



North Central Climate and Drought Outlook

16 April 2020



Spring in Minnesota: April 13, 2020
Courtesy: Pete Boulay MNDNR



Pete Boulay, MNDNR State Climatology Office
Peter.Boulay@state.mn.us 612-390-1301

General Information

- **Providing climate services to the Central Region**
 - Collaboration Activity Between:
 - State Climatologists/American Association of State Climatologists
 - NOAA NCEI/NWS/OAR/NIDIS
 - USDA Climate Hubs
 - Midwest and High Plains Regional Climate Centers
 - National Drought Mitigation Center
- **Next Regular Climate/Drought Outlook Webinar**
 - May 21, 2020 (1 PM CST): Presenter: Dennis Todey
- **Access to Future Climate Webinars and Information**
- <http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>
- **Recordings of Past Webinars**
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu/webinars.php>
- **Open for questions at the end**

Presentation Outline

- Recent Conditions
 - Temperature and precipitation ranks
 - 30-day temperature and precipitation
 - Modeled soil moisture
 - Stream flow
 - Drought
 - Snow
- Impacts
- Outlooks
 - El Niño-Southern Oscillation
 - Short-term
 - Spring and summer season



Ice out on Green Lake: April 9, 2020
Spicer, MN
Courtesy: Matt Erickson



The Wait.

