

Midwest and Great Plains Climate-Drought Outlook

20 April 2017

Dr. Dennis Todey
Director – USDA Midwest Climate Hub
Nat'l Lab. for Ag. and Env.
Ames, IA
dennis.todey@ars.usda.gov
515-294-2013

Photo:
BJ Baule



United States Department of Agriculture
Midwest Climate Hub

General Information

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

- * Collaboration Activity Between:

- * State Climatologists
 - * NOAA NCEI/NWS/OAR/NIDIS/
 - * USDA Climate Hubs
 - * American Association of State Climatologists
 - * Midwest and High Plains Regional Climate Centers
 - * National Drought Mitigation Center/USDA

- * **Next Regular Climate/Drought Outlook Webinar**

- * May 18, 2016 (1 PM CDT) Pat Guinan – Missouri State Climatologist (UM)

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

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

- * <http://mrcc.isws.illinois.edu/webinars.htm>

- * <http://www.hprcc.unl.edu/webinars.php>

- * **Open for questions at the end**

Agenda

- * **Current Conditions**
- * **Impacts**
 - * **Ag**
 - * **Snow/water**
 - * **Other**
- * **Outlooks**
 - * **El Niño in waiting**
 - * **Planting/summer**

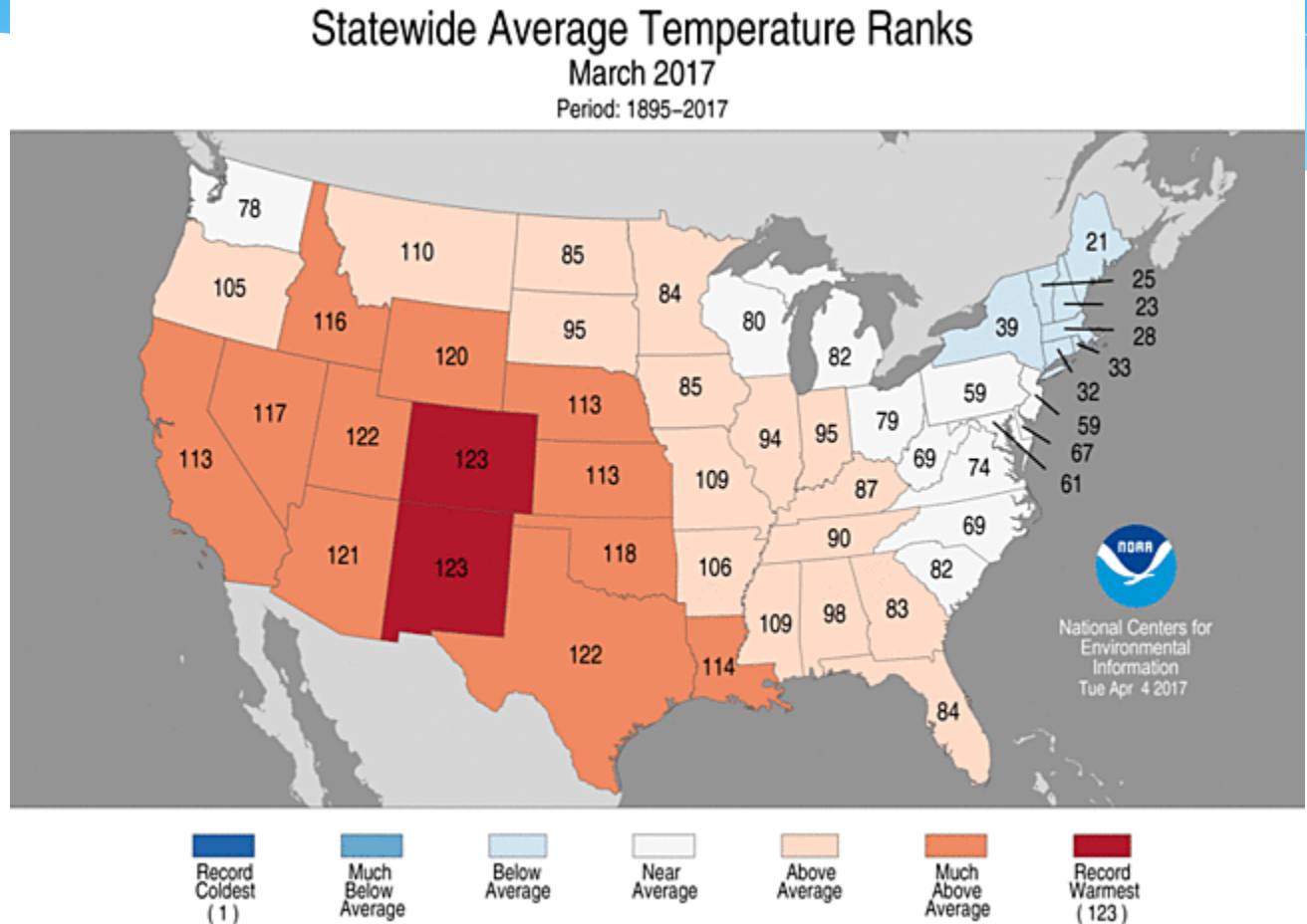


Review/Current Conditions

March Temperature Recap

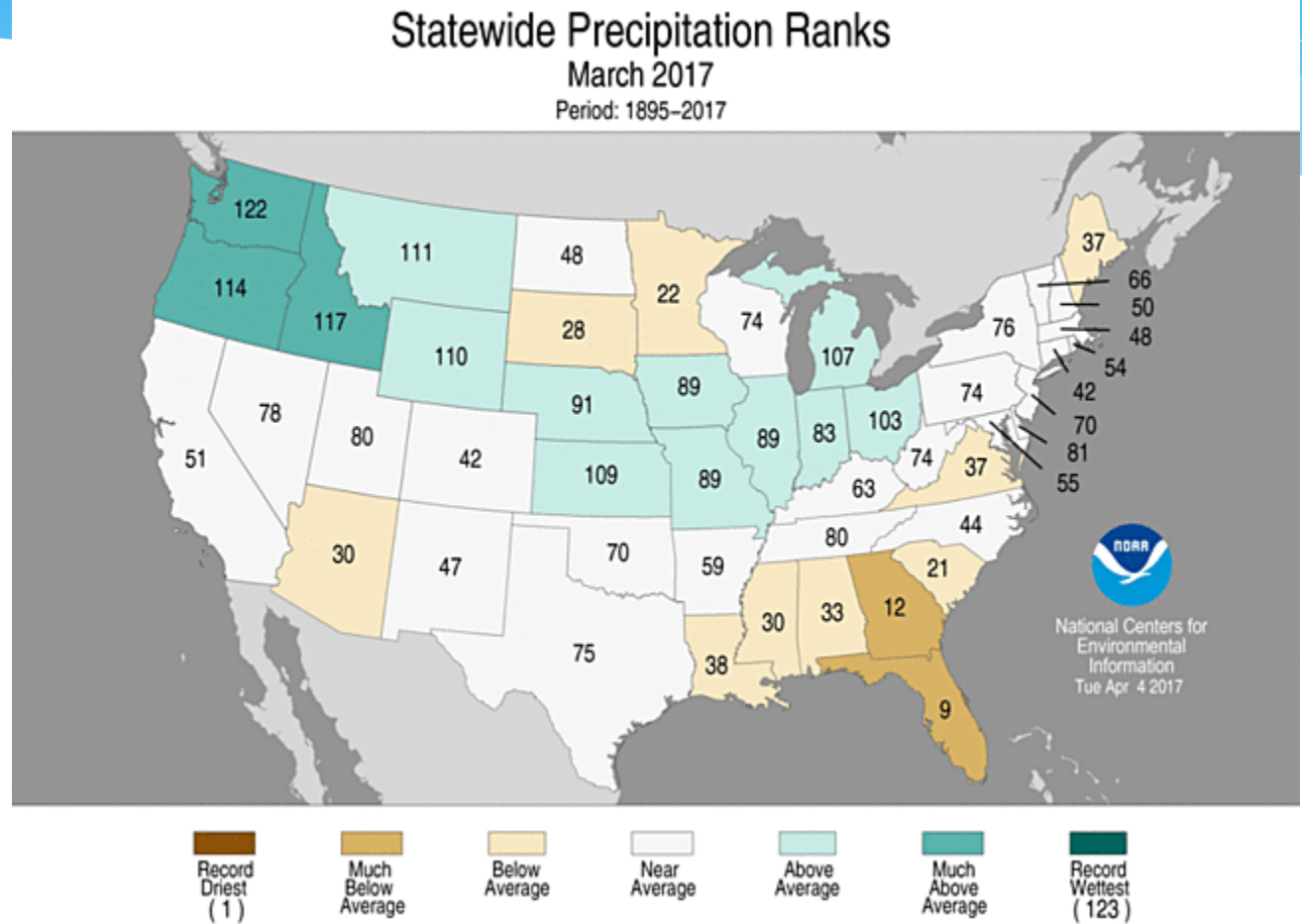
Warmer to Much Above Average middle of the country. Colorado record warm

Impacted snow melt in the Rockies



March Precipitation Recap

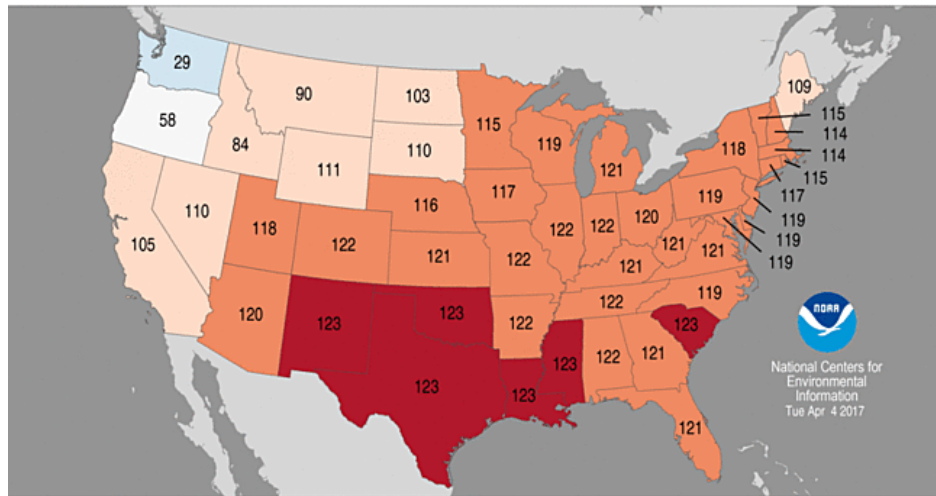
Generally wetter
across Corn Belt.
Drier March SD-MN



Statewide Average Temperature Ranks

January–March 2017

Period: 1895–2017



Same story on warmth top 5-10 generally warmest

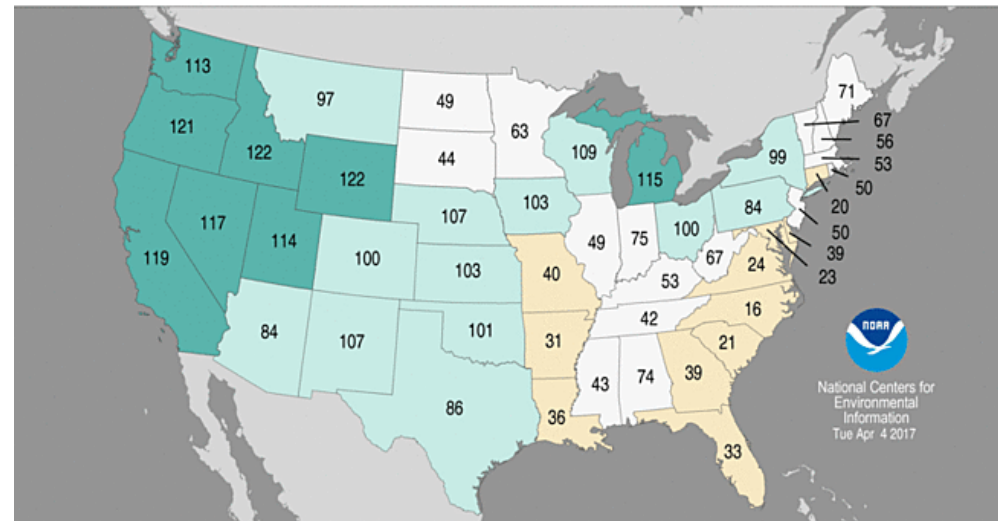
Mixed bag on precip. Wetter plains to Great Lakes. Dry to moderate surrounding.

