North Central US Climate-Drought Outlook 15 April 2021

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

Photo:
Ray Wolf
NWS Quad Cities

Photo taken Feb 19, 2013

United States Department of Agriculture
Midwest Climate Hub

General Information

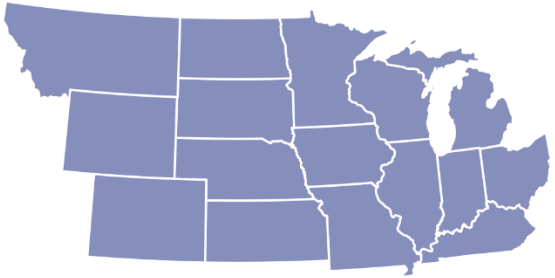
- **Providing climate services to the North Central US**
  - Collaboration Activity Among:
    - NOAA NCEI/NWS/OAR/NIDIS/
    - USDA Climate Hubs
    - American Association of State Climatologists
    - Midwest and High Plains Regional Climate Centers
    - National Drought Mitigation Center

- **Next Regular Climate/Drought Outlook Webinar**
  - May 20, 2021 (1 PM CDT) Aaron Wilson– Ohio State Climate Office (OSU Ext.)

- **Access to Future Climate Webinars and Information**
- http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars
  - https://mrcc.illinois.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php
- **Open for questions at the end (enter them along the way).**

Making the Webinars

REGISTER
Scan QR code ▶▶▶
attendee.gotowebinar.com/register/7528179497868100876



Partners

- Central Region Climate Services Director (RCSD)
- Central Region National Weather Service (NWS)
- NOAA National Integrated Drought Information System (NIDIS)
- American Association of State Climatologists (AASC)
- Regional Climate Centers (RCCs)
- State Climate Offices
- USDA Climate Hubs (Midwest and Northern Plains)
- USDA Office of the Chief Economist
- State Universities and Extension
- National Drought Mitigation Center

Presenters & Network

- 22 unique webinar presenters since 2011
- 45 local experts across the region provide pre-webinar input on areas of concern

Monthly Webinar

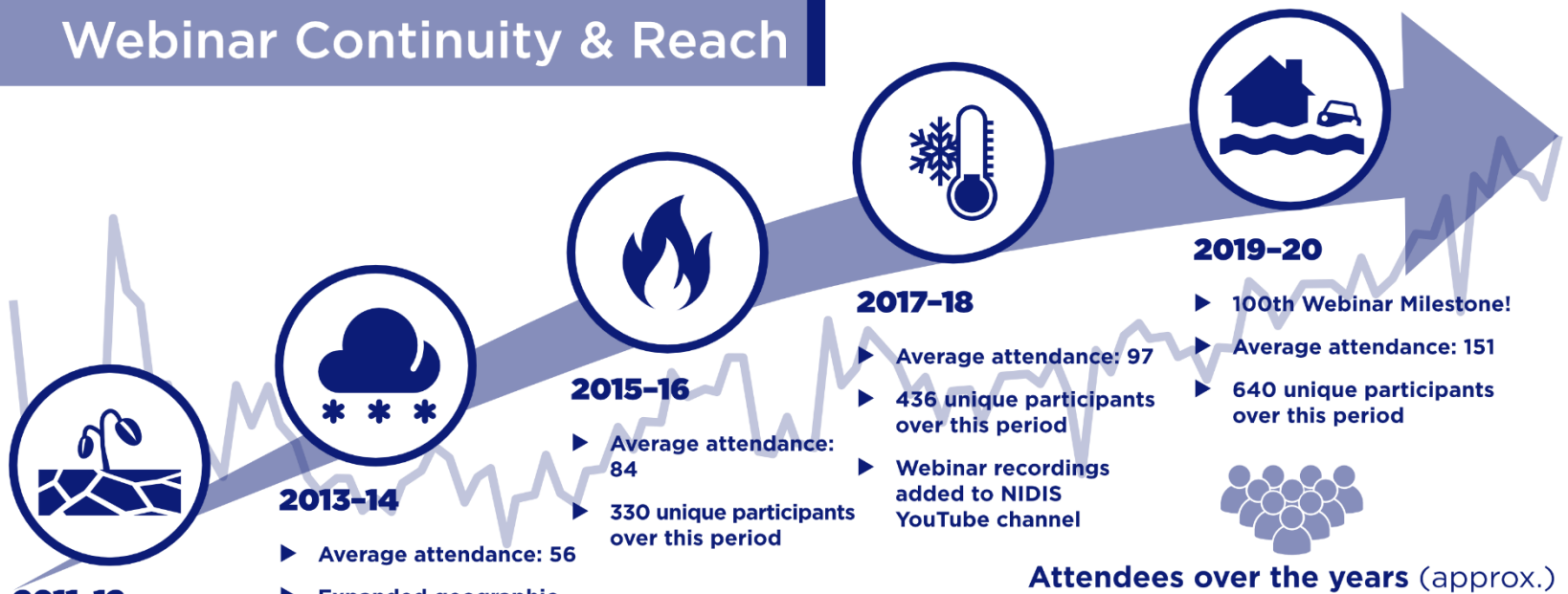
- Livestream
- 45-minute presentation
- 15-minute audience interaction Q&A
- Recording and presenter slides archived for later viewing and sharing: **NIDIS** | **MRCC** | **HPRCC**
  click names to view

Data/Information Provided

- Current conditions with historical perspective
- U.S. Drought Monitor
- Crop status reports
- Current impacts
- Seasonal information
- Hydrology
- Monthly/seasonal outlooks
- El Niño Southern Oscillation impacts
- Big picture and regional specifics
- Possible impact of future events

The North Central U.S. Monthly Climate and Drought Summary and Outlook

Webinar Continuity & Reach



2011–12

- Webinar launch in response to 2011 Missouri River flooding
- Continued in response to 2012 drought
- Average attendance: 79 geographically focused on Missouri River Basin

2013–14

- Average attendance: 56
- Expanded geographic focus to include the Midwest

2015–16

- Average attendance: 84
- 330 unique participants over this period

2017–18

- Average attendance: 97
- 436 unique participants over this period
- Webinar recordings added to NIDIS YouTube channel

2019–20

- 100th Webinar Milestone!
- Average attendance: 151
- 640 unique participants over this period

"A great summary in one hour that would take me a day to dig around and look through all the same material."

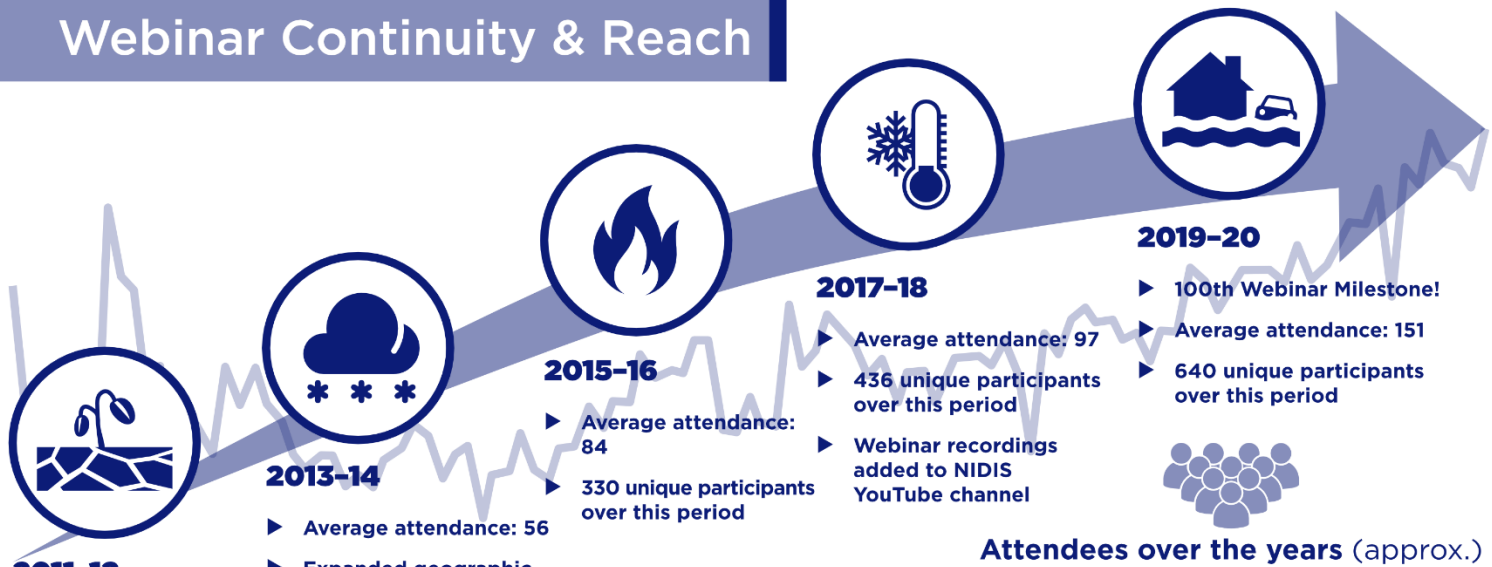
Attendees over the years (approx.)

- 670 Federal Agency Staff
- 230 State Government Staff
- 40 Tribal Government/ Agency Staff
- 290 Academic and Research Staff
- 200 Business & Industry Leaders, including Farmers
- 40 Media Writers
- 85 City, Municipality, County Staff
- 50 Individuals
- 80 Non-profit and Trade Organization Staff
- 10 Elected Representative Offices
- 15 International Entities

Over 13,500 webinar views (live and YouTube) from 2011–2020

The North Central U.S. Monthly Climate and Drought Summary and Outlook

Webinar Continuity & Reach



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https://drought.unl.edu/Projects/Detail.aspx?id=34

Agenda

- **Current Conditions**
- **Impacts**
  - **Hydro**
  - **Ag (freeze, planting)**
  - **Fire**
  - **Other**
- **Outlooks**
  - **La Niña chances**
  - **Summer**

