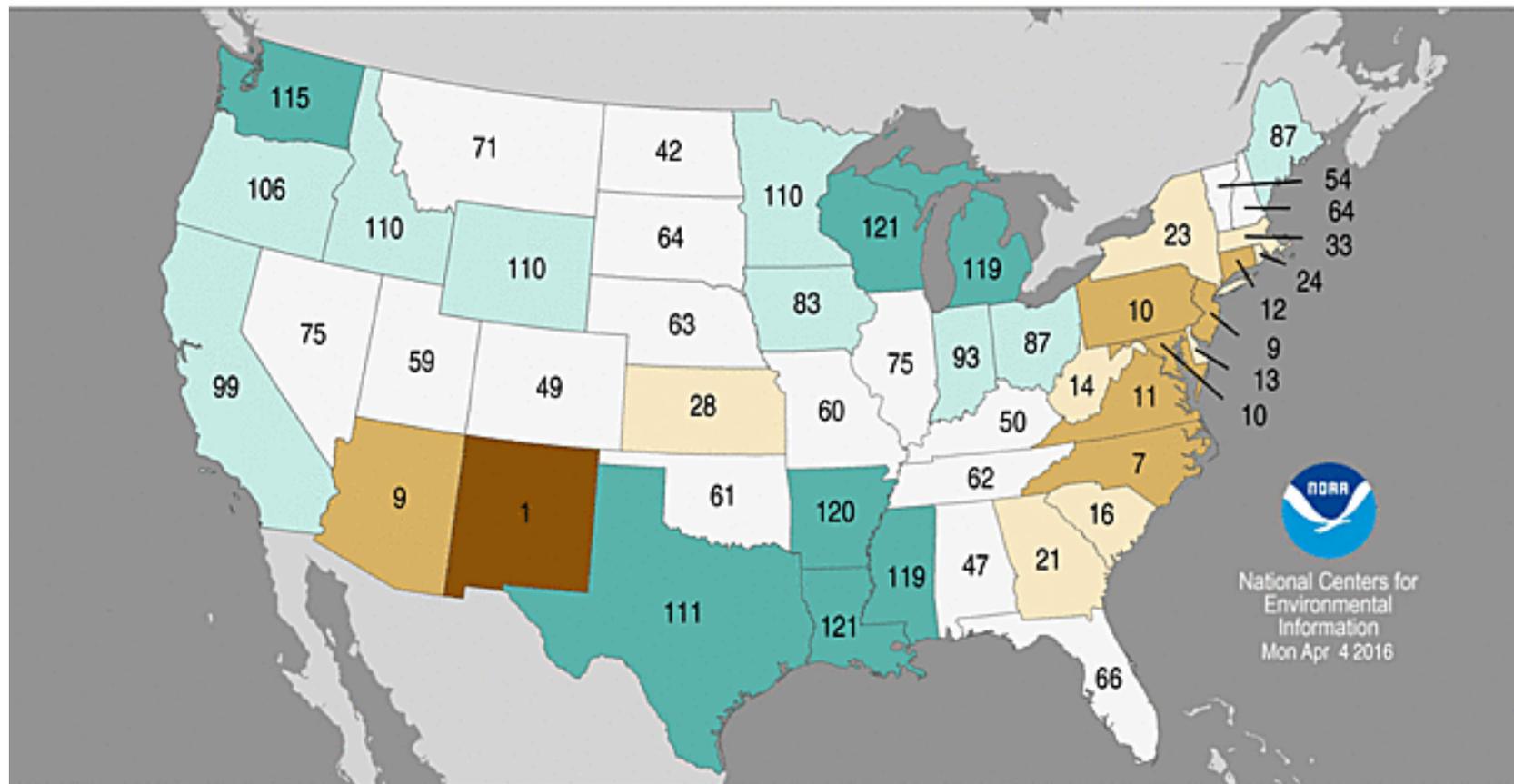
Midwestern Regional Climate Center

The contiguous United States March precipitation average was 2.89 inches, which is 0.38 inches above the 20th century average.

## Statewide Precipitation Ranks

March 2016

Period: 1895-2016

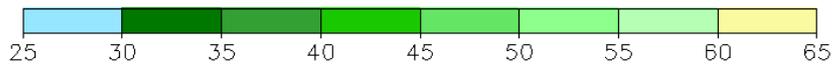
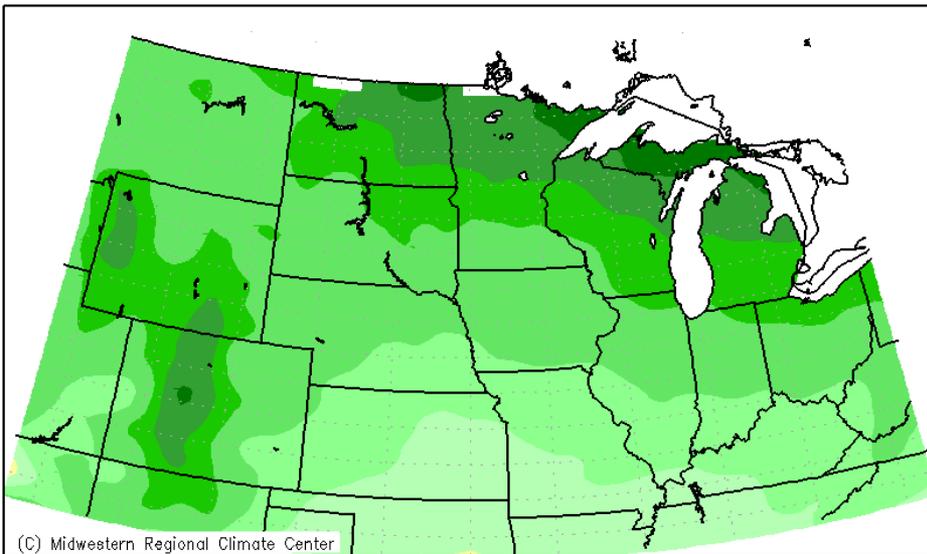


National Centers for  
Environmental  
Information  
Mon Apr 4 2016

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

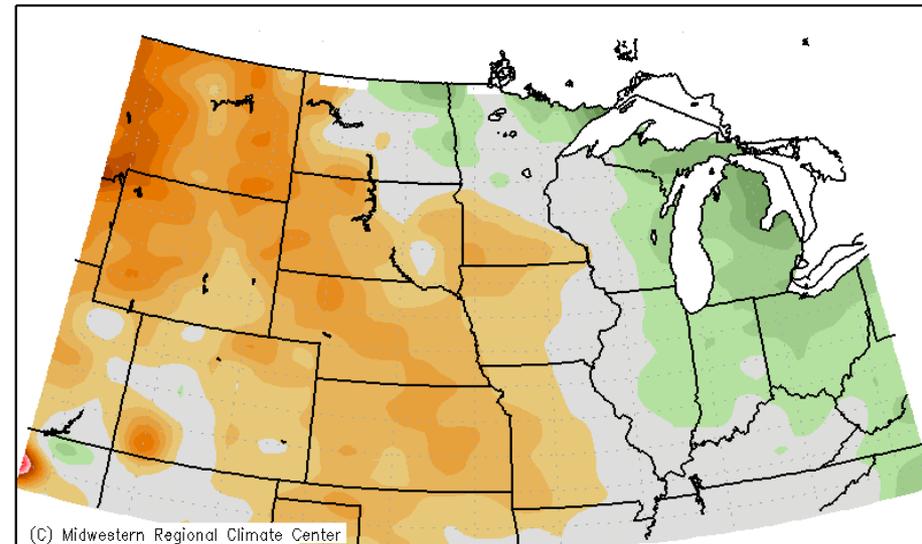
# Average temperature and departure from mean for April 1-20, 2016

## Average Temperature (°F) April 1 to April 20, 2016



Midwestern Regional Climate Center

## Average Temp (°F) Departure from Mean April 1 to April 20, 2016



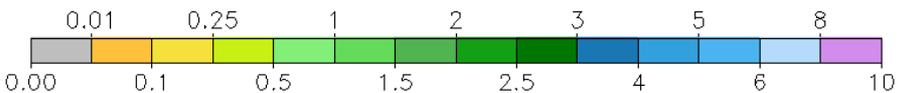
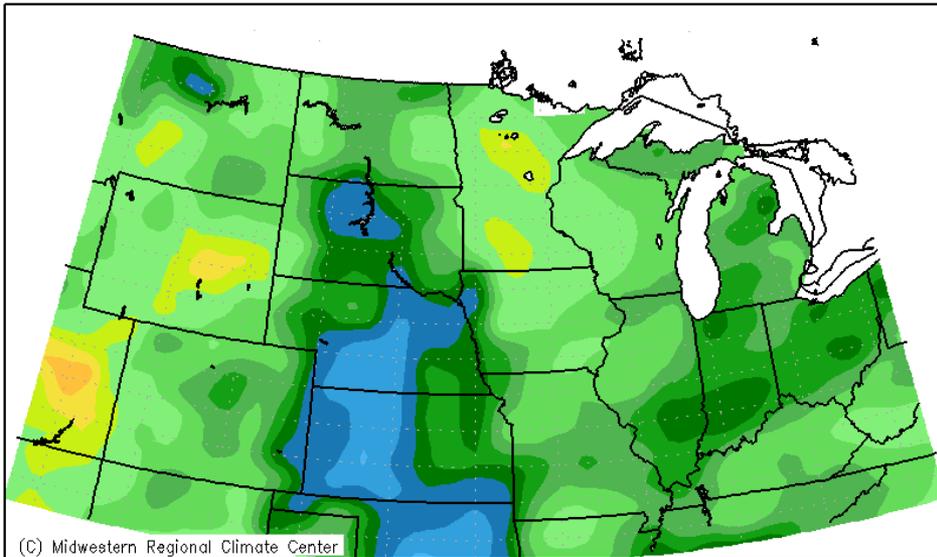
Mean period is 1981–2010.



Midwestern Regional Climate Center

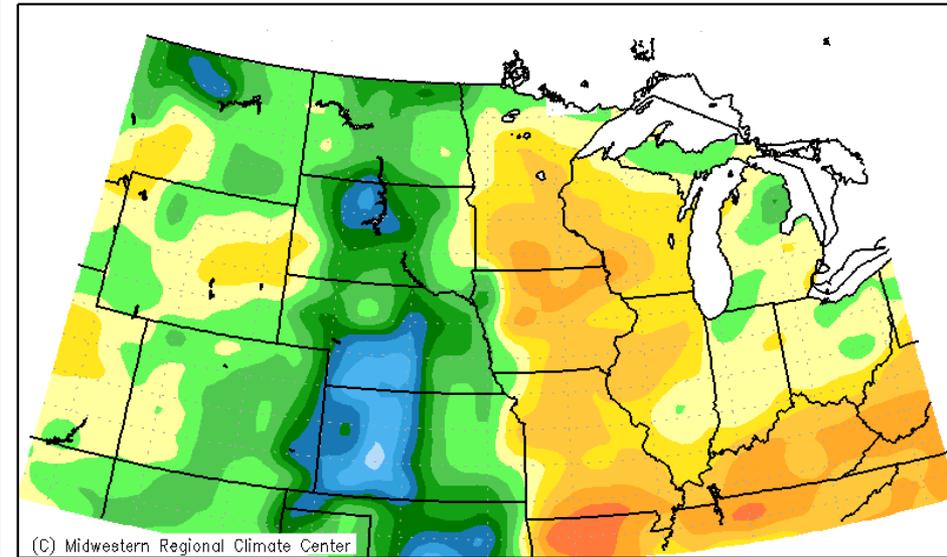
# Accumulated precipitation and departure from mean for April 1-21, 2016

## Accumulated Precipitation (in) April 1 to April 21, 2016



Midwestern Regional Climate Center

## Accumulated Precipitation (in) Departure from Mean April 1 to April 21, 2016



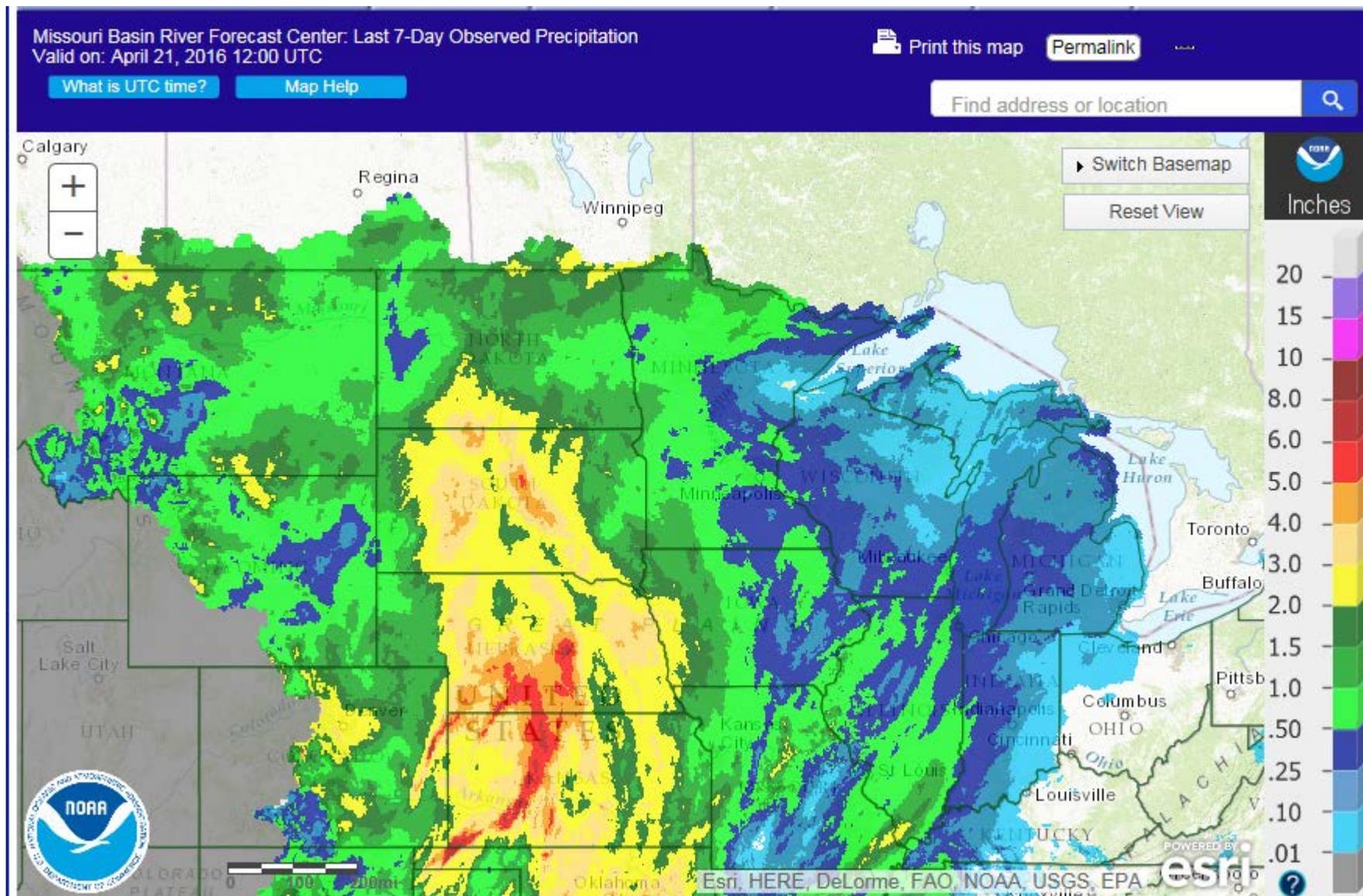
Mean period is 1981-2010.