January - March ranks

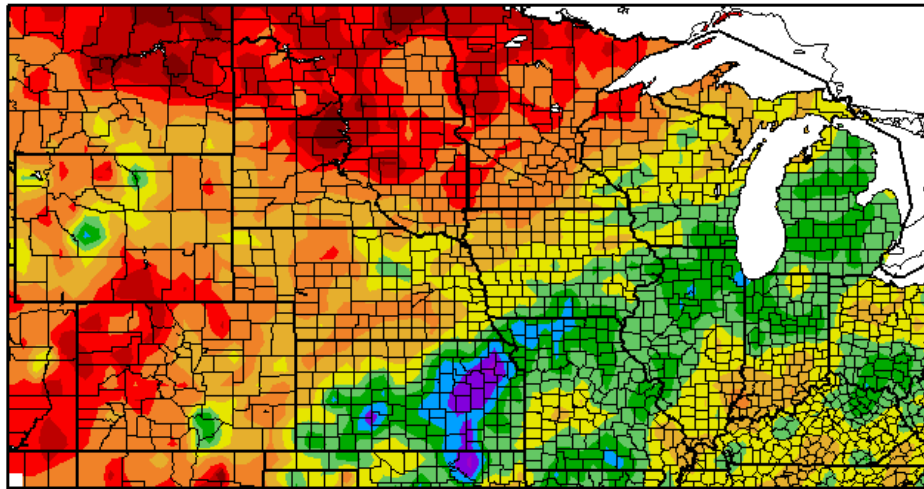
Statewide Precipitation Ranks

January–March 2017

Period: 1895–2017

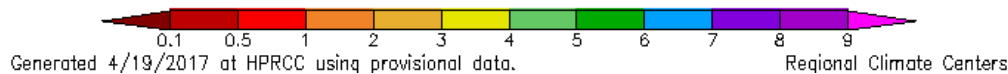


Precipitation (in)
3/20/2017 - 4/18/2017

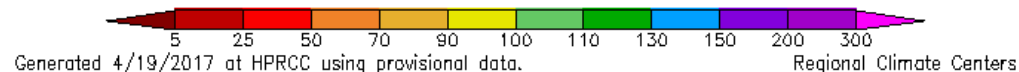
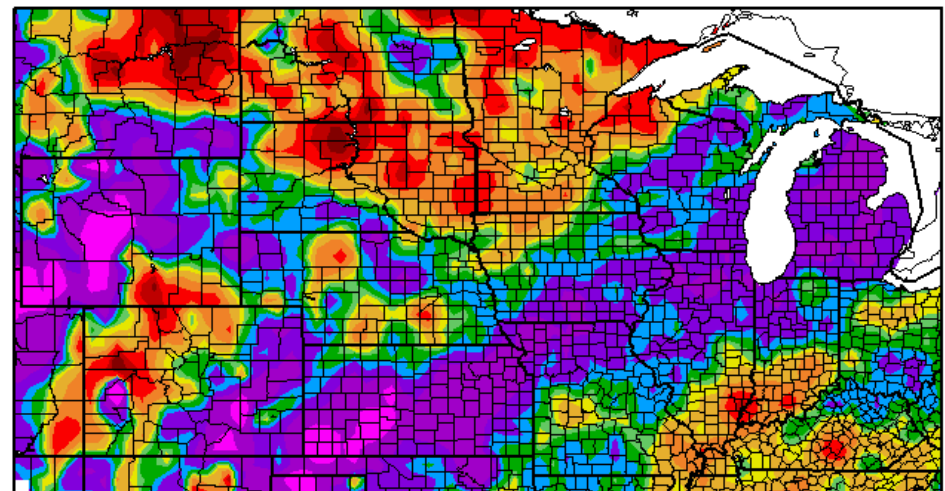


Last 30 days Precipitation

Percent of Normal Precipitation (%)
3/20/2017 - 4/18/2017

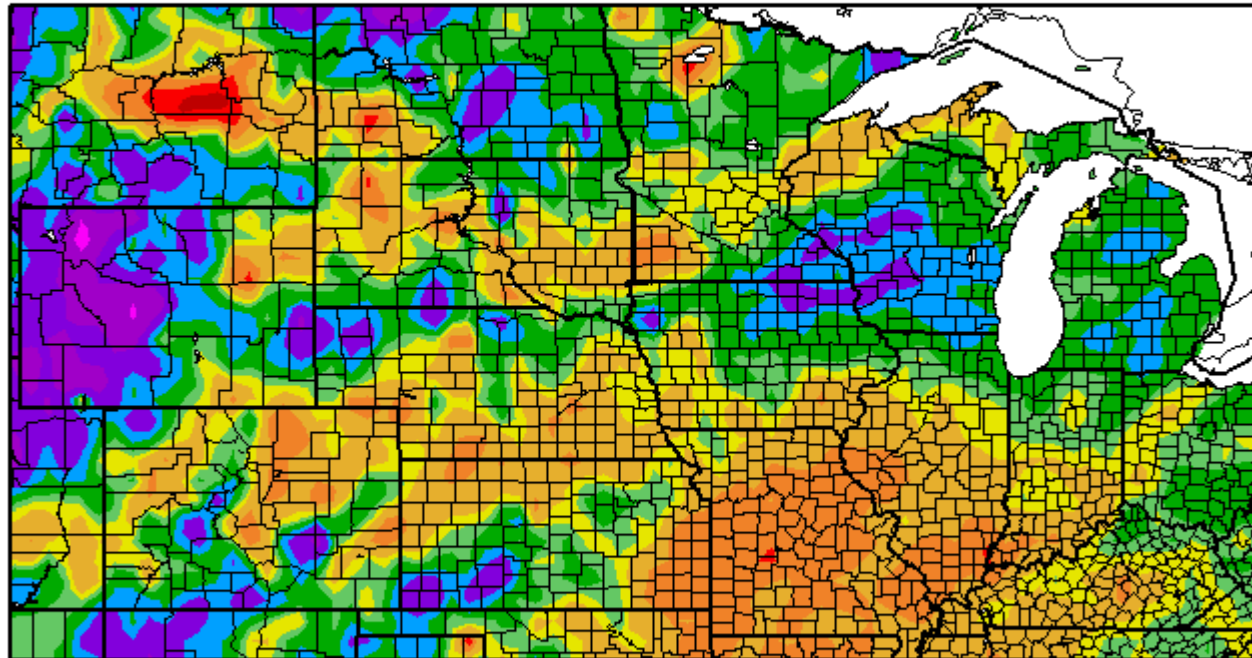


- Less rain Dakotas
- Carry-over from fall still impacting soils in places
- Dry springs usually not much concern Dakotas
- Wet KS-MI
- Slowing field progress



Percent of Normal Precipitation (%)

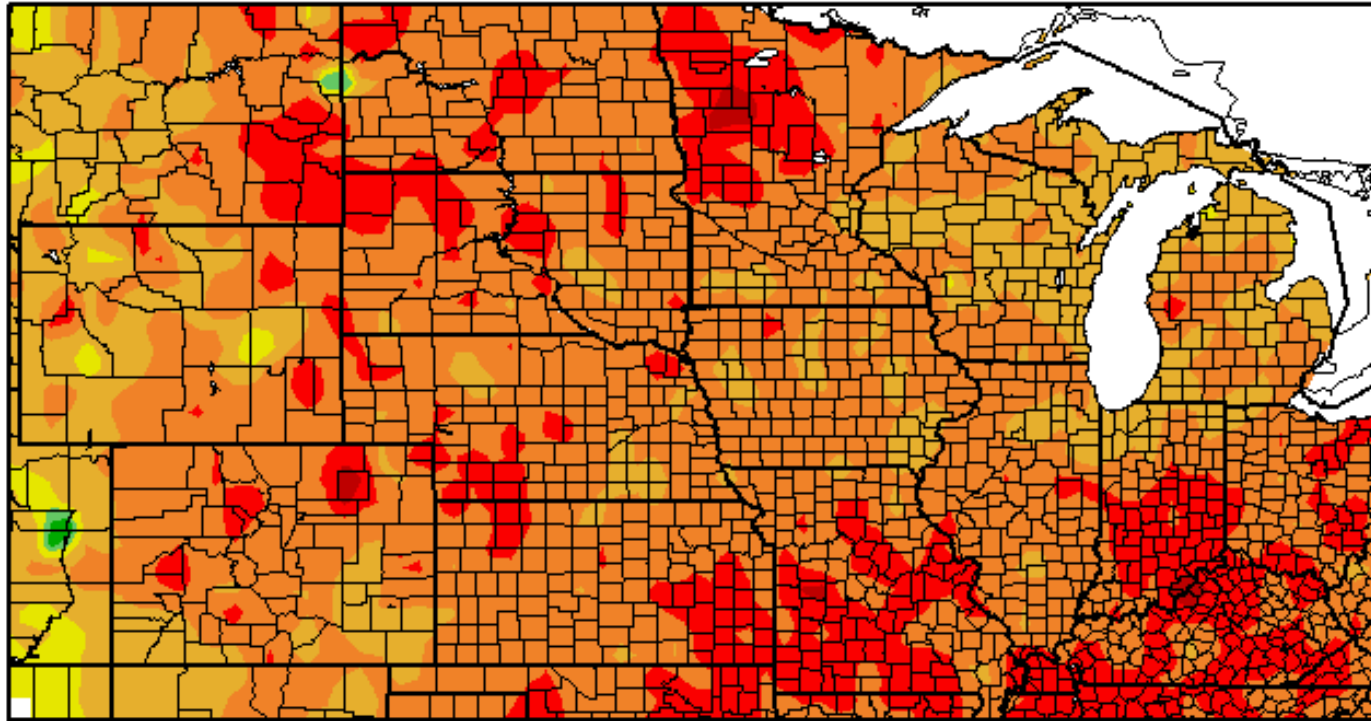
10/19/2016 – 4/18/2017



Generated 4/19/2017 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Temperature (F) 3/20/2017 - 4/18/2017



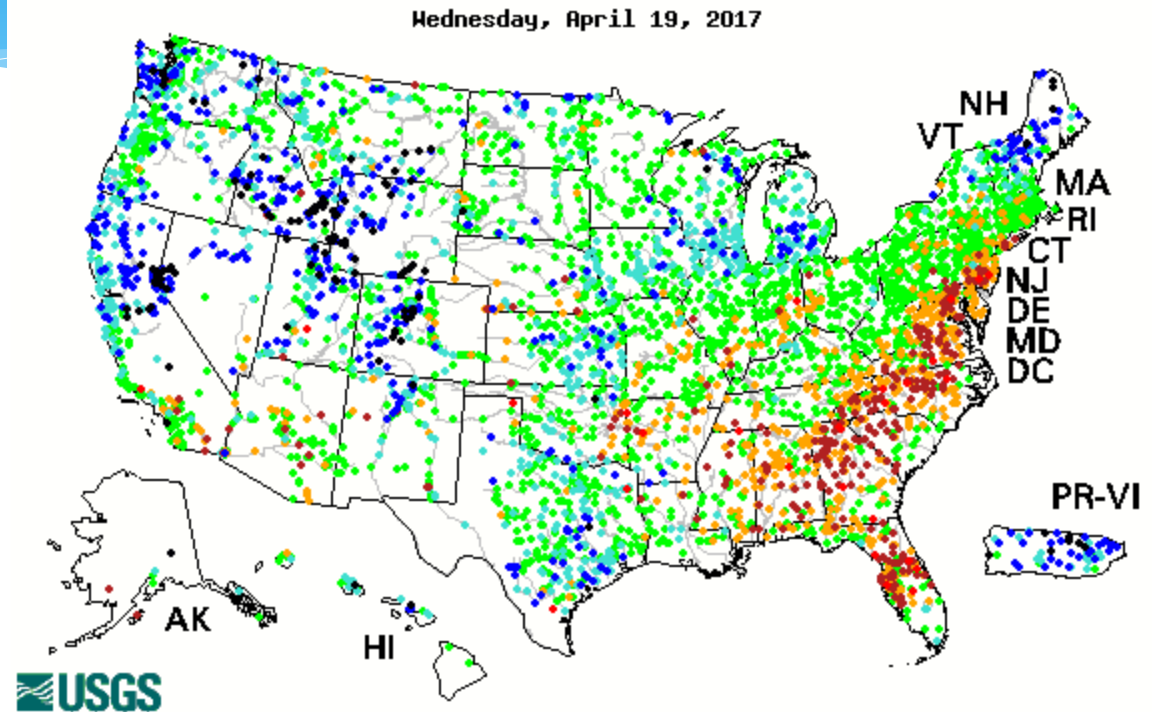
Generated 4/19/2017 at HPRCC using provisional data.

Regional Climate Centers

7-Day Average Streamflow

Wednesday, 19 April 2017

- Pockets of below avg. streamflow OH to MO and plains
- Wet areas show fairly well KS-MI
- Melt-off adding to streams in the west



<http://waterwatch.usgs.gov/index.php?id=pa07d>

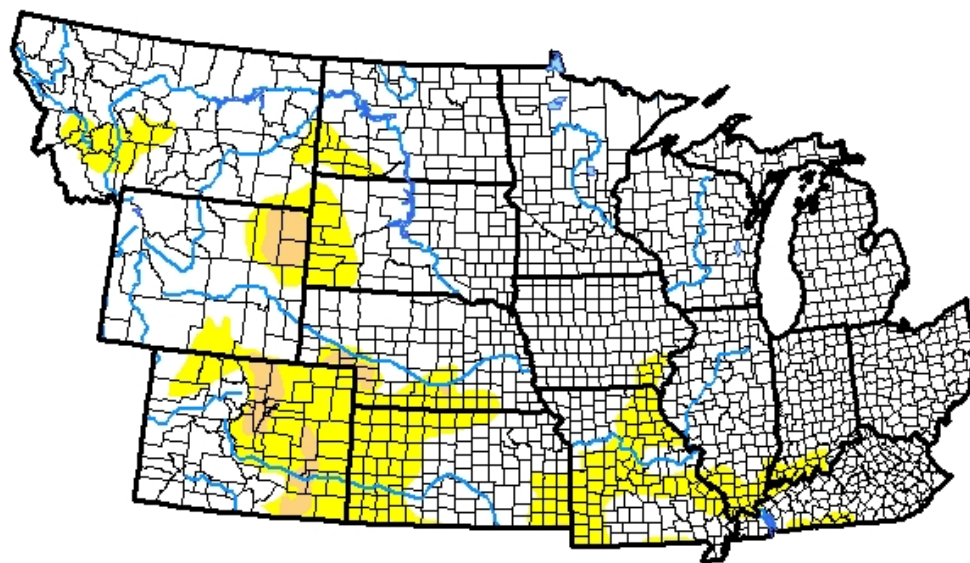
U.S. Drought Monitor

NWS Central Region

April 18, 2017
 (Released Thursday, Apr. 20, 2017)
 Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	81.11	18.89	2.07	0.00	0.00	0.00
Last Week <i>04-11-2017</i>	81.42	18.58	3.34	0.00	0.00	0.00
3 Months Ago <i>01-17-2017</i>	72.70	27.30	11.32	1.02	0.00	0.00
Start of Calendar Year <i>01-03-2017</i>	65.79	34.21	12.04	1.70	0.00	0.00
Start of Water Year <i>09-27-2016</i>	76.71	23.29	7.36	1.93	0.12	0.00
One Year Ago <i>04-19-2016</i>	73.62	26.38	4.60	0.25	0.00	0.00



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.