April 7, 2020

New Richmond, Wisconsin

Courtesy: Ryan Overson

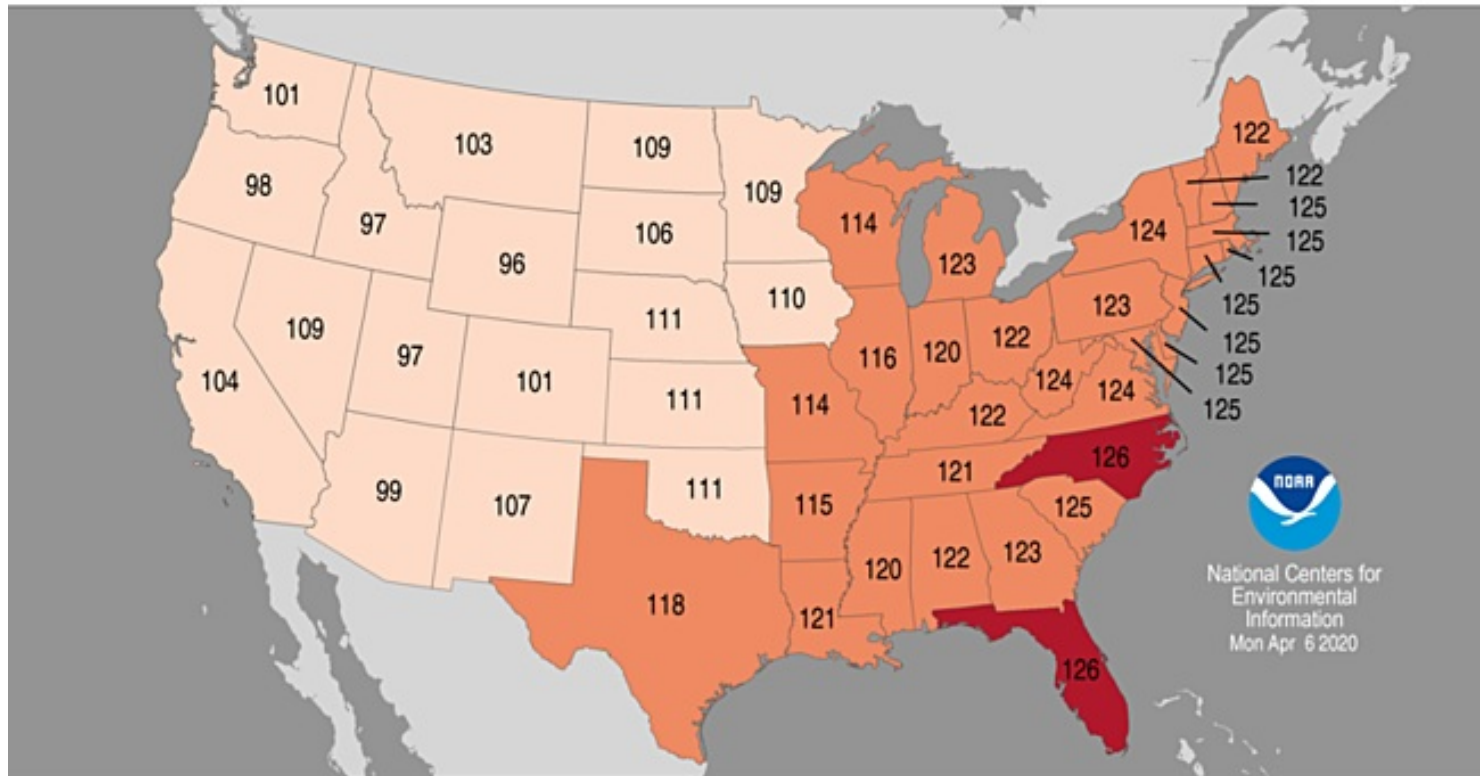
RECENT CONDITIONS

2020 January-March Temperature Ranks

Statewide Average Temperature Ranks

January-March 2020

Period: 1895-2020



National Centers for
Environmental
Information
Mon Apr 6 2020

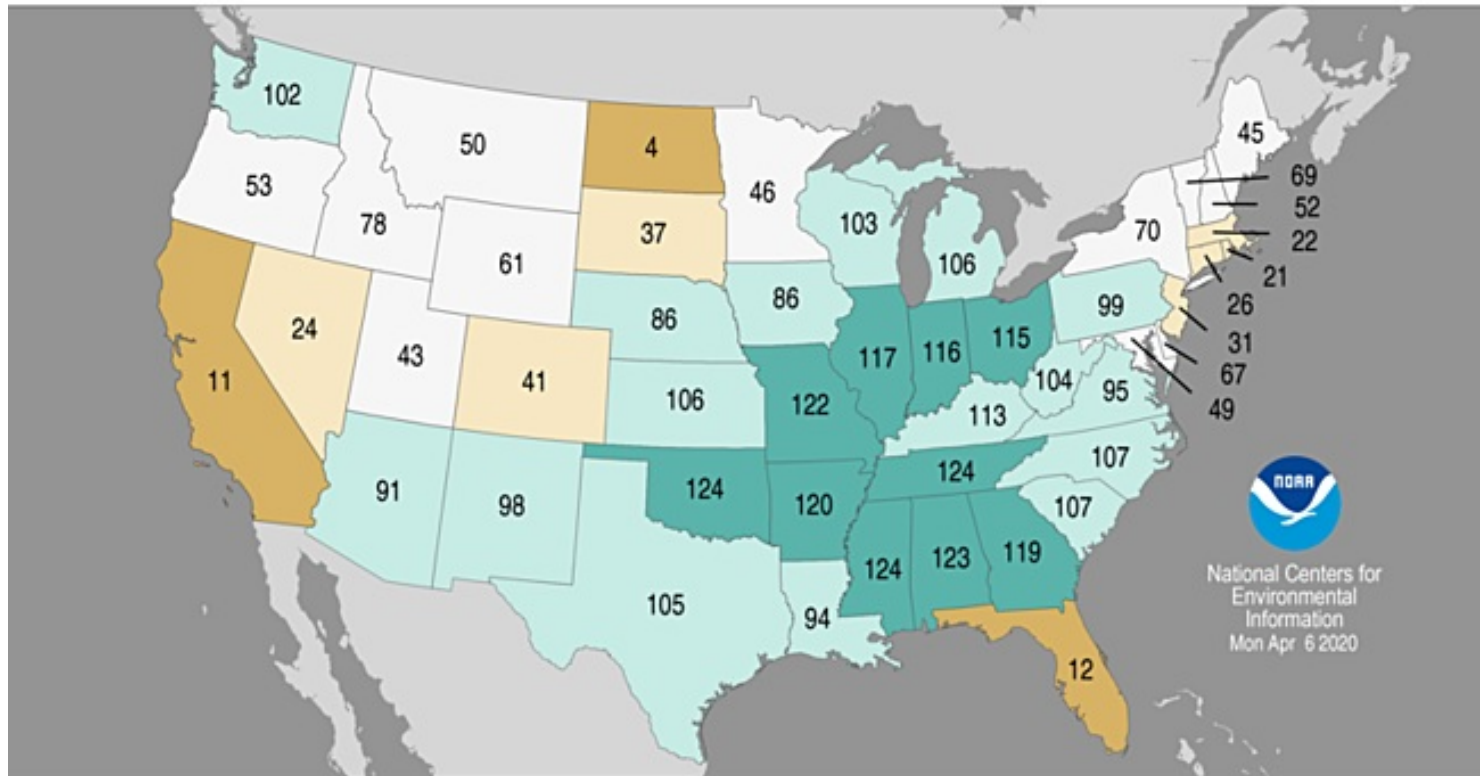


2020 January-March Precipitation Ranks

Statewide Precipitation Ranks

January-March 2020

Period: 1895-2020

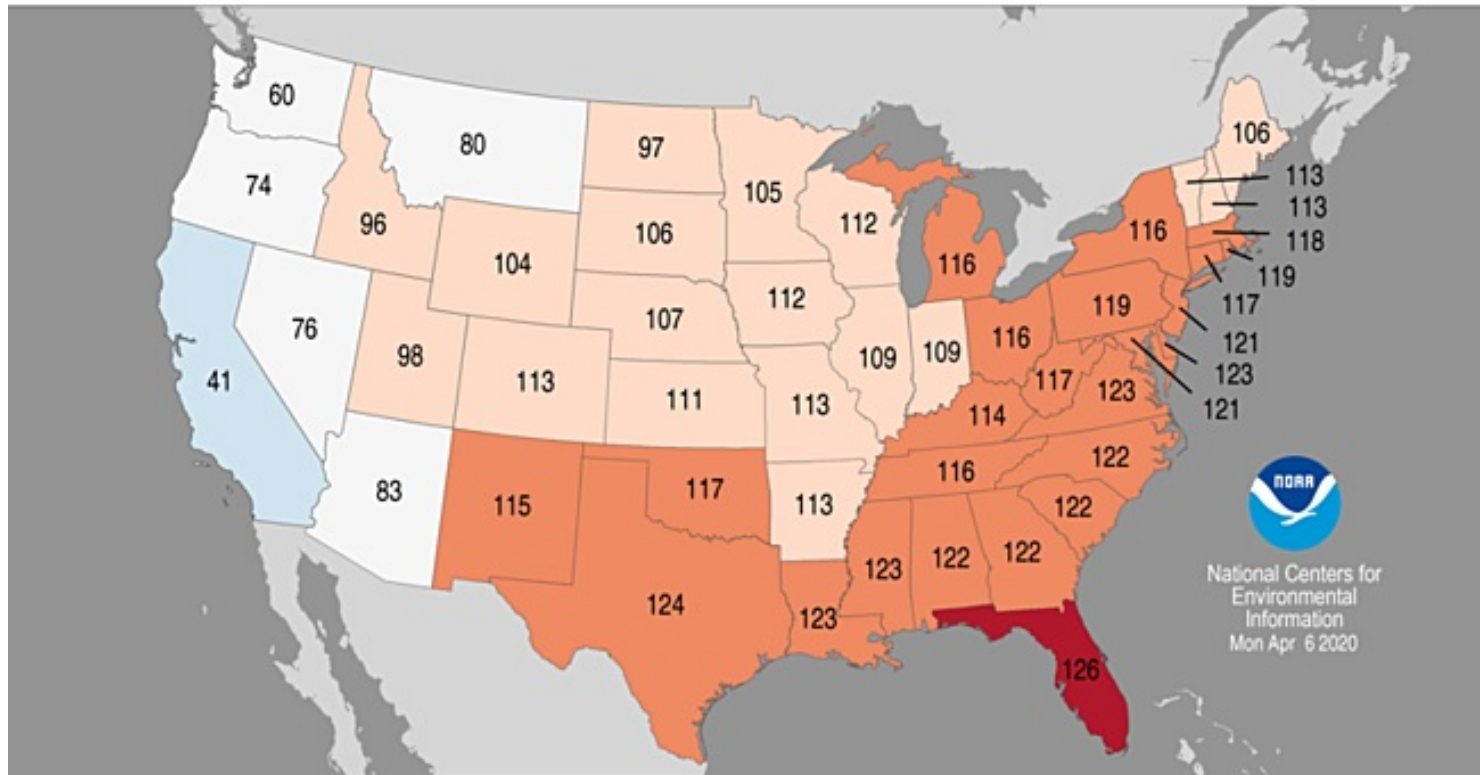


March Temperature Ranks

Statewide Average Temperature Ranks

March 2020

Period: 1895-2020

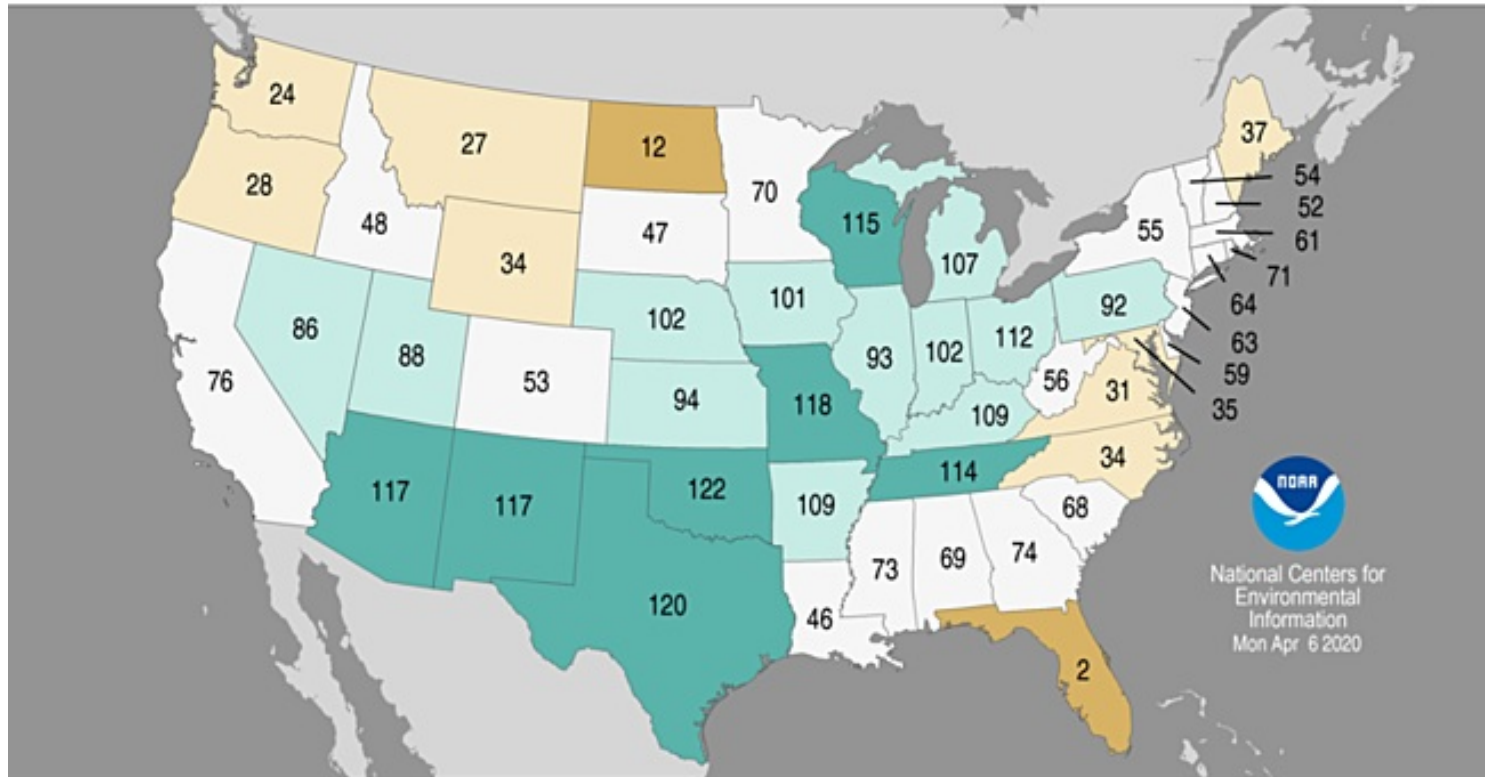


March Precipitation Ranks

Statewide Precipitation Ranks

March 2020

Period: 1895–2020

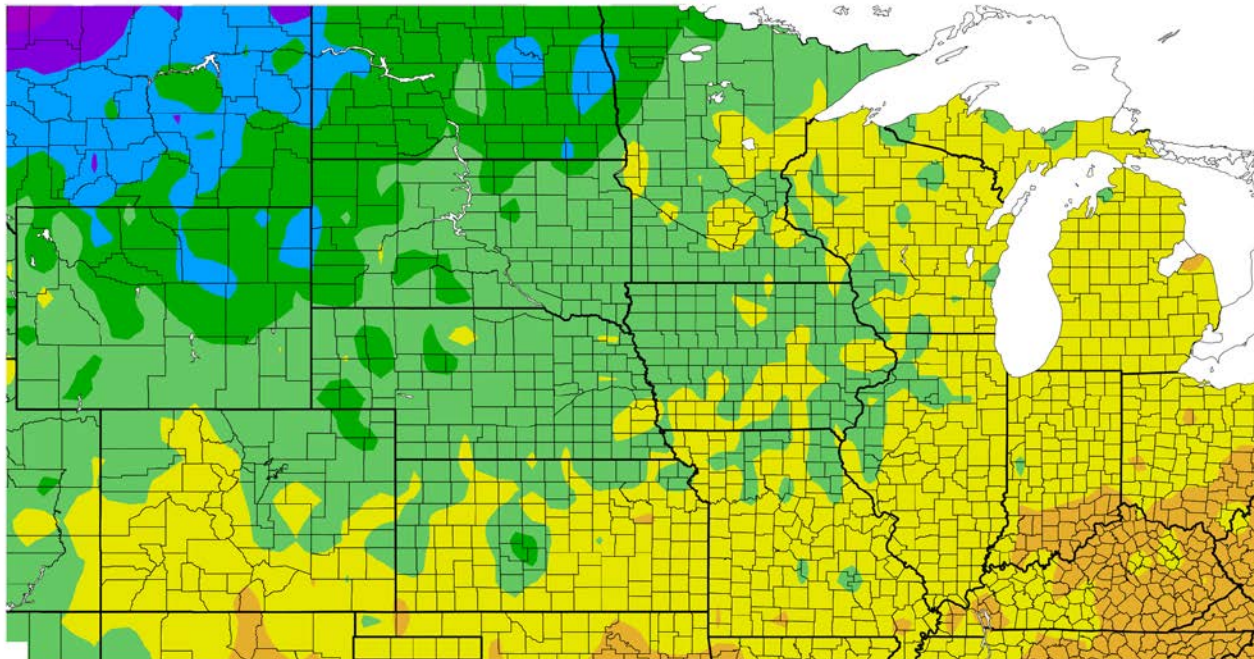


National Centers for
Environmental
Information
Mon Apr 6 2020



Winter vs Spring

Departure from Normal Temperature (F)
3/16/2020 – 4/14/2020



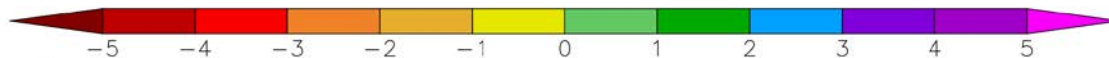
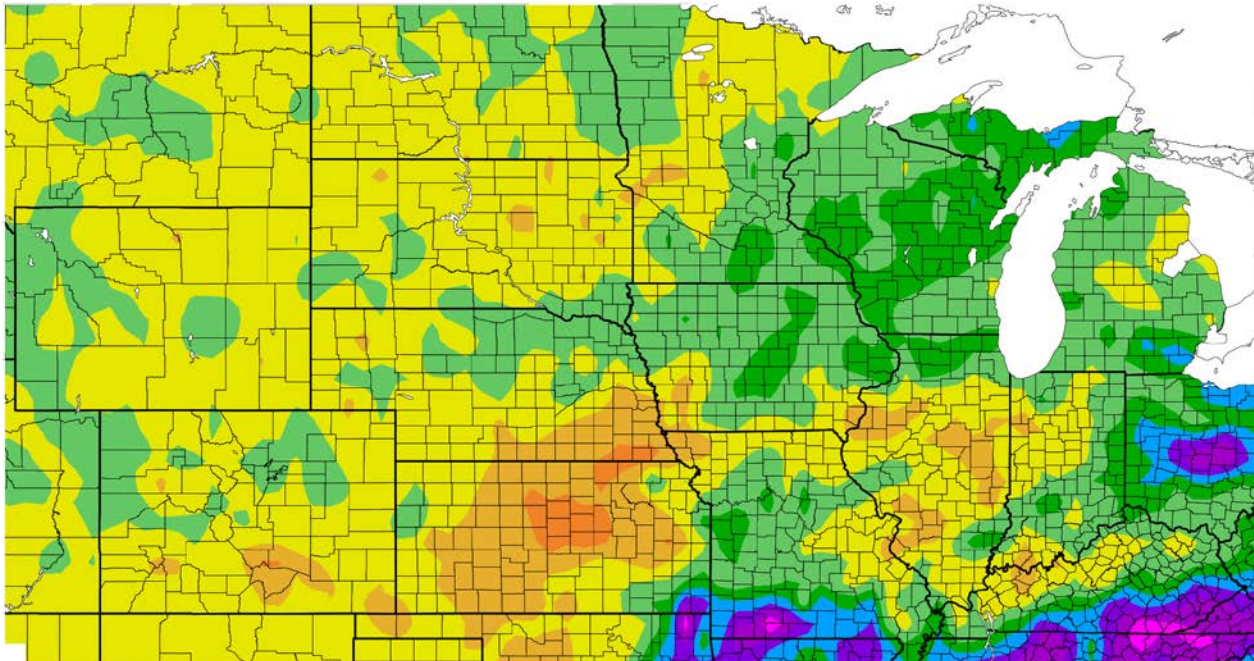
Generated 4/15/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Winter vs Spring

Departure from Normal Precipitation (in)
3/16/2020 – 4/14/2020



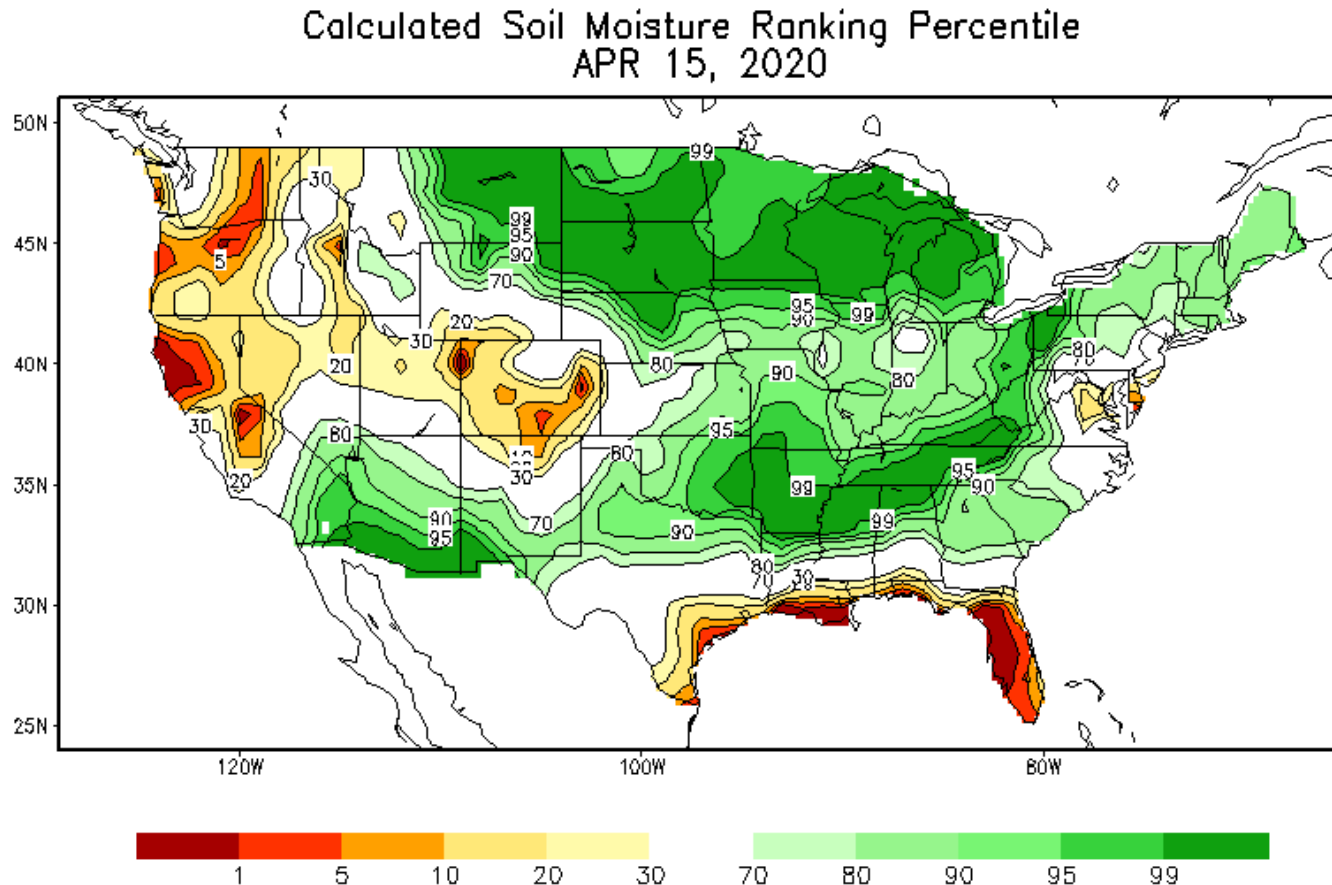
Generated 4/15/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Calculated Soil Moisture Percentiles

(note some surface drying. Deeper soils wet.)



This product was prepared by the

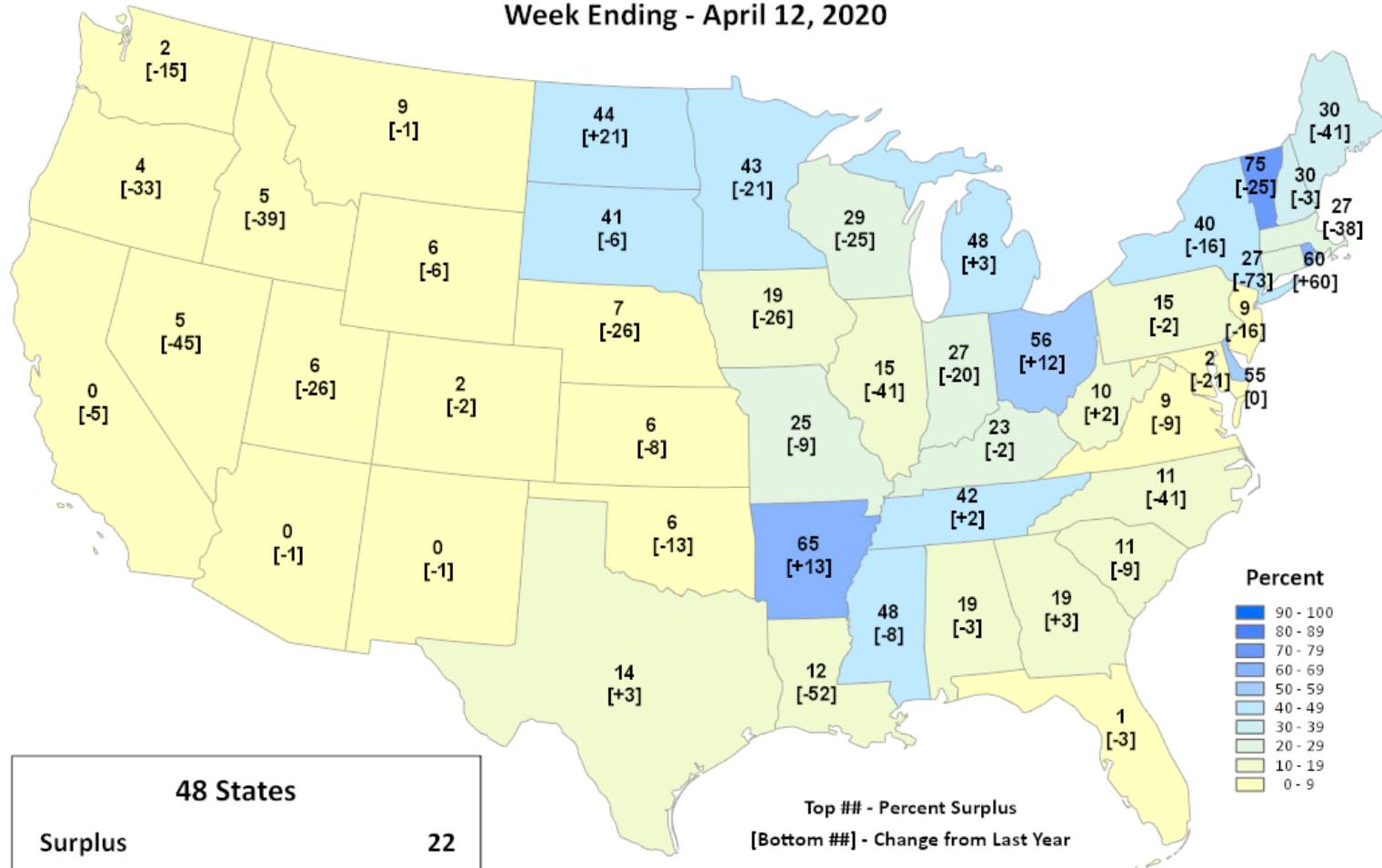
 USDA Office of the Chief Economist (OCE)