Midwestern Regional Climate Center

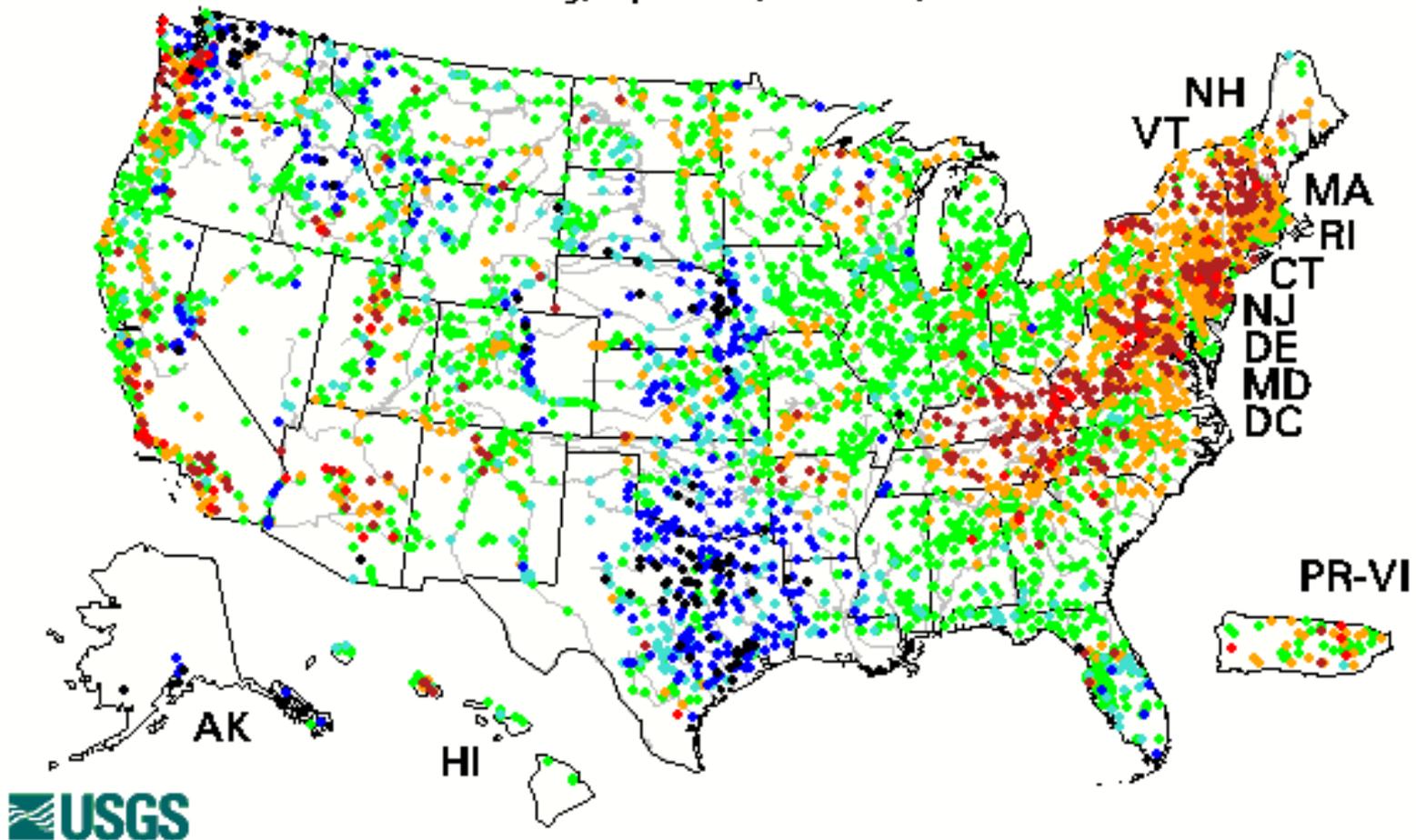
# Beneficial Plains Rains

## AHPS NWS Precipitation Analysis for past 7 days, Apr 15-21, 2016



# Current Streamflow

Thursday, April 21, 2016 08:30ET



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

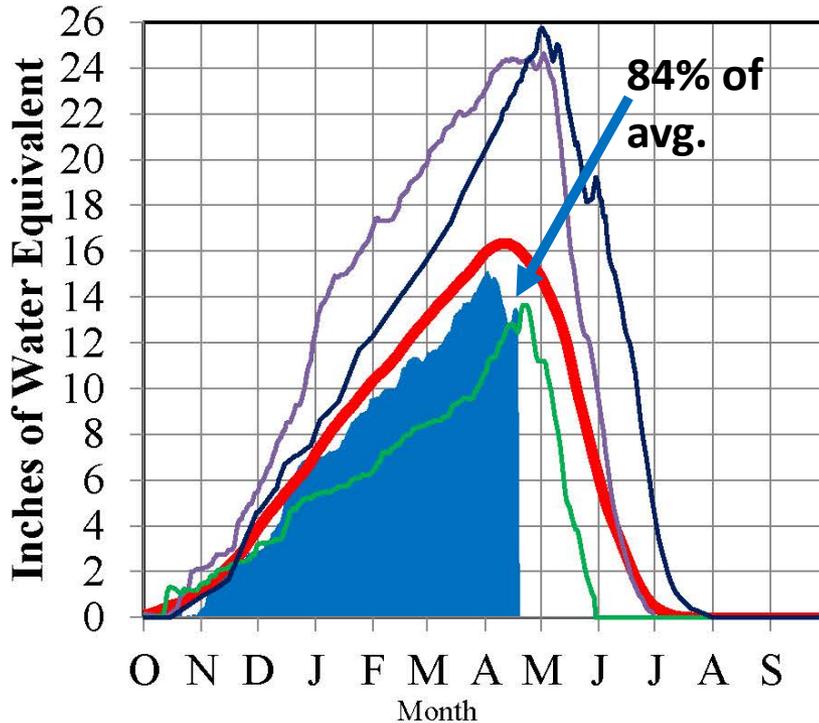
Explanation - Percentile classes						
●	●	●	●	●	●	●
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

[http://waterwatch.usgs.gov/?id=ww\\_current](http://waterwatch.usgs.gov/?id=ww_current)

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

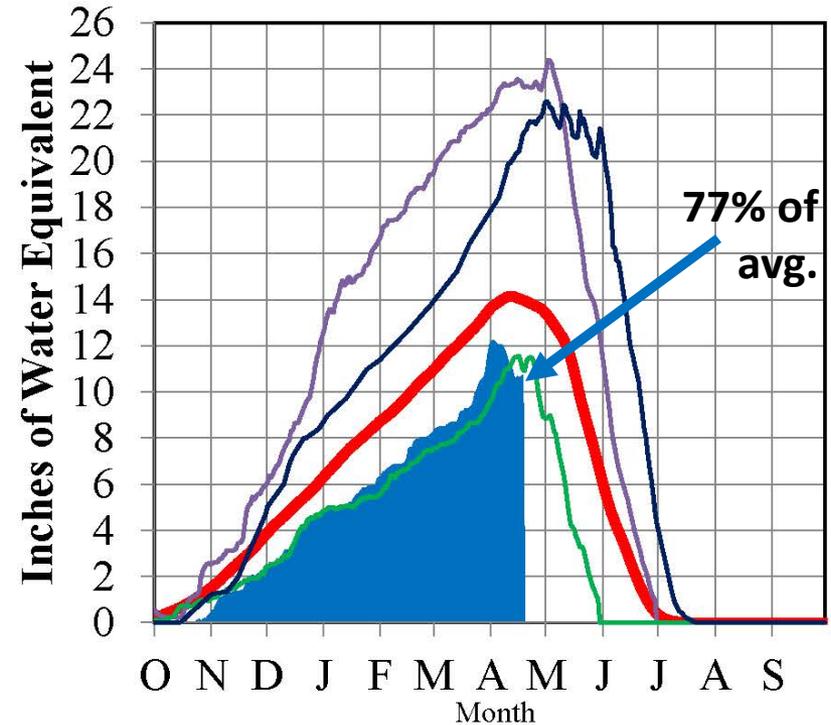
April 18, 2016

### Total above Fort Peck



■ 2015-16 ■ 1981-2010 Ave ■ 1997 ■ 2001 ■ 2011

### Total Fort Peck to Garrison



■ 2015-16 ■ 1981-2010 Ave ■ 1997 ■ 2001 ■ 2011

The Missouri River Basin mountain snowpack normally peaks near April 15. On April 18, 2016 the mountain Snow Water Equivalent (SWE) in the “Total above Fort Peck” reach is currently 13.4”, 84% of average. The mountain SWE in the “Total Fort Peck to Garrison” reach is currently 10.7”, 77% of average. At this time, it appears that 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.

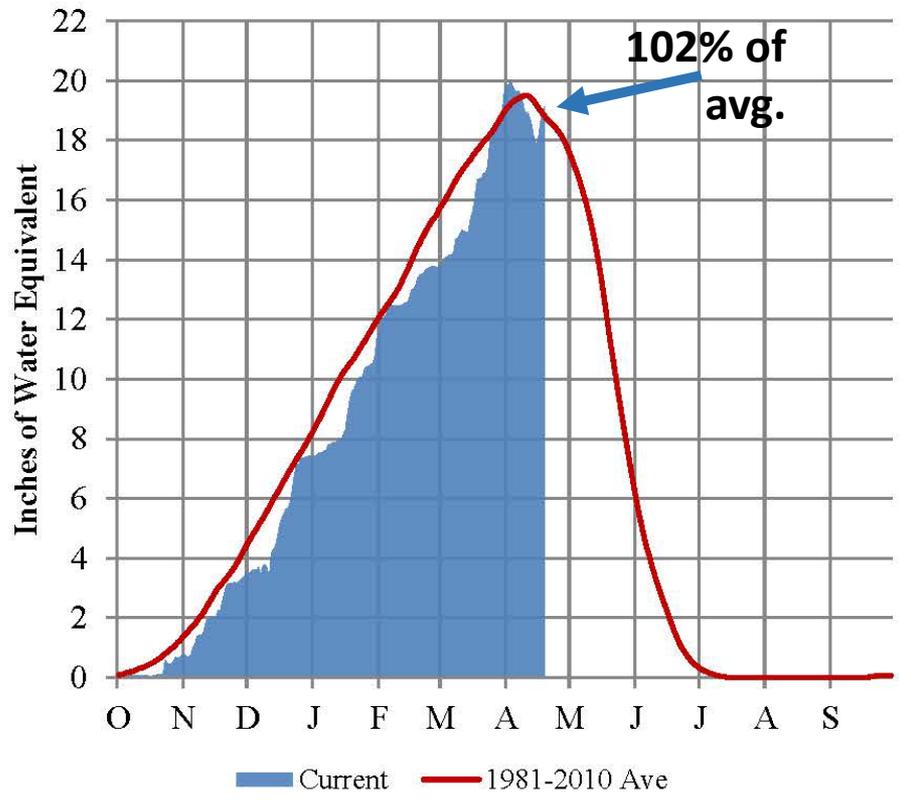
<http://www.nwd-mr.usace.army.mil/rcc/reports/snow.pdf>

# Platte River Basin - Mountain Snowpack Water Content

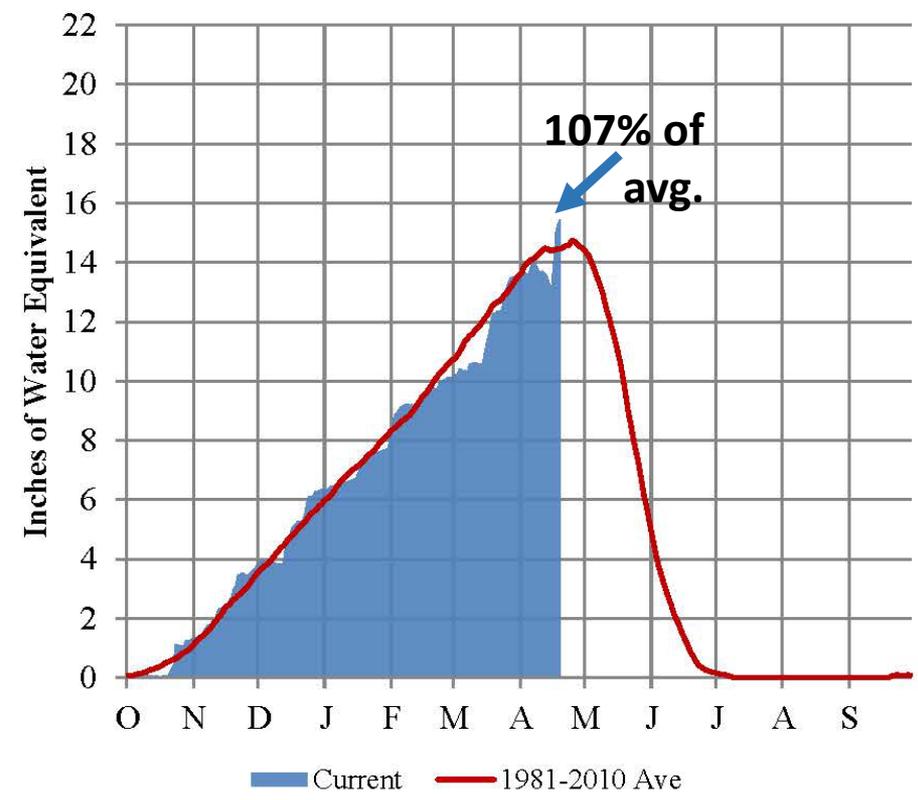
## Water Year 2015-2016

4/20/2016

### Total North Platte



### Total South Platte



The North and South Platte River Basin mountain snowpacks normally peak near April 15. As of April 19, 2016, the mountain snowpack SWE in the "Total North Platte" reach is currently 19.1", 102% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 15.4", 107% of average.