Author:

Chris Fenimore
 NCEI/NESDIS/NOAA

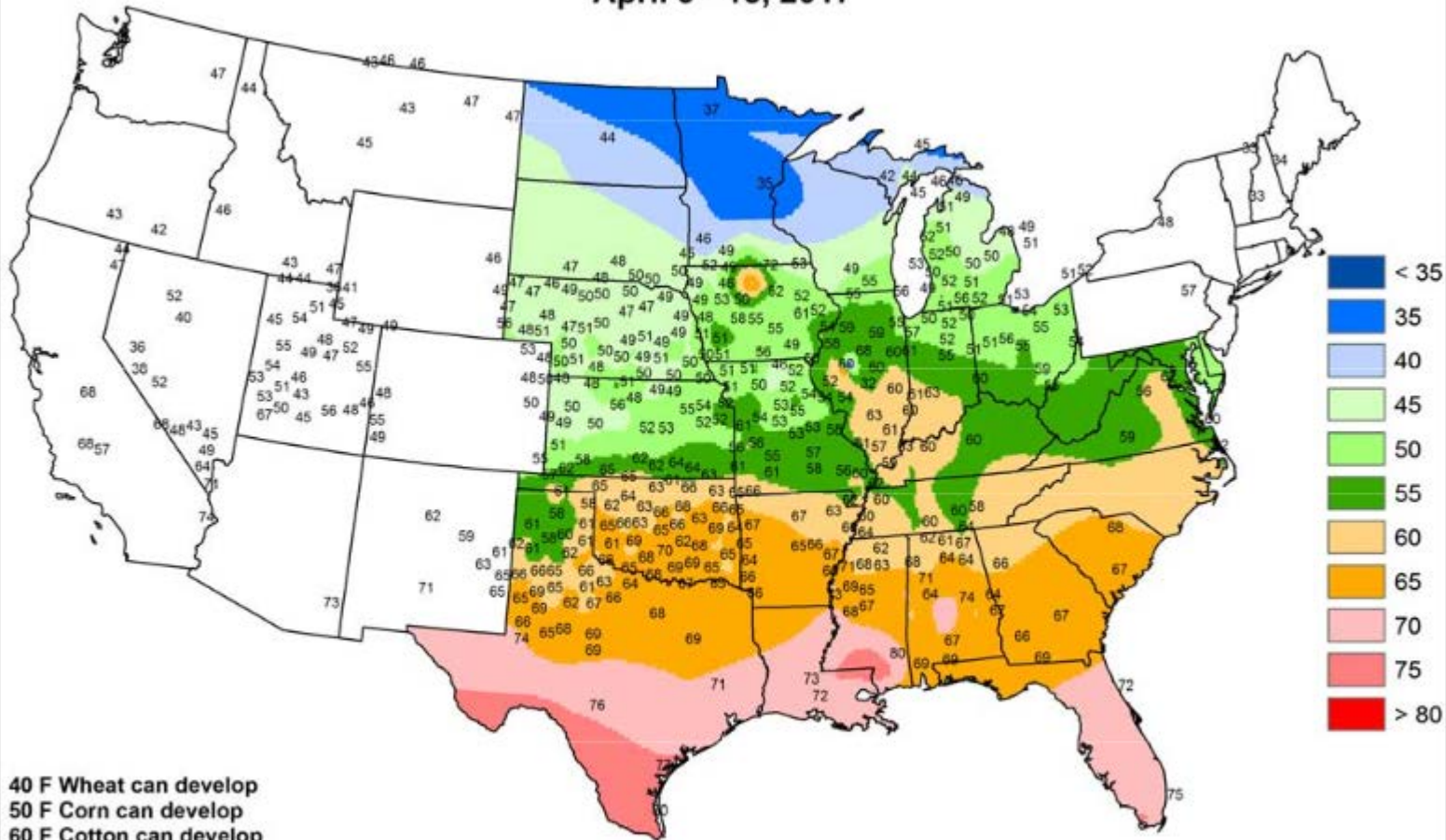


<http://droughtmonitor.unl.edu/>

Agriculture

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

April 9 - 15, 2017

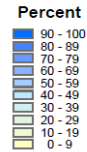
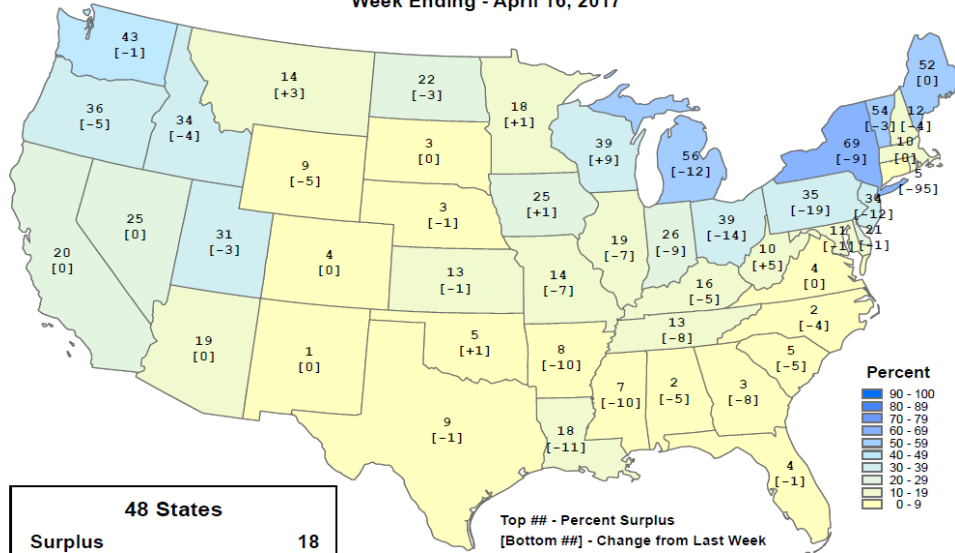


Based on preliminary data.

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 Agronomic Information System, Mississippi State University, Oklahoma Mesonet, Purdue University, University of Missouri and USDA/NRCS Soil Climate Analysis Network.



Topsoil Moisture Percent Surplus Week Ending - April 16, 2017



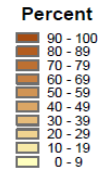
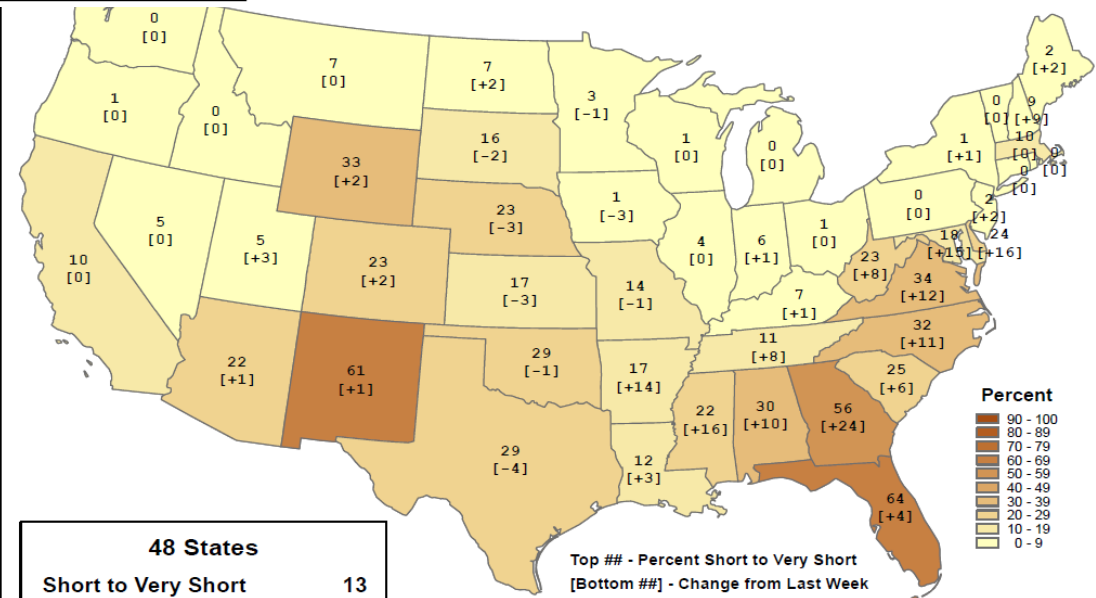
48 States	
Surplus	18
Change from Last Week	-3

Top ## - Percent Surplus
Bottom ##] - Change from Last Week

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

NASS Topsoil moisture

Topsoil Moisture Percent Short to Very Short Week Ending - April 16, 2017



48 States	
Short to Very Short	13
Change from Last Week	0

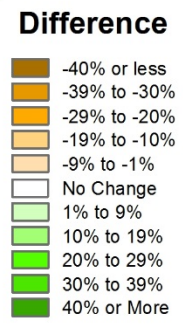
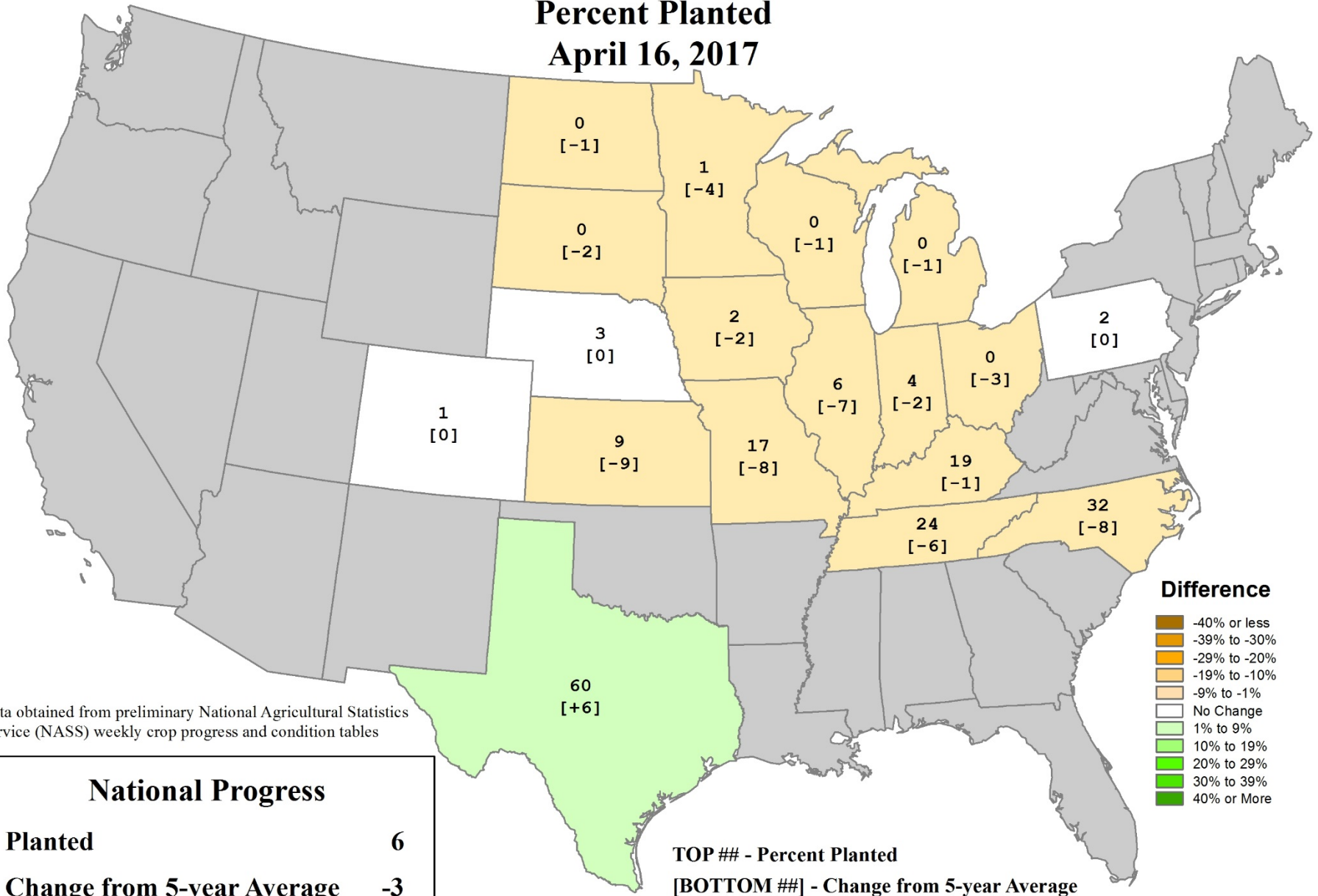
Top ## - Percent Short to Very Short
Bottom ##] - Change from Last Week