Photo:
Dennis Todey Ames, IA 15 April 2020

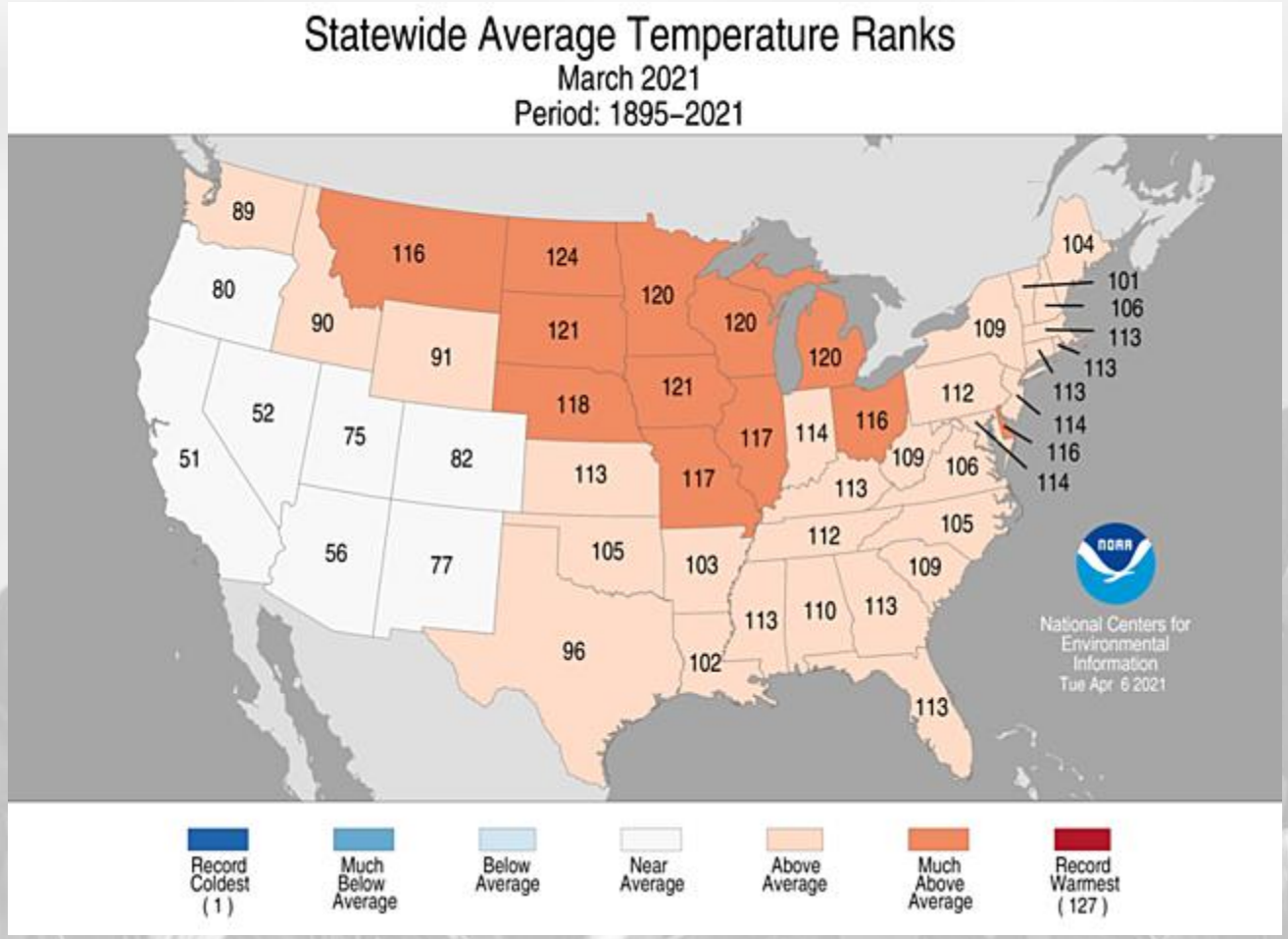
Photo:
MN Incident Command 31 March 2021
Ox Cart Fire

REVIEW/CURRENT CONDITIONS

March Temperature Recap

After a cold period in February March was very warm through the central US.

Top 10 warmest in most states in the region.

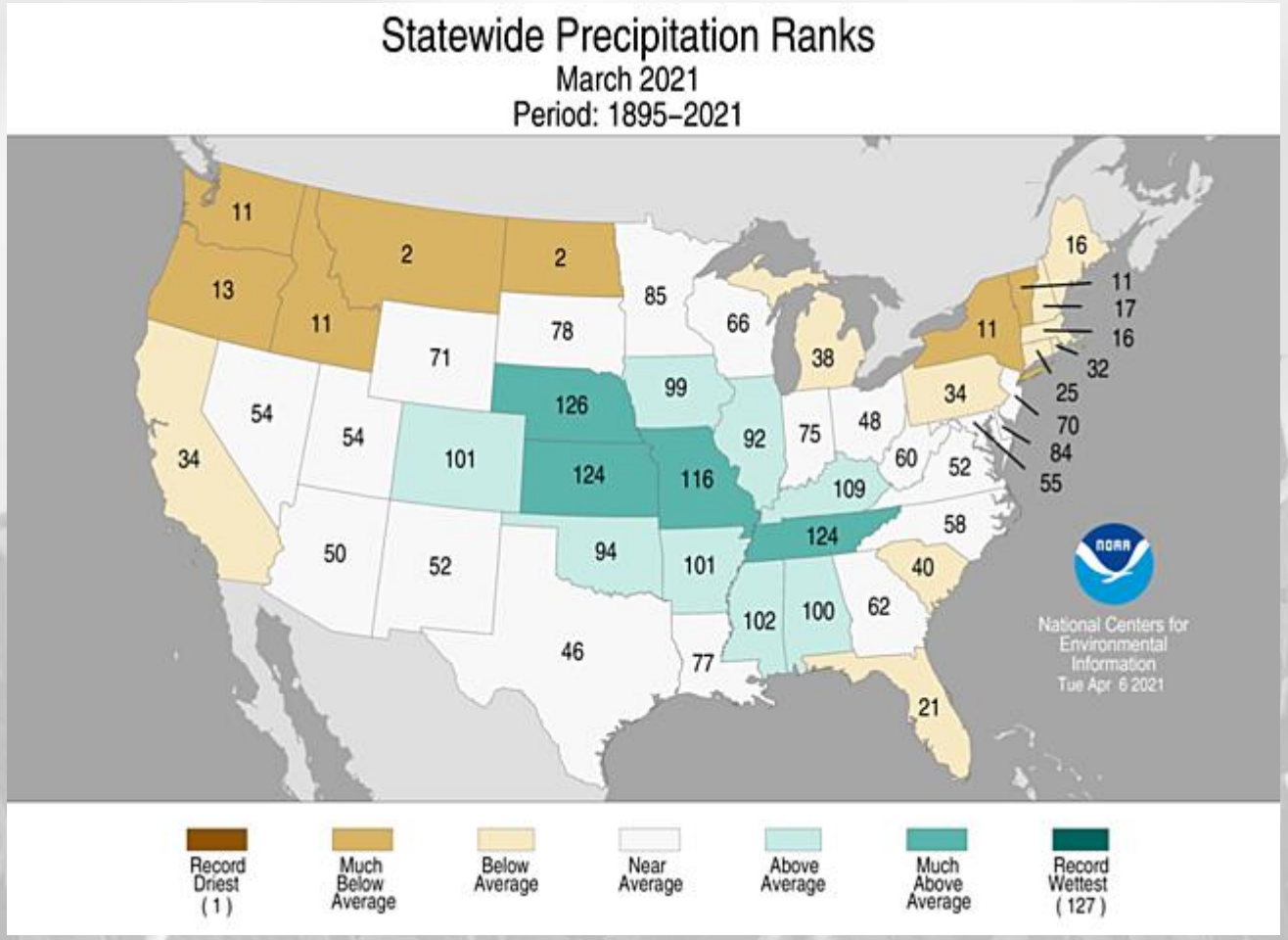


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

March Precipitation Recap

Strong contrast across the region in precipitation. Wet to the south and dry to the north.

Top 5 wettest NE/KS. Top 5 driest ND/MT.



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

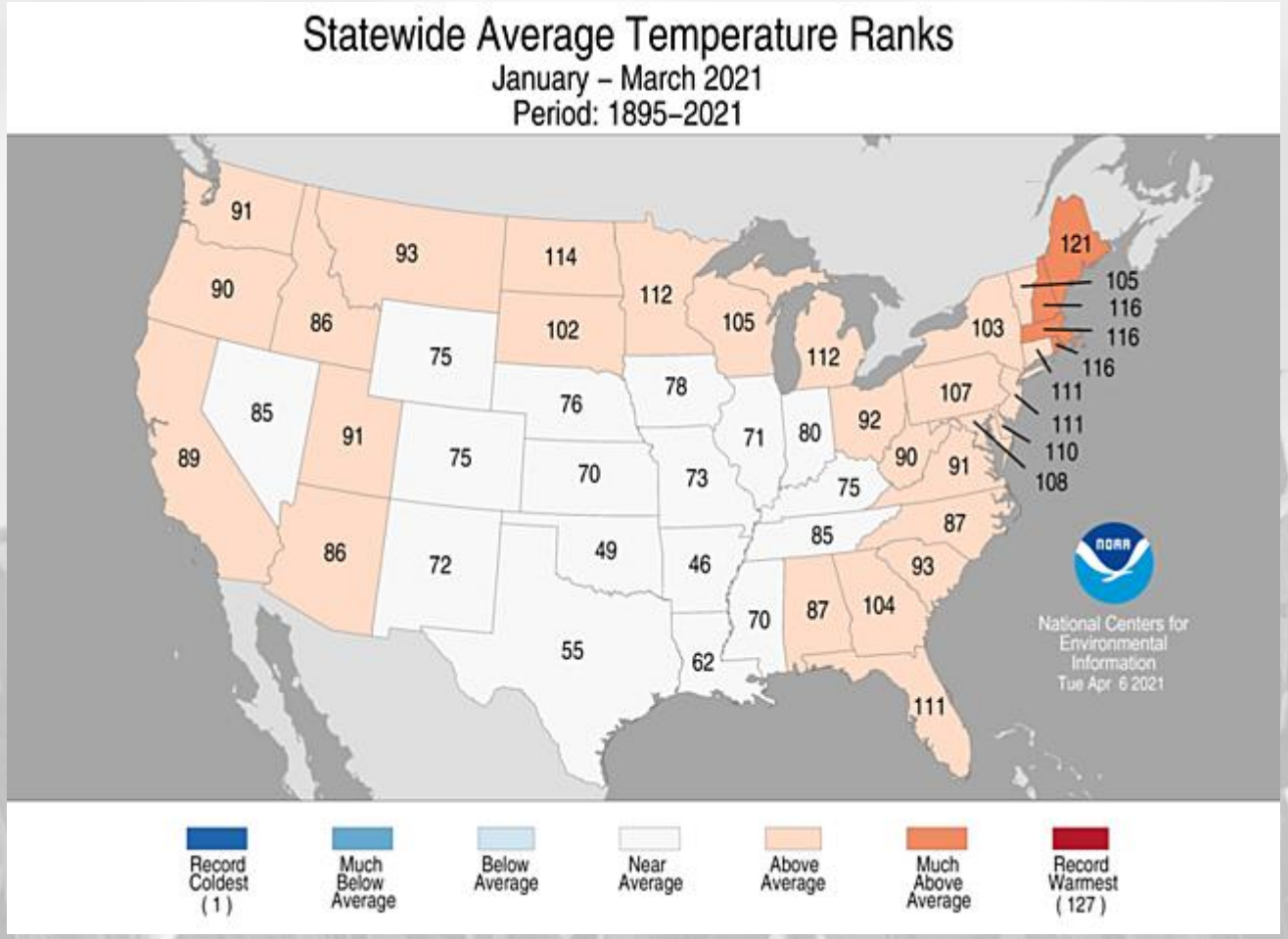
March Precip Details

- Wettest March on record
  - Caspar, WY
  - Goodland, KS
  - Grand Island, NE
- Driest March
  - Dickinson, ND
  - Bismarck (3rd)
  - Mobridge, SD (4th)
- Snowiest March
  - Caspar, WY
  - Denver, CO

Photo: Ray Wolf
NWS Quad Cities

January-March Temperature Recap

Cold February had a large impact across the south, while northern areas stayed relatively warm.