# Missouri River Basin Conditions

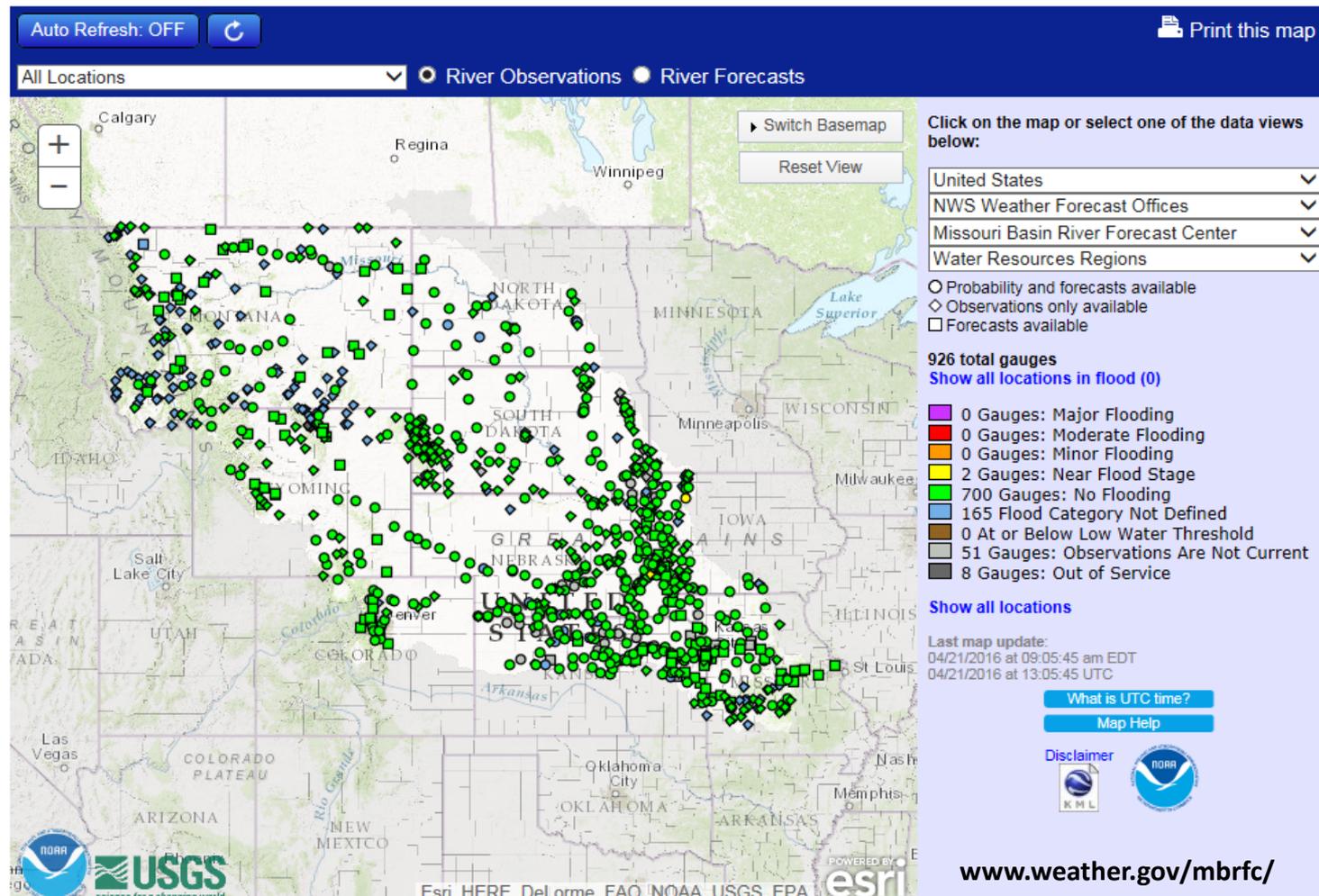
## April 21, 2016 Observed River Conditions

### NWS- Missouri Basin River Forecast Center

[Weather.gov](http://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

## April 21, 2016 Observed River Conditions

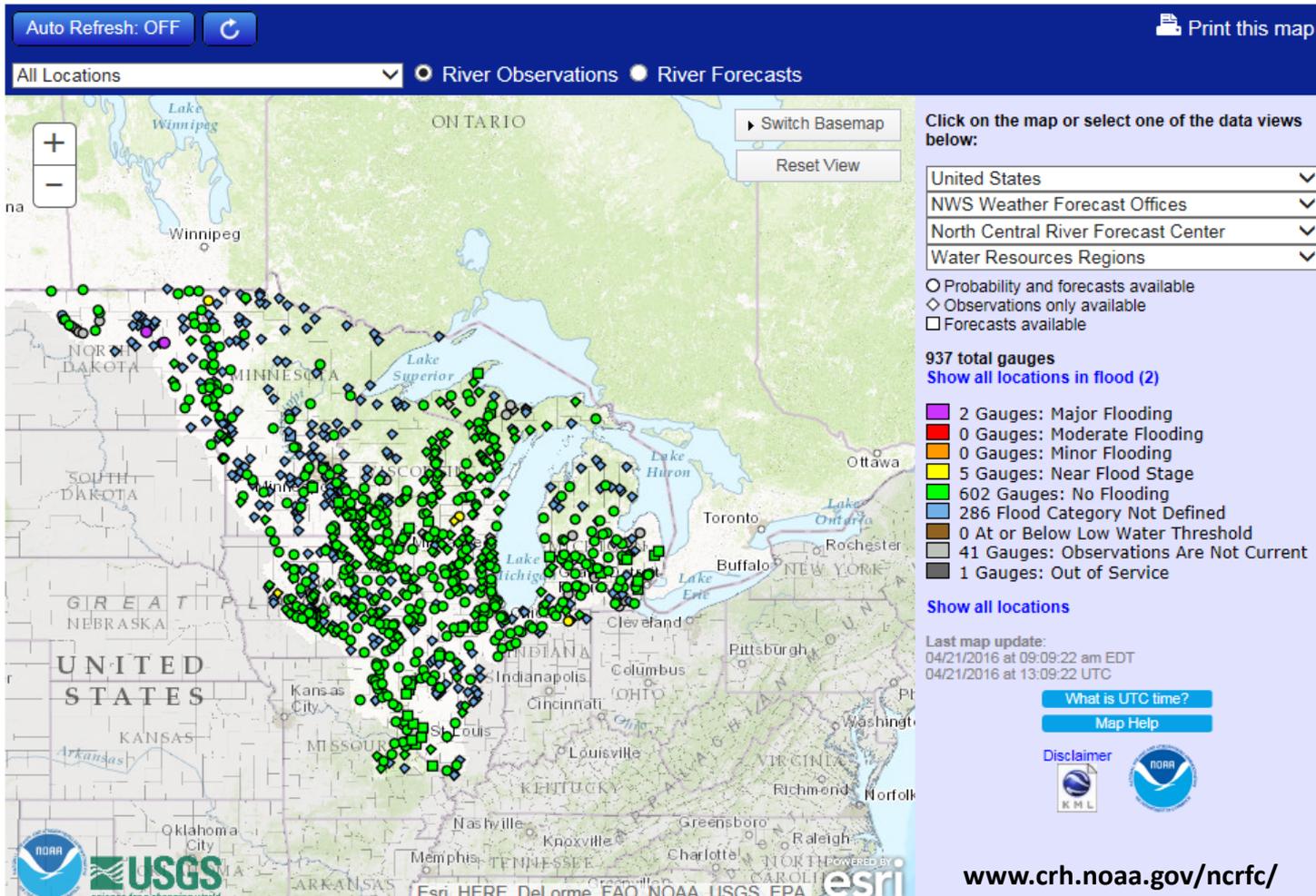
### NWS North Central River Forecast Center

[Weather.gov](http://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

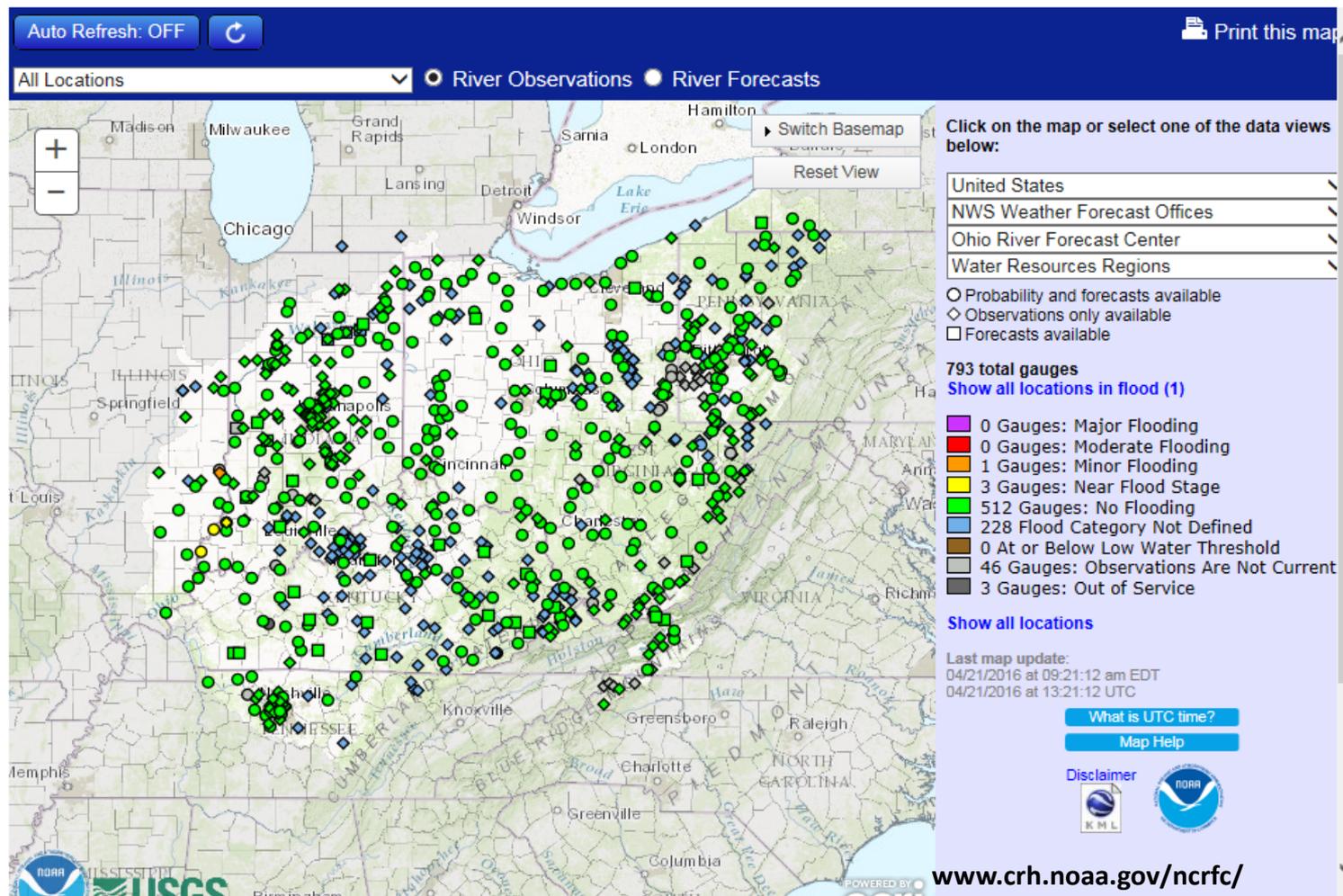
April 21, 2016 Observed River Conditions