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

U.S. Corn Progress

Percent Planted

April 16, 2017



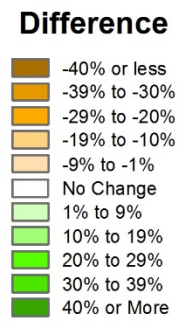
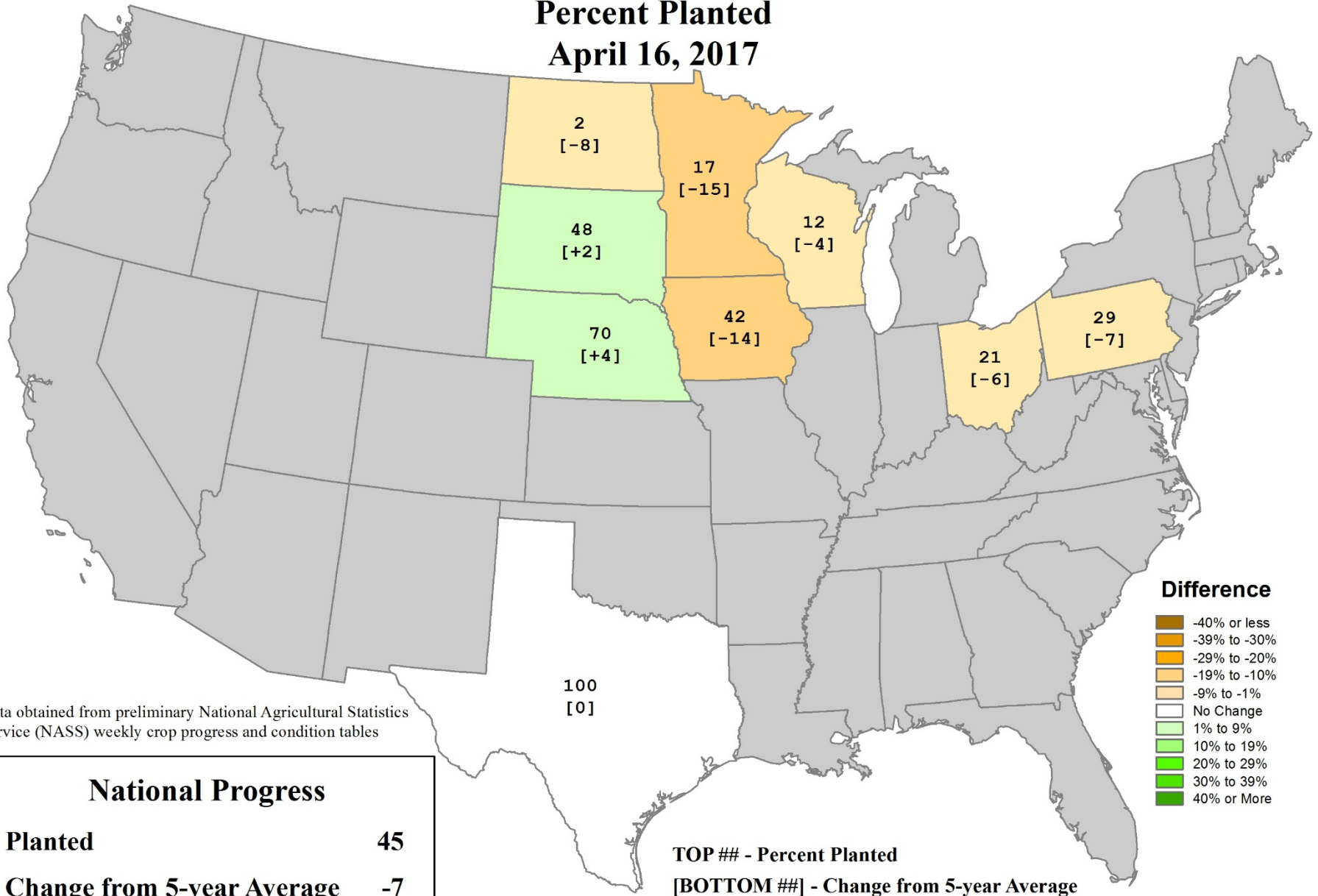
Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress	
Planted	6
Change from 5-year Average	-3

TOP ## - Percent Planted
[BOTTOM ##] - Change from 5-year Average

U.S. Oats Progress

Percent Planted
April 16, 2017



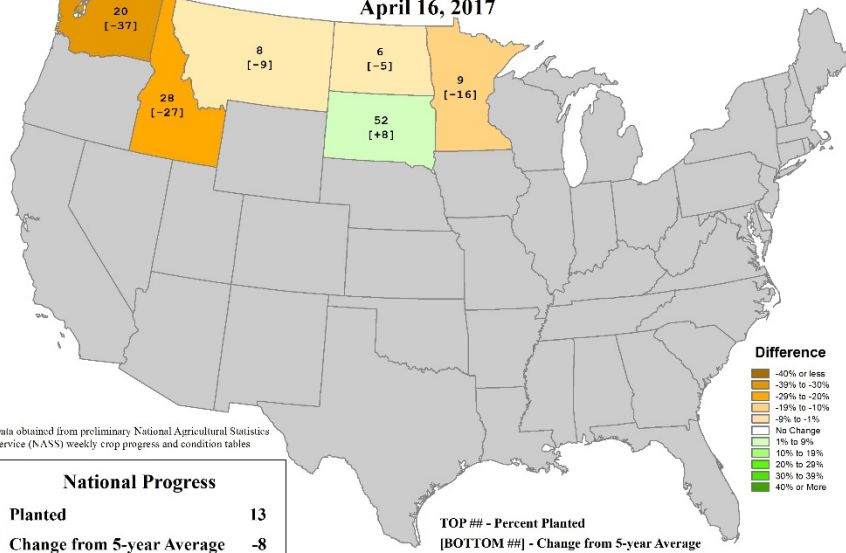
Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress	
Planted	45
Change from 5-year Average	-7

TOP ## - Percent Planted
[BOTTOM ##] - Change from 5-year Average

U.S. Spring Wheat Progress

Percent Planted
April 16, 2017



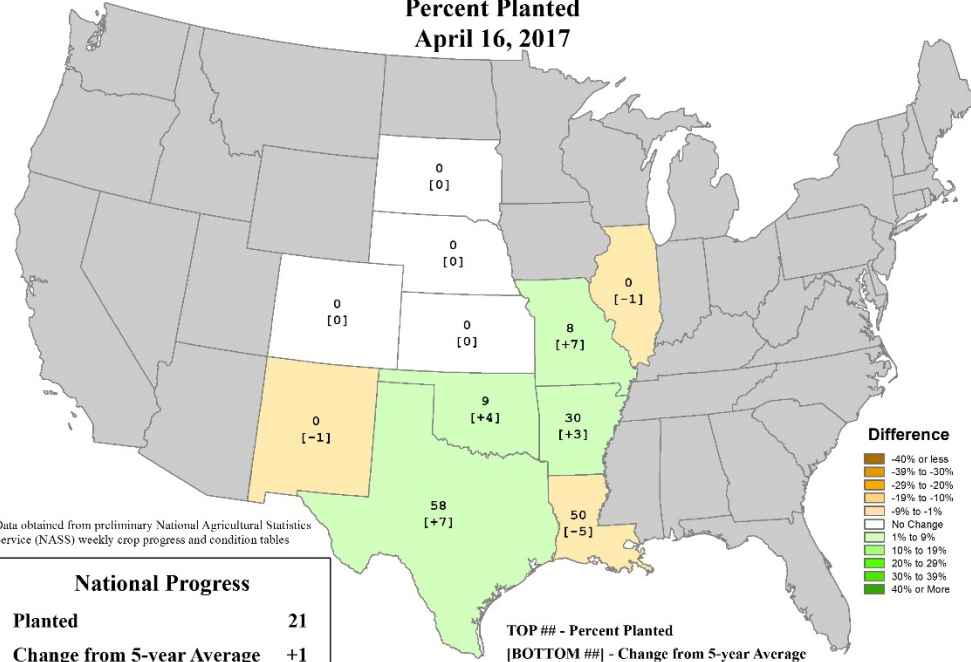
Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress	
Planted	13
Change from 5-year Average	-8

USDA Agricultural Weather Assessments

U.S. Sorghum Progress

Percent Planted
April 16, 2017



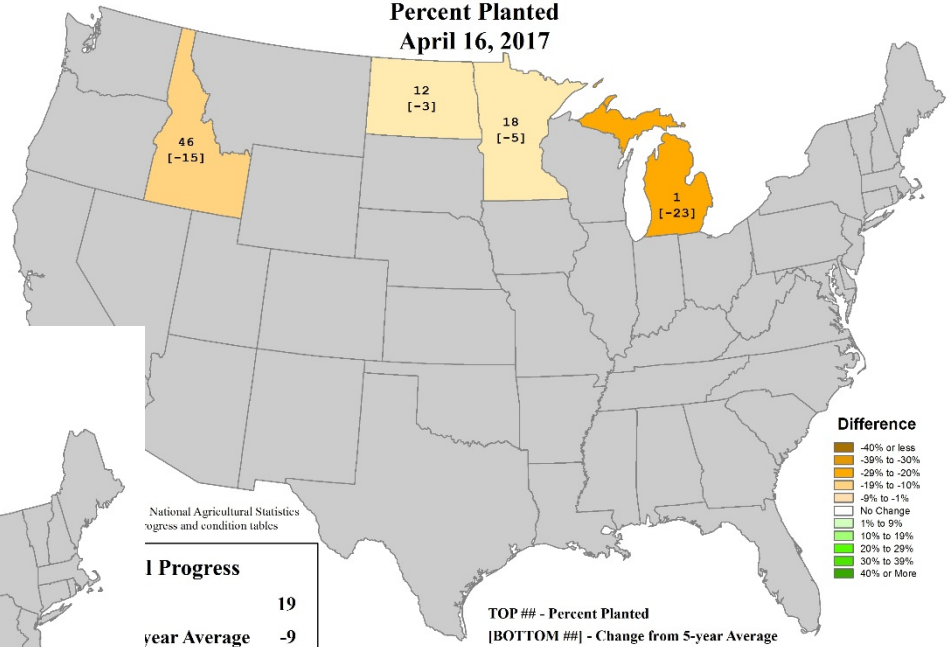
Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress	
Planted	21
Change from 5-year Average	+1

USDA Agricultural Weather Assessments
World Agricultural Outlook Board

U.S. Sugarbeets Progress

Percent Planted
April 16, 2017



National Agricultural Statistics Service weekly crop progress and condition tables

National Progress	
Planted	19
Change from 5-year Average	-9

USDA Agricultural Weather Assessments
World Agricultural Outlook Board

Water/Snow

Flooding on Red
Cedar River – MSU
Campus

Photo: BJ Baule



GREAT LAKES SURFACE ENVIRONMENTAL ANALYSIS (GLSEA)



Analysis Date: JD 109 04/19/2017

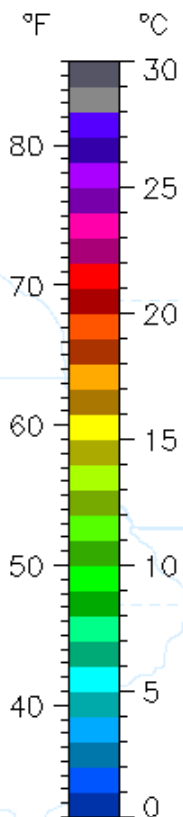
Percent Pixels with Data within +/-10 Days: 99.7%

Date of last ice analysis: 4/19/2017 48°

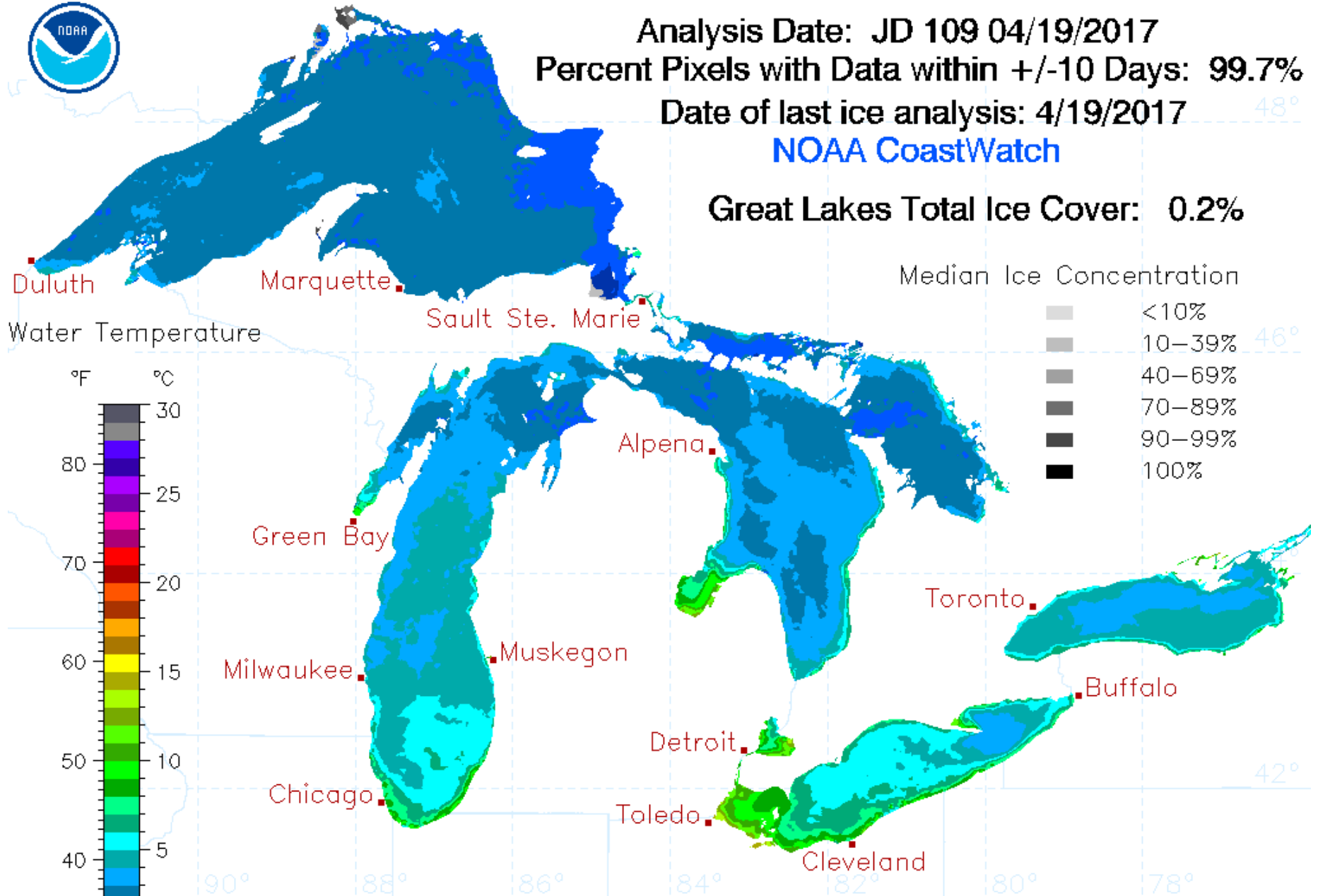
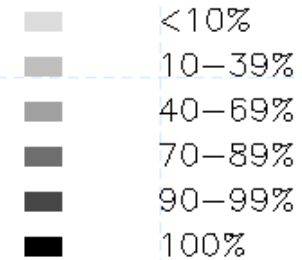
NOAA CoastWatch