 World Agricultural Outlook Board (WAOB)

Topsoil Moisture

Percent Surplus

Week Ending - April 12, 2020



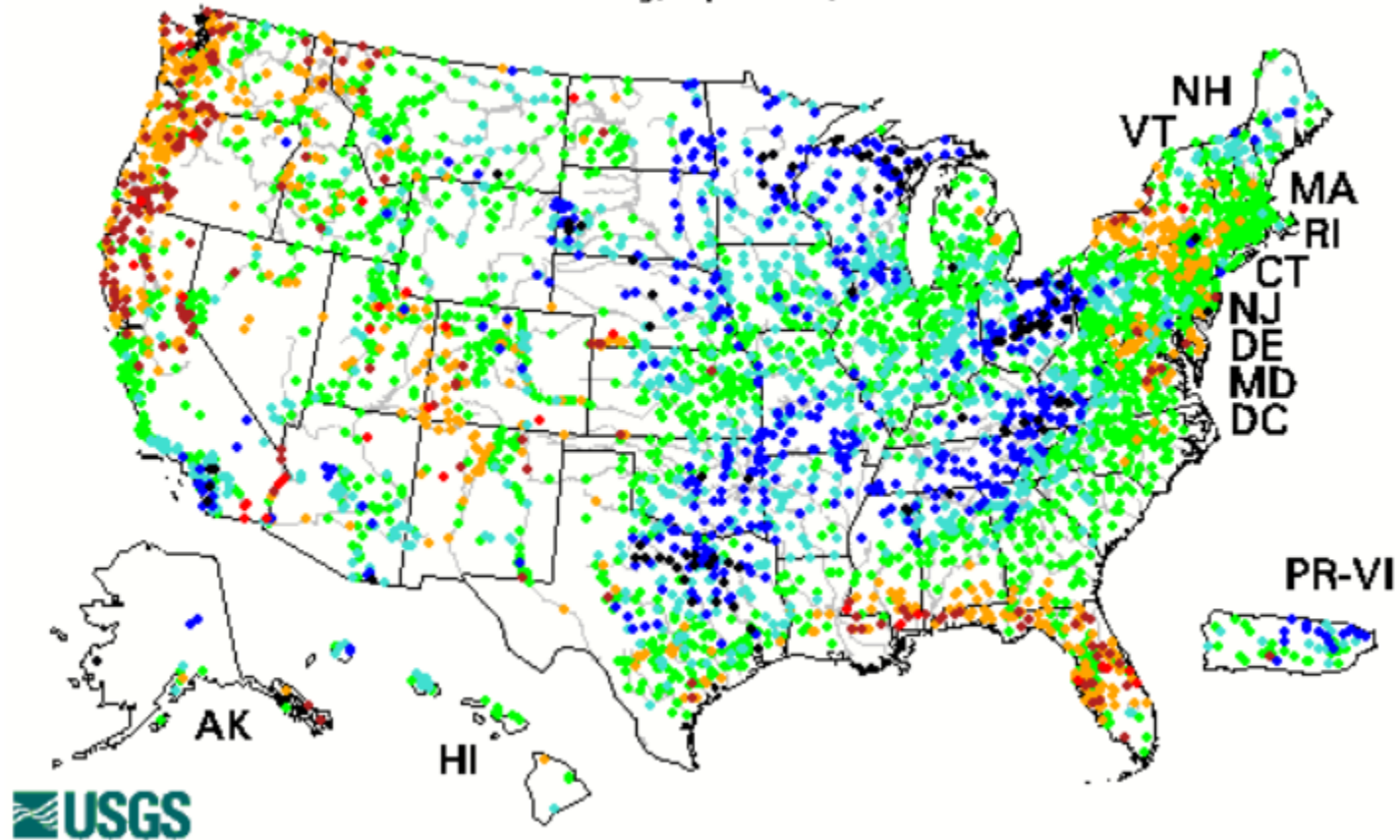
48 States	
Surplus	22
Change from Last Year	-11

Top ## - Percent Surplus
 [Bottom ##] - Change from Last Year

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

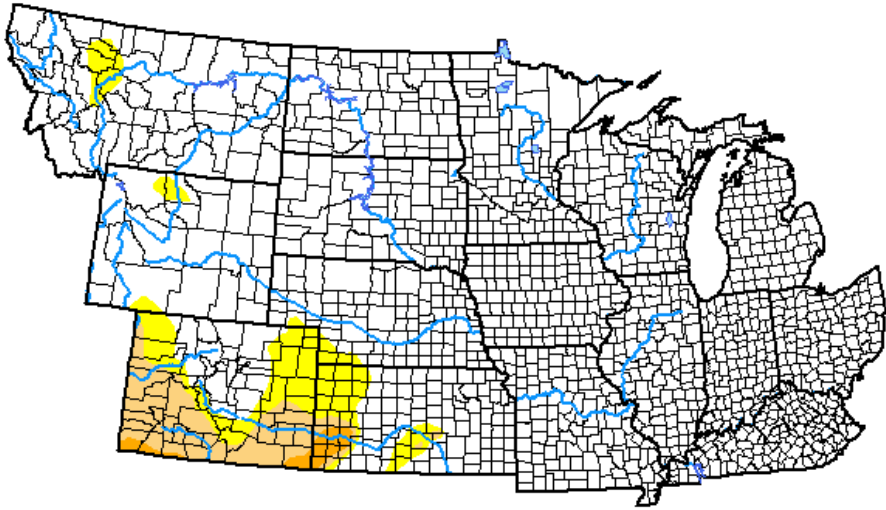
28-Day Average Streamflow

Wednesday, April 15, 2020



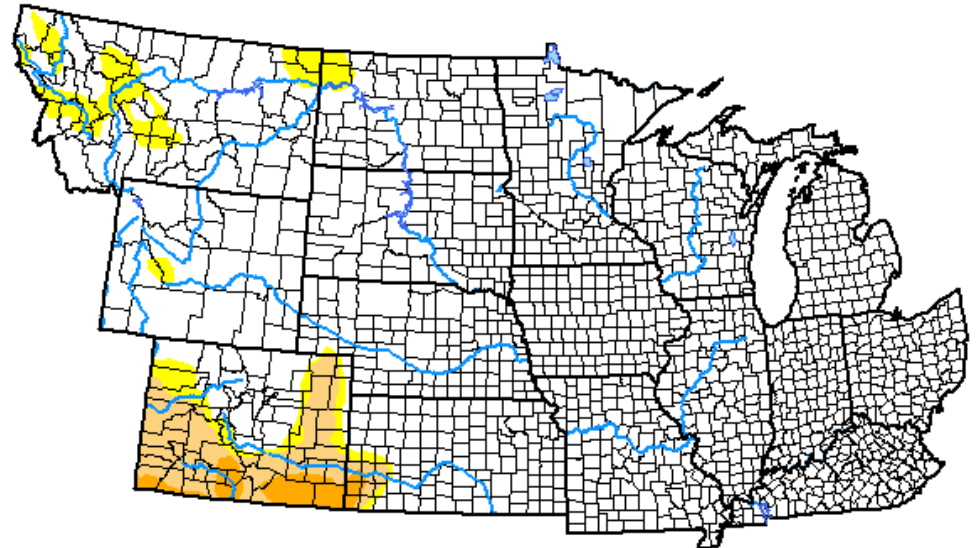
<https://waterwatch.usgs.gov/index.php?r=us&m=pa28d&w=map>