NWS - Ohio River Forecast Center

[Weather.gov](http://Weather.gov) > Ohio RFC

Ohio RFC  
River Forecast Center

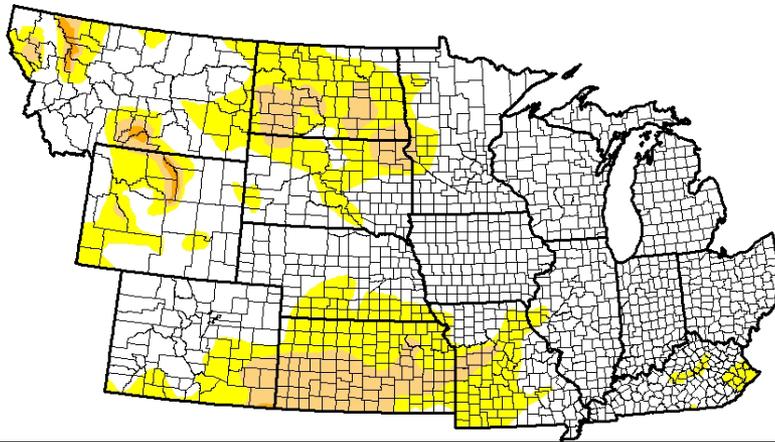
[River Observations and Forecasts](#) [Weather Observations and Forecasts](#) [Water Supply](#) [Climate and History](#) [Seasonal Interest](#) [Additional Info](#)



# U.S. Drought Monitor

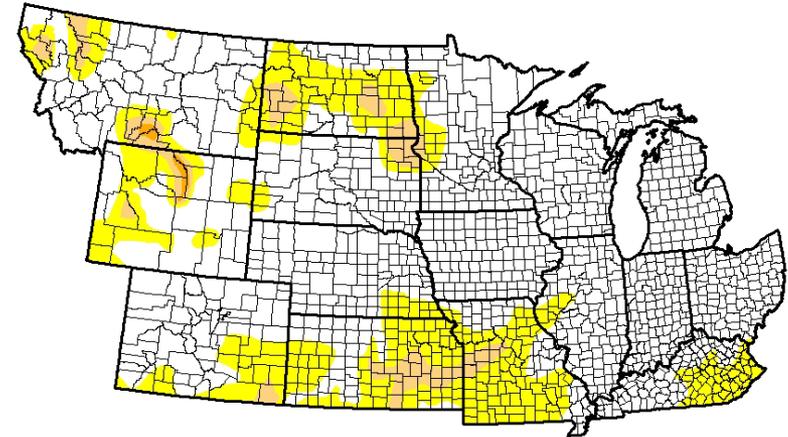
## U.S. Drought Monitor NWS Central Region

April 12, 2016  
(Released Thursday, Apr. 14, 2016)  
Valid 8 a.m. EDT

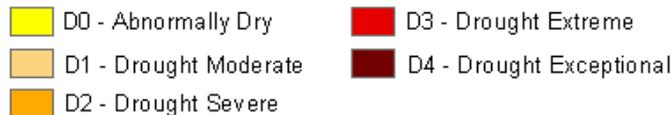


## U.S. Drought Monitor NWS Central Region

April 19, 2016  
(Released Thursday, Apr. 21, 2016)  
Valid 8 a.m. EDT



### Intensity:



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

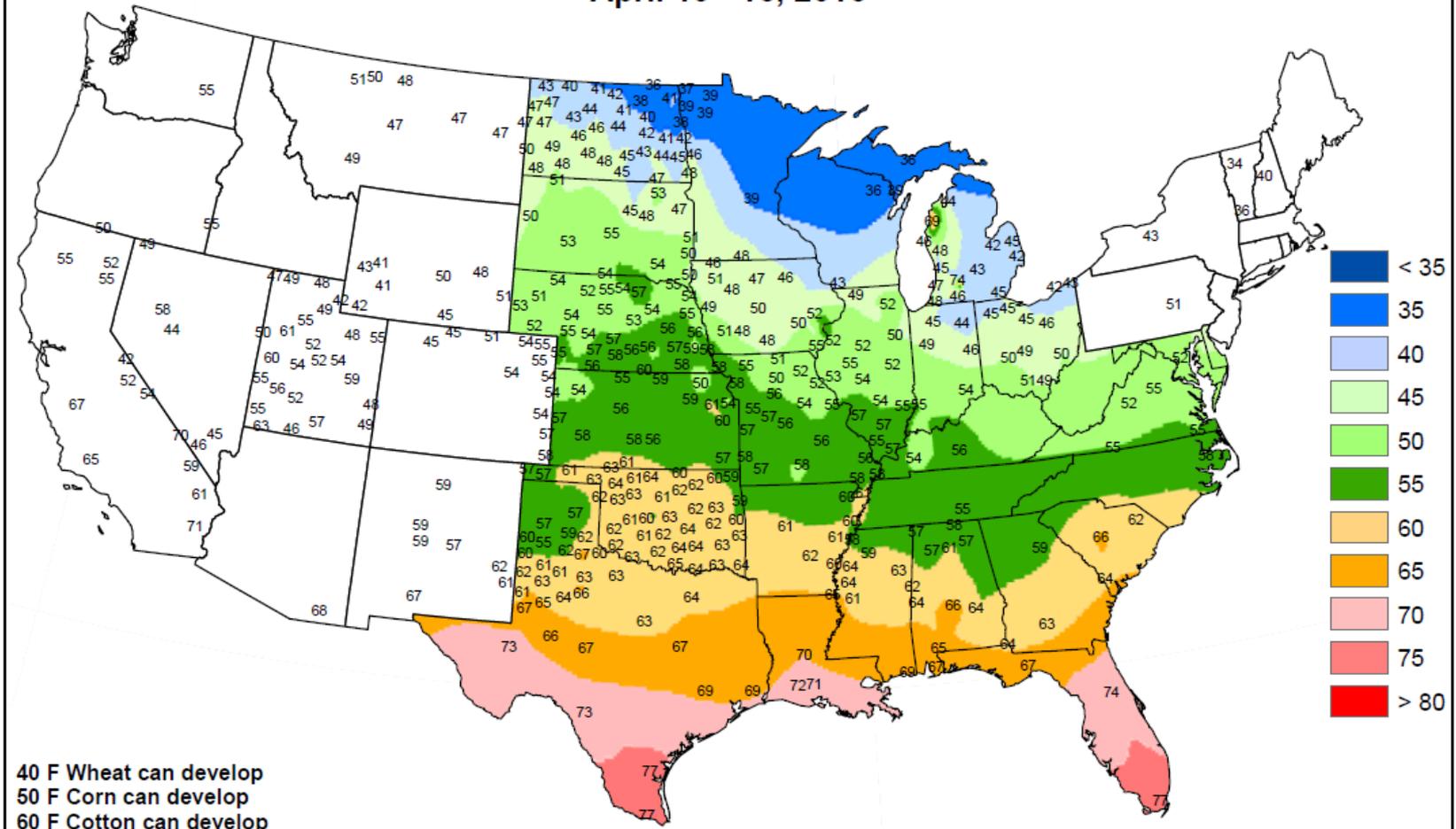


<http://droughtmonitor.unl.edu/>

# Weekly Average Soil Temperature , Apr 10-16, 2016

## Average Soil Temperature (Deg. F, 4" Bare)

April 10 - 16, 2016



Based on preliminary data.

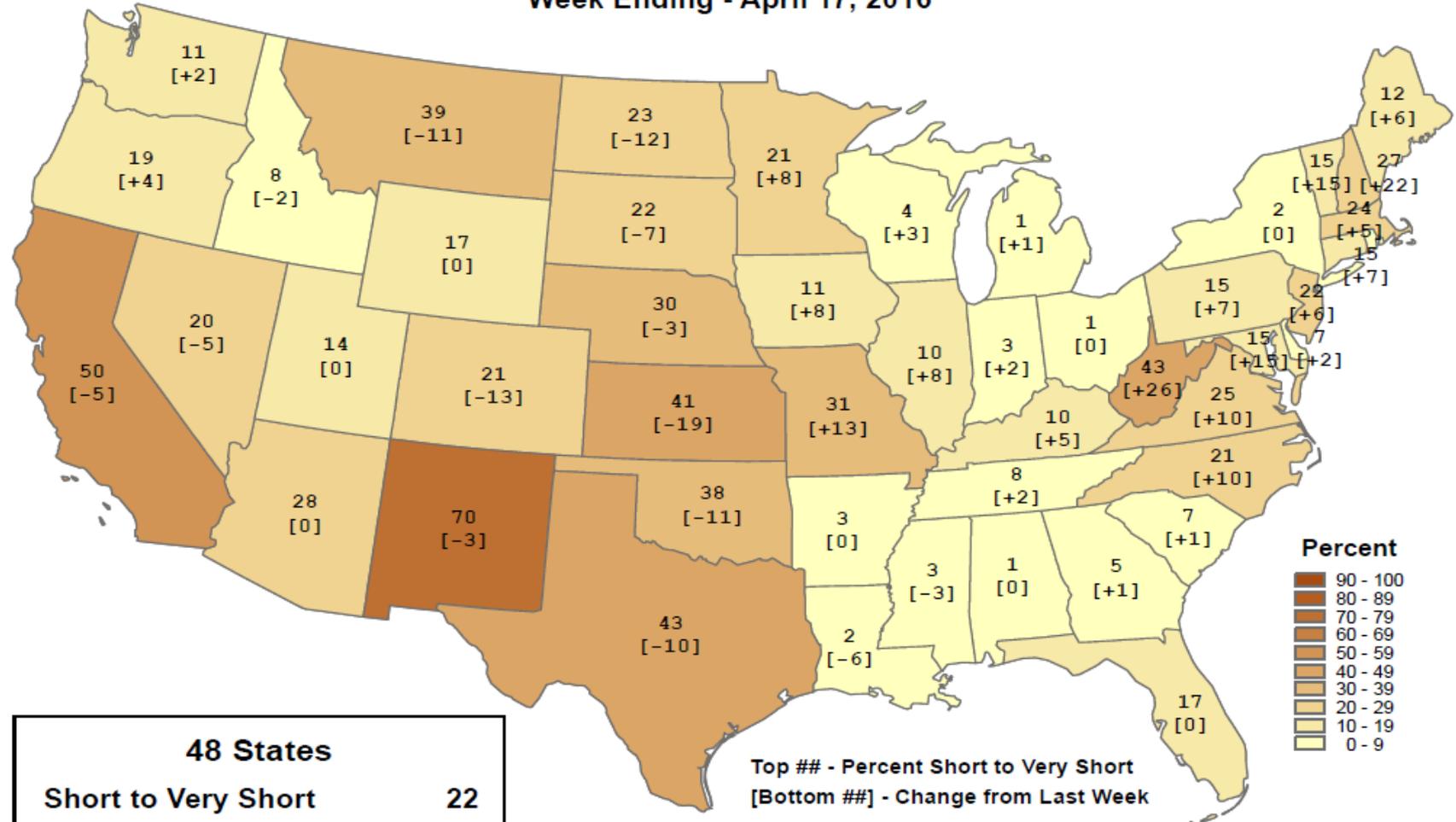
Supplemental data provided by Alabama A&M University, Bureau of Reclamation - Pacific Northwest Region AgriMet Program, High Plains Regional Climate Center, Illinois State Water Survey, Iowa State University, Louisiana Agrilimatic Information System, Mississippi State University, Oklahoma Mesonet, Purdue University, University of Missouri and USDA/NRCS Soil Climate Analysis Network.

# Extent of Topsoil Moisture Short or Very Short of Moisture



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 - April 17, 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

## Anderson Creek, KS

**Largest fire in KS history, > 400,000 acres**

- **Wind/water erosion potential**
- **Smoke health hazard: people and animals**
- **No grazing, nutritional losses**
- **Livestock losses/injuries**
- **Property damage: residences, outbuildings, fences etc.**



# Impacts

Rapid snowmelt due to recent warmth. Some apricot and cherry damage possible in southern MI from Apr 12 freeze event.

No spring flood concerns at this time

Recent precipitation events have mitigated dryness concerns east of the divide.

Recent rainfall beneficial to ag

Lake ice out 10 days ahead of median in northern MN.  
Active start to spring fire season; sugar beets planted at record pace

No spring flood concerns

Cold first half of April followed by major warm-up

60% of winter wheat in good condition;  
Spring wheat planting well ahead of schedule

Despite hard freeze on 4/9 and 4/12, hort crops mostly OK

Water supplies in good shape; corn planting progressing well. No signs of freeze damage

Minor Apr freeze impacts; corn planting picking up

1-4" of rain over eastern CO last weekend was very beneficial.