Great Lakes Total Ice Cover: 0.2%

Water Temperature



Median Ice Concentration

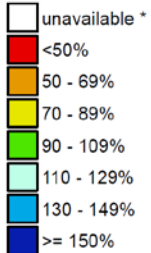


Great Lakes Environmental Research Laboratory
National Ice Center

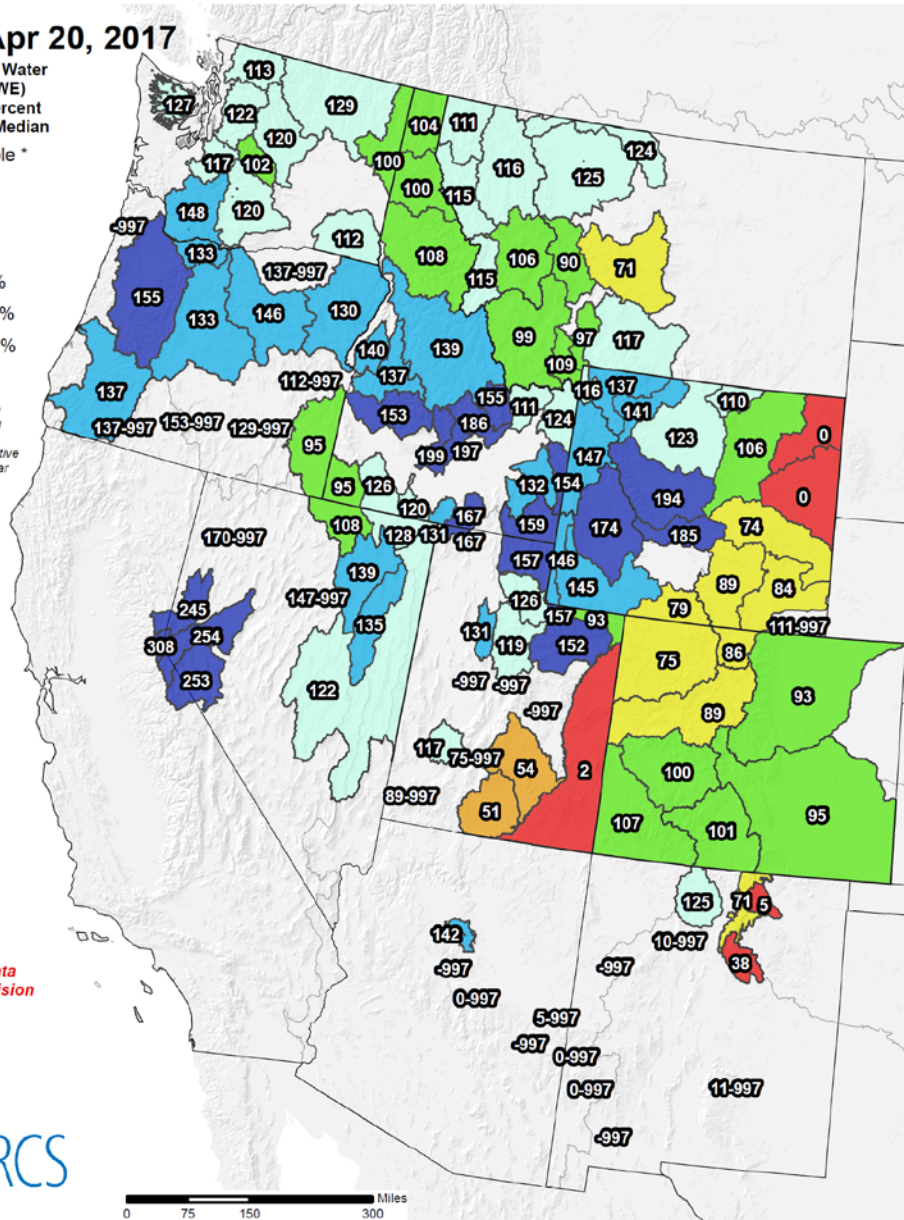
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Apr 20, 2017

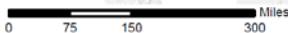
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



* Data unavailable at time of posting or measurement is not representative at this time of year



Provisional data subject to revision



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

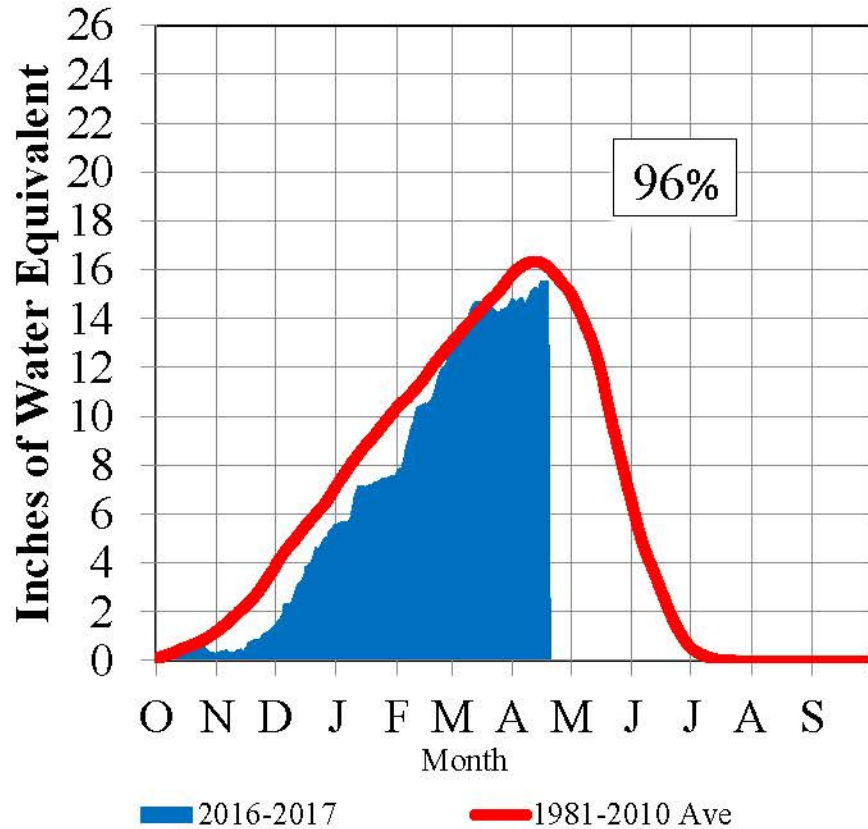
NRCS Snow Water Equivalent

- * MT – near average
- * WY- wet west – none east
- * CO – good but dropping (early warmth)

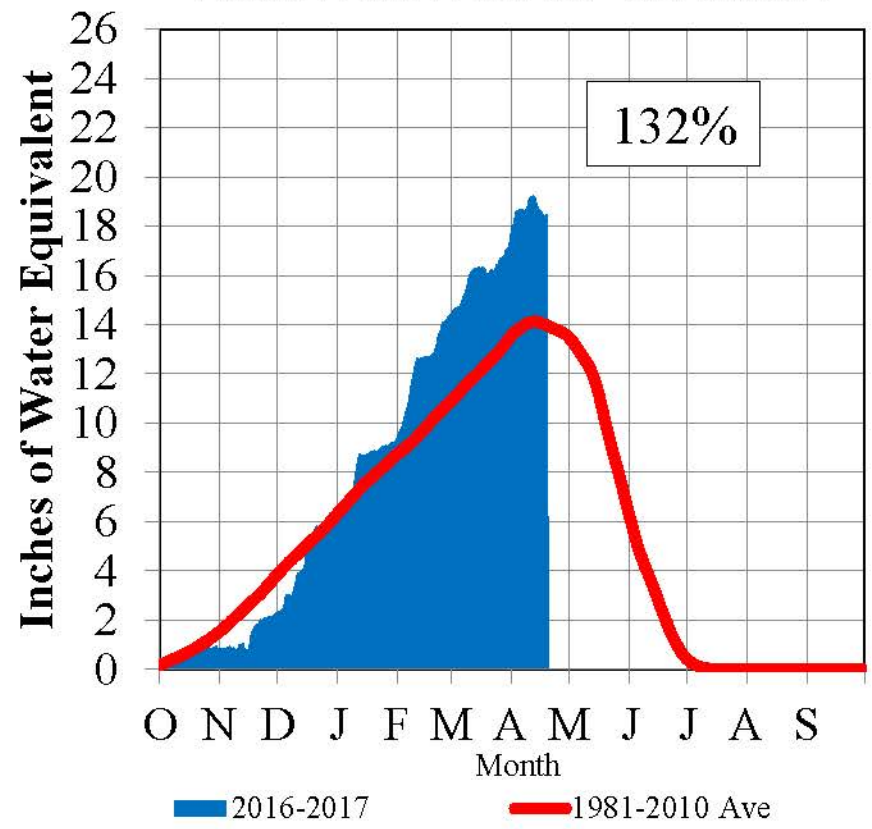
Missouri River Basin – Mountain Snowpack

April 19, 2017

Total above Fort Peck



Total Fort Peck to Garrison

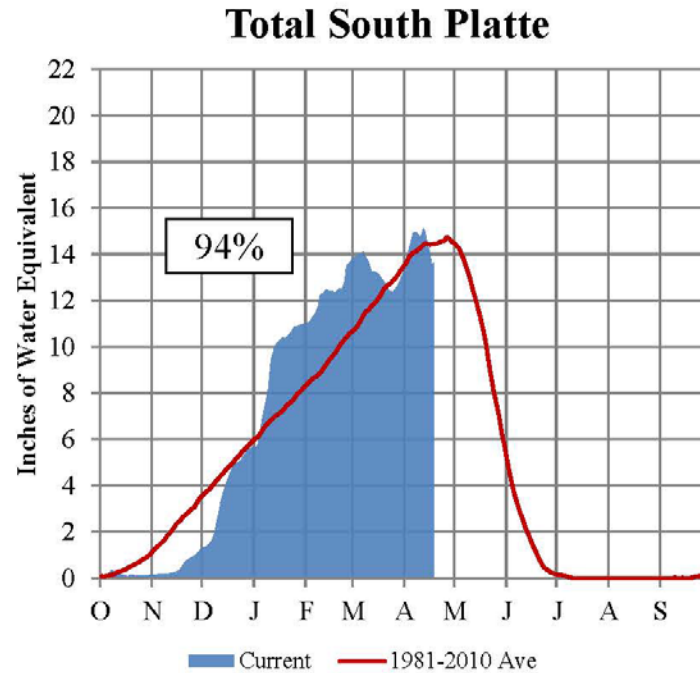
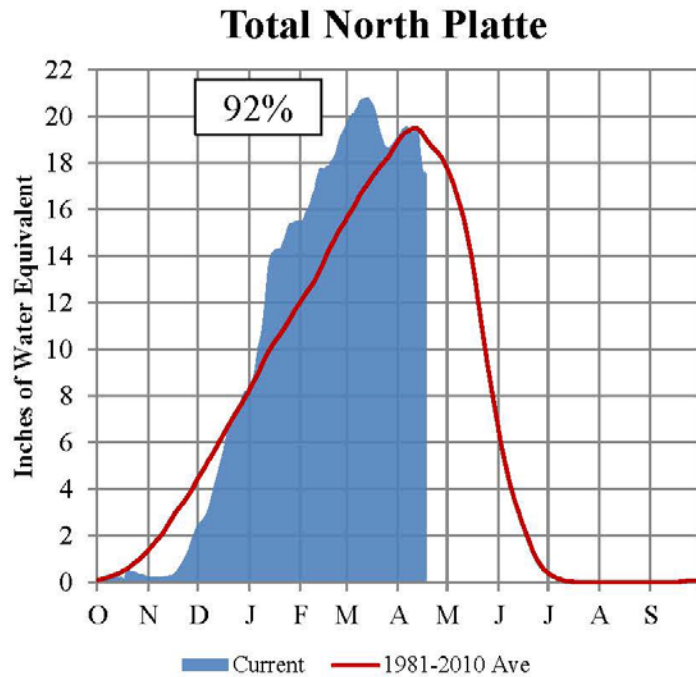


The Missouri River Basin mountain snowpack normally peaks near April 15.

Platte River Basin - Mountain Snowpack Water Content

Water Year 2016-2017

April 18, 2017



The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of April 17, 2017, the mountain snowpack SWE in the "Total North Platte" reach is currently 17.6", 92% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 13.5", 94% of average.