US Drought Monitor... Past Two Months



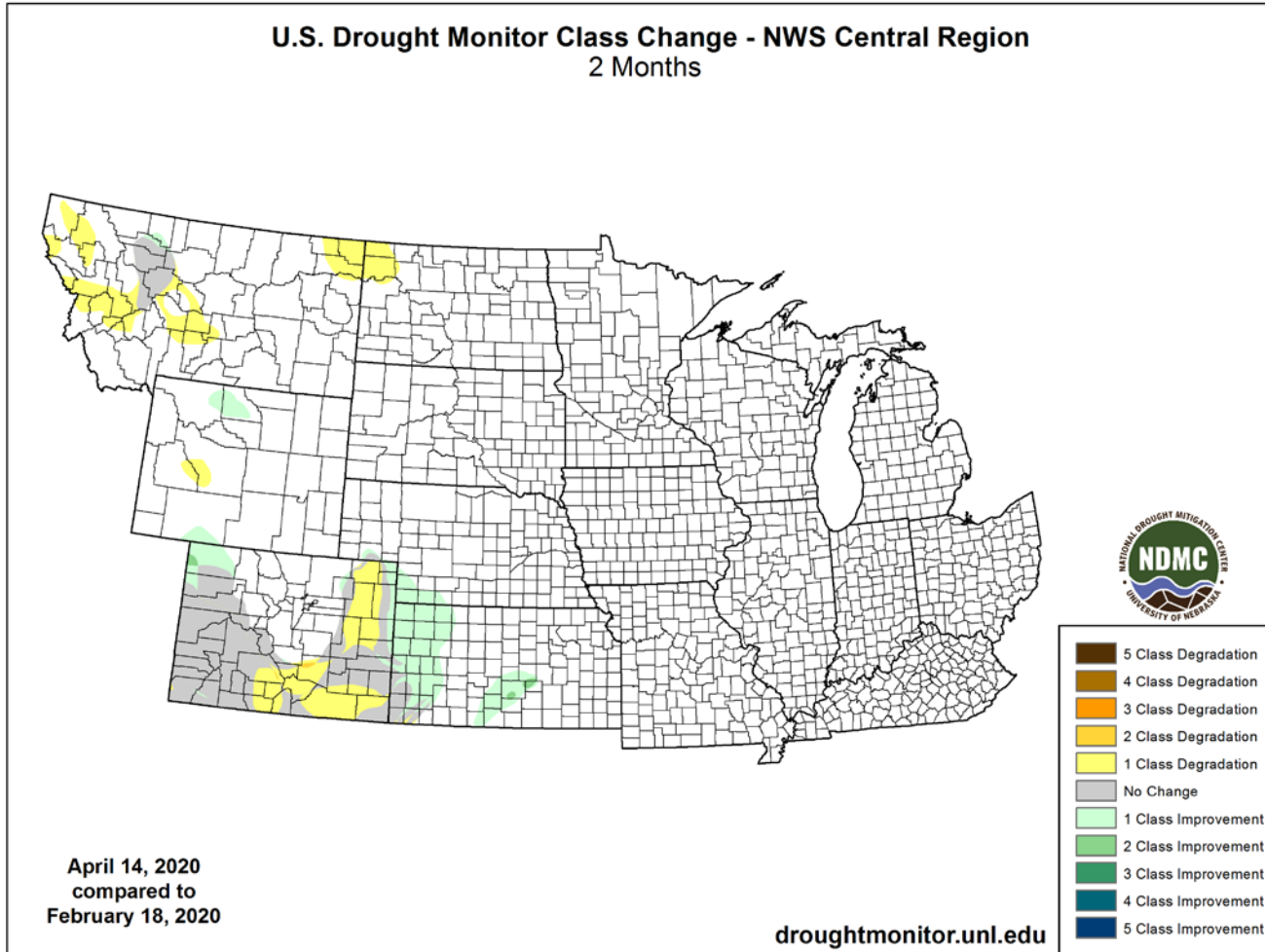
February 18, 2020

April 14, 2020

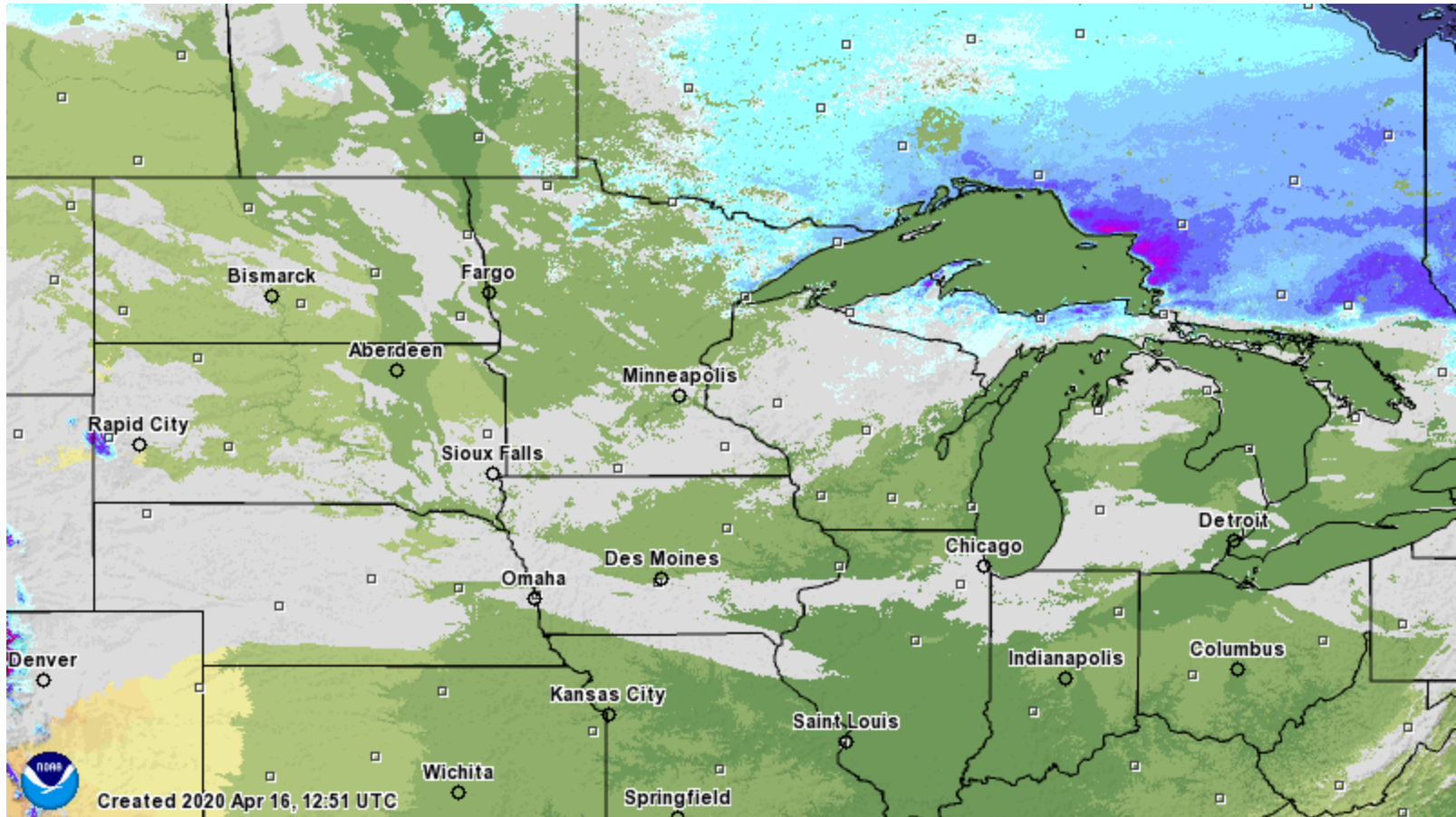


<http://droughtmonitor.unl.edu>

US Drought Monitor... Past Two Months



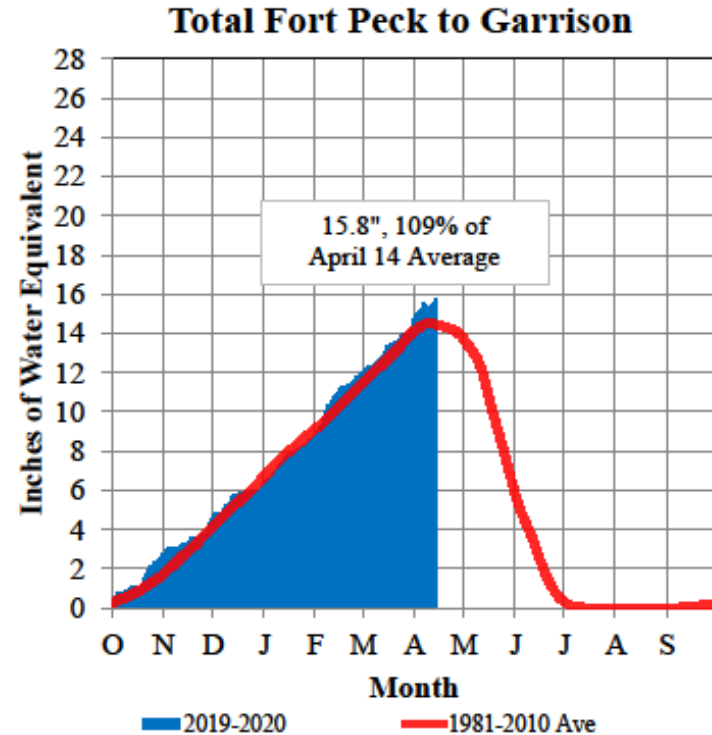
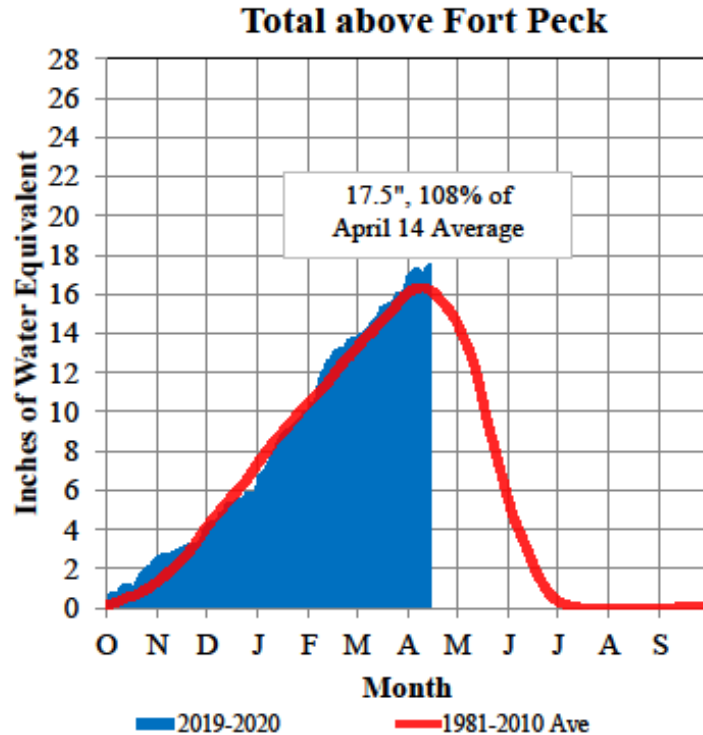
Snow Depth from National Operational Hydrologic Remote Sensing Center



<https://www.nohrsc.noaa.gov/nsa/>

Missouri River Basin – Mountain Snowpack Water Content 2019-2020

14-Apr-2020

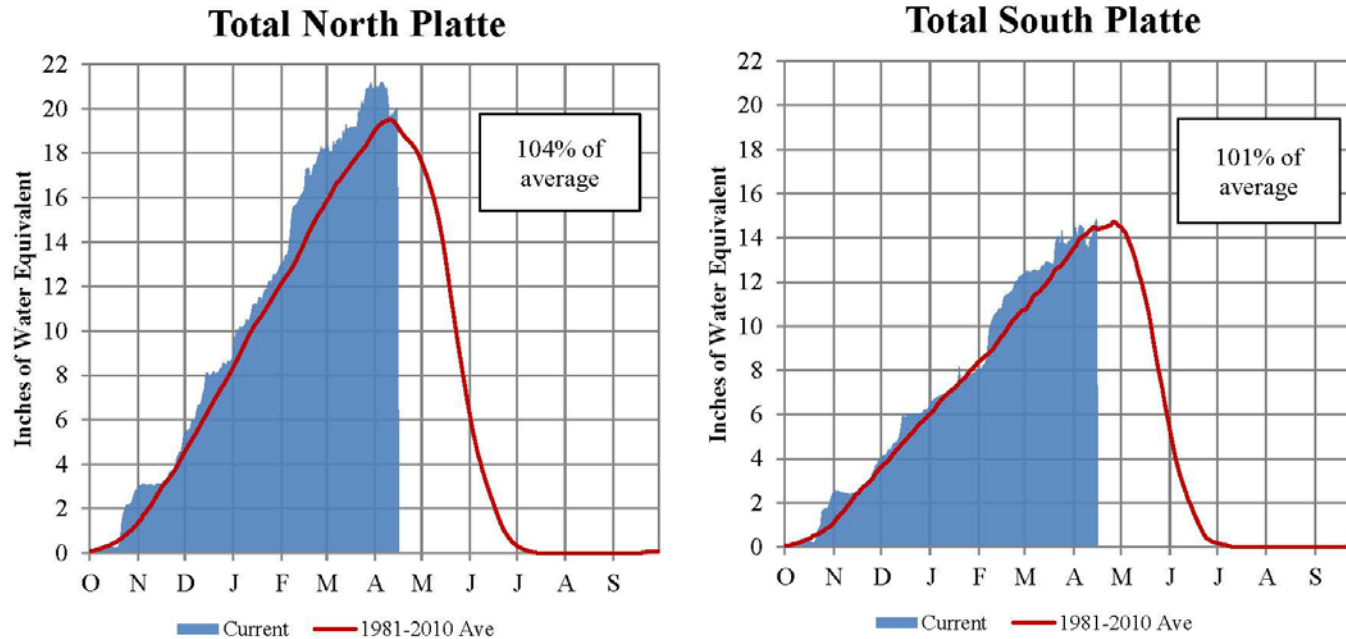


The Missouri River Basin mountain snowpack normally peaks near April 15.

Platte River Basin - Mountain Snowpack Water Content

Water Year 2019-2020

April 15, 2020



The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of April 14, 2020, the mountain snowpack SWE in the "Total North Platte" reach is currently 20.0", 104% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 14.7", 101% of average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

High Water Levels in the Great Lakes



Egg Harbor Beach: Door County WI

August 3, 2019

Courtesy: Pete Boulay

High Water Levels in the Great Lakes

	SUPERIOR	MICH-HURON	ST. CLAIR	ERIE	ONTARIO
Forecasted Water Level for Apr 10, 2020 (feet)	602.40	581.69	577.20	574.41	246.98
Chart Datum (feet)	601.10	577.50	572.30	569.20	243.30
Difference from chart datum (inches)	+16	+50	+59	+63	+44
Difference from average water level for Mar 10, 2020 (inches*)	+2	+4	+5	+6	+5
Difference from average water level for Apr 10, 2019 (inches*)	+1	+15	+12	+11	+9
Difference from long-term monthly average of Apr (inches)	+14	+36	+35	+33	+16
Difference from highest monthly average of record for Apr (inches)	-3	+3	+4	+4	-15
Year of highest recorded monthly mean	1986	1986	1986	1985	1973
Difference from lowest monthly average of record for Apr (inches)	+35	+67	+63	+67	+49
Year of lowest recorded monthly mean	1926	1964	1926	1934	1935
Projected net change in levels by May 10, 2020 (inches)	+3	+4	+3	+2	+11

<https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Weekly-Great-Lakes-Water-Levels/>

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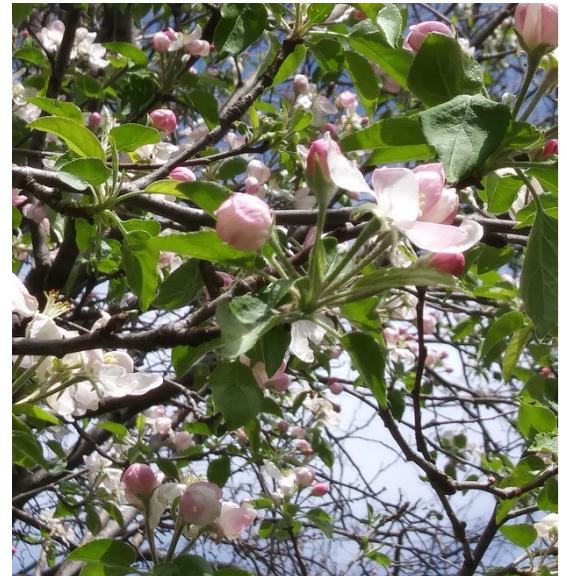
State Impacts