Recent statewide rainfall mitigated dryness concerns, especially over southern NE; watch for wheat rust problems

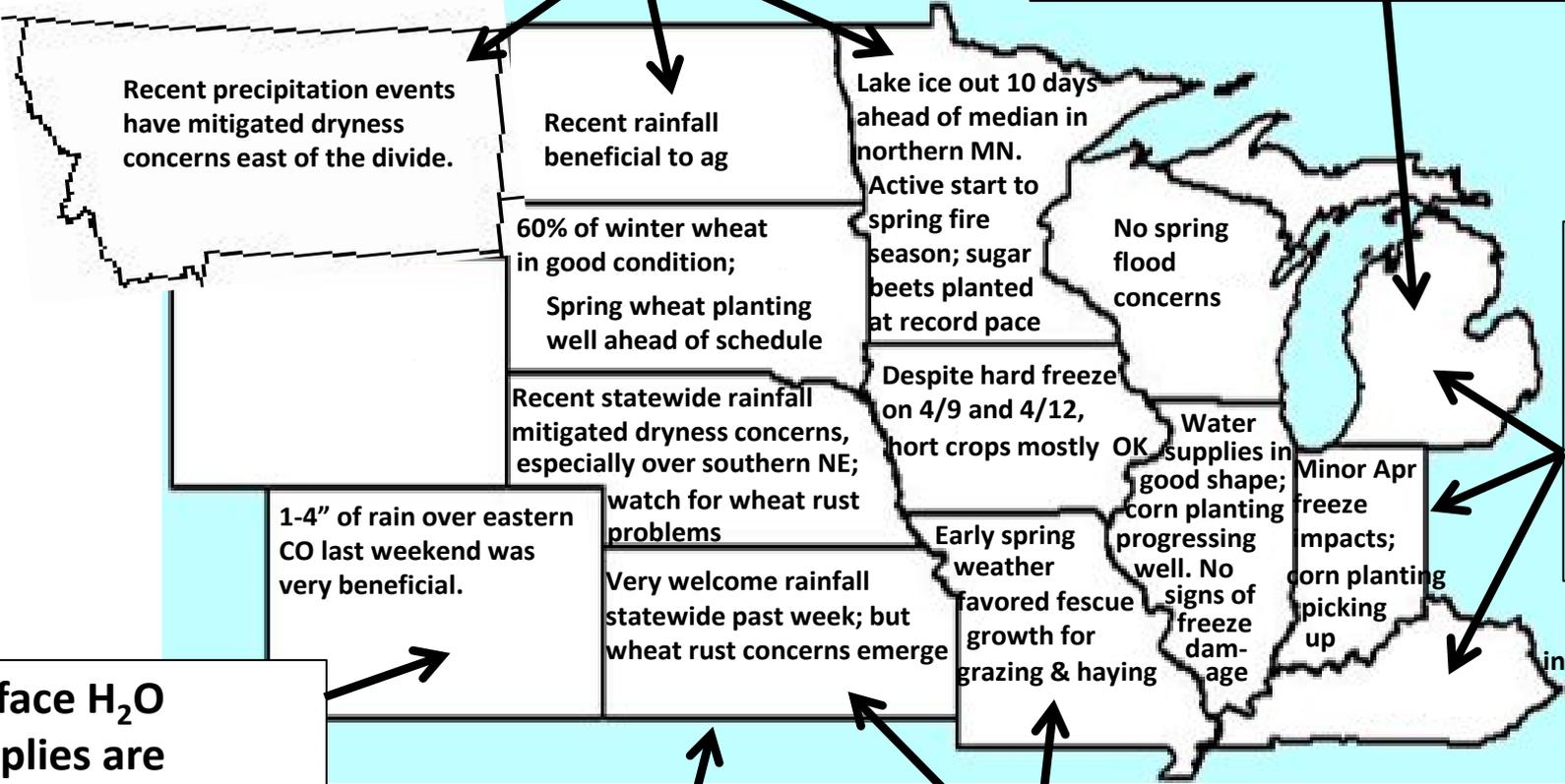
Very welcome rainfall statewide past week; but wheat rust concerns emerge

Early spring weather favored fescue growth for grazing & haying

Surface H<sub>2</sub>O supplies are mostly good and near normal snowmelt/runoff season expected.

Largest wildfire in KS history; notable drought reduction this week

Corn planting well ahead of average



# Impacts

## Crop Progress and Condition as of April 17, 2016

Corn Percent Planted				
	Prev Year	Prev Week	Apr 17 2016	5-Yr Avg
CO	1	0	0	2
IL	11	2	12	14
IN	1	0	1	7
IA	5	0	13	3
KS	20	17	35	16
KY	2	6	23	19
MI	1	0	0	1
MN	9	0	13	3
MO	7	24	58	21
NE	3	0	7	3
NC	36	21	46	41
ND	0	0	1	1
OH	1	0	0	4
PA	0	2	4	2
SD	4	0	1	2
TN	6	17	35	28
TX	50	46	49	56
WI	1	0	1	1
18 Sts	7	4	13	8
These 18 States planted 93% of last year's corn acreage.				

Oats Percent Planted				
	Prev Year	Prev Week	Apr 17 2016	5-Yr Avg
IA	65	30	78	56
MN	43	8	46	25
NE	80	50	71	66
ND	11	4	15	8
OH	12	8	21	27
PA	14	27	53	28
SD	58	31	55	39
TX	100	100	100	100
WI	20	3	16	17
9 Sts	54	38	56	50
These 9 States planted 68% of last year's oat acreage.				

Winter Wheat Condition by Percent					
	VP	P	F	G	EX
AR	3	5	32	49	11
CA	0	0	15	35	50
CO	3	13	26	48	10
ID	0	1	9	70	20
IL	1	5	28	51	15
IN	1	3	19	59	18
KS	2	10	39	44	5
MI	1	7	23	54	15
MO	1	4	29	53	13
MT	1	4	37	52	6
NE	0	3	40	48	9
NC	5	13	31	43	8
OH	0	1	21	52	26
OK	1	6	37	48	8
OR	0	0	34	58	8
SD	0	10	25	60	5
TX	2	9	44	39	6
WA	1	3	16	70	10
18 Sts	2	7	34	48	9
Prev Wk	2	7	35	48	8
Prev Yr	5	14	39	35	7

Barley Percent Planted				
	Prev Year	Prev Week	Apr 17 2016	5-Yr Avg
ID	71	35	54	54
MN	34	2	14	15
MT	39	25	41	24
ND	10	2	10	6
WA	63	30	38	36
5 Sts	38	19	33	26
These 5 States planted 82% of last year's barley acreage.				

Spring Wheat Percent Planted				
	Prev Year	Prev Week	Apr 17 2016	5-Yr Avg
ID	66	30	46	55
MN	51	5	23	23
MT	18	17	34	12
ND	17	5	14	10
SD	65	29	61	35
WA	83	42	63	55
6 Sts	31	13	27	19
These 6 States planted 99% of last year's spring wheat acreage.				

Sugarbeets Percent Planted				
	Prev Year	Prev Week	Apr 17 2016	5-Yr Avg
ID	60	23	55	57
MI	20	0	1	27
MN	49	0	54	16
ND	41	0	25	12
4 Sts	45	4	40	24
These 4 States planted 84% of last year's sugarbeet acreage.				

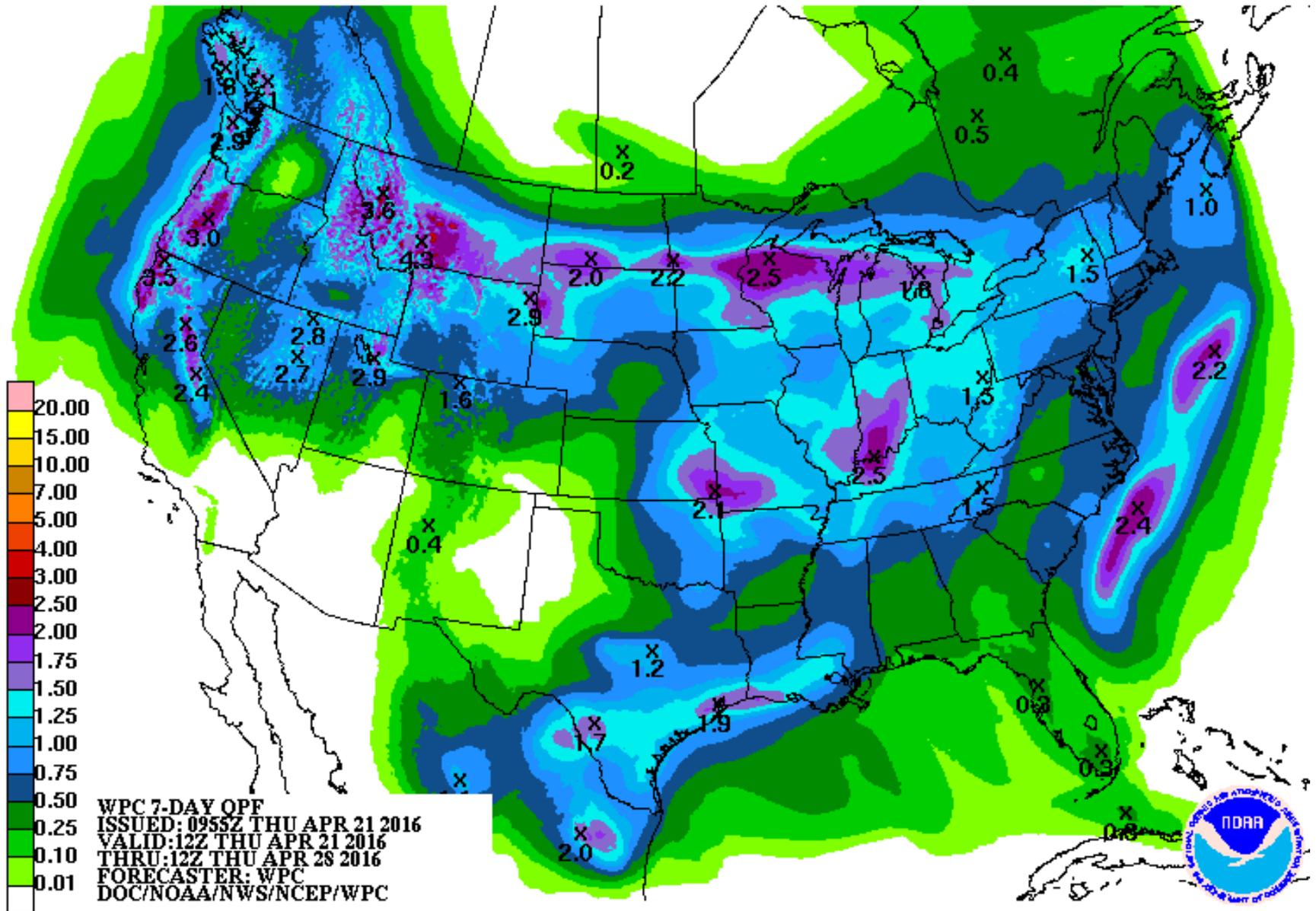
Weekly Weather and Crop Bulletin,  
Vol. 103, No. 16, April 19, 2016

NASS Report

# Climate Outlooks

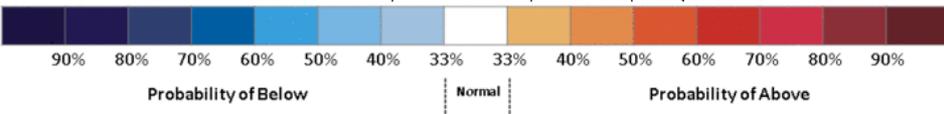
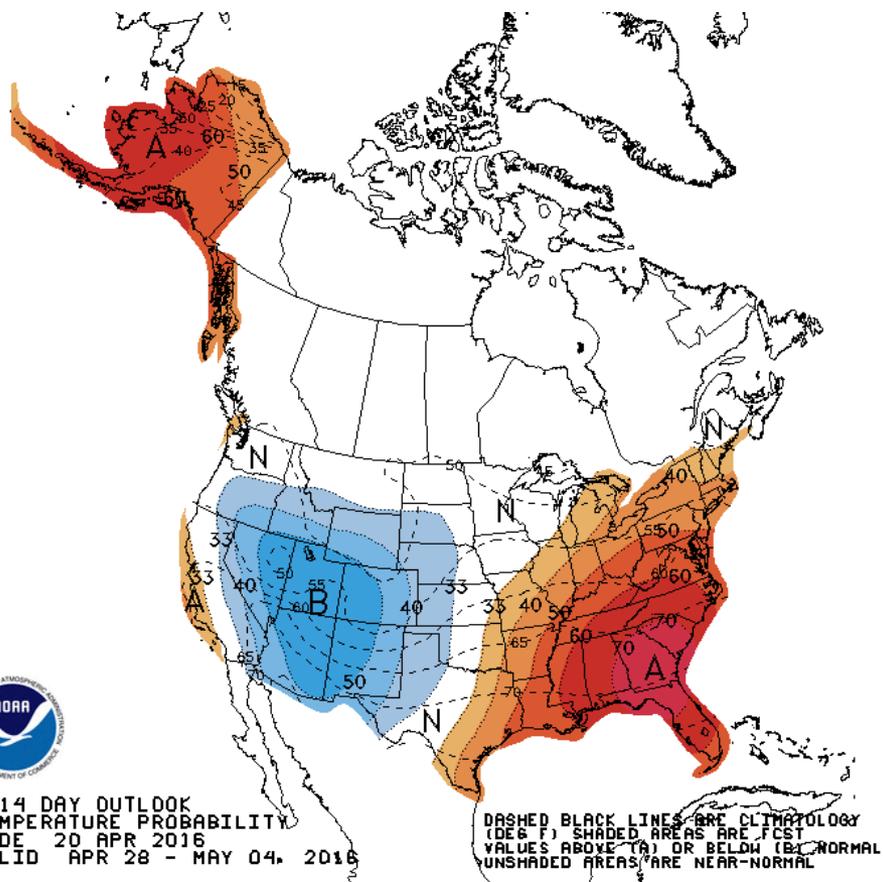
- **7-day precipitation forecast**
- **8-14 day outlook**
- **Significant River Flood Outlook**
- **La Niña watch**
- **July**
- **3 Months (May, Jun, July)**
- **Drought Outlook**
- **Summer outlook (Jun, Jul, Aug)**