Other various issues

- * Early season fire issues quickly eased with rain and green-up
- * Pollen reports (allergies) setting in early
- * Very early season mosquito reports IN (March) and MI (recent)

Early season weeds –
henbit – Lincoln, NE

Photo: Tyler Williams



A few warm winter issues

- * Early season insects – reduced winter die-of
 - * Black cutworm
 - * Army worm
- * IL- extensive cover crop growth
- * Cover crop termination better – actively growing
- * Potential N-loss for people who still apply fall Nitrogen

Early Spring Freeze

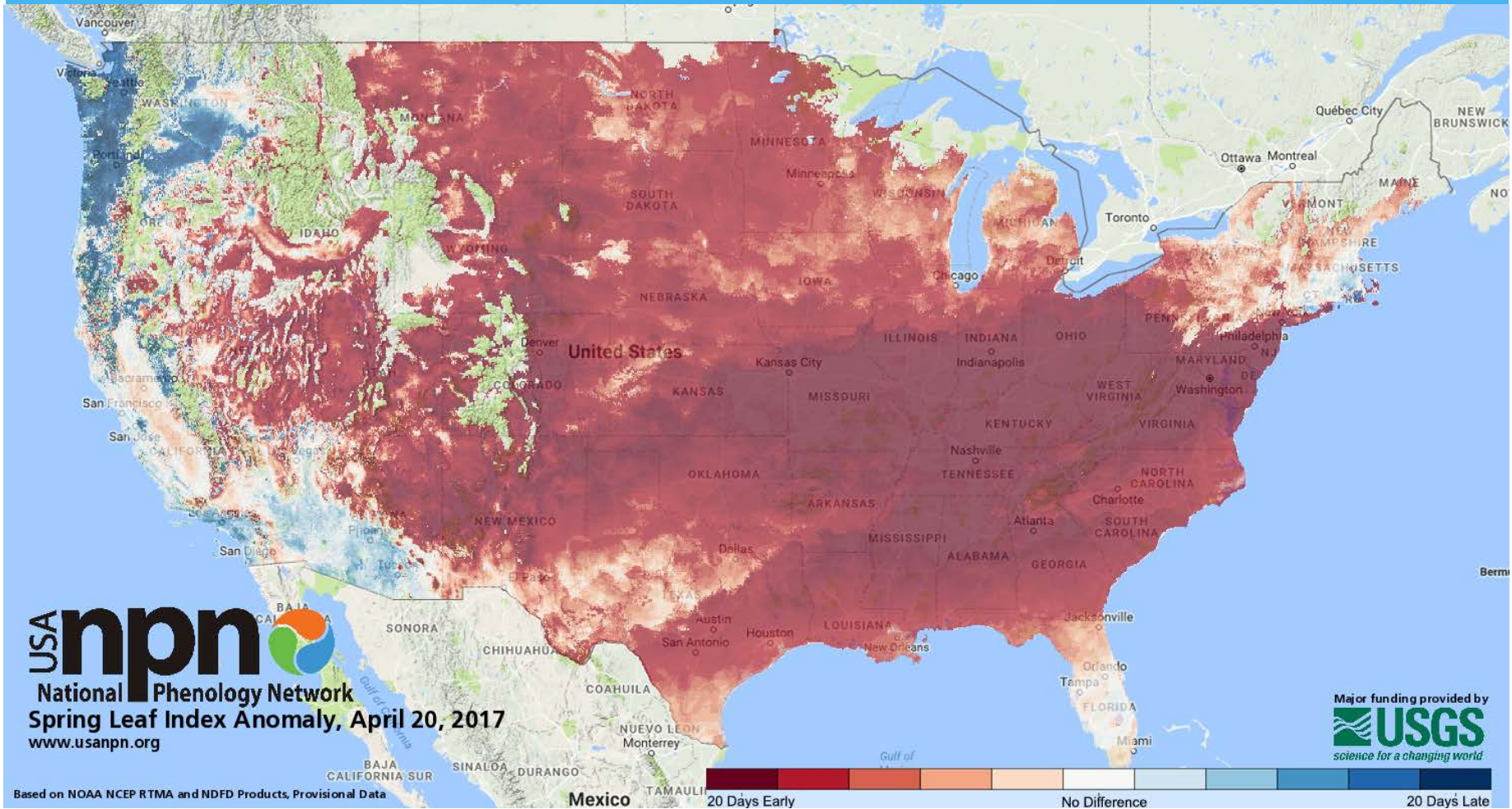
- * Warm late winter/early spring pushed early development
- * Temperatures into the teens mid-March
- * Issues
 - * Blooms on fruit trees –freeze removed some
 - * Alfalfa damaged
- * Early spraying (MI) disease pressure on fruit crops
- * Freeze 4/11 KS wheat – seemingly no problem

Image from

<https://agcrops.osu.edu/newsletter/corn-newsletter/2017-07/managing-frost-injured-alfalfa>

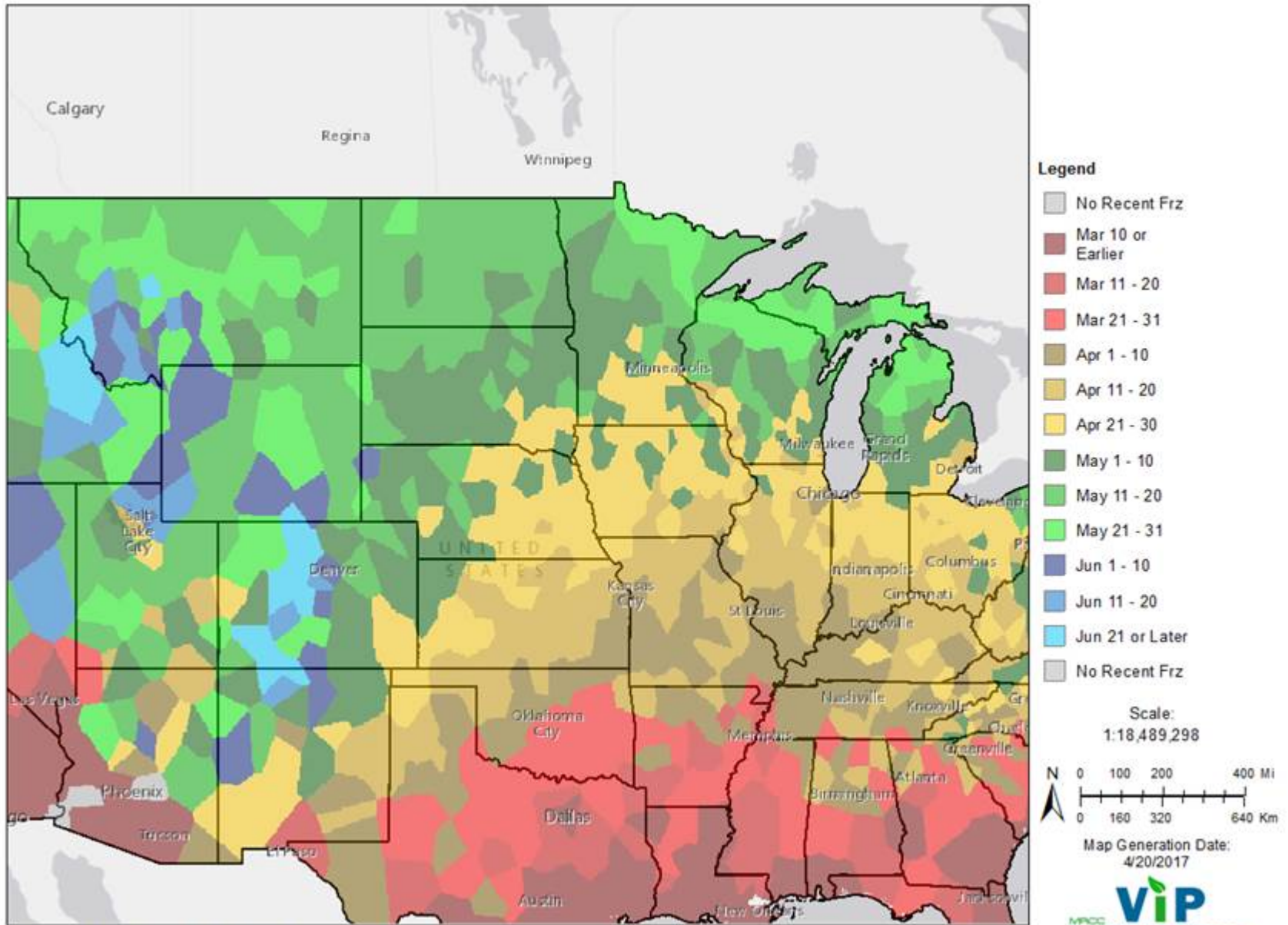


NPN Spring Leaf Index Anom.



<https://www.usanpn.org/files/npn/maps/six-leaf-index-anomaly.png>

Climatology: Median (50th percentile) Last (Spring) 32°F Freeze, based on 1981-2010 data



Outlooks

Wind River Mtns.

Photo: Windy Kelley



Climate Outlooks

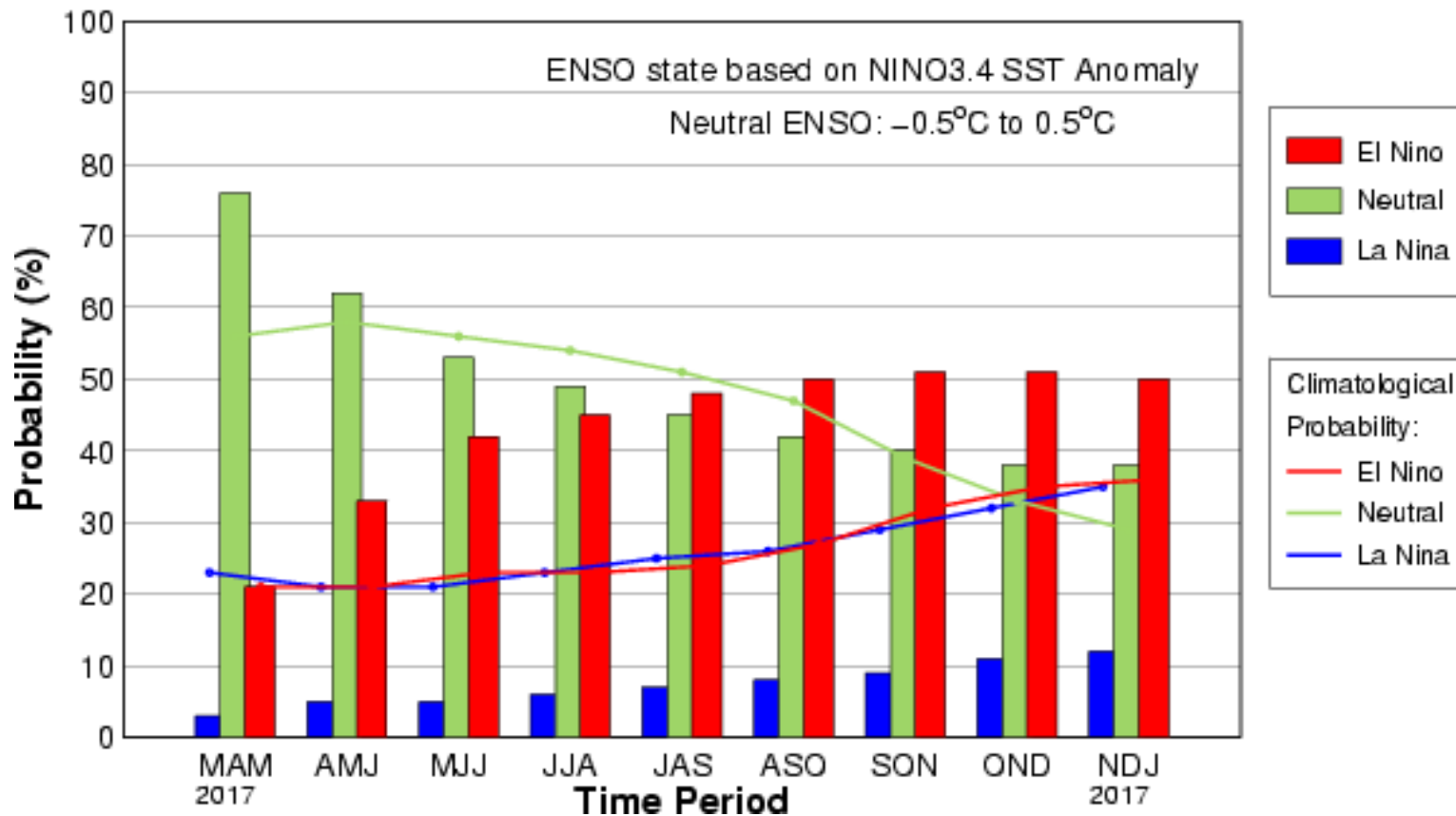
- * **El Niño in waiting.....**
- * **7-day precipitation forecast**
- * **8-14 day outlook**
- * **May**
- * **Summer/growing season**