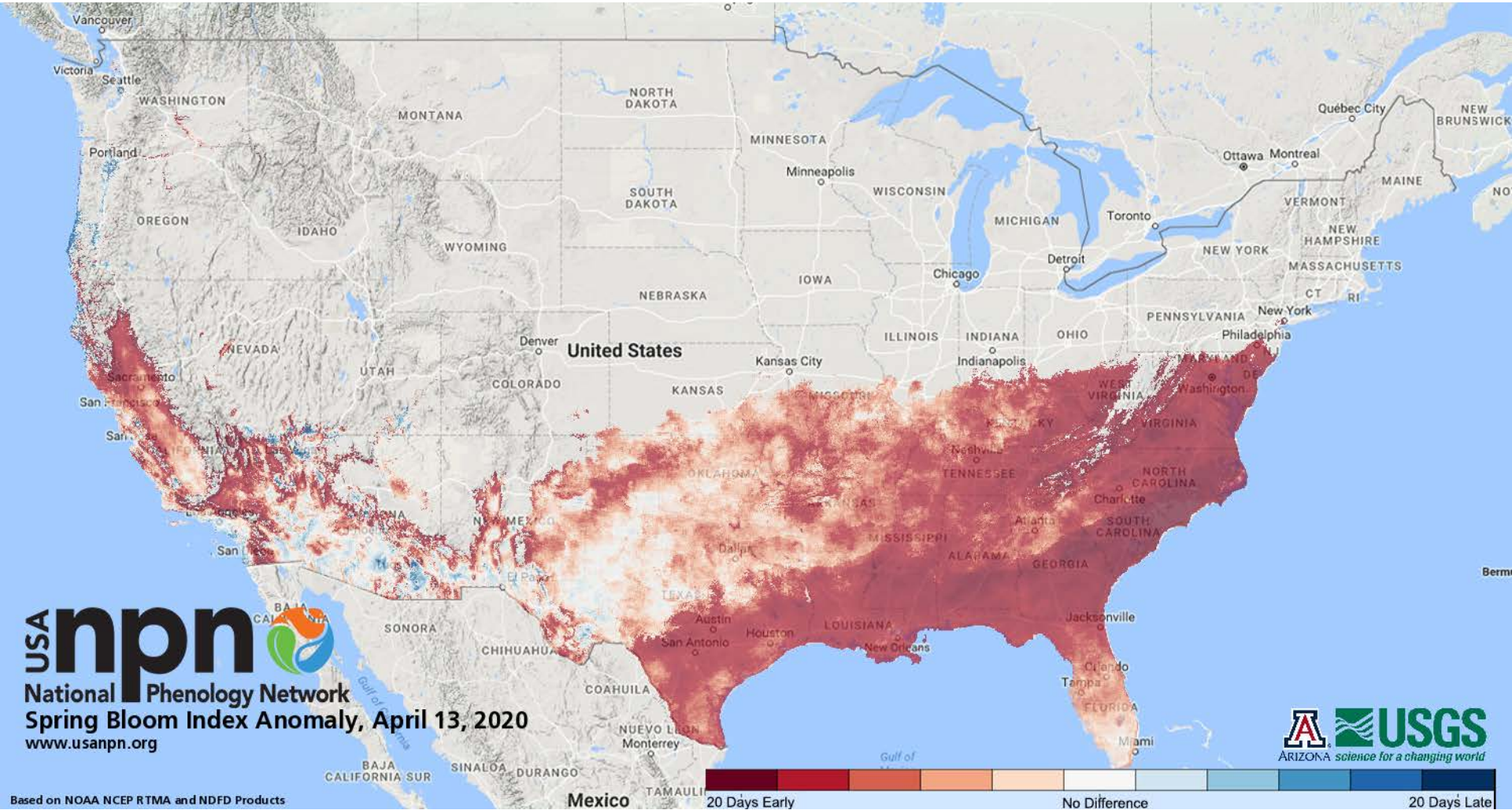


Springtime in Indiana
-*Courtesy Hans Schmitz*

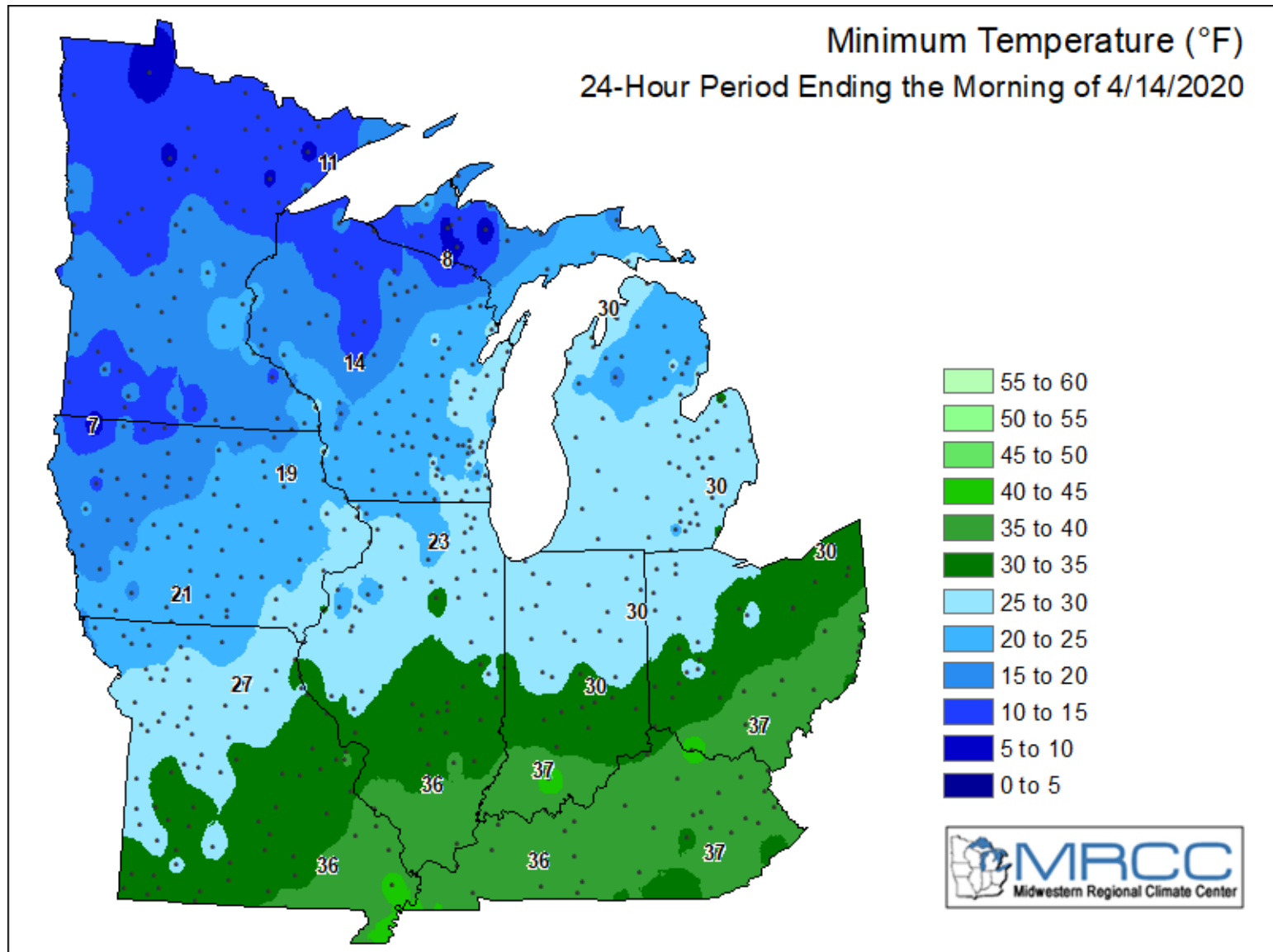
- Cold Mid April
 - Below Freezing minimums on April 13-16.
 - Possible damage to fruit trees (MI,NE,KS,IN).
 - Alfalfa/wheat impacts (NE)
 - Lake ice out progress halted (MN)

Apple Buds in Kansas City, MO
Courtesy: Julie Kluck



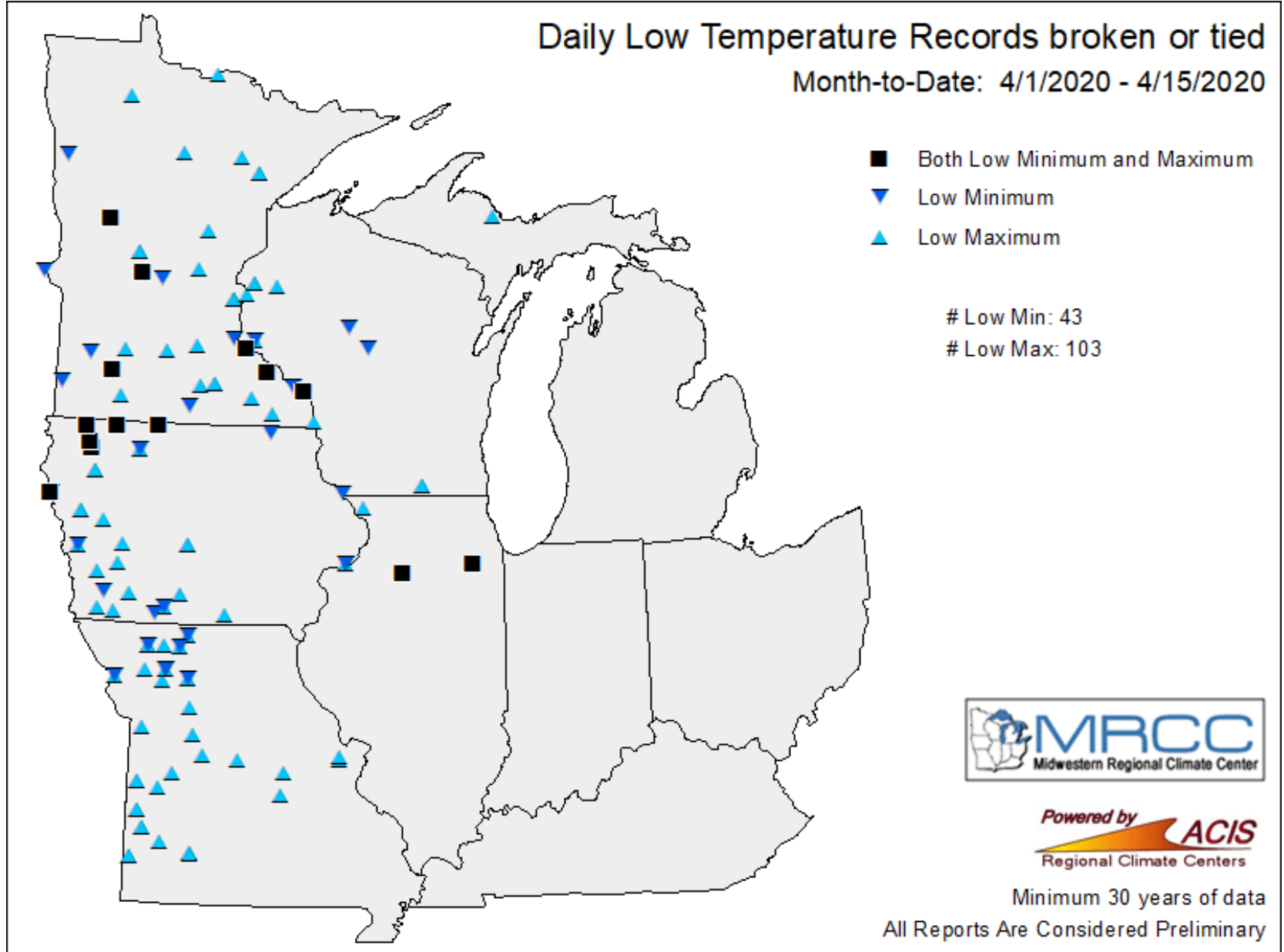


Courtesy: National Phenology Network



Courtesy: Midwest Regional Climate Center

Daily Low Temperature Records Broken or Tied

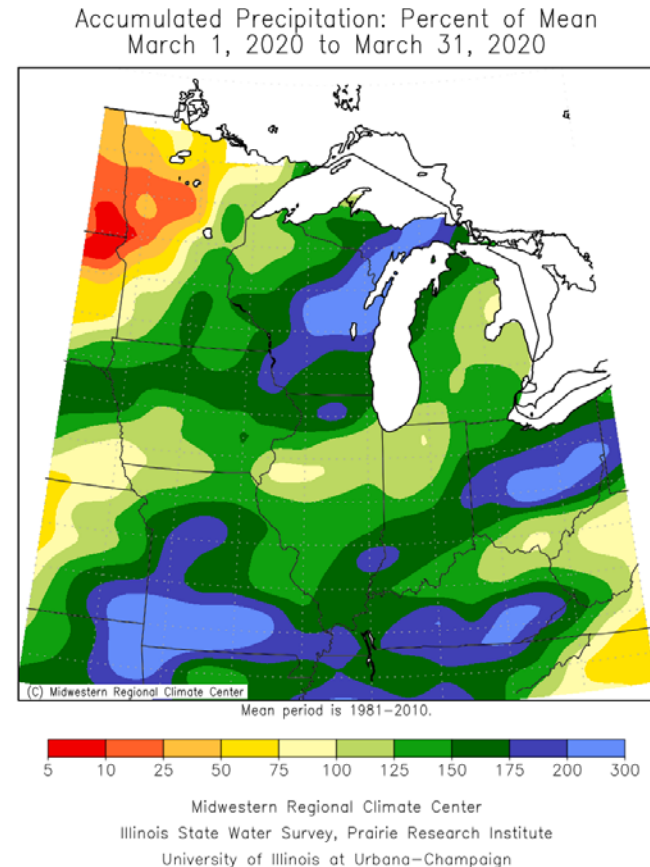


- Kentucky and Ohio
 - Mid 20's for lows. 5-8 hours below freezing.
 - Concerns about specialty crops, alfalfa.
 - Last few months wet.
 - Lake Erie shore flooding.

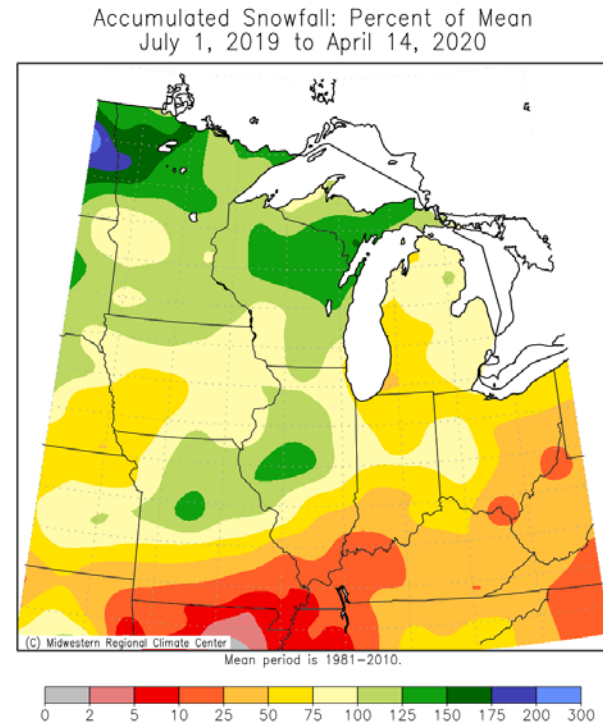


Clinton County: April 15, 2020

Courtesy: Stu Foster and Kentucky Mesonet



- Michigan
 - Ample seasonal snow north, less in south.
 - Large hail on April 8.
 - Recent dry weather east and south assisted fieldwork and planting of sugar beets and oats.



- Illinois
 - Snowy and icy roads causing problems.
 - Drying out in western and central Illinois. No issues yet, but watching over next two weeks.

60-car crash on Kennedy
Expressway: April 15, 2020
Courtesy: Chicago FD



- Iowa and Missouri
 - Cold may have damaged tree fruits (stone fruits, apples) both Iowa and Missouri.
 - Grapes in Iowa not so bad.
 - Some planting begun, soils turned cold and now there is slowing progress.

- Minnesota
 - March was mild, except northwest.
 - Dry northwest in March, wet southeast.
 - Lake ice out progress was a week ahead of the median and two weeks ahead of 2019.
 - April began mild, but turned cold and snowy.

Sunset: April 8, 2020
Courtesy: Pete Boulay



- Kansas and Nebraska
 - Record cold with lows 20's. Freeze warnings.
 - Busy field work until cold event, now behind.
 - Drying out, but still decent soil moisture NE.
 - Calving season went well.
 - Quite foggy at times in March.

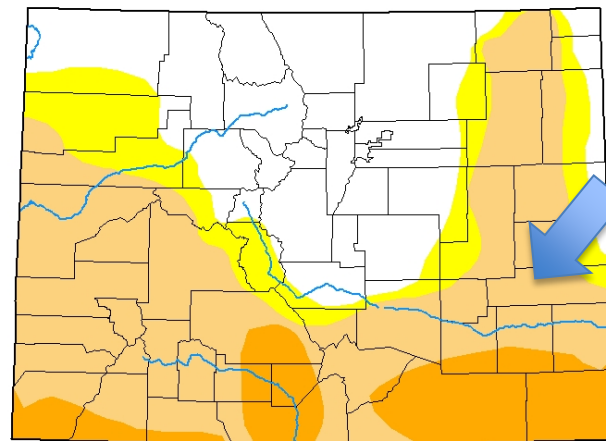
Fog in Kansas:
March 12, 2020
Courtesy: Mark Junker



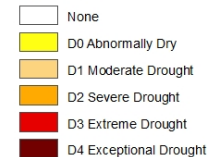
- Colorado
 - Severe drought (D2) south and eastern plains
 - Grass and brush fires and blowing dust
 - Wheat in poor condition in Kiowa County
 - Urban corridor close to normal.