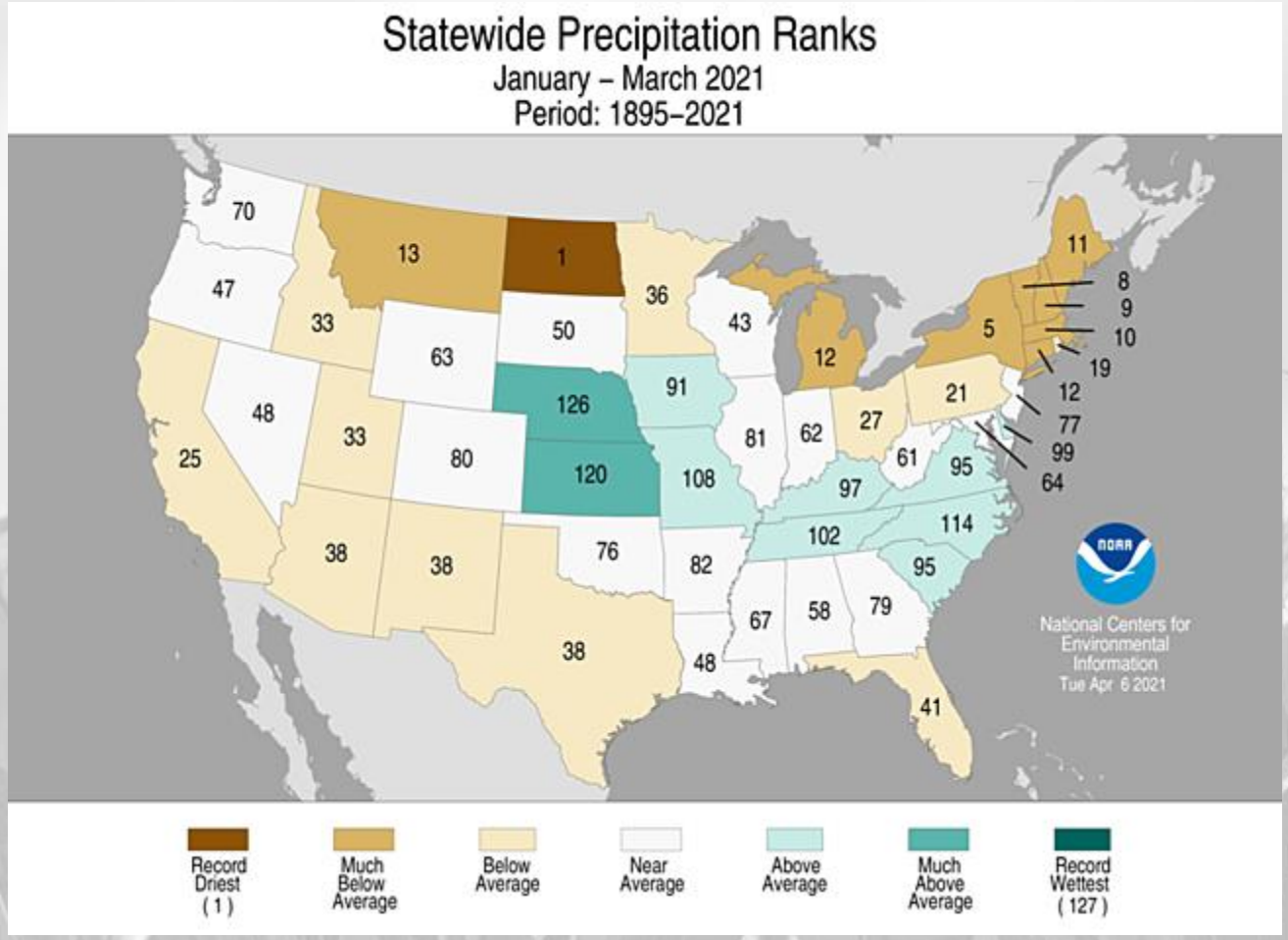


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

January-March Precipitation Recap

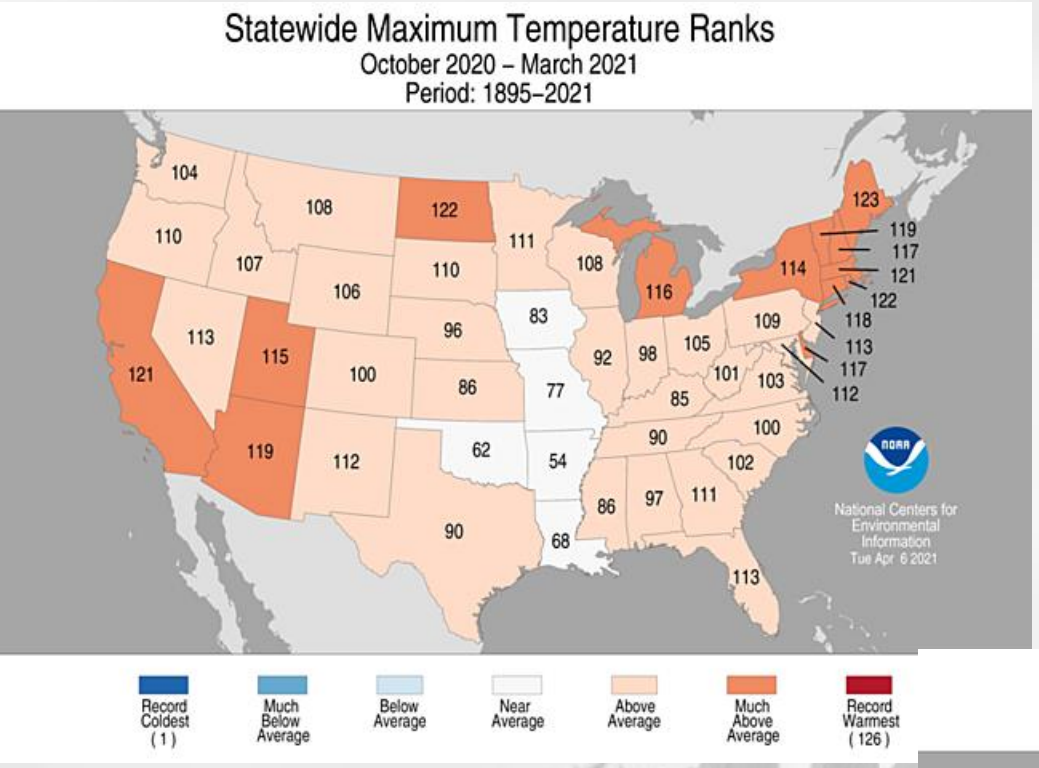
Precipitation contrast shows again Jan.-Mar. Wet across central areas and dry to north.

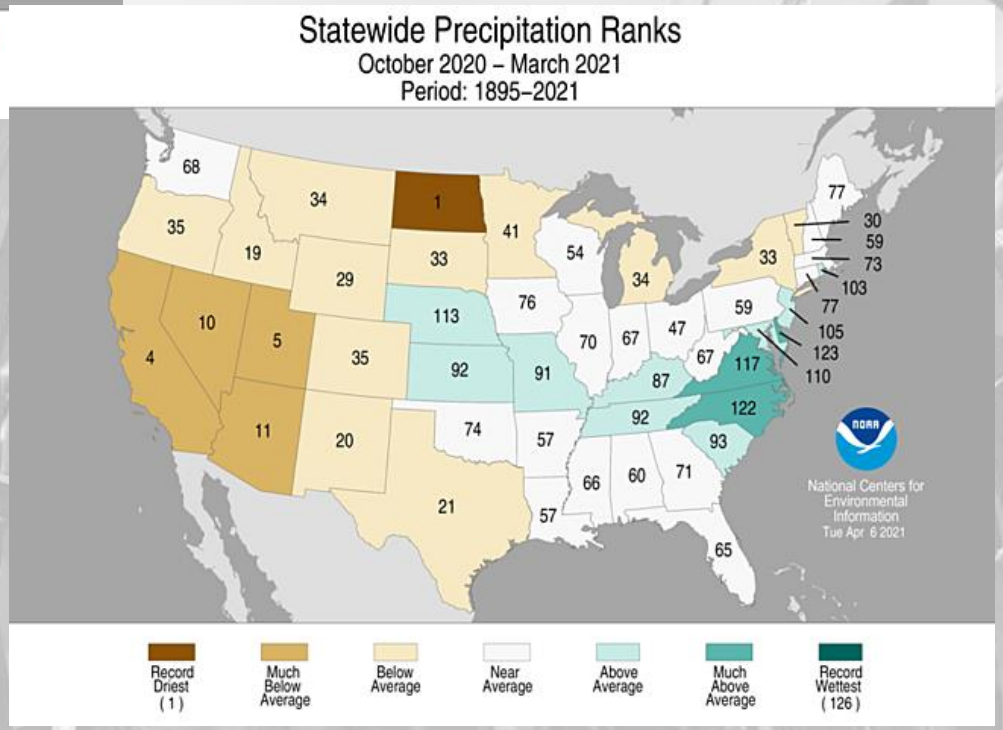
Second wettest on record for Nebraska, driest on record for North Dakota.



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

October-March



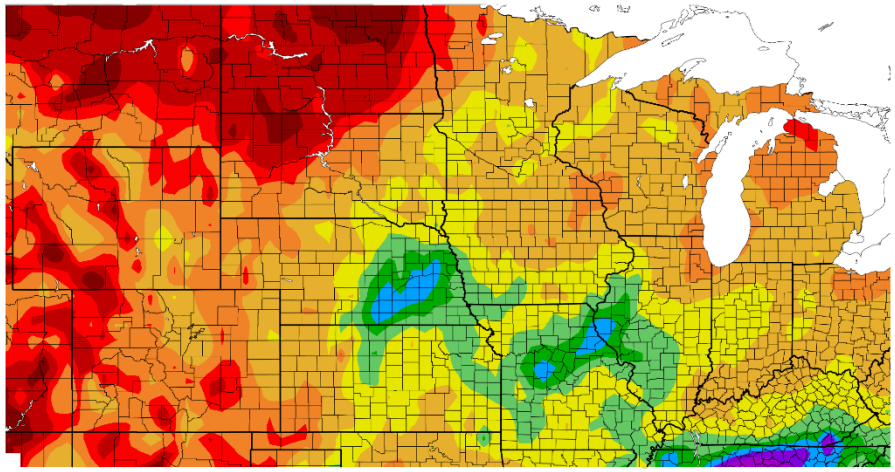


Generally warmer than average and dry across the north and west again.

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

Last 30 days Precipitation

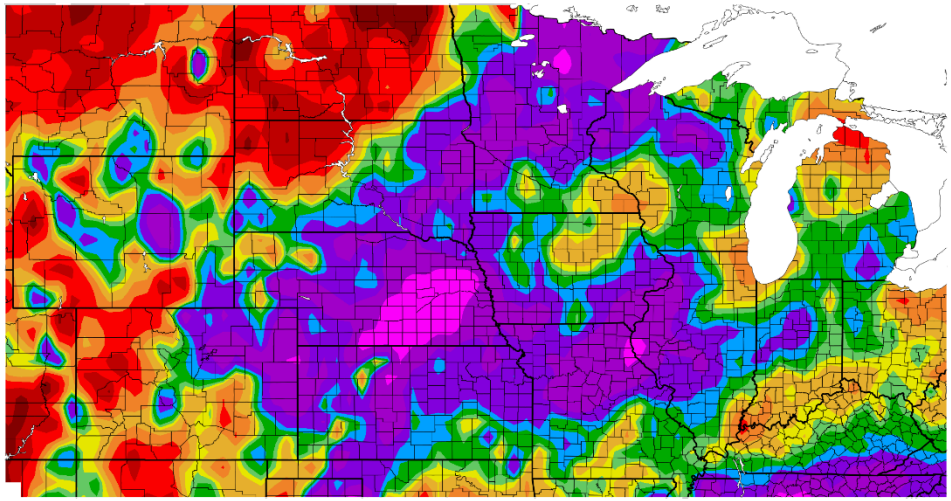
Precipitation (in)
3/14/2021 – 4/12/2021