# Forecast Precipitation Amounts (7-day)

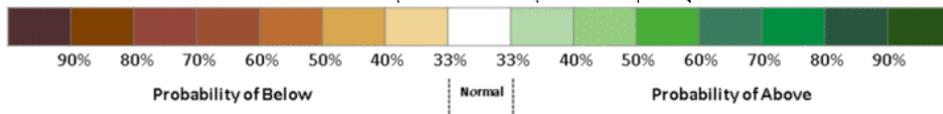
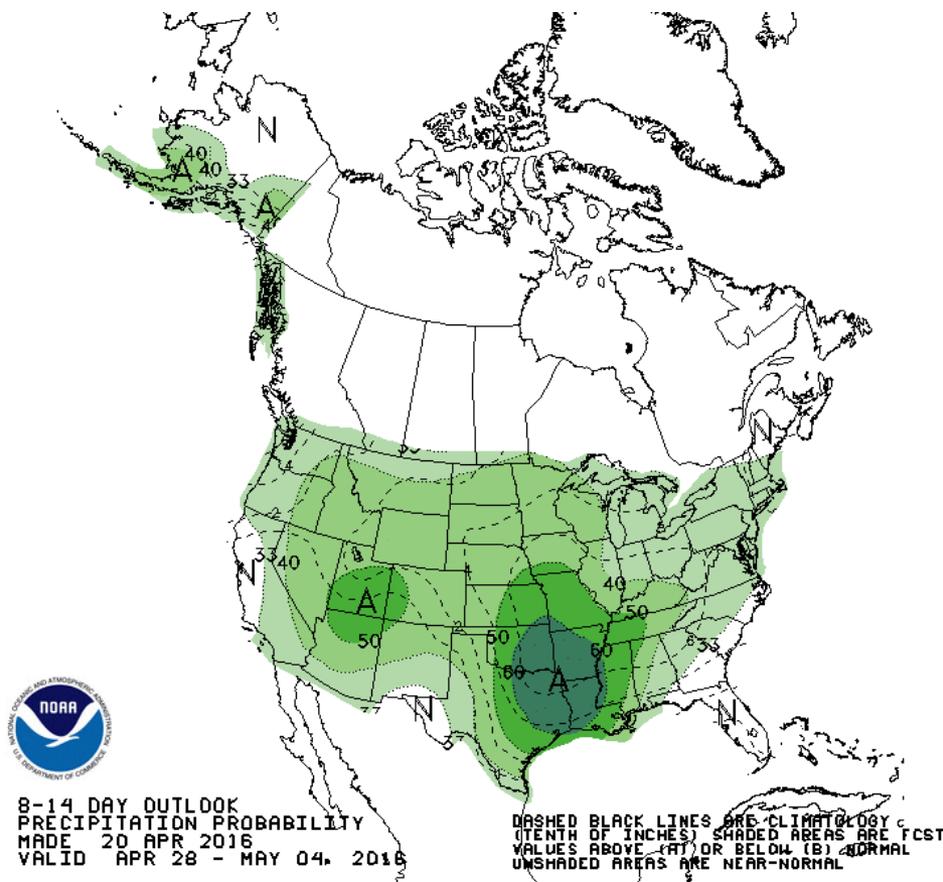


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

# 8-14 Day Forecast for Apr 28-May 4, 2016



Temperature



Precipitation



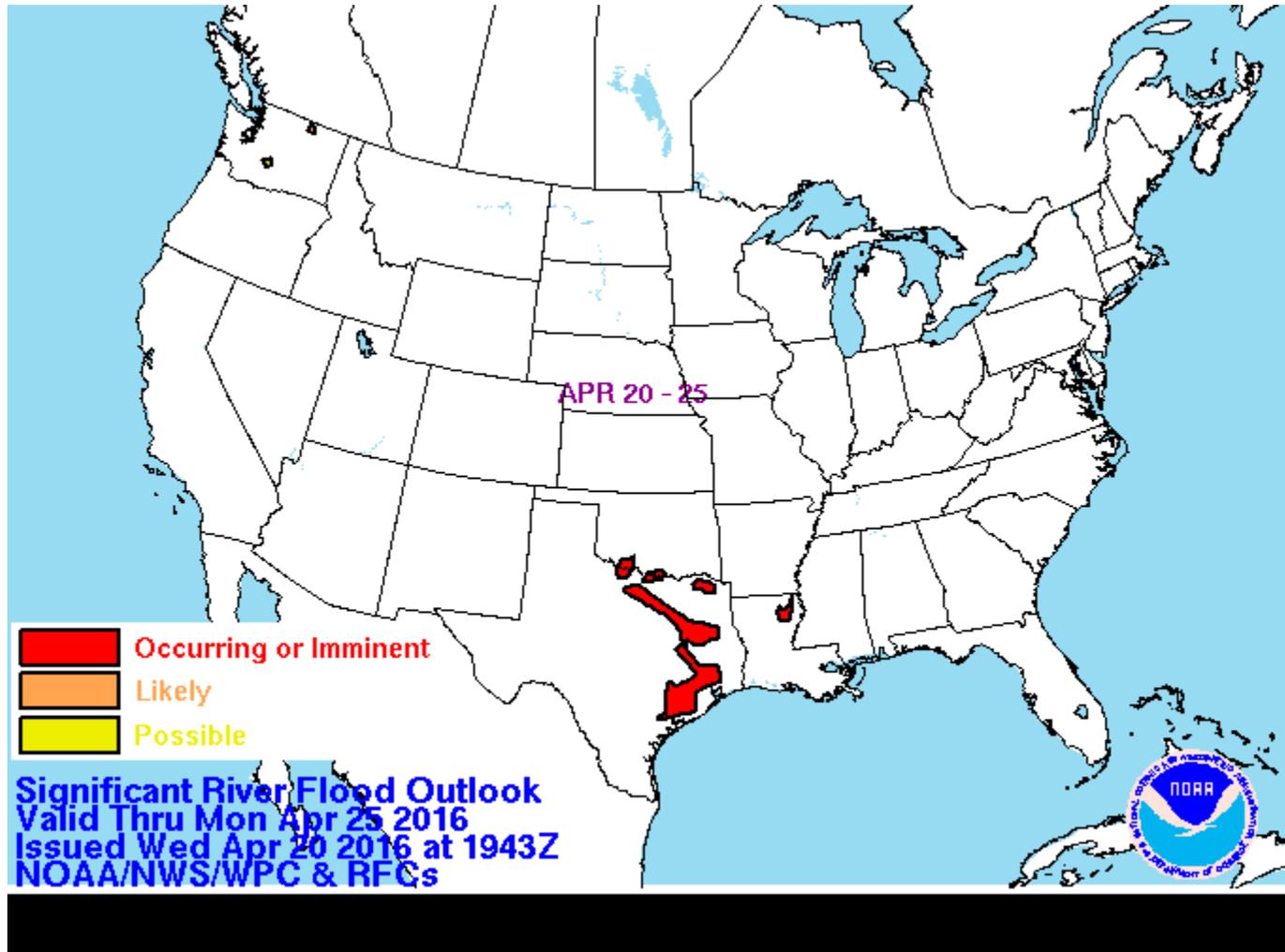
NATIONAL WEATHER SERVICE

# Significant River Flood Outlook

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



**Issued Wed, Apr 20, 2016 and valid thru Mon Apr 25, 2016**



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

# Adios El Niño; Hola La Niña?

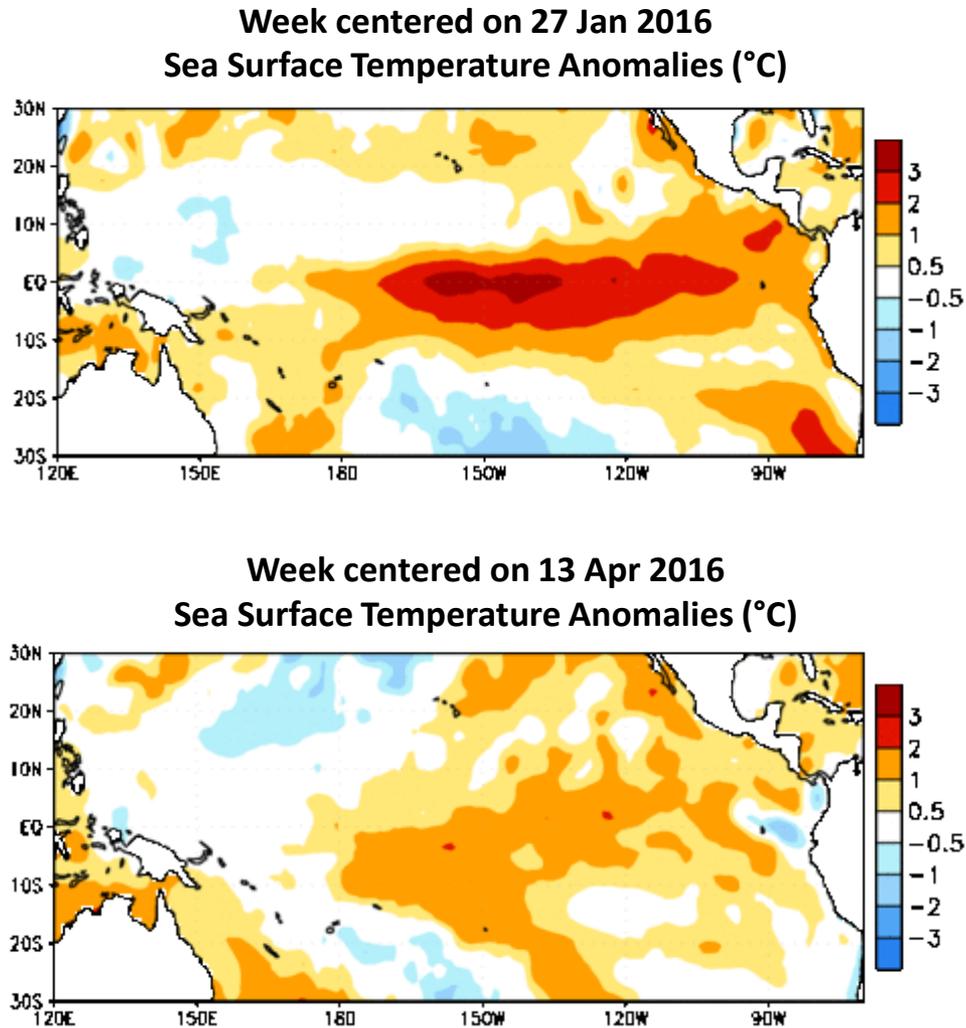


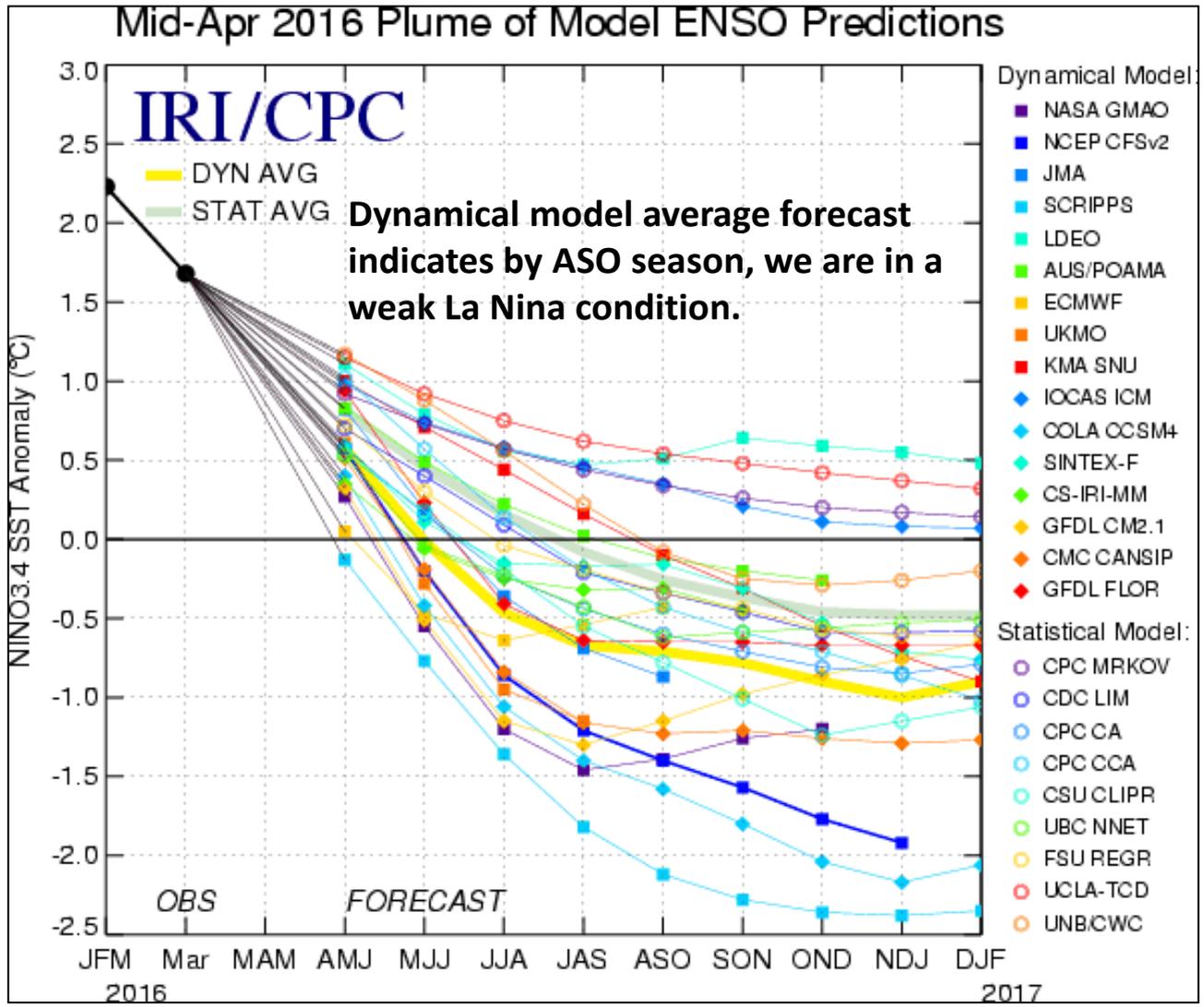
Figure 1. Average sea surface temperature (SST) anomalies (°C) for the weeks centered on 27 Jan 2016 (top) and 13 Apr 2016 (bottom). Anomalies are computed with respect to the 1981-2010 base period weekly means.