**U.S. Drought Monitor
Colorado**

April 14, 2020
(Released Thursday, Apr. 16, 2020)
Valid 8 a.m. EDT



Intensity:

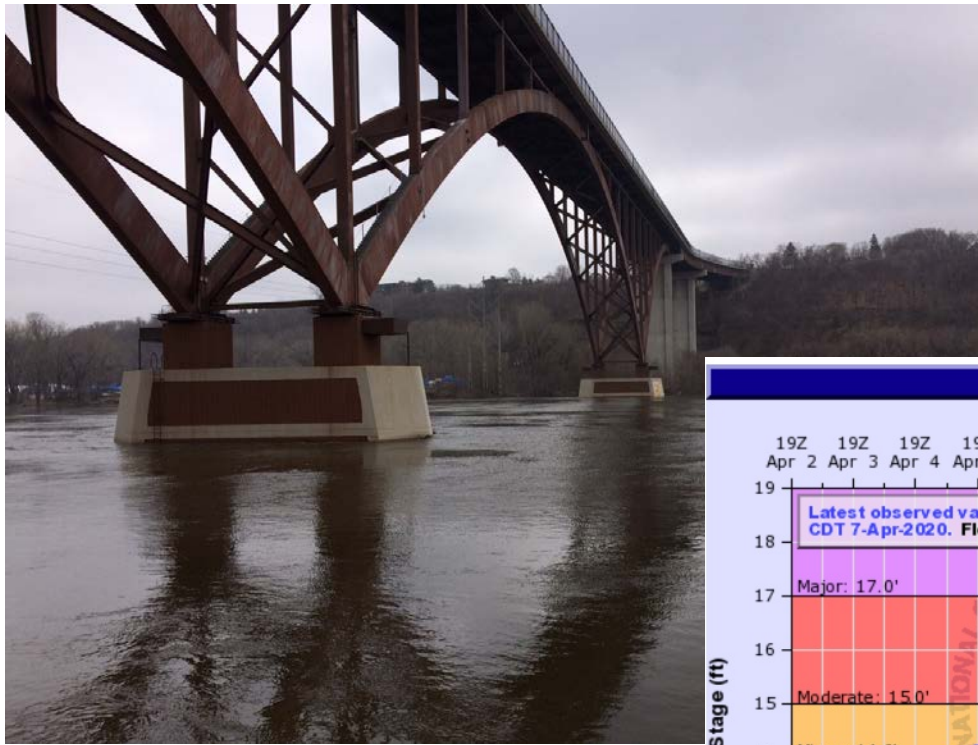


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

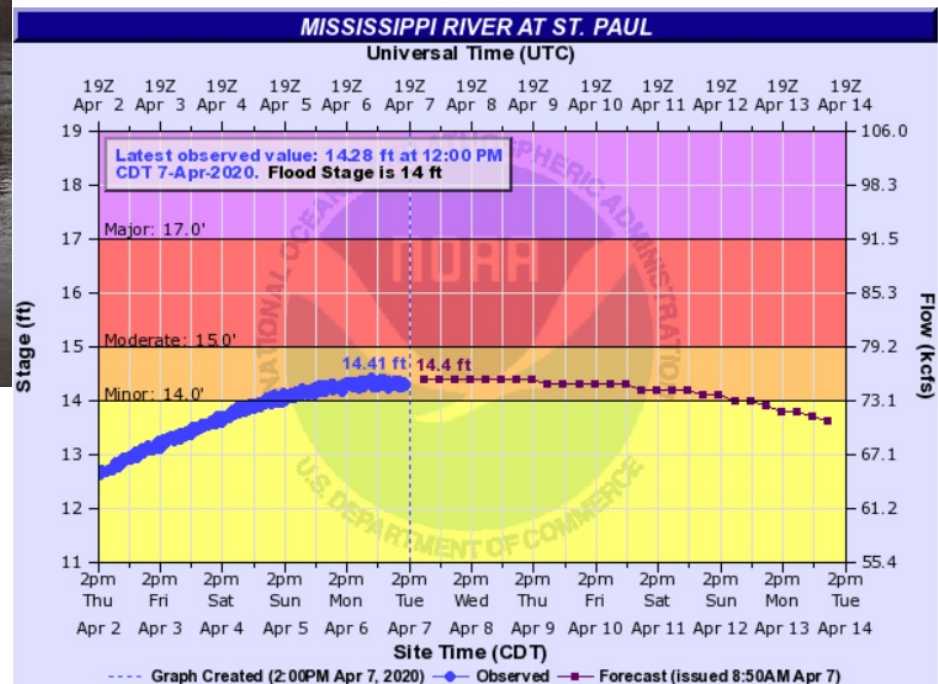
Author:

Brian Fuchs
National Drought Mitigation Center





April 7, 2020
 Mississippi River
 at St. Paul
Courtesy Pete Boulay

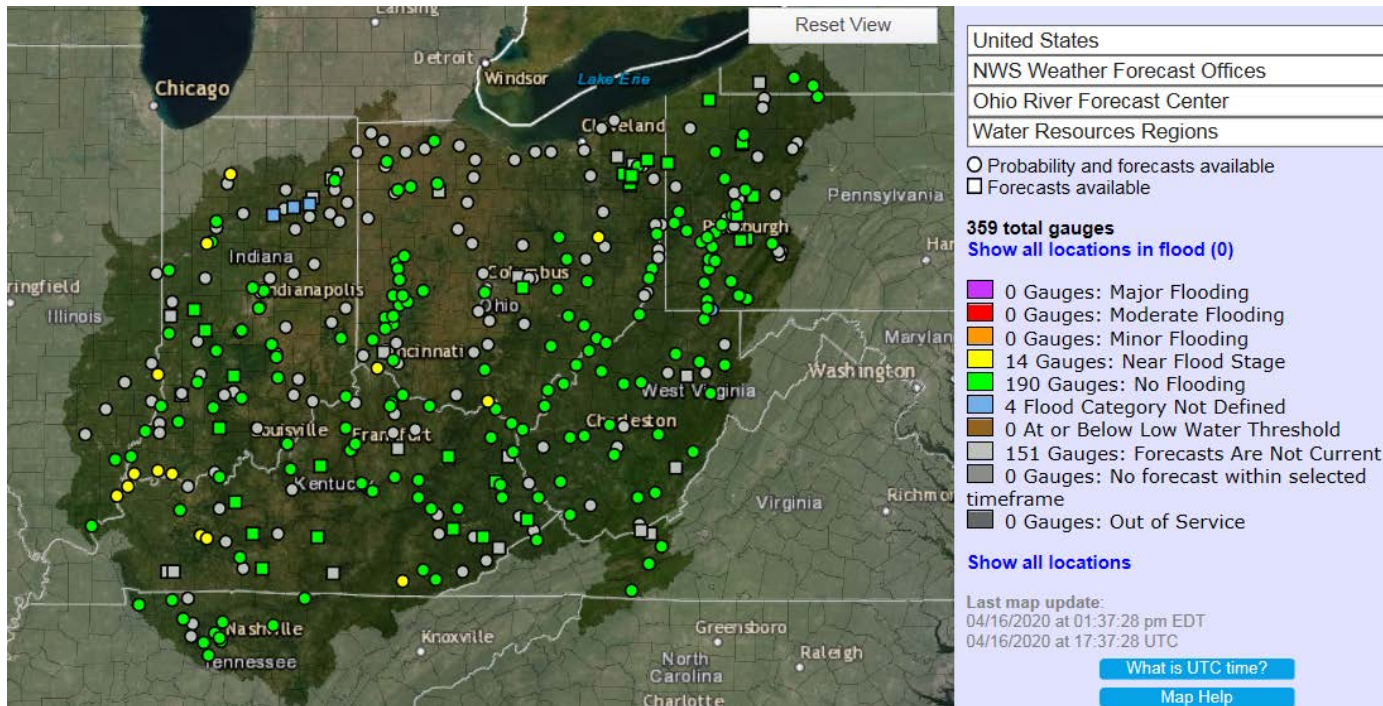


RIVERS AND STREAMS

April 7, 2020
 Mississippi River
 at St. Paul

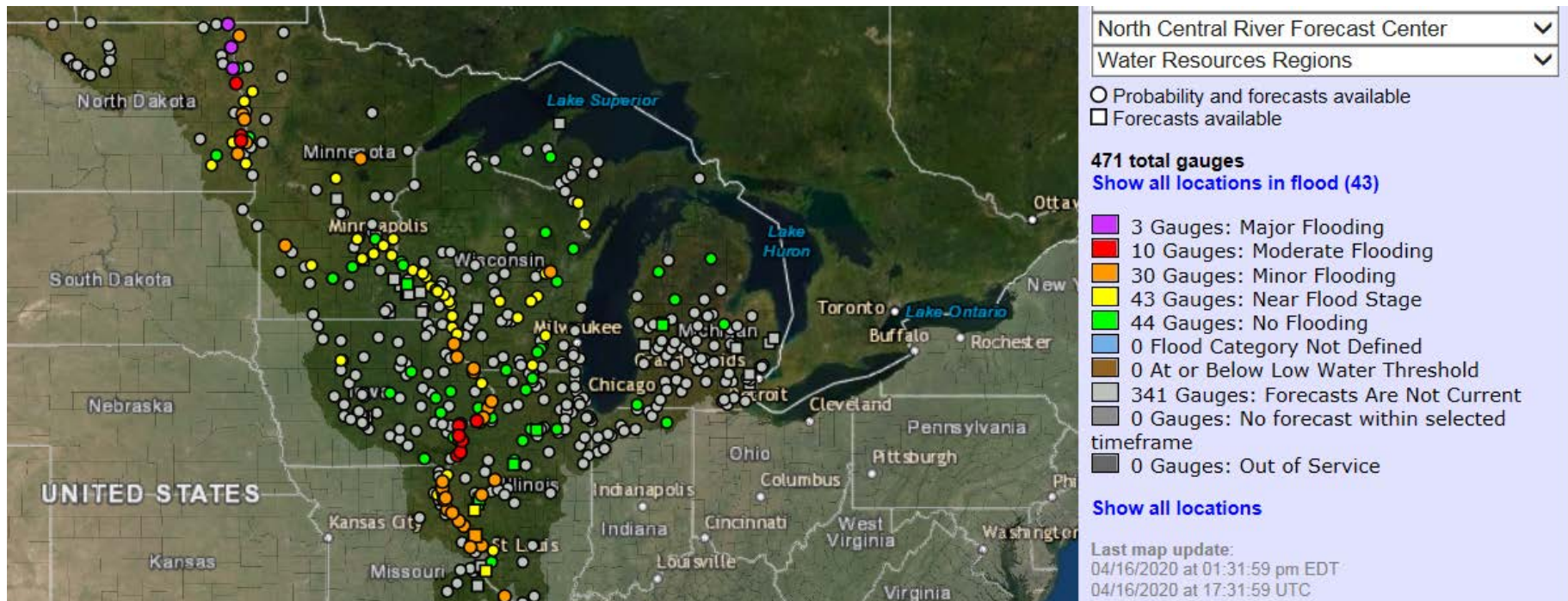
- Ohio Valley

- Flash flooding March 20 in Columbus area.
- South Fork of the Licking River set record (I-70).
- Normal flood risk now. Minor flooding possible.



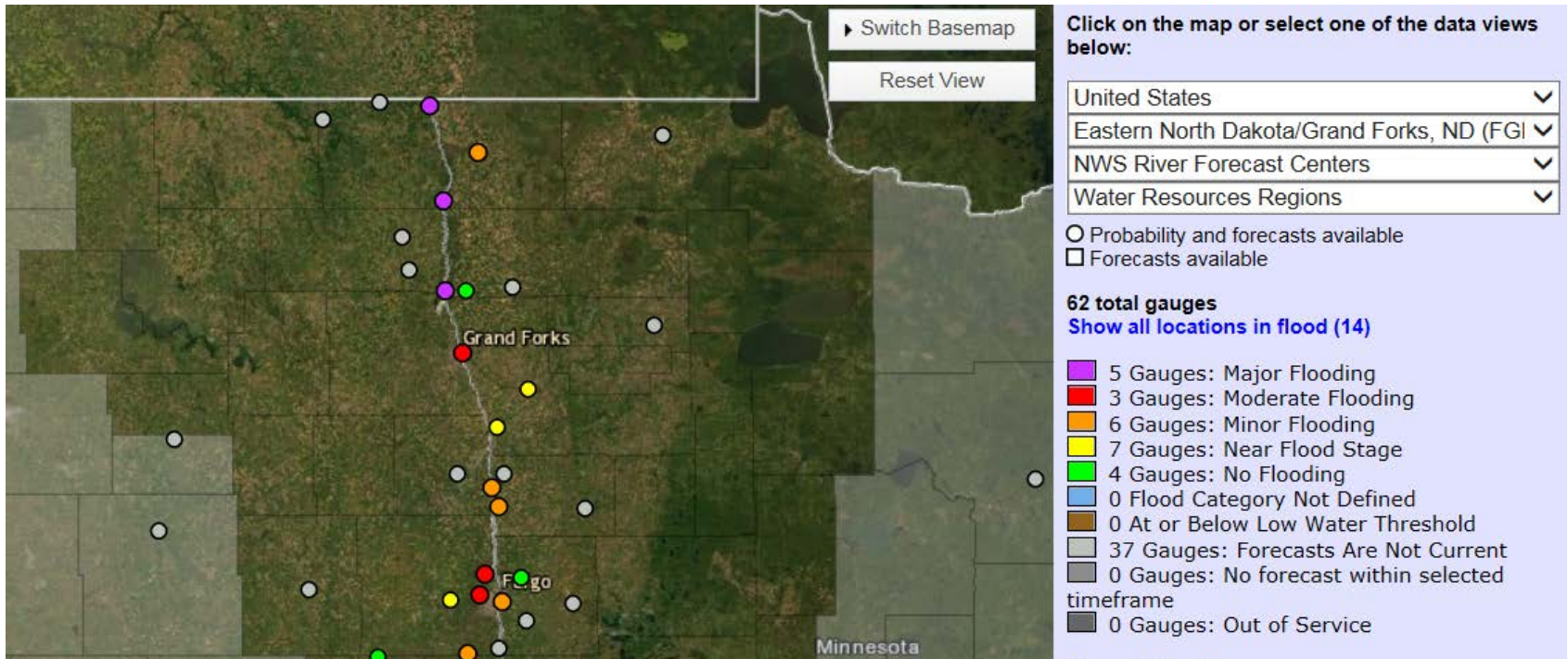
<https://www.weather.gov/ohrfc/>

- Upper Mississippi River Basin
 - Tail end of snow melt working its way down.
 - Peak near Muscatine, IA (moderate).
 - Transitioning to minor at Keokuk, IA.



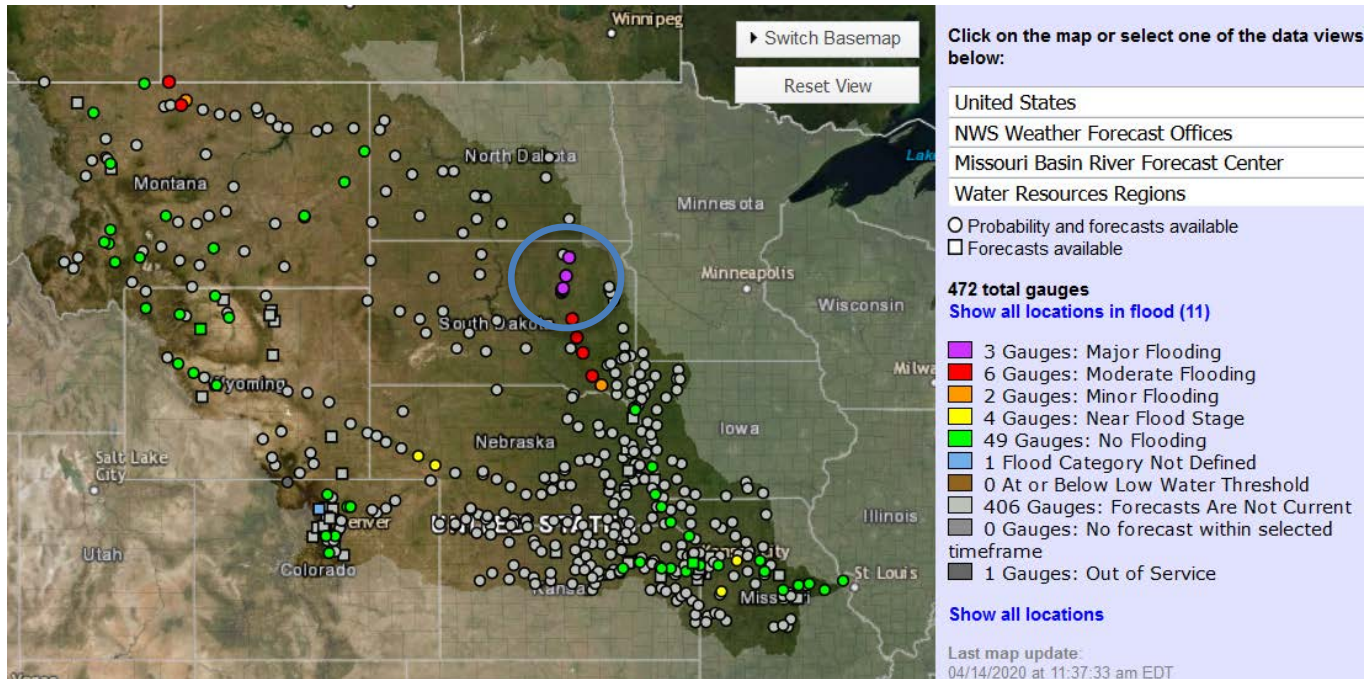
<https://www.weather.gov/ncrfc/>

- Red River of the North
 - Peak currently near Drayton, ND.
 - Oslo within half foot of record (est. 5th highest).
 - I-29 between Manvel and Grafton closed.