Generated 4/13/2021 at HPRCC using provisional data. NOAA Regional

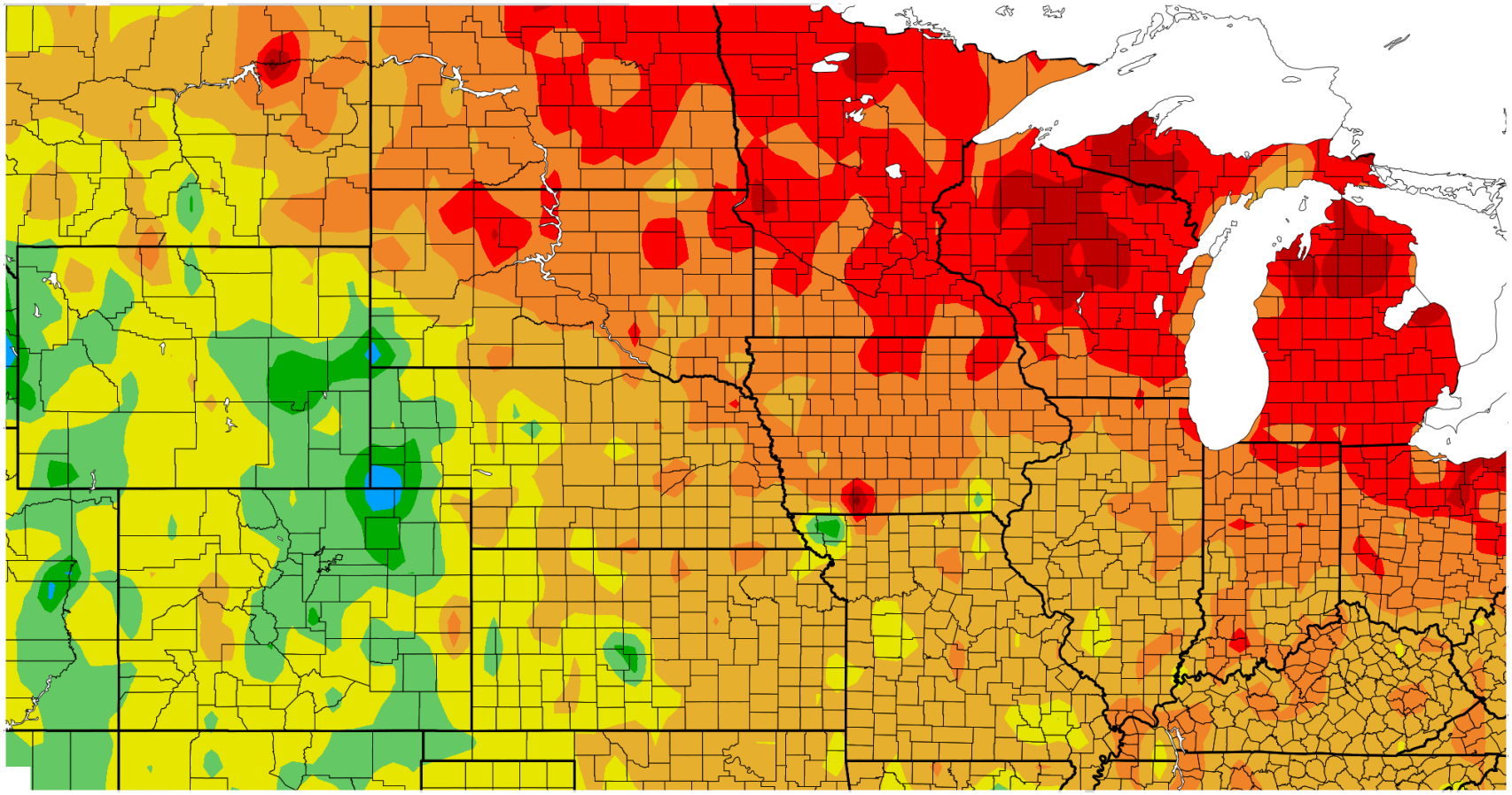
- Very dry nrn plains and some east
- Better elsewhere
- Double average precipitation centered on Nebraska.

Percent of Normal Precipitation (%)
3/14/2021 – 4/12/2021



Generated 4/13/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

Departure from Normal Temperature (F)
3/14/2021 - 4/12/2021



−10 −8 −6 −4 −2 0 2 4 6 8 10

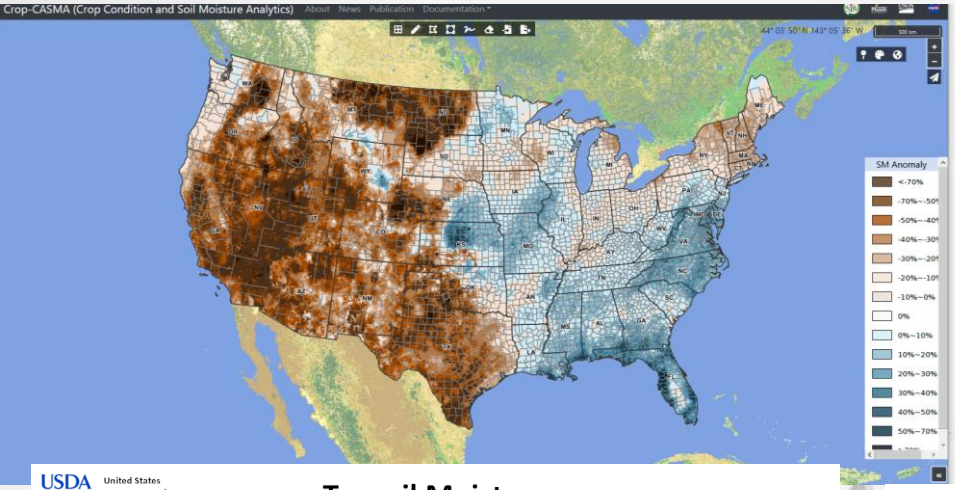
Generated 4/13/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

HYDROLOGY

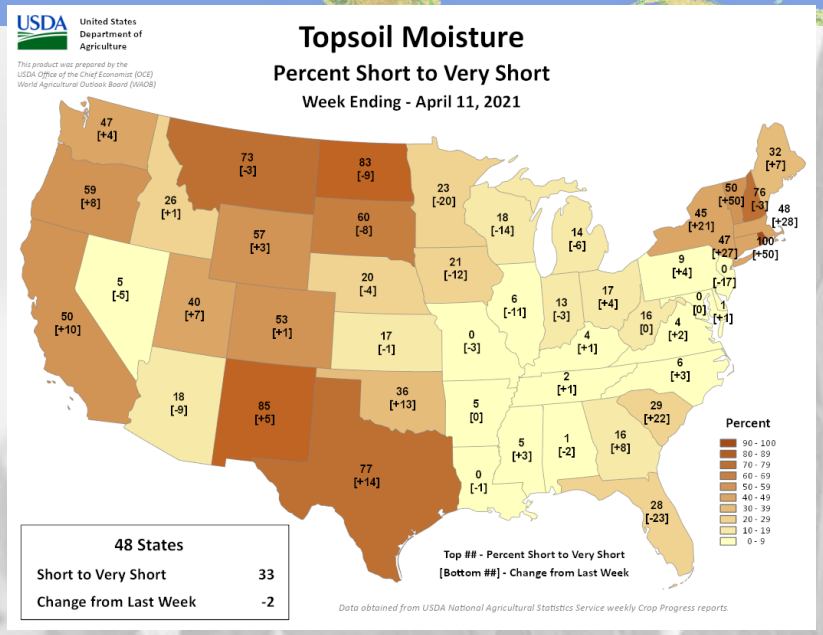
Photo:
Natalie Umphlett – UNL HPRCC
Holmes Lake – Lincoln, NE

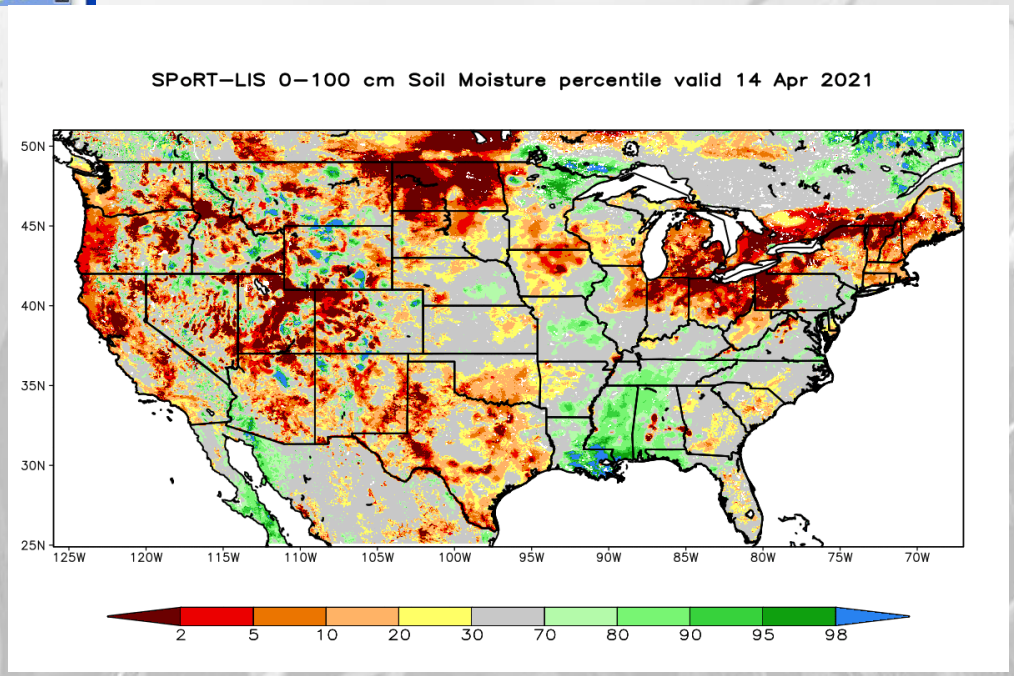
Soil Moisture



- Dry nrn plains consistently
- Varying results eastern Corn Belt.

- NE-KS to KY appropriately moist or a little wet from recent precip.