CPC/IRI Probabilistic ENSO Outlook

Updated: 13 April 2017

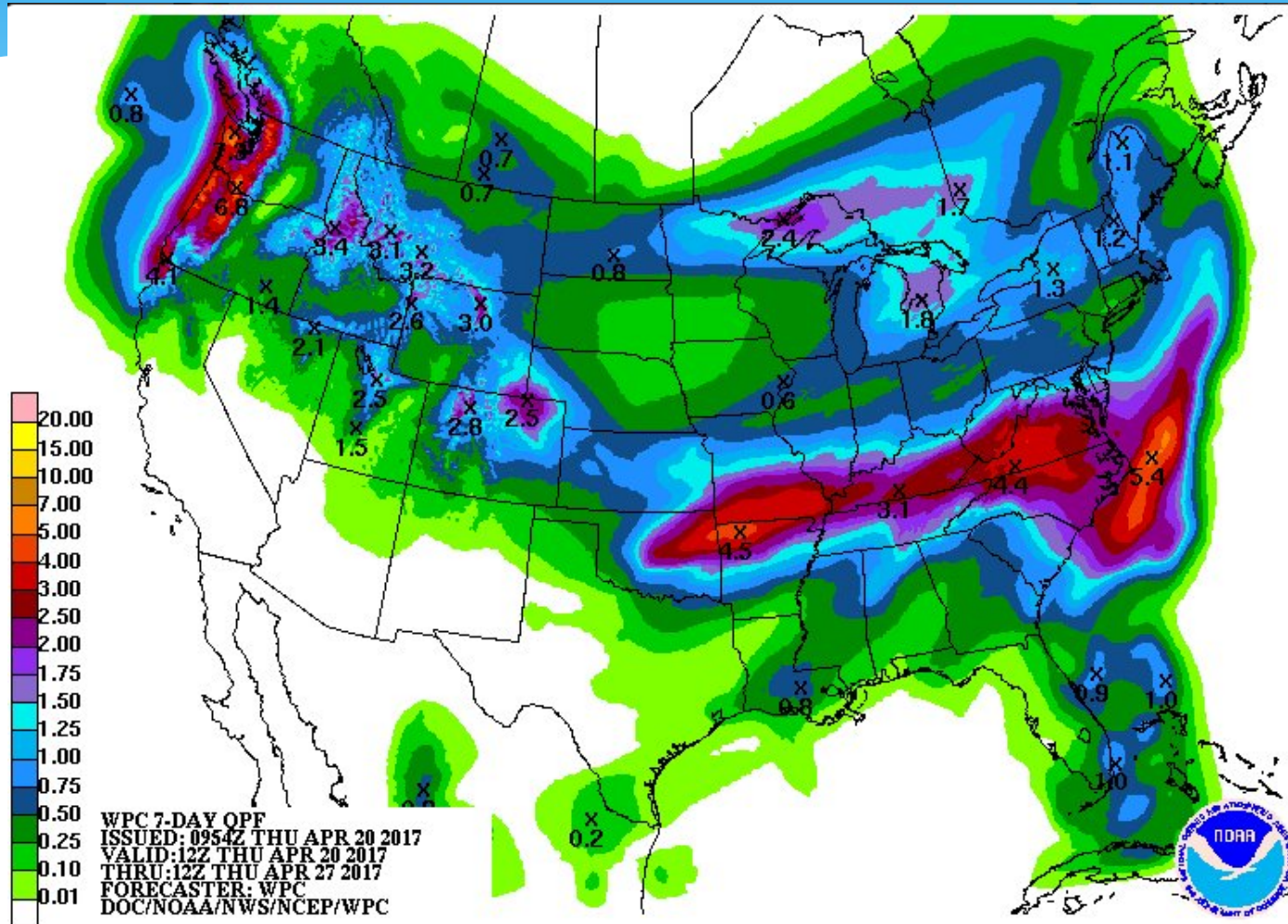
El Niño conditions somewhat likely winter 2017-18.

Early-Apr CPC/IRI Official Probabilistic ENSO Forecast



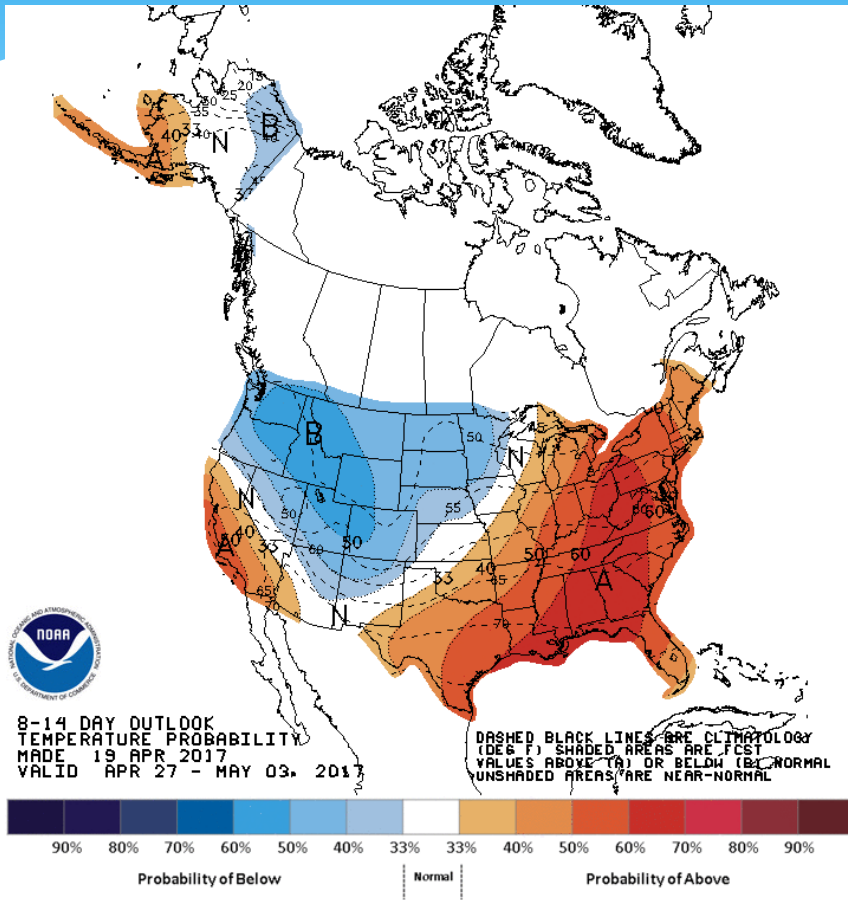
7-day Quantitative Precipitation Forecast

Valid: 7 AM Thu 20 Apr.– 7 AM Thu 27 Apr.