<https://www.weather.gov/ncrfc/>

- Missouri River Basin
 - Still has enhanced risk for flooding (James R).
 - Soils continue to be very wet.
 - Fairly dry and warm March helped.

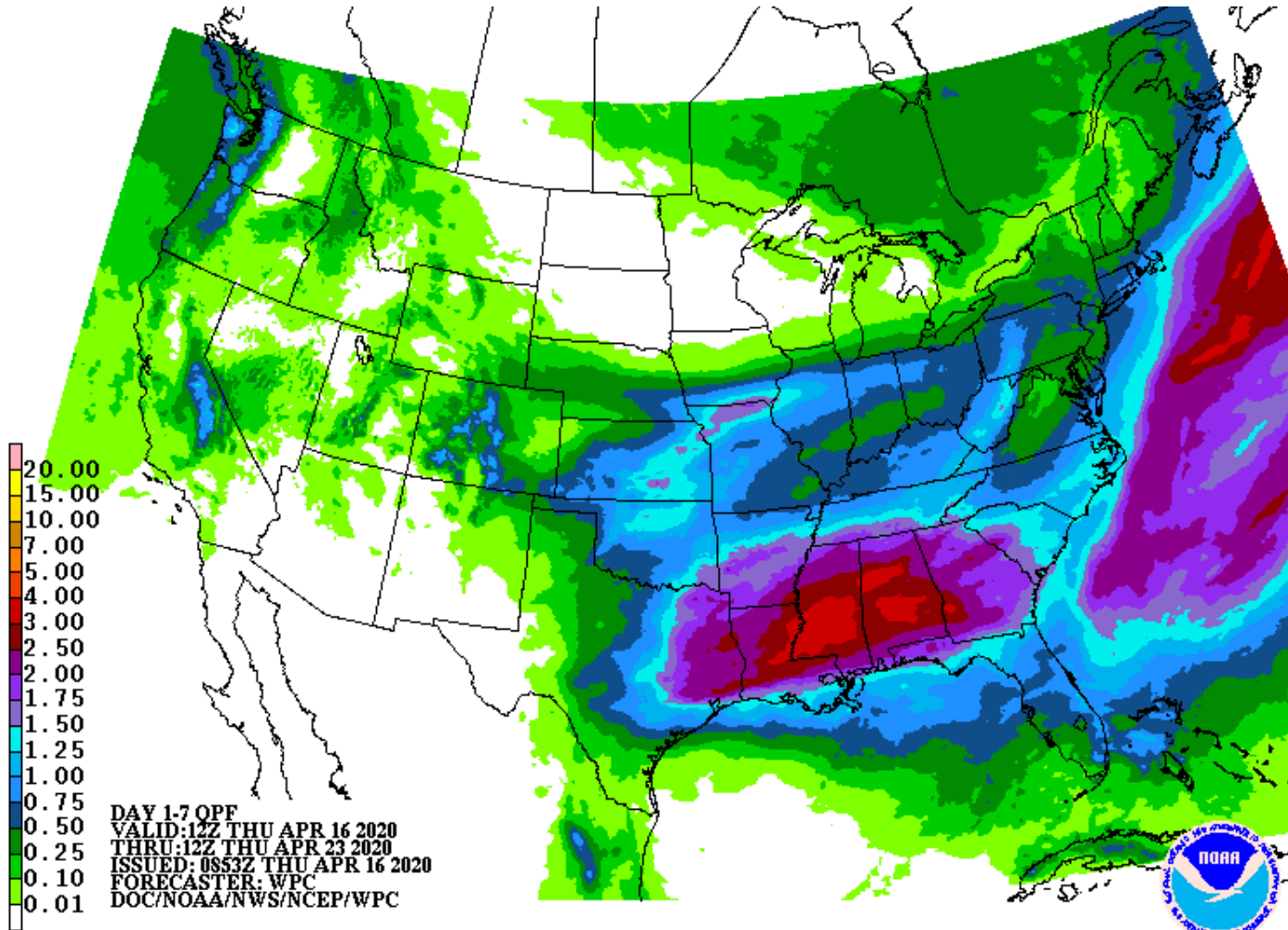


Climate Outlooks

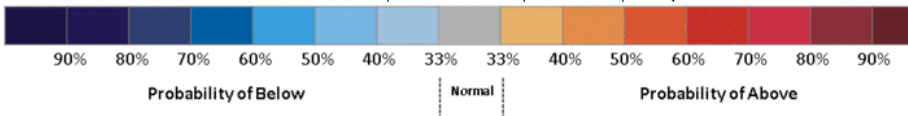
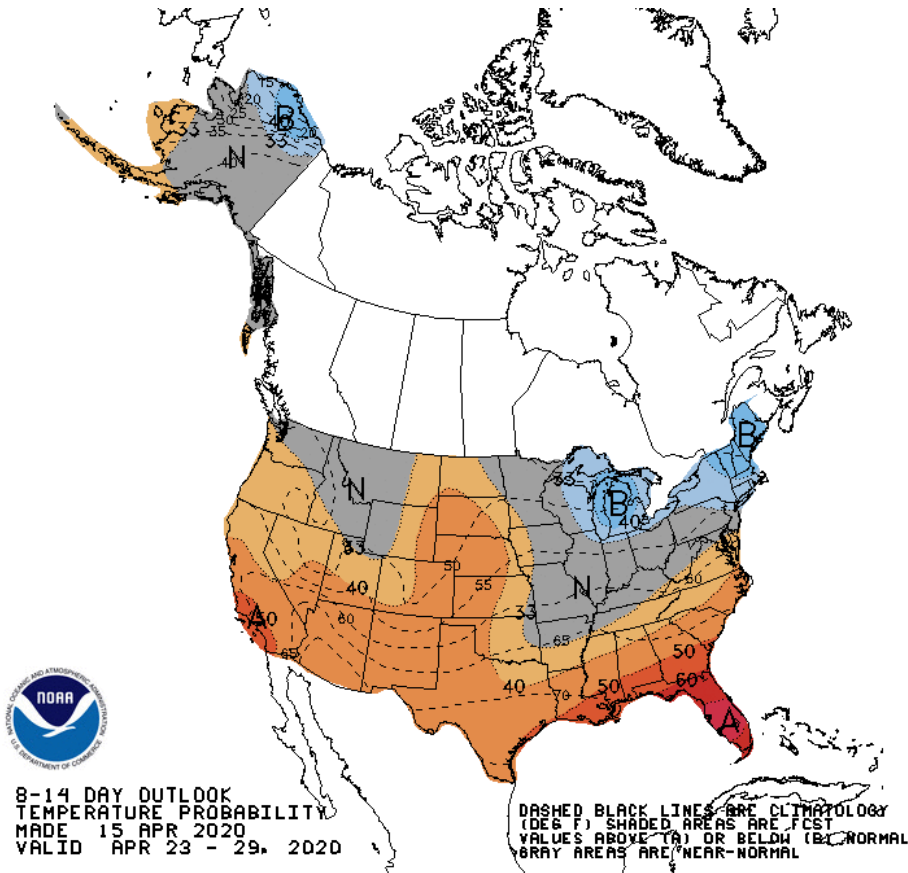
- 7-day QPF
- 8-14 day outlook
- May temperature and precipitation
- MJJ temperature and precipitation
- JJA temperature and precipitation

7-day Quantitative Precipitation Forecast

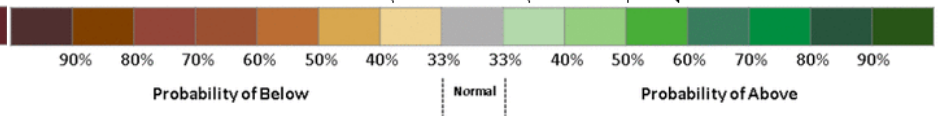
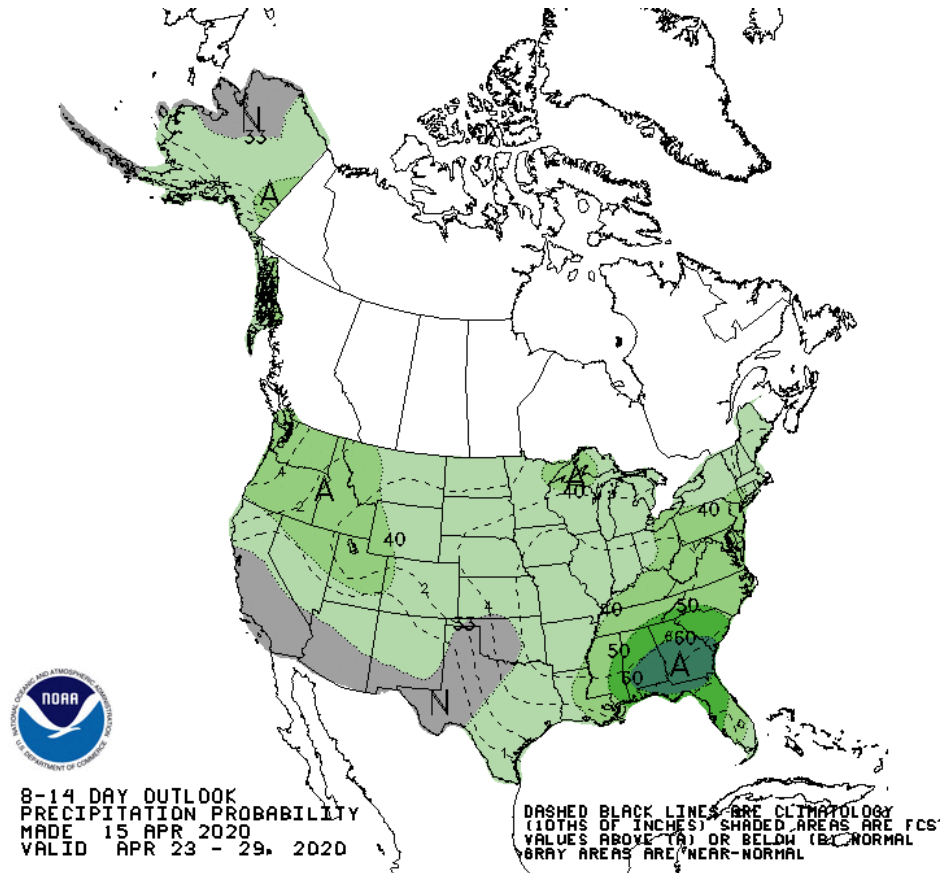
Valid: 16-23 April



8-14 Day Outlook

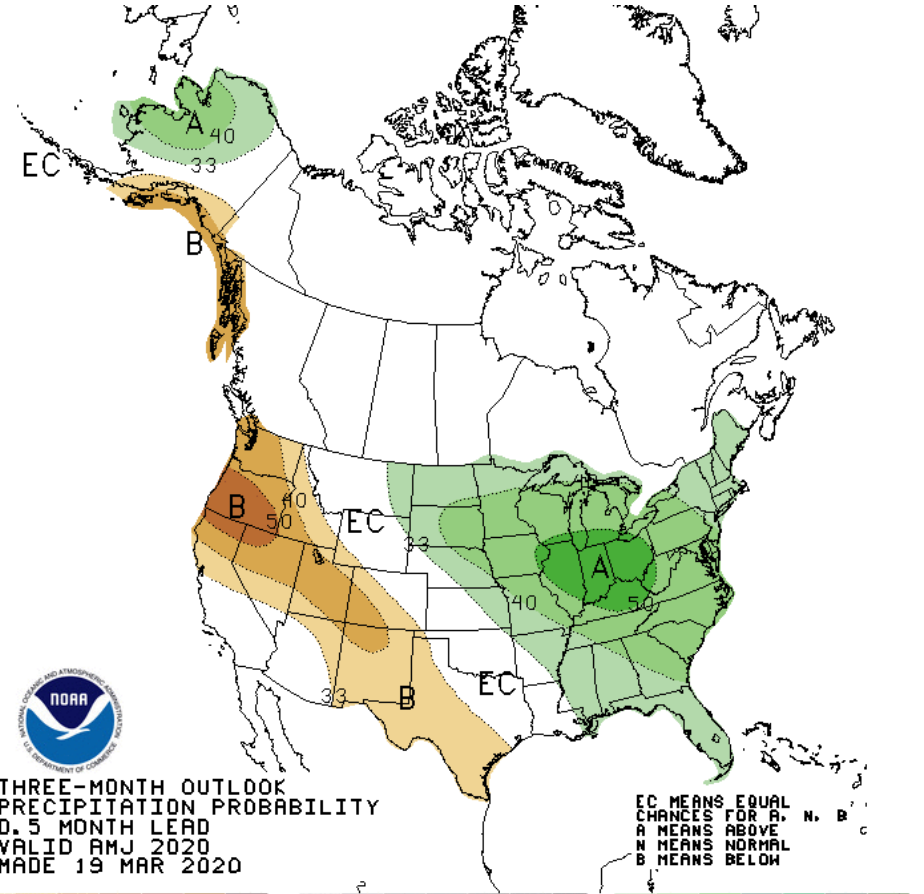
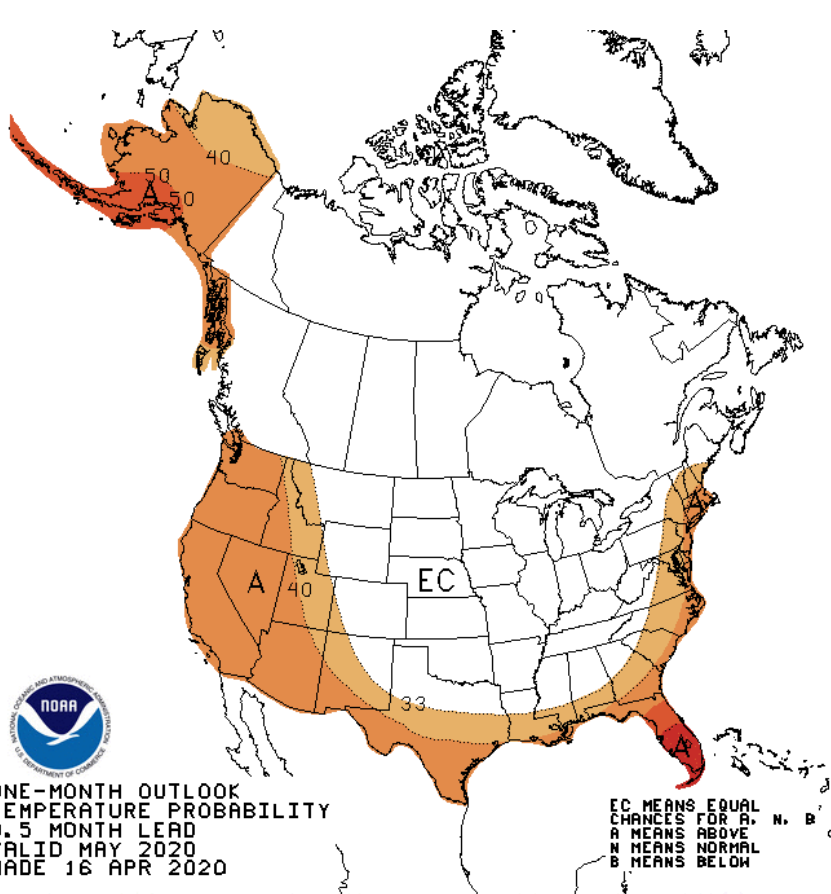


Temperature



Precipitation

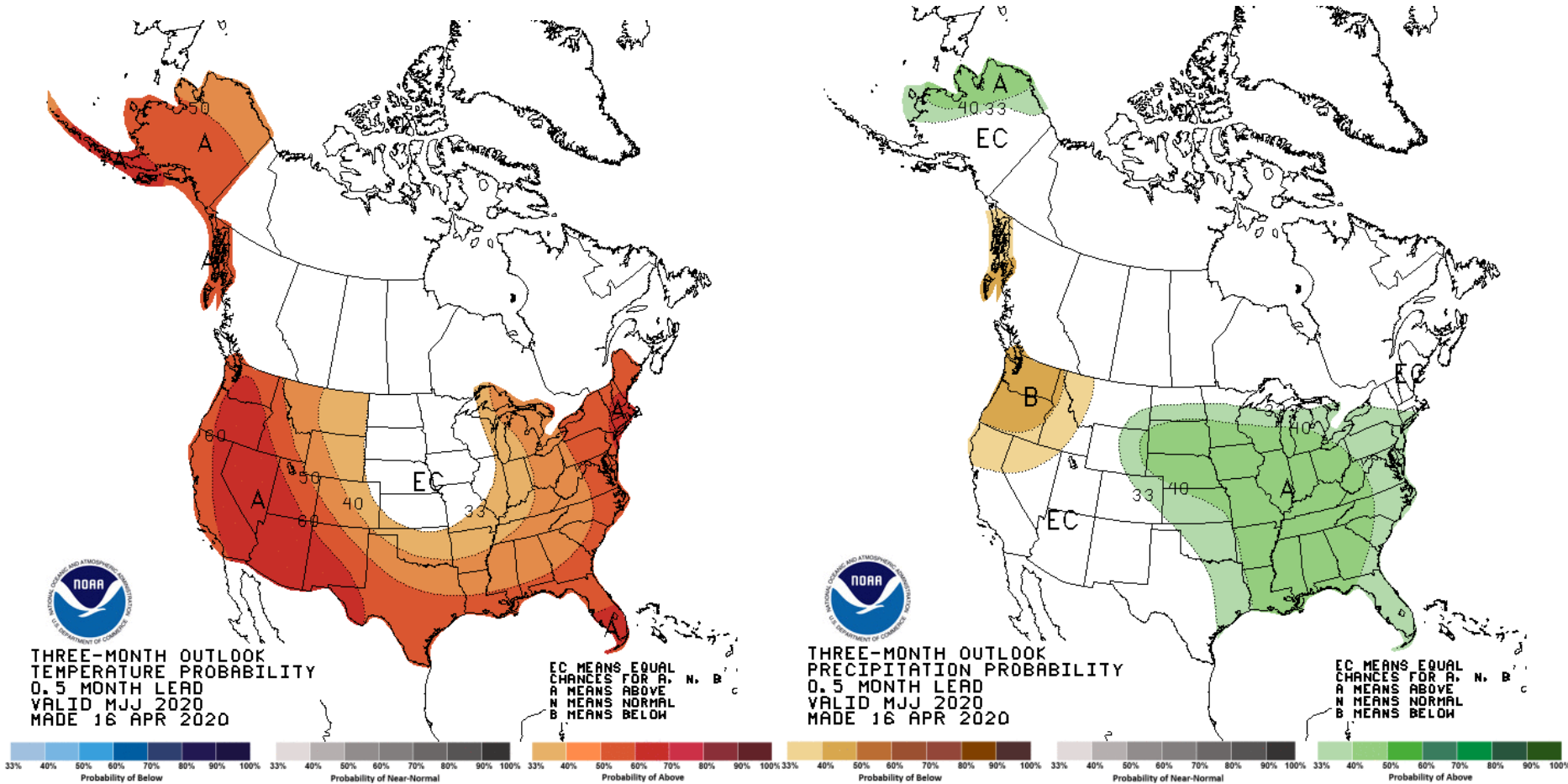
May Outlook



Temperature

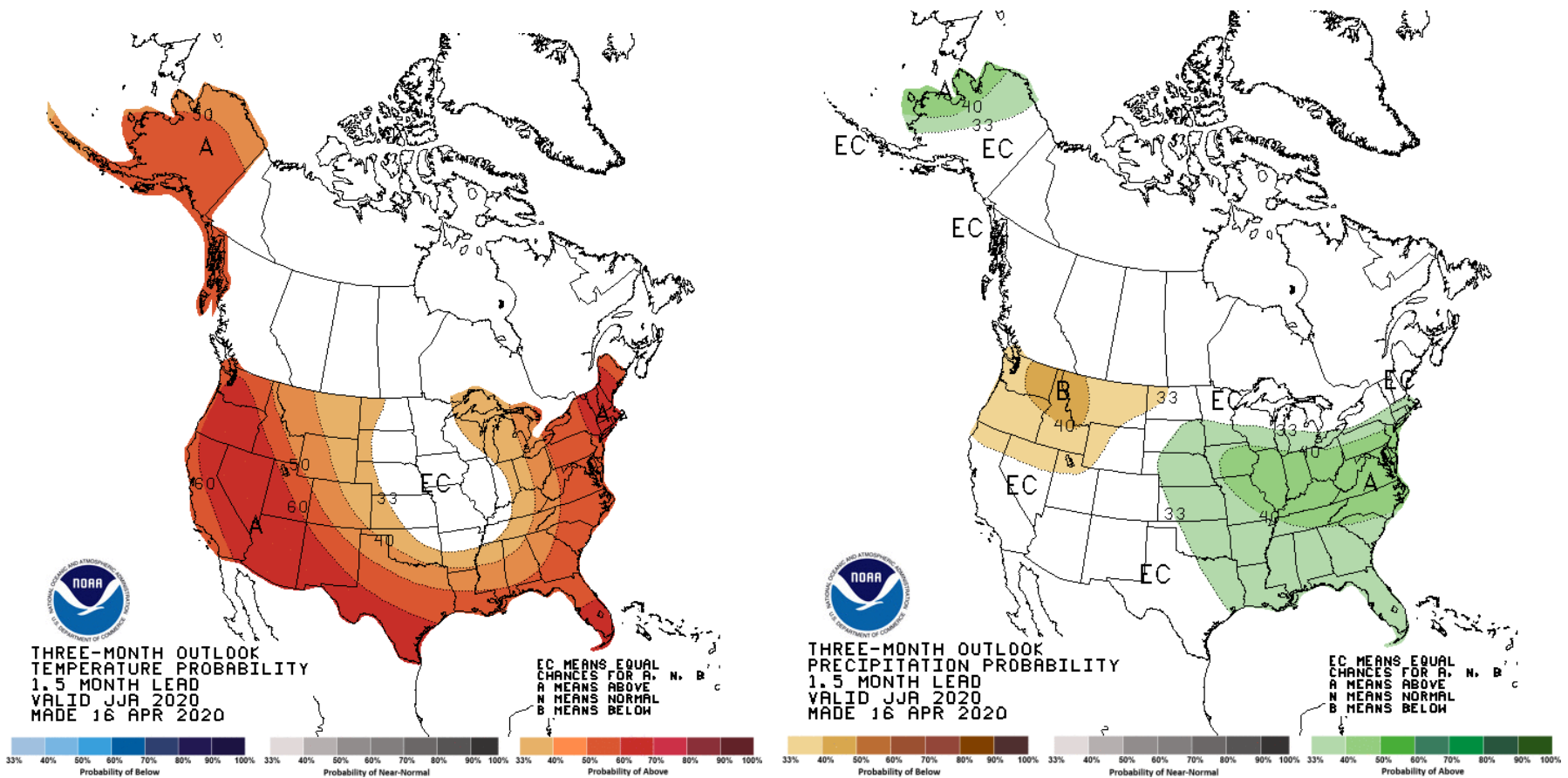
Precipitation

Climate Prediction Center Outlook: Spring-Early Summer (May-July) 2020



<https://www.cpc.ncep.noaa.gov/products/predictions/90day/>

Climate Prediction Center Outlook: Summer (June-August) 2020

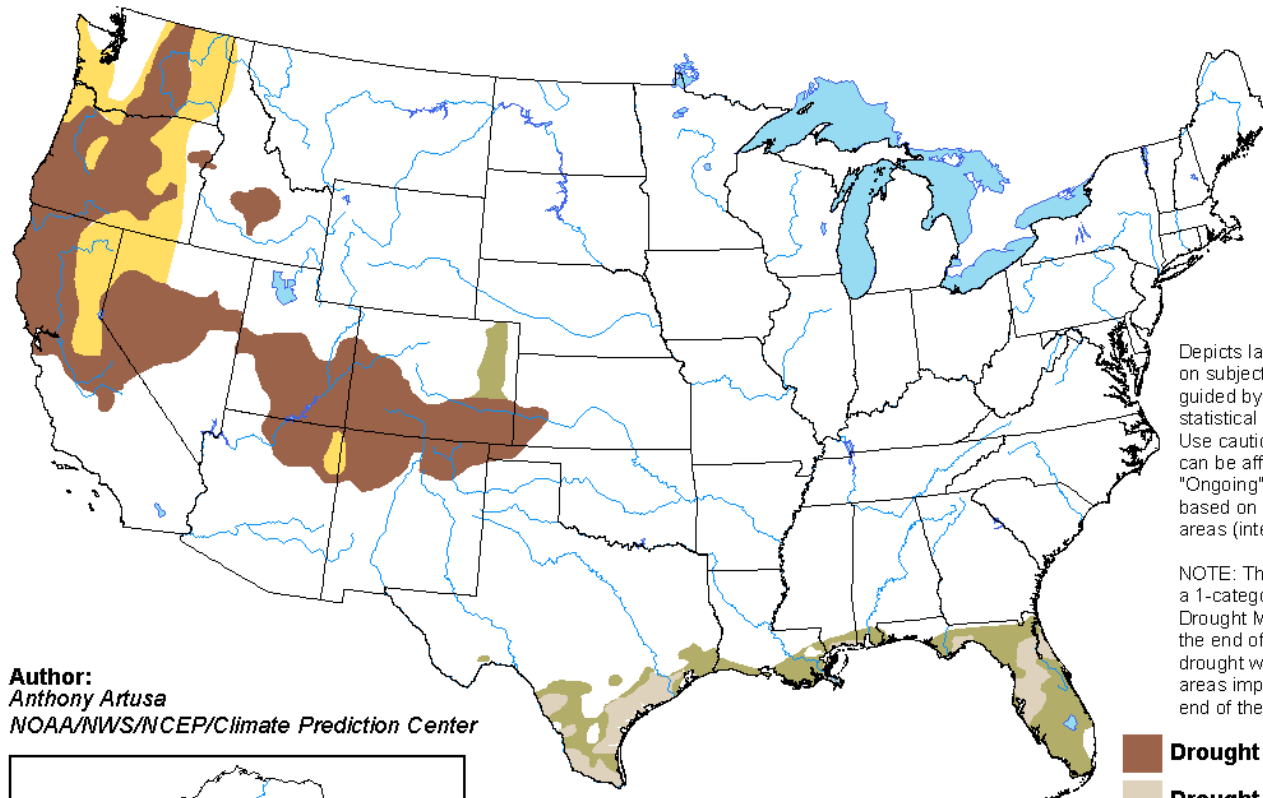


https://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead02

Seasonal Drought Outlook

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

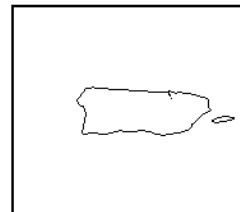
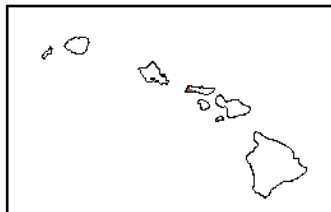
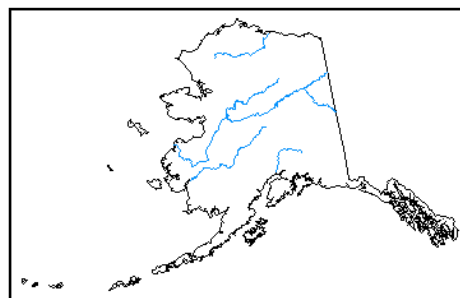
Valid for April 16 - July 31, 2020
Released April 16



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>

Outlook Summary

- Soils remain wet in many areas, except parts of west.
- Below normal temperatures North and Great Lakes for rest of April.
- Equal chances for below, normal and above normal temperatures this spring and early summer. Above normal precipitation except west.

Further Information - Partners

- **Today's and Past Recorded Presentations:**
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu>
- NOAA's National Centers for Environmental Information: 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
 - <https://mrcc.illinois.edu>
 - <http://www.hprcc.unl.edu>

Thank You and Questions?

- Questions:
 - **Climate:**
 - Pete Boulay: Peter.Boulay@state.mn.us , 612-390-1301
 - 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
 - **Weather:**
 - crhroc@noaa.gov

Apple Tree
Kansas City
Courtesy Julie Kluck