# LA NIÑA WATCH

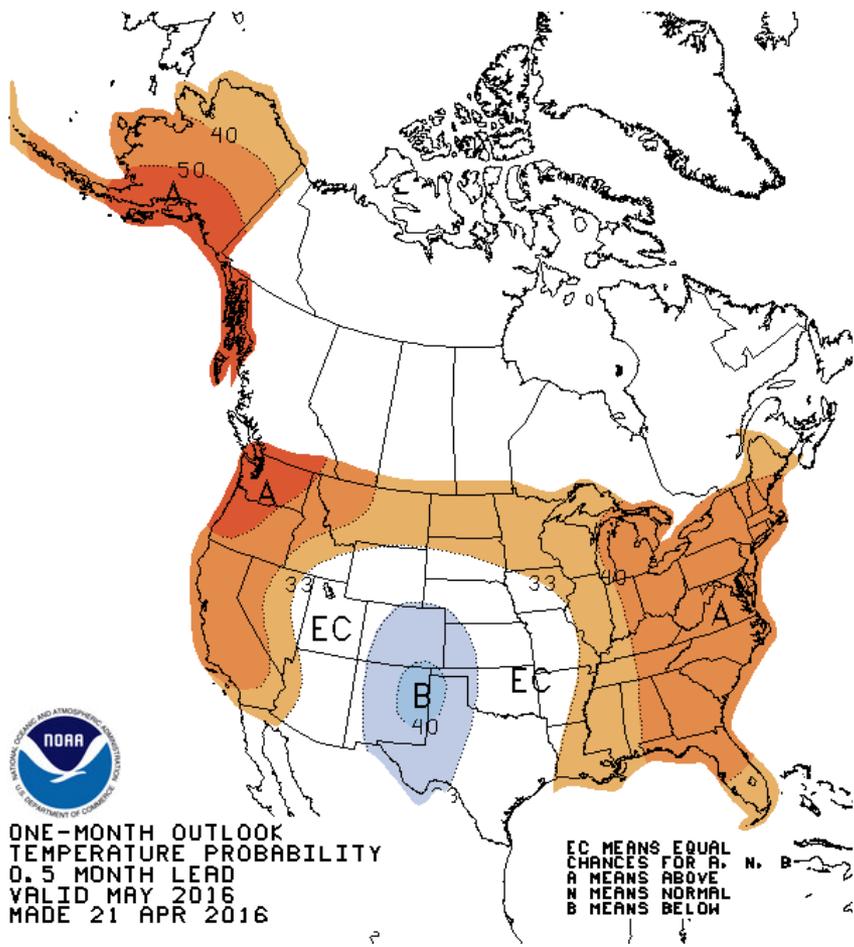
**La Niña Watch:** Issued when conditions are favorable for the development of La Niña conditions within the next six months. (CPC definition)

**CPC/IRI La Nina Forecast Probabilities, Apr 14, 2016**

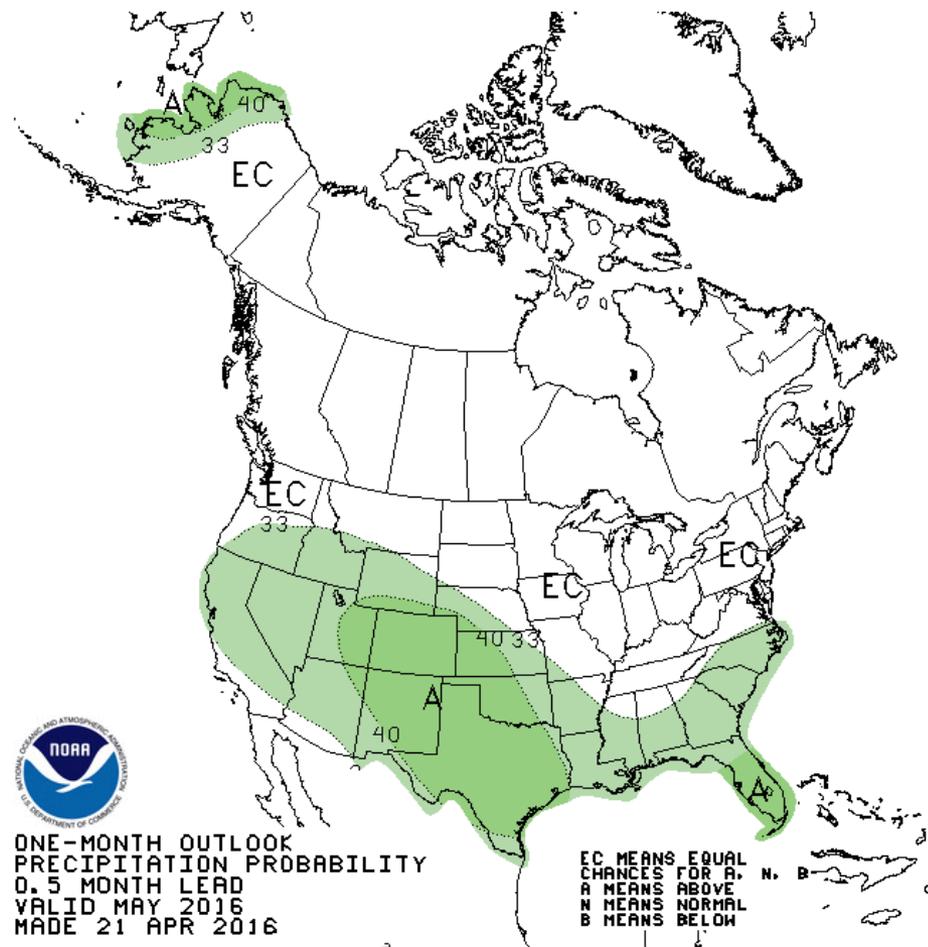
AMJ 2016	4%
MJJ 2016	21%
JJA 2016	45%
JAS 2016	58%
ASO 2016	65%
SON 2016	69%
OND 2016	70%
NDJ 2016	71%



# May Temperature & Precipitation Outlook

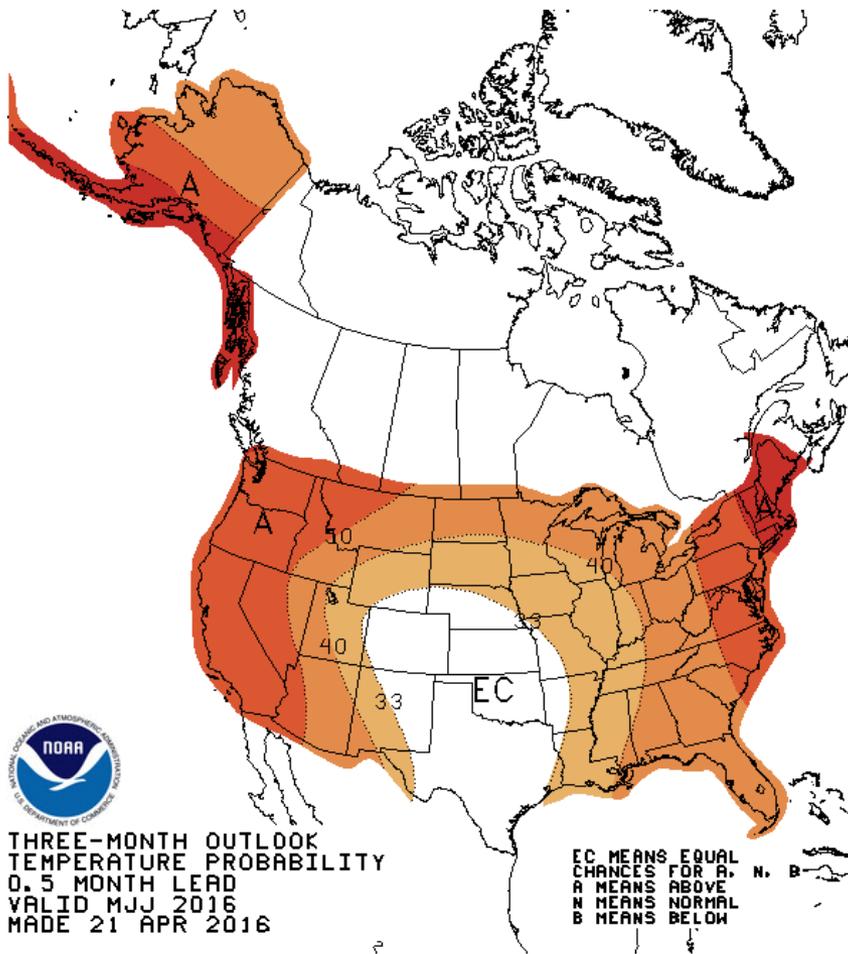


Temperature

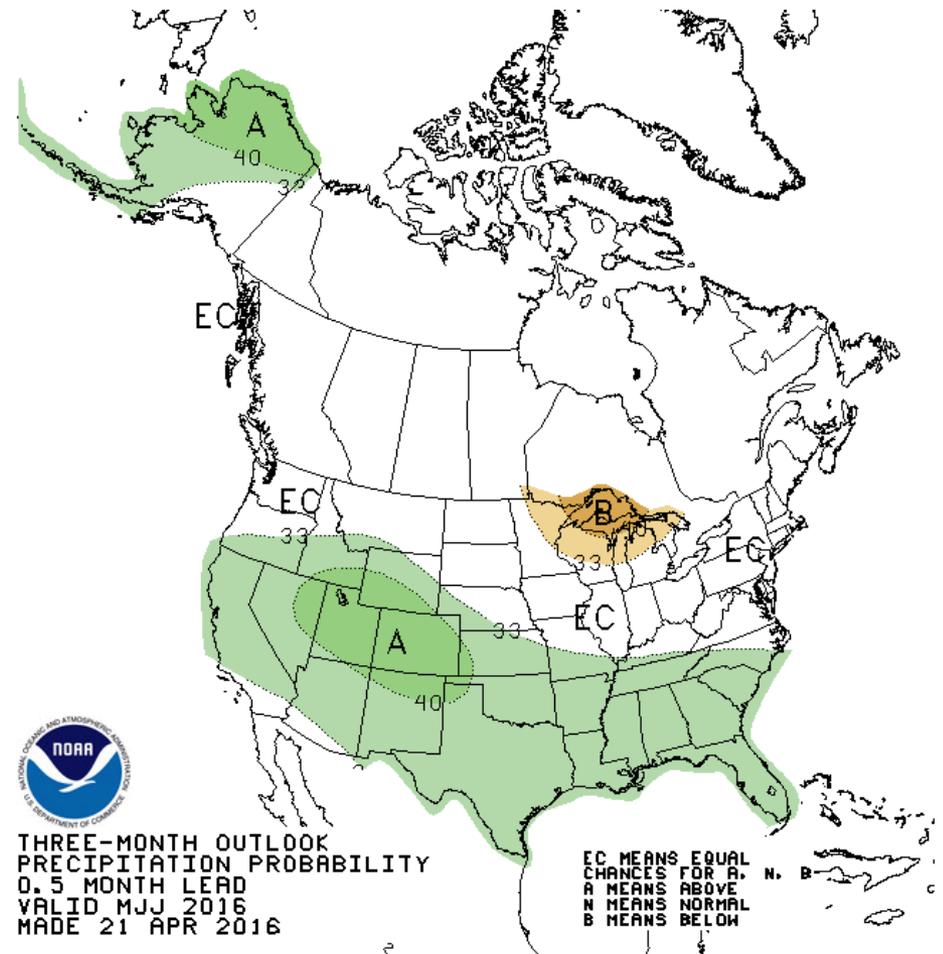


Precipitation

# May-Jun-Jul Outlook



Temperature

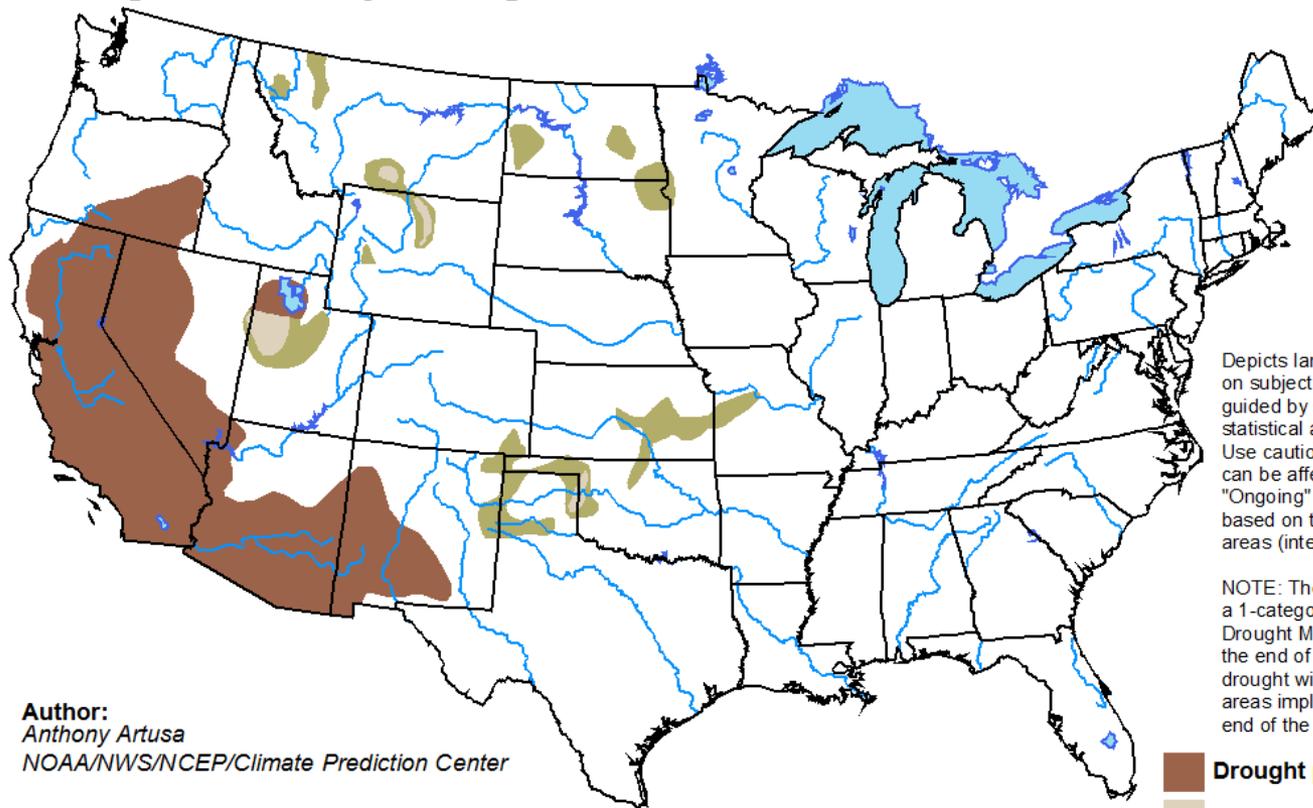


Precipitation

# Drought Outlook through July 31, 2016

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

Valid for April 21 - July 31, 2016  
Released April 21, 2016

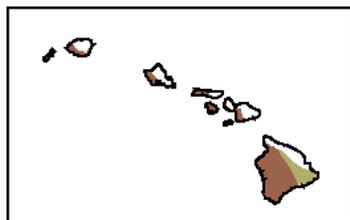
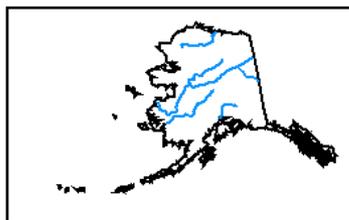