http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#

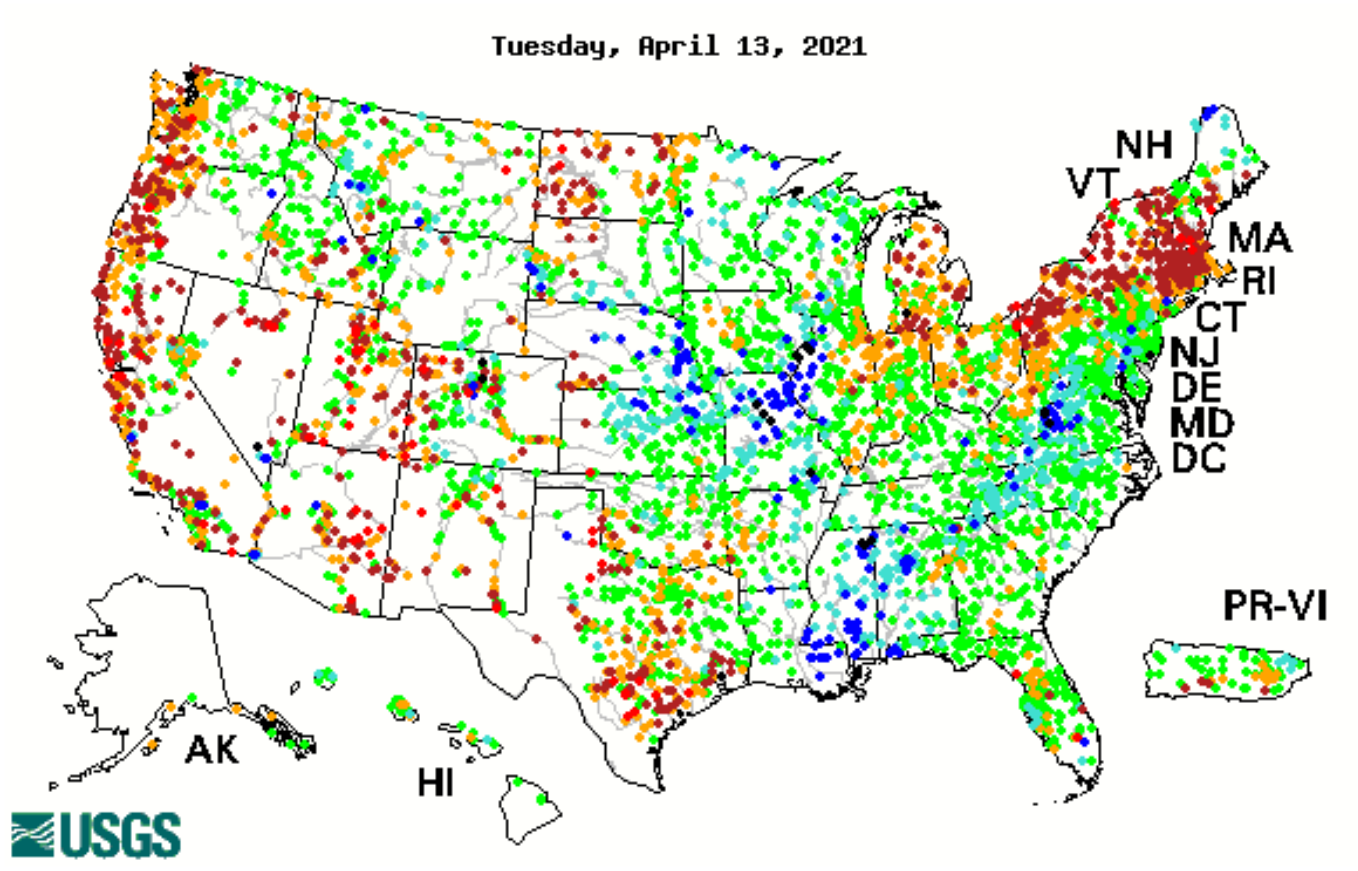
https://cloud.csiss.gmu.edu/Crop-CASMA/

https://weather.msfc.nasa.gov/sport/case_studies/lis_CONUS.html

7-Day Average Streamflow

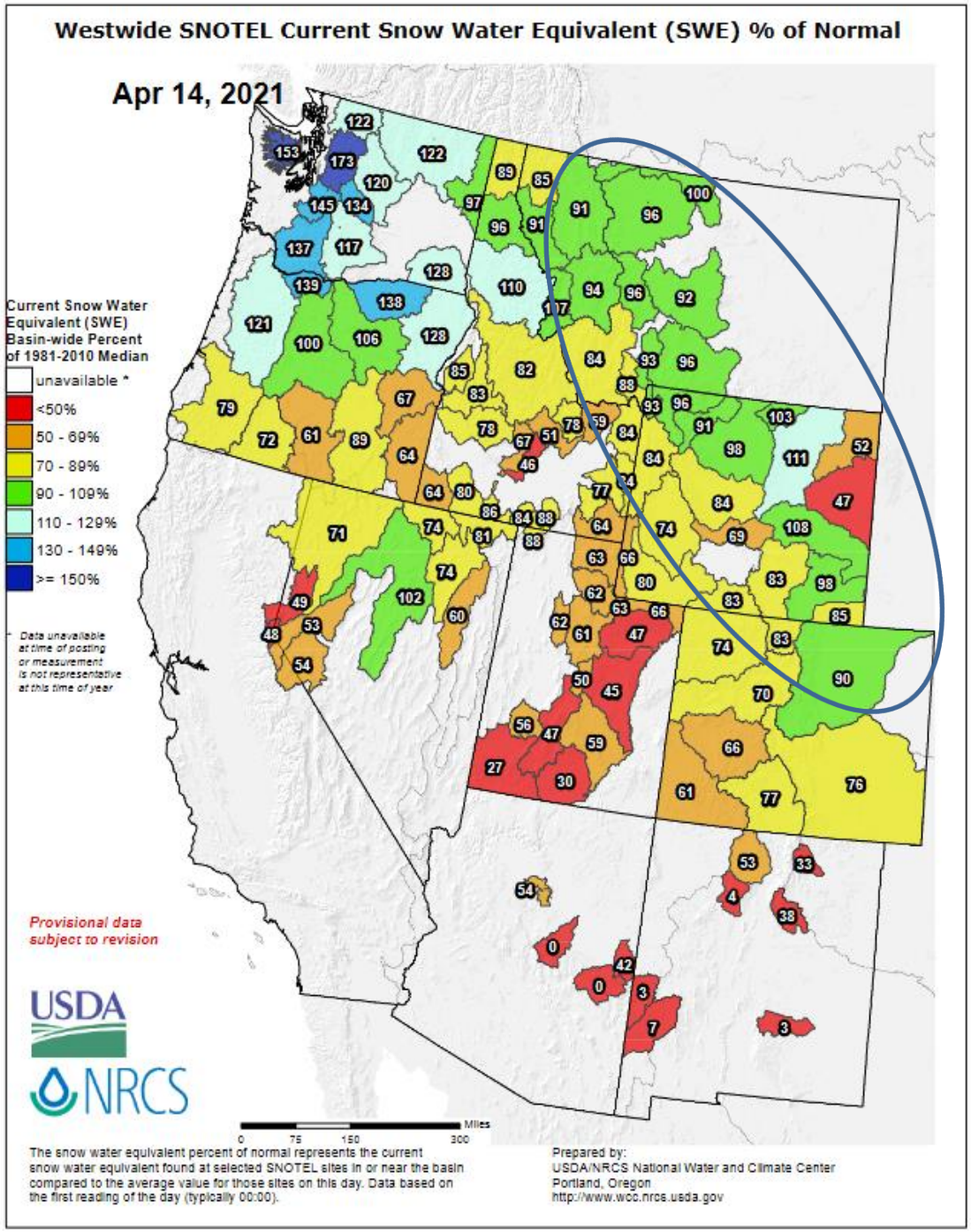
Tuesday, 13 April 2021

- Above avg. streamflows central area.
- Below eastern Great Lakes
- Large chunks Plains



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/index.php?id=pa07d



NRCS Snow Water Equivalent

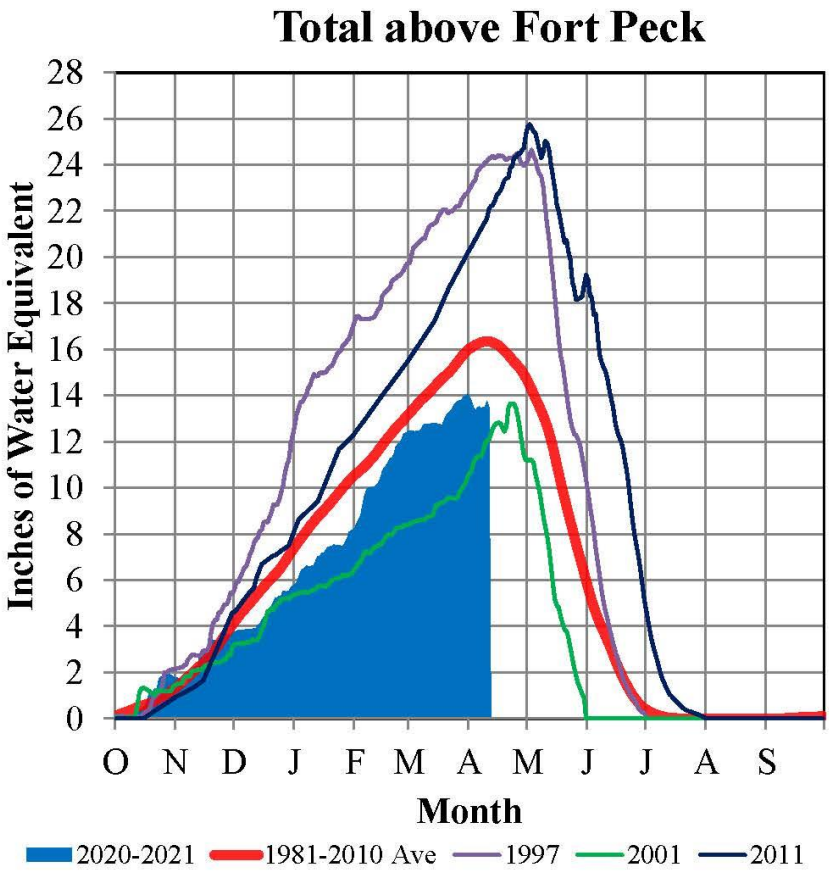
- Most front range close to average.
- Melting out early.

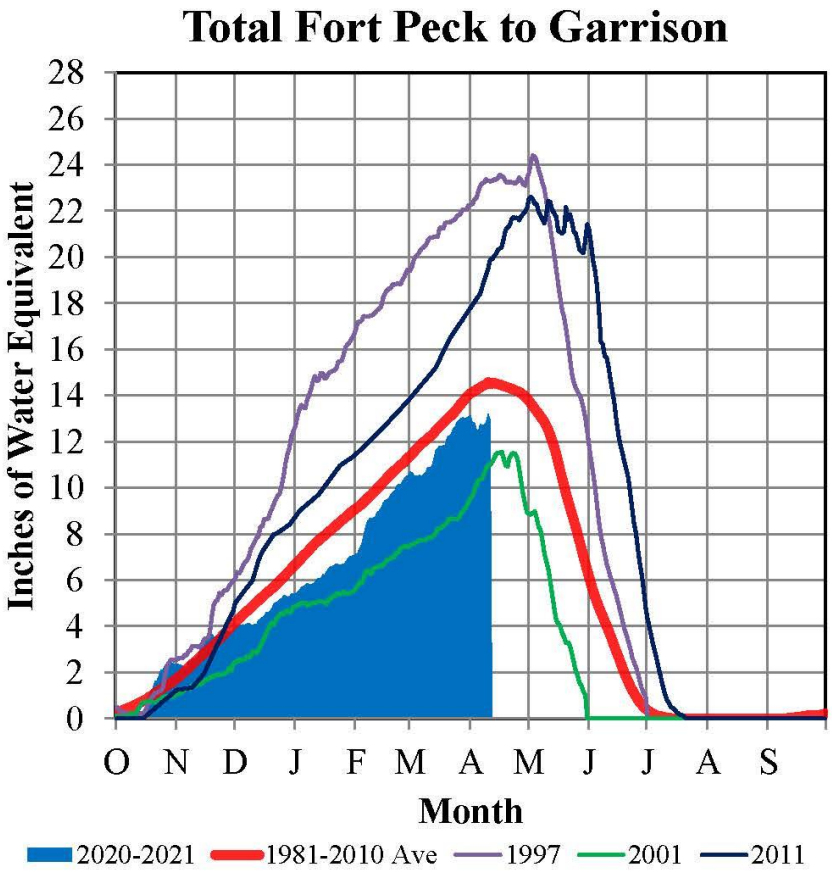
Various water issues

- March snow helped east slope CO water supply
- CO west slope limited snow and early meltout
  - Water supply issues
  - Fires
  - Possible reduced production
- MT also early melt-out (less help from March snow).

Missouri River Basin – Mountain Snowpack Water Content 2020-2021 with comparison plots from 1997*, 2001*, and 2011

11-Apr-2021

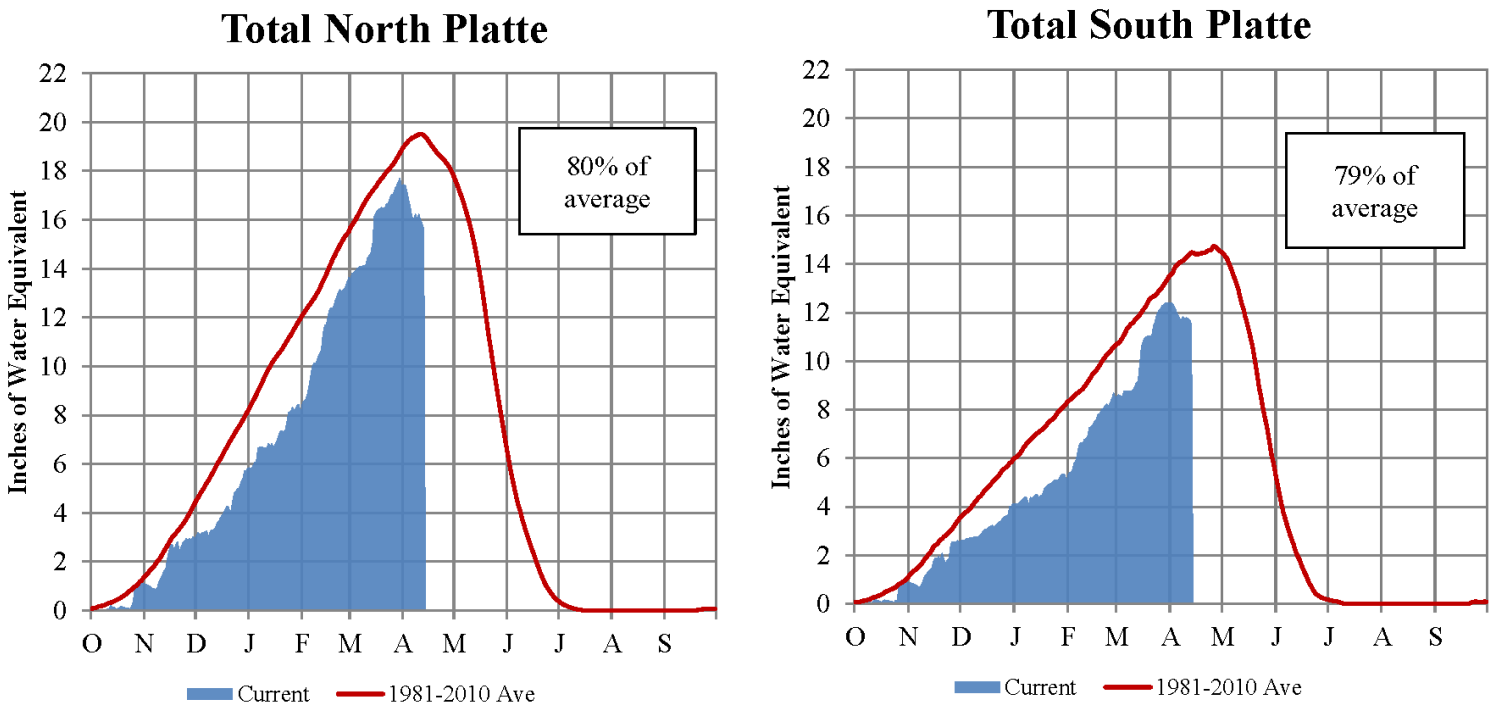




On April 11, 2021 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach was 13.5", 82% of the April 11 average. On April 11, 2021 the mountain SWE in the "Fort Peck to Garrison" reach was 13.0", 89% of the April 11 average. The normal peak for both reaches is near April 15.

Provisional data. Subject to revision.

Platte River Basin - Mountain Snowpack Water Content
Water Year 2020-2021
April 14, 2021

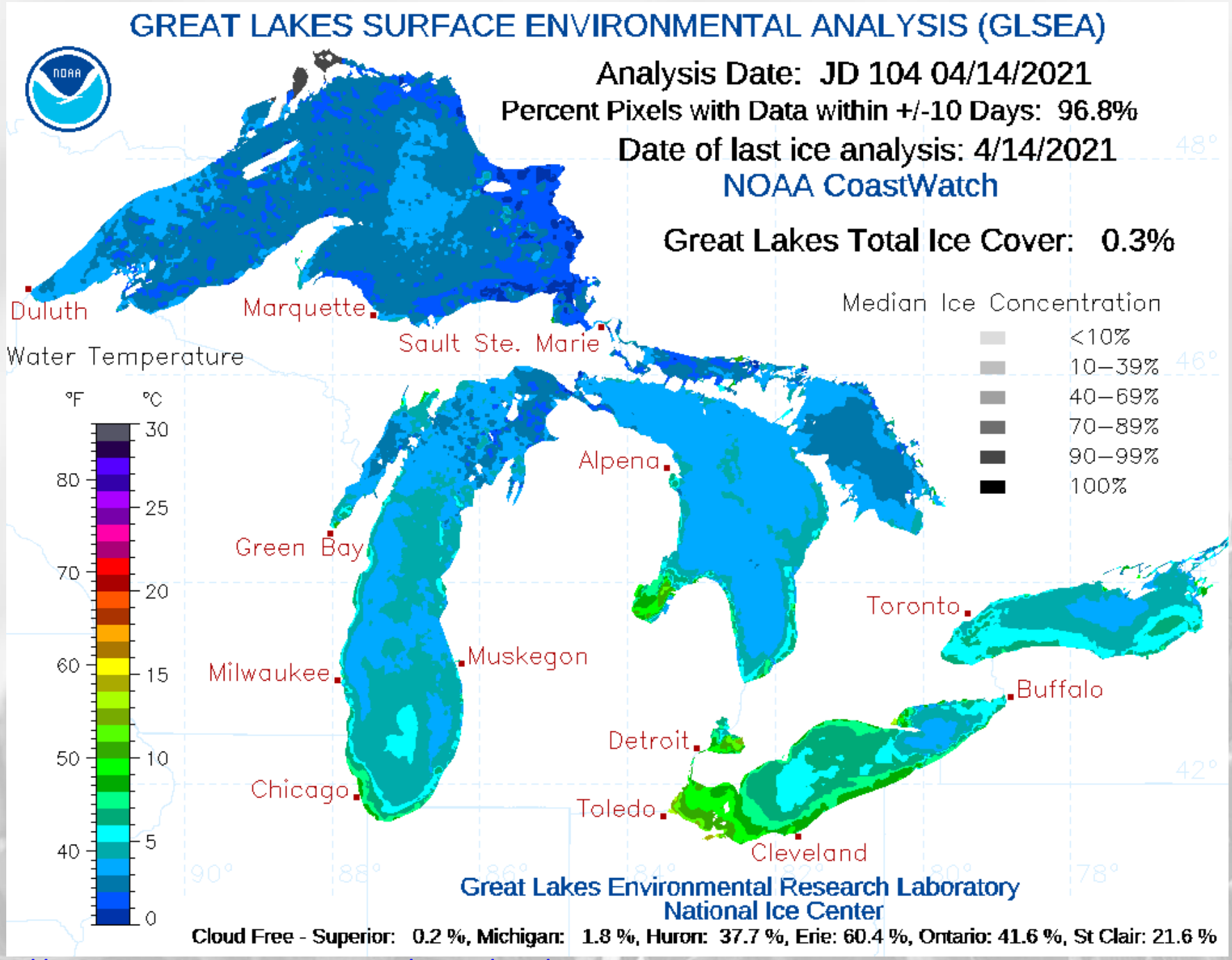


The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of April 13, 2021, the mountain snowpack SWE in the "Total North Platte" reach is currently 15.6", 80% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 11.5", 79% of average.

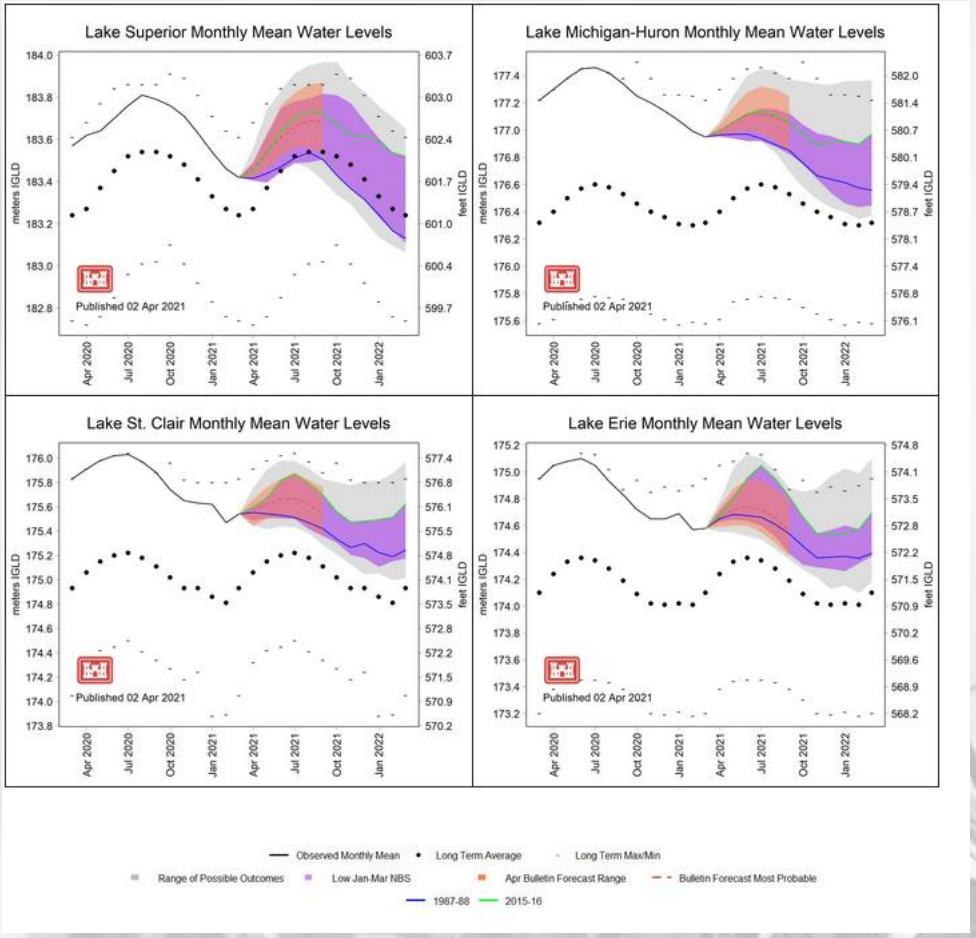
Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

https://www.nwd-mr.usace.army.mil/rcc/reports/platte_snow.png



https://coastwatch.glerl.noaa.gov/glsea/cur/glsea_cur.png



Great Lakes Levels

- Lower lakes up slightly
- Others generally falling from record level but still above averages.
- Dryness in region contributing.
- Possible rebound, but unlikely back to record levels.

https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Level-Future-Scenarios/

River Flooding Risk

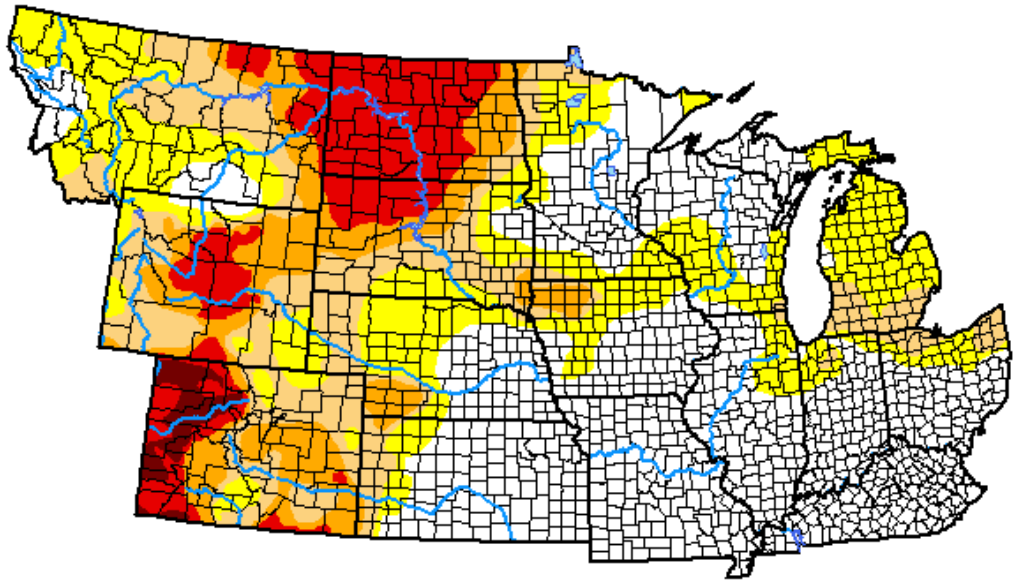
Minor flooding on Mississippi currently

Some risk of flooding KS-MO-IL – normal summer convection.

https://water.weather.gov/ahps/

U.S. Drought Monitor

NWS Central Region



April 13, 2021

(Released Thursday, Apr. 15, 2021)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	40.21	59.79	37.11	21.27	11.47	1.32
Last Week *04-06-2021*	33.10	66.90	38.46	21.45	10.56	1.32
3 Months Ago *01-12-2021*	30.27	69.73	45.16	24.13	11.54	2.52
Start of Calendar Year *12-29-2020*	30.52	69.48	46.07	24.23	12.18	2.52
Start of Water Year *09-29-2020*	29.60	70.40	37.34	17.96	7.13	0.24
One Year Ago *04-14-2020*	90.45	9.55	5.26	1.33	0.00	0.00

Intensity:

- None
- 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. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

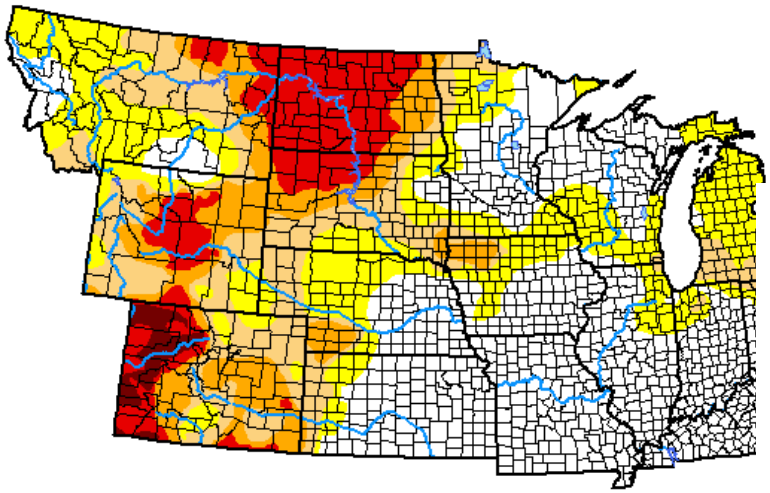
Deborah Bathke

National Drought Mitigation Center

droughtmonitor.unl.edu

US Drought Monitor

U.S. Drought Monitor
NWS Central Region



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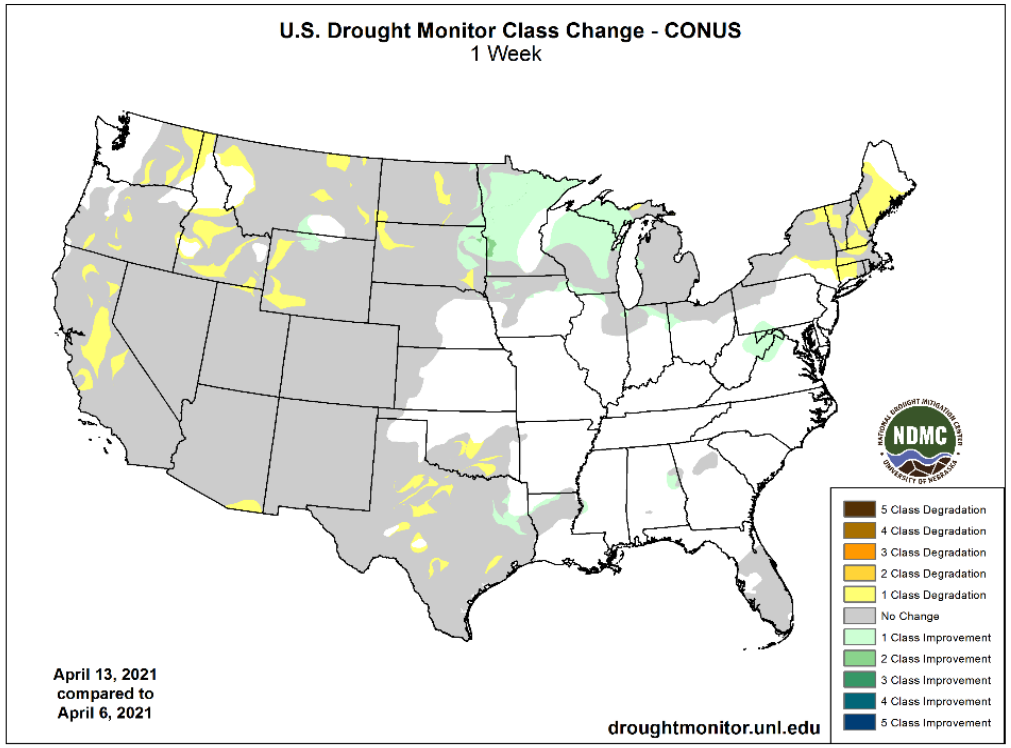


https://droughtmonitor.unl.edu/

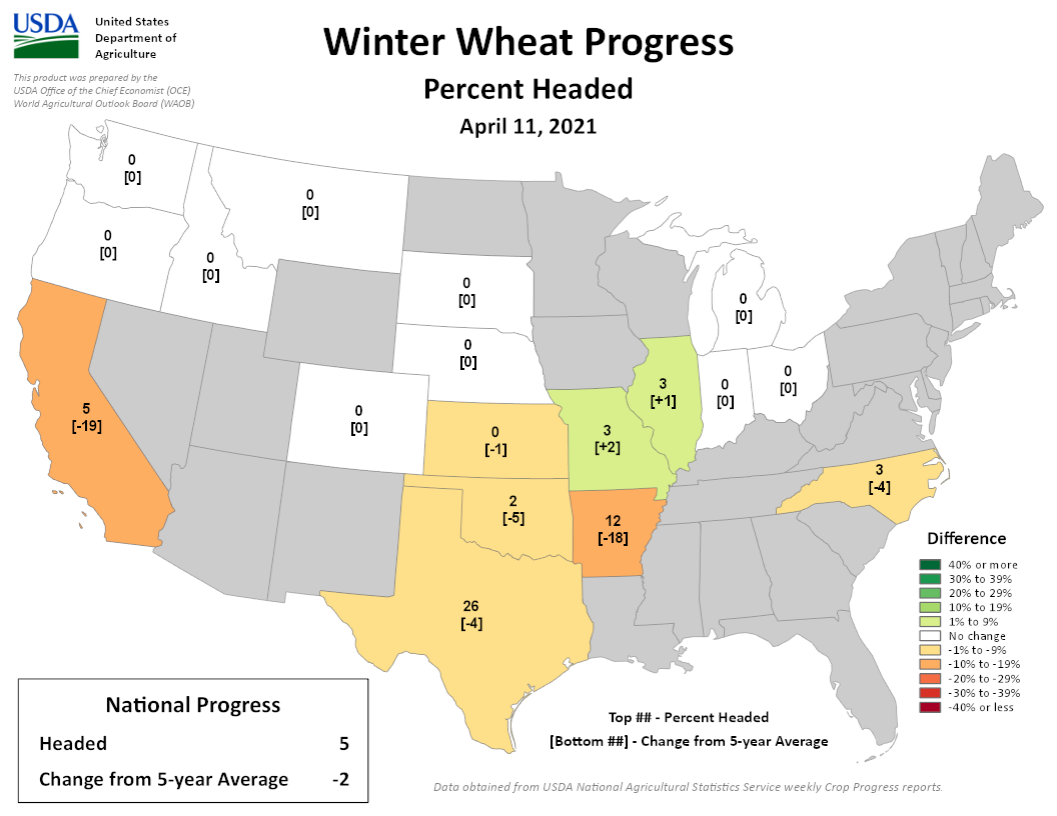
AGRICULTURE

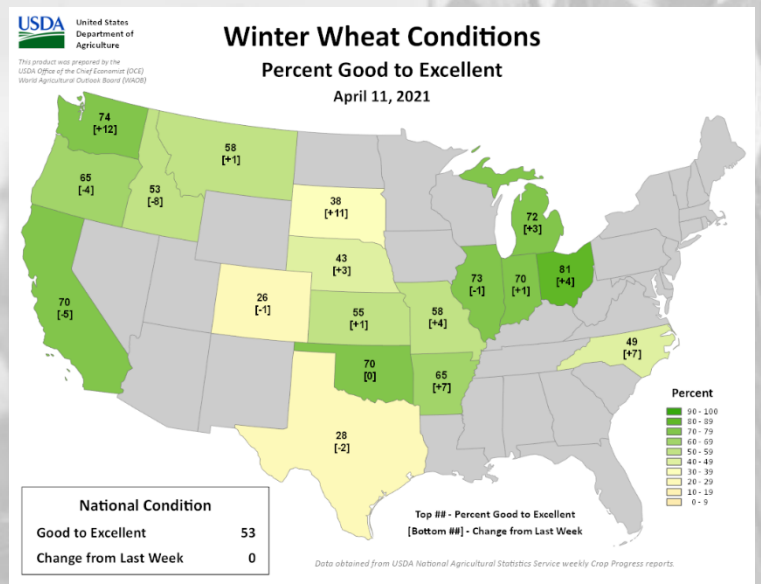
Photo:
Romulo Lollato – KSU

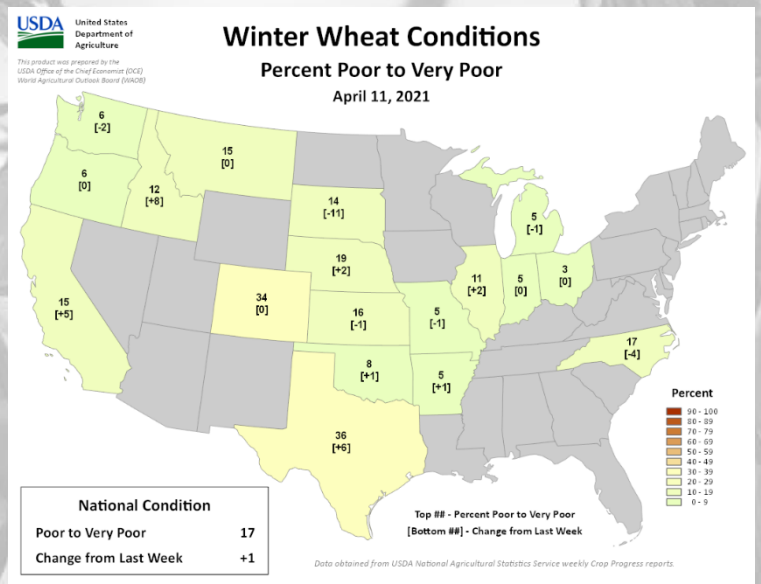
USDA NASS Crop Progress

Winter Wheat

- Winter wheat progress a little behind 5 year avg (-2%).
- Extreme cold and drought impacting west
- Conditions in the east generally good.







USDA United States Department of Agriculture

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

Winter Wheat Progress

Percent Headed

April 11, 2021

USDA NASS

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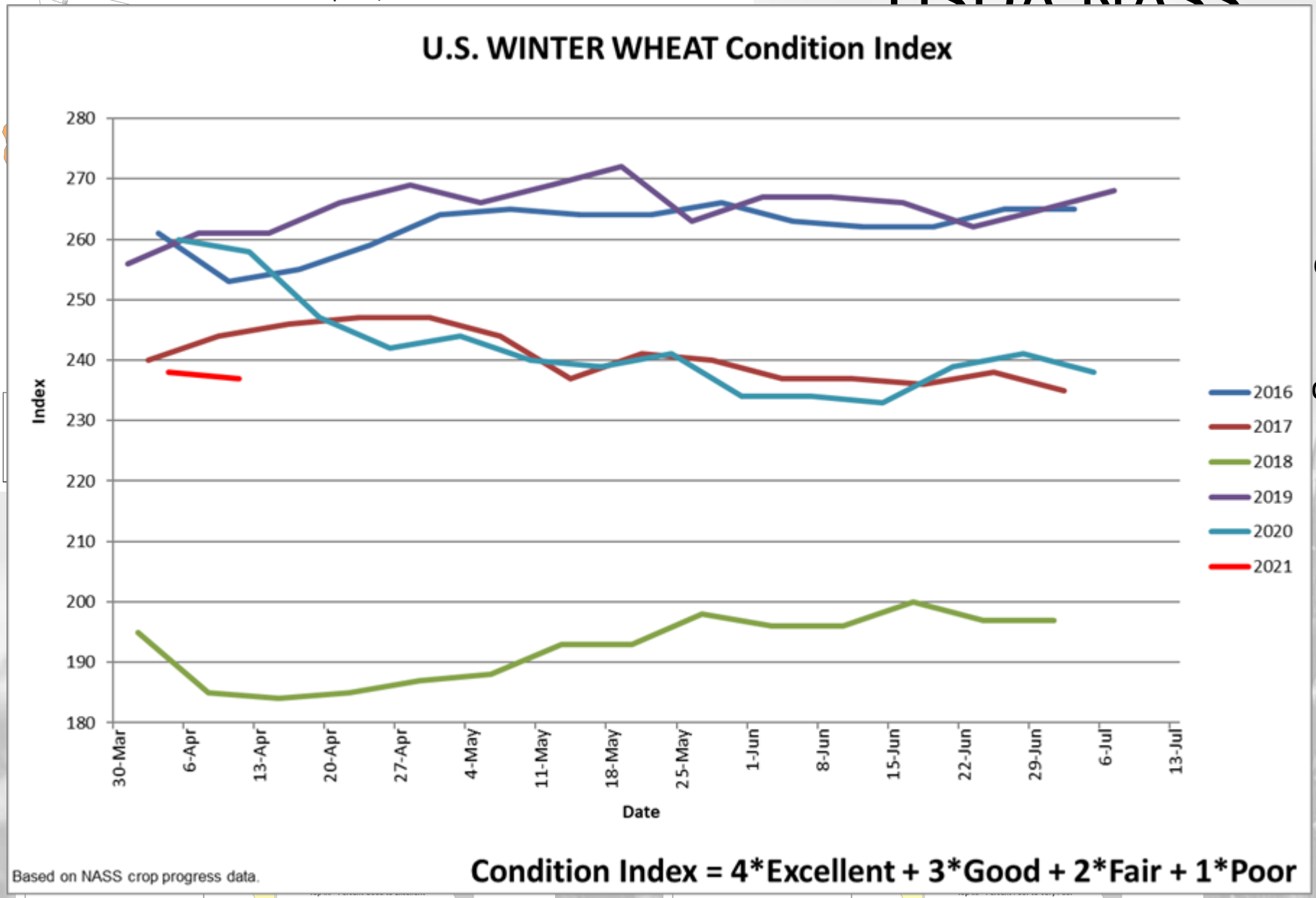


Good to Excellent	53
Change from Last Week	0

[Bottom ##] - Change from Last Week

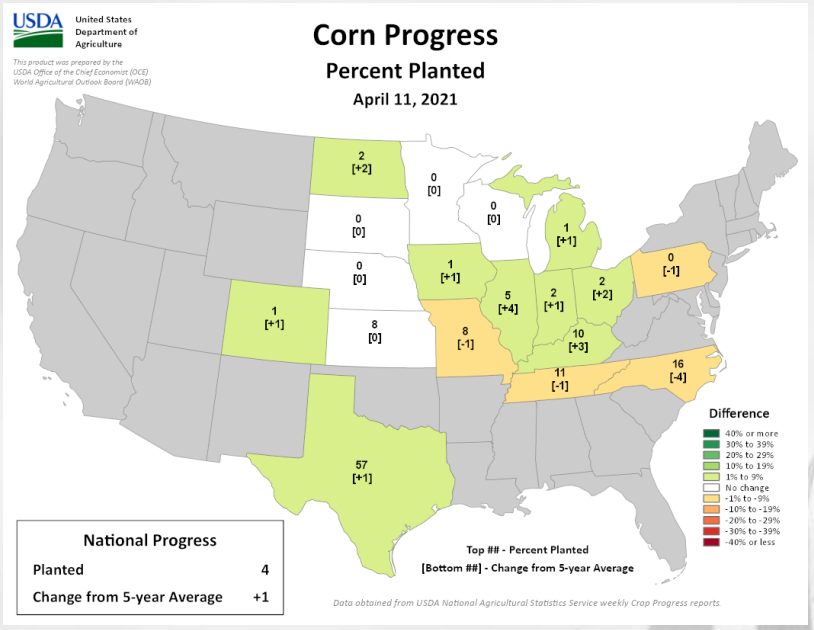
Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

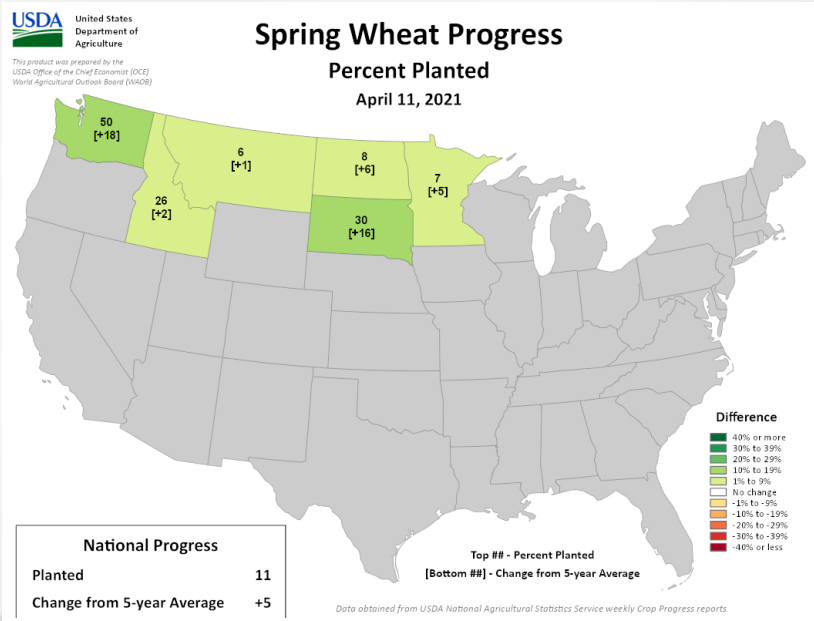
Poor to Very Poor	17
Change from Last Week	+1

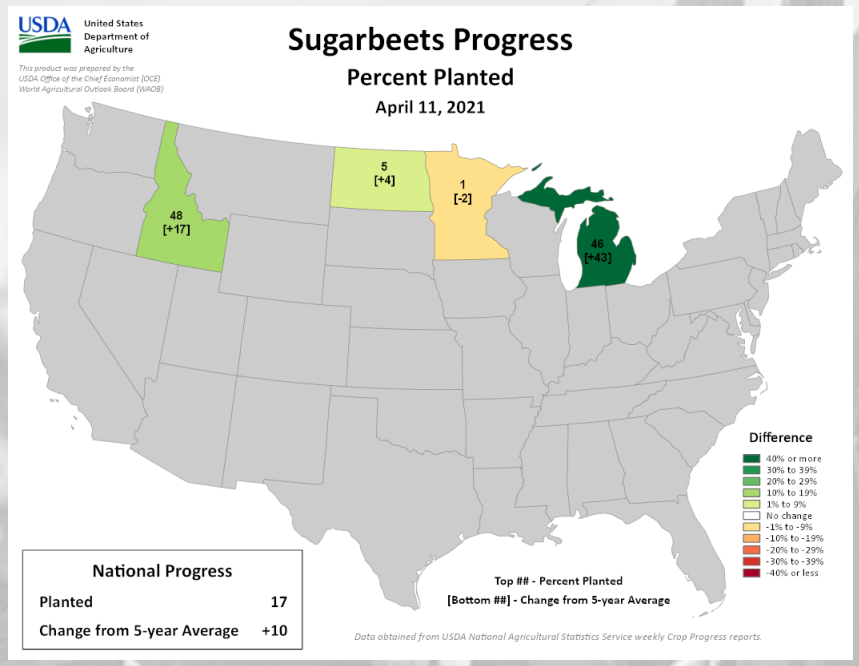
[Bottom ##] - Change from Last Week

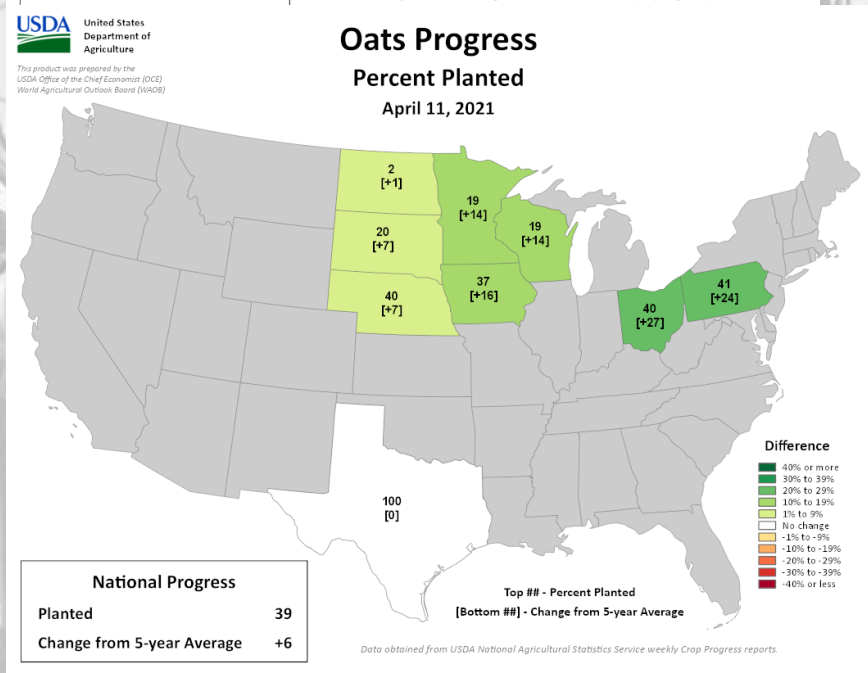
Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

USDA NASS Crop Progress