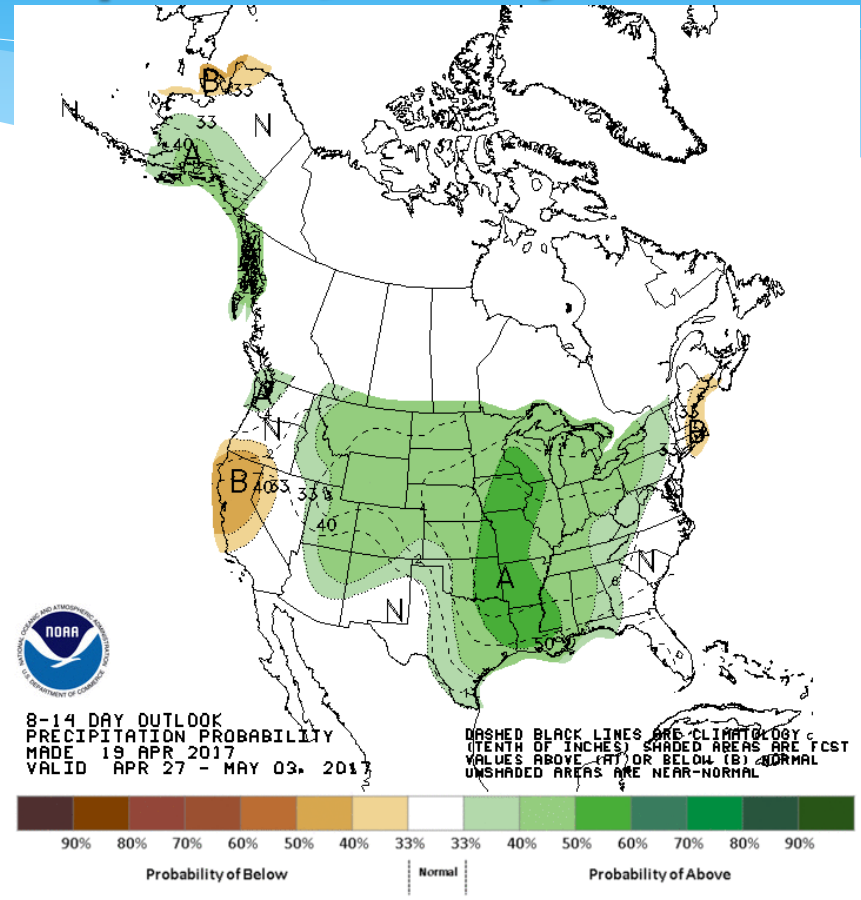


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

Temperature and Precipitation Probabilities for 27 Apr. – 3 May 2017

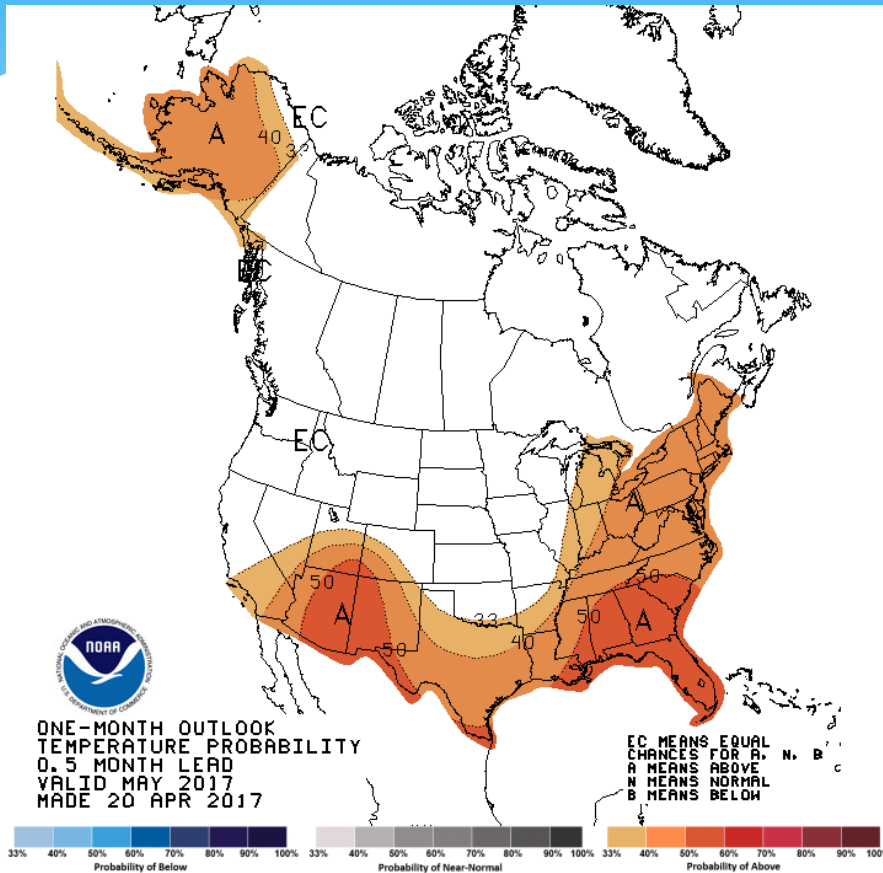


Temperature

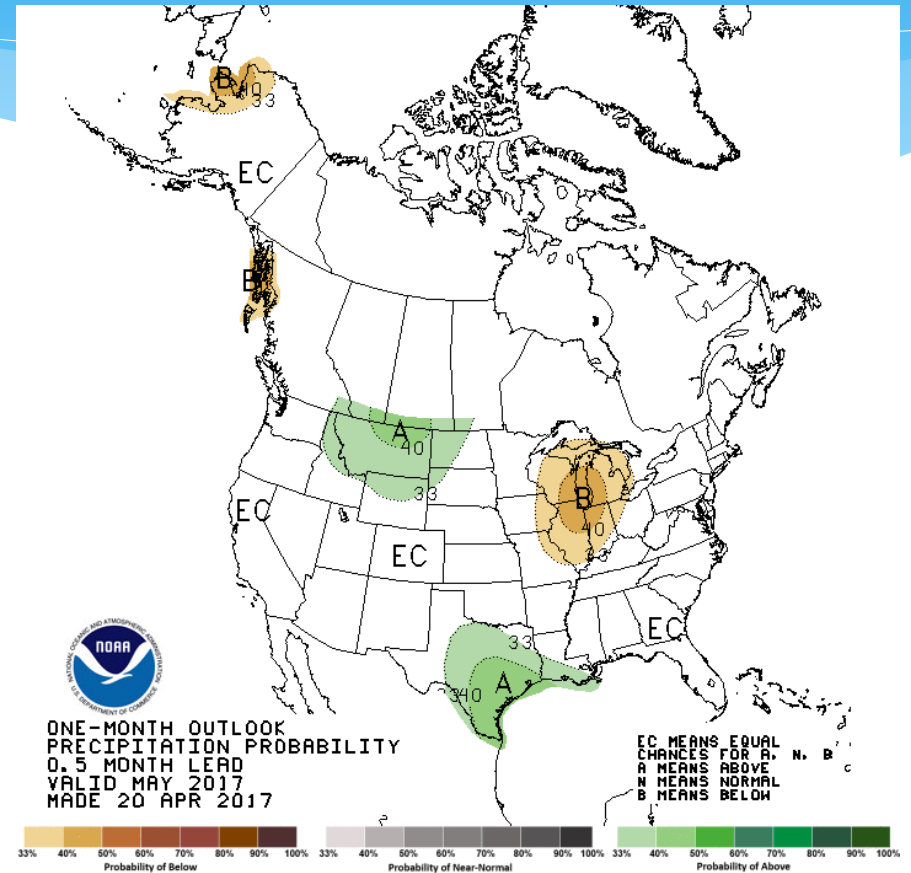


Precipitation

May Temperature and Precipitation Probabilities



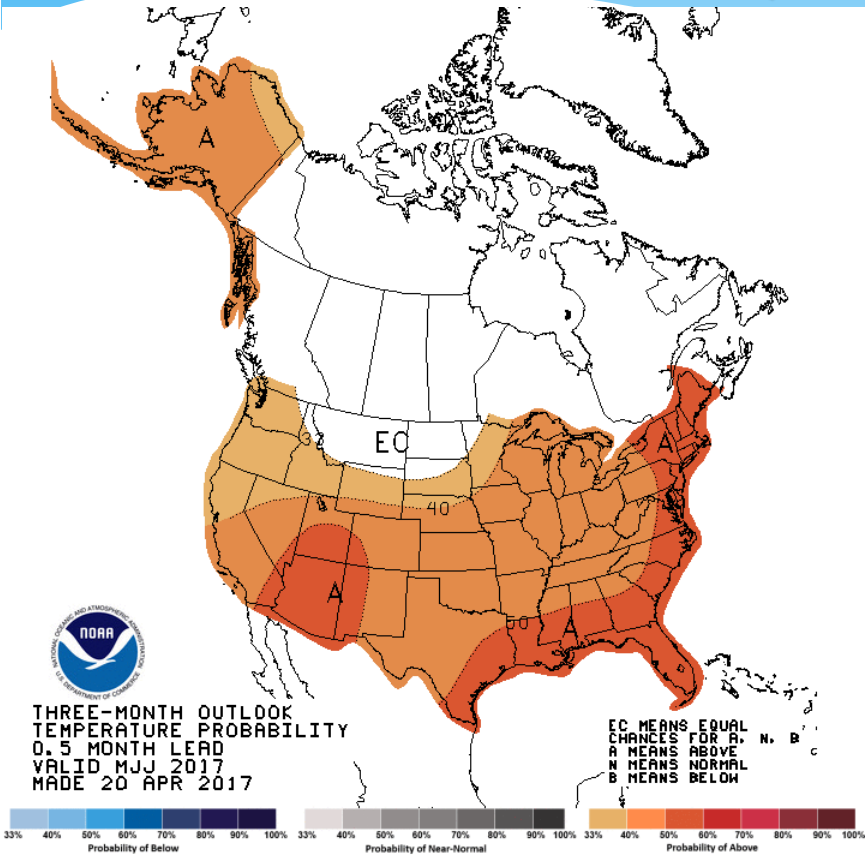
Temperature



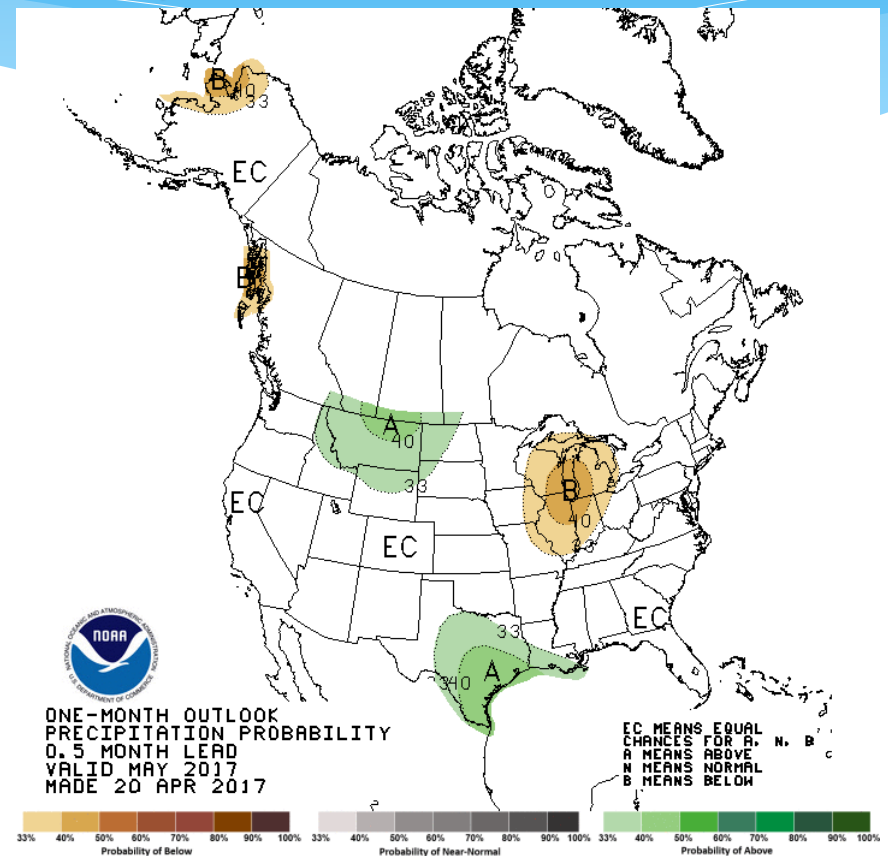
Precipitation

<http://www.cpc.ncep.noaa.gov/products/predictions/30day/>

3 Month Temperature and Precipitation Probabilities (May-July)

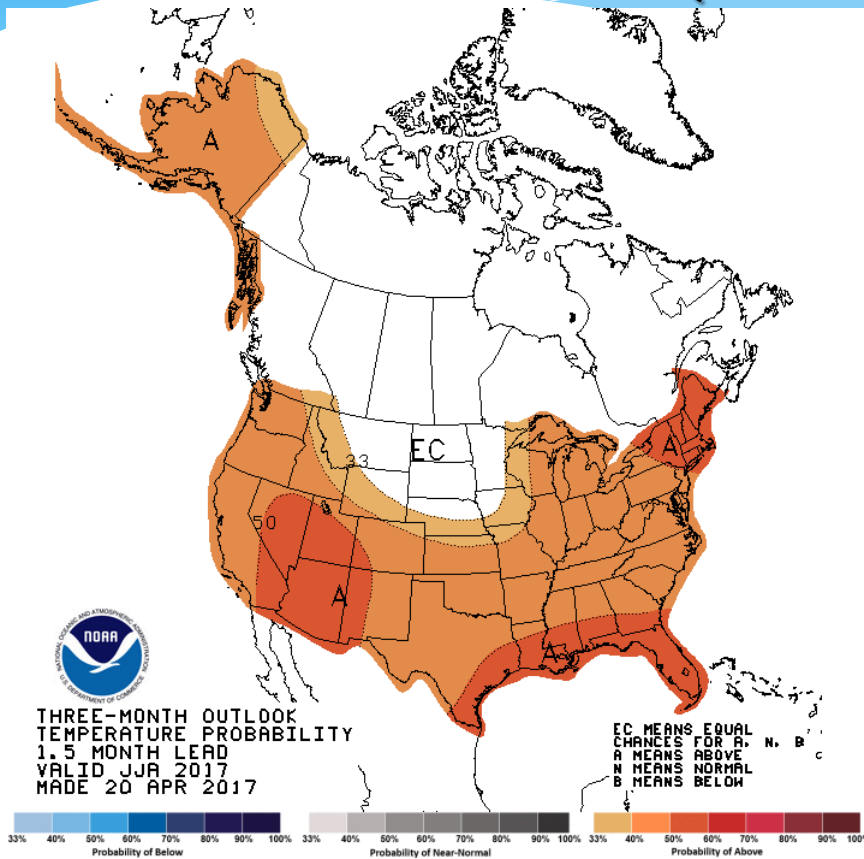


Temperature

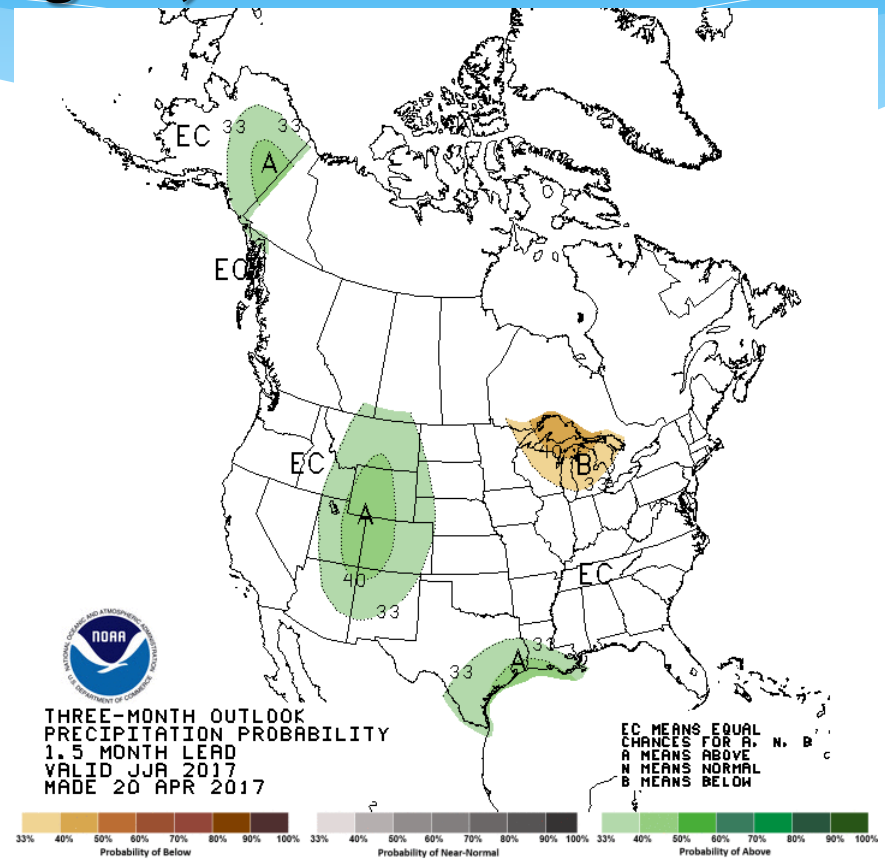


Precipitation

3 Month Temperature and Precipitation Probabilities (June-August)



Temperature

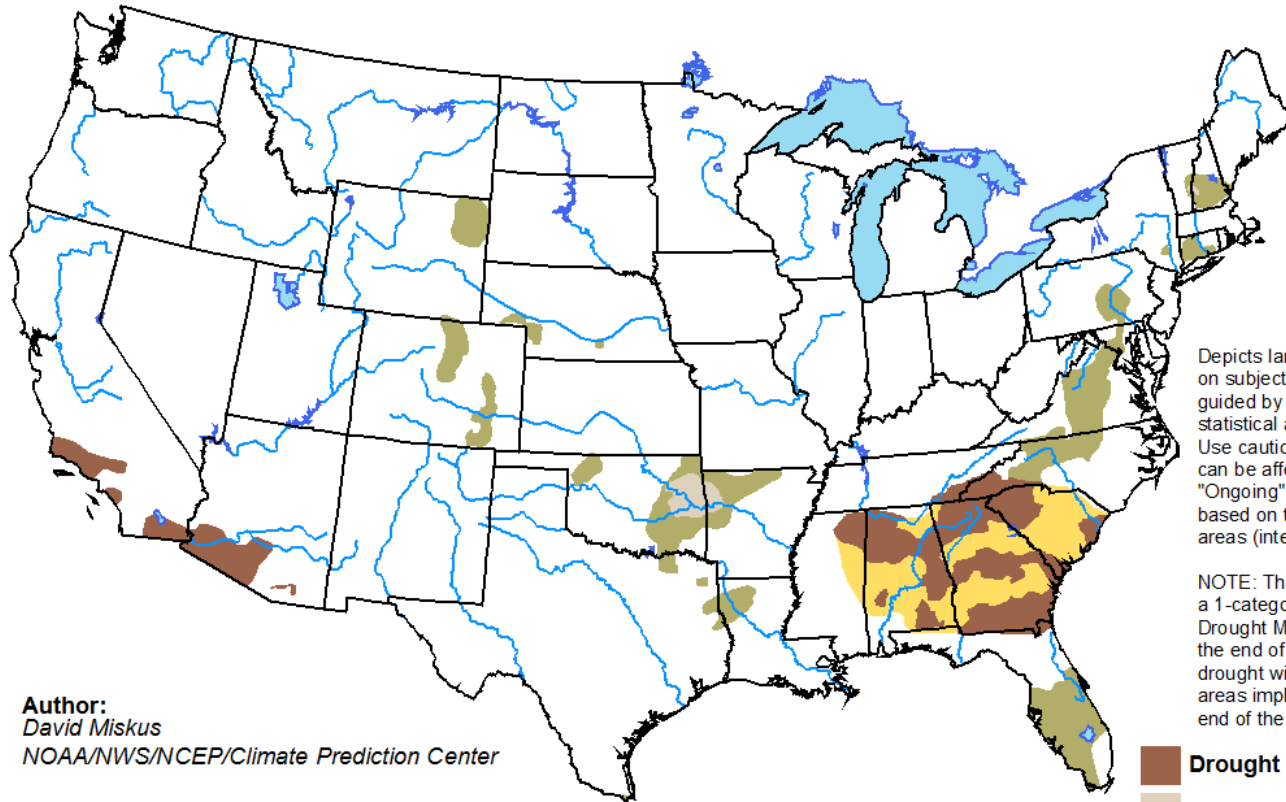


Precipitation

Drought Outlook through 31 July

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





Valid for April 20 - July 31, 2017
Released April 20, 2017

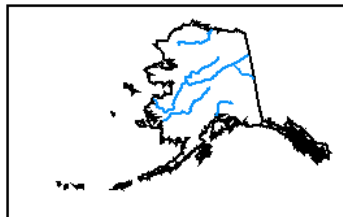


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

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



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

Summary - Conditions

- * Very warm early start to year (2nd nationally) – introduced various impacts
- * Varying wetness – differing issues. Some carry-over from last fall precip, too.
- * Early season warmth avoided most major freeze issues (so far)
- * Did introduce a set of various issues – insects and human health

Summary - Outlooks

- * El Niño – no advisory (yet) – more likely into fall
- * Near-term planting issues still going to be with us – not seeing overall very long term problems (delayed planting)
- * Warmer likely for the whole region in the summer
- * Pockets of dry possible in the east - summer
- * Better chance wetter in the west - summer

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 Climatic Data Center: www.ncdc.noaa.gov
 - Monthly climate reports (U.S. & Global):
www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.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:

- * **Climate:**

- * Dennis Todey: dennis.todey@ars.usda.gov , 515-294-2013

- * Doug Kluck: doug.kluck@noaa.gov, 816-994-3008

- * Mike Timlin: mtimlin@illinois.edu; 217-333-8506

- * Natalie Umphlett: numphlett2@unl.edu ; 402 472-6764

- * Brian Fuchs: bfuchs2@unl.edu 402 472-6775

- * Barb Mayes: barbara.mayes@noaa.gov

- * **Weather:**

- * crhroc@noaa.gov