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

Author:  
Anthony Artusa  
NOAA/NWS/NCEP/Climate Prediction Center

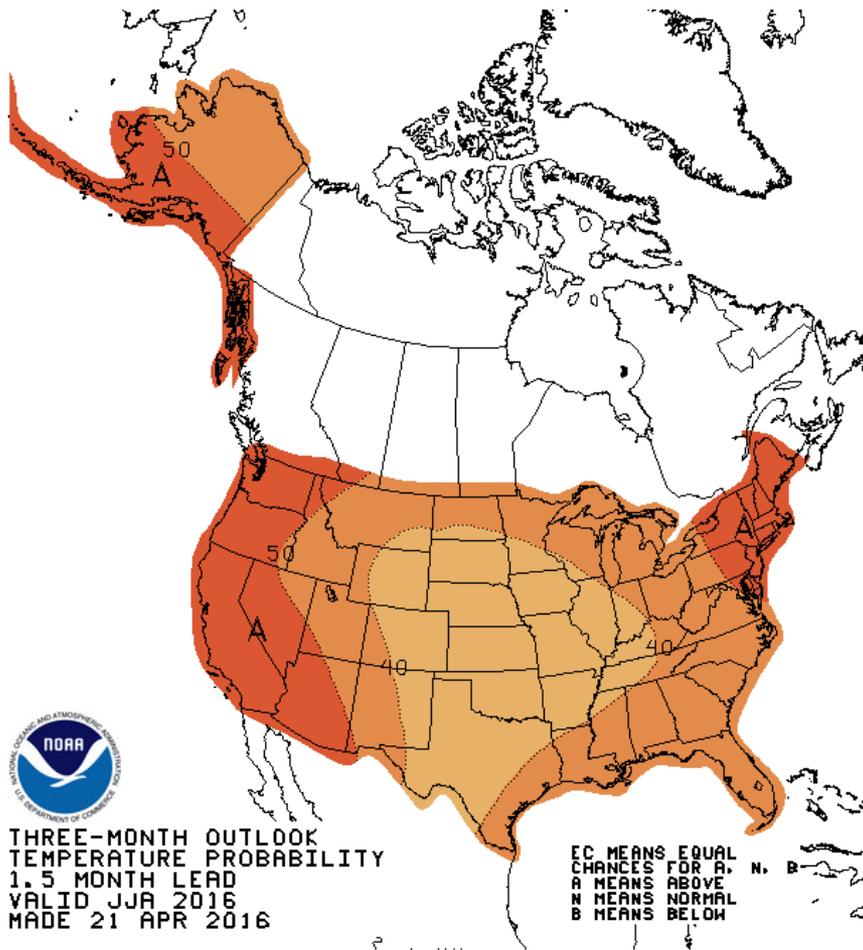
-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



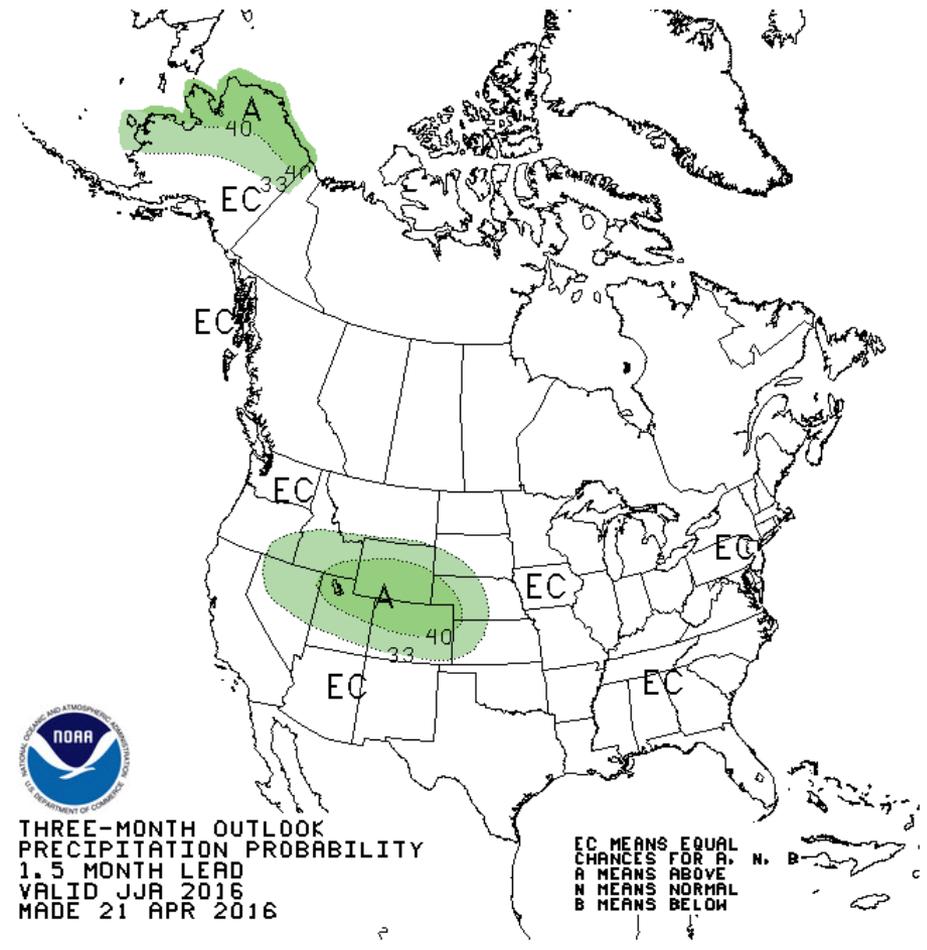
<http://go.usa.gov/3eZ73>

[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/season\\_drought.gif/](http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif/)

# Jun-Jul-Aug Outlook

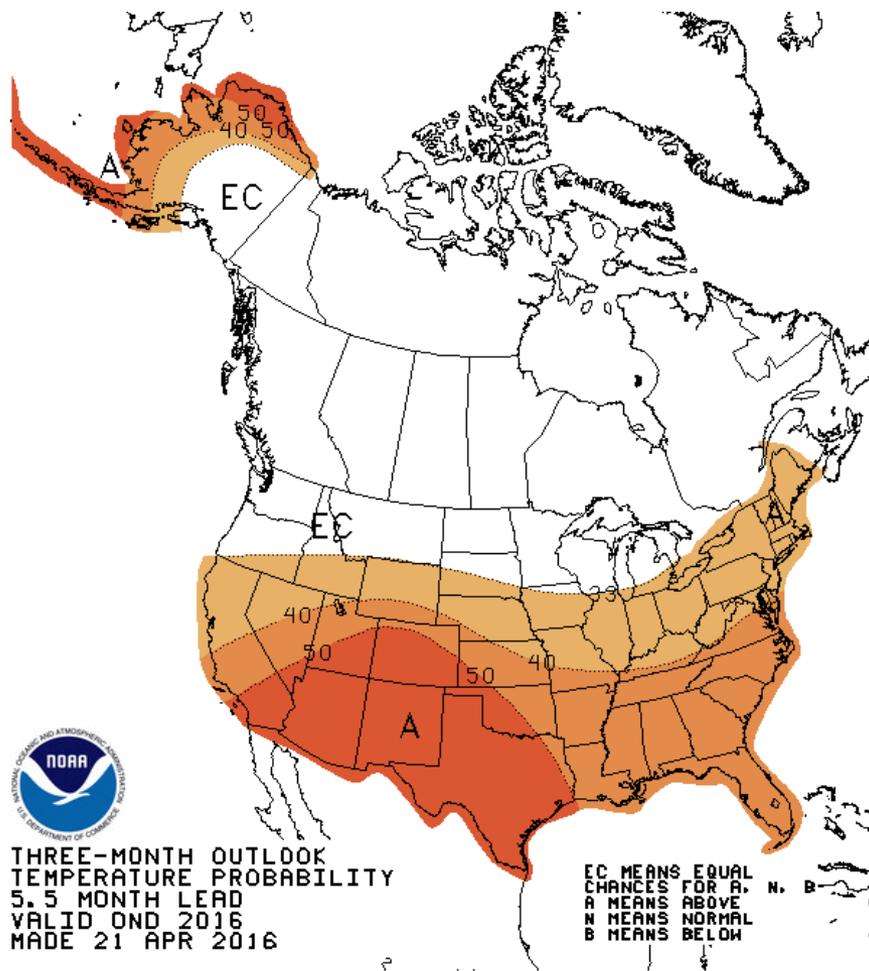


Temperature

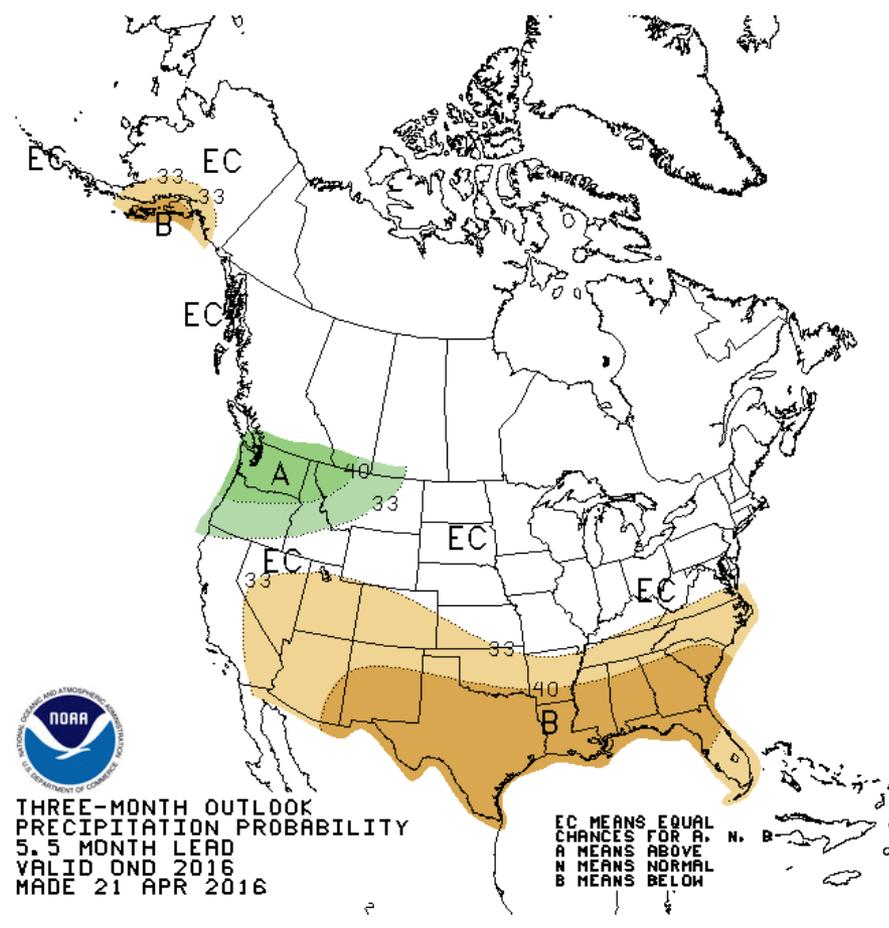


Precipitation

# Oct-Nov-Dec Outlook



Temperature



Precipitation

# Summary

## \* **Recent Conditions**

- \* Widespread significant precipitation has mitigated dryness concerns across the western half of the North Central Region,
- \* Drought conditions have improved across the Front Range and Plains
- \* No immediate significant flood concerns across the region
- \* Warm-up has ramped up agricultural activity

# Summary

## \* Outlooks

- \* Another significant storm system expected over the next 7 days, bringing substantial precipitation to the region, unsettled weather next week.
- \* Drought removal likely as summer approaches
- \* For May-Jun-Jul, an enhanced likelihood for above normal temperatures is anticipated for the region with the exception of CO, KS, SE WY, much of NE and western MO where equal chances exist.
- \* For May-Jun-Jul, an enhanced likelihood of above normal precipitation is anticipated from WY, CO, SW NE, KS and southern MO. Equal chances exist elsewhere with the exception of the upper Great Lakes where below normal precipitation is expected.
- \* For this summer, Jun-Jul-Aug, an enhanced likelihood for above normal temperatures is anticipated for all of the North Central Region.
- \* For this summer, Jun-Jul-Aug, an enhanced likelihood for above normal rainfall is anticipated for WY, CO, SW SD, western NE and western KS; Equal chances elsewhere.
- \* La Niña Watch, ~ 70% likelihood La Niña will emerge by Autumn, Sep-Oct-Nov

# 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/](http://www.ncdc.noaa.gov/sotc/)
- NOAA's Climate Prediction Center: [www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)
- Current Weather Forecasts: [www.weather.gov](http://www.weather.gov)
- Climate Portal: [www.climate.gov](http://www.climate.gov)
- U.S. Drought Portal: [www.drought.gov](http://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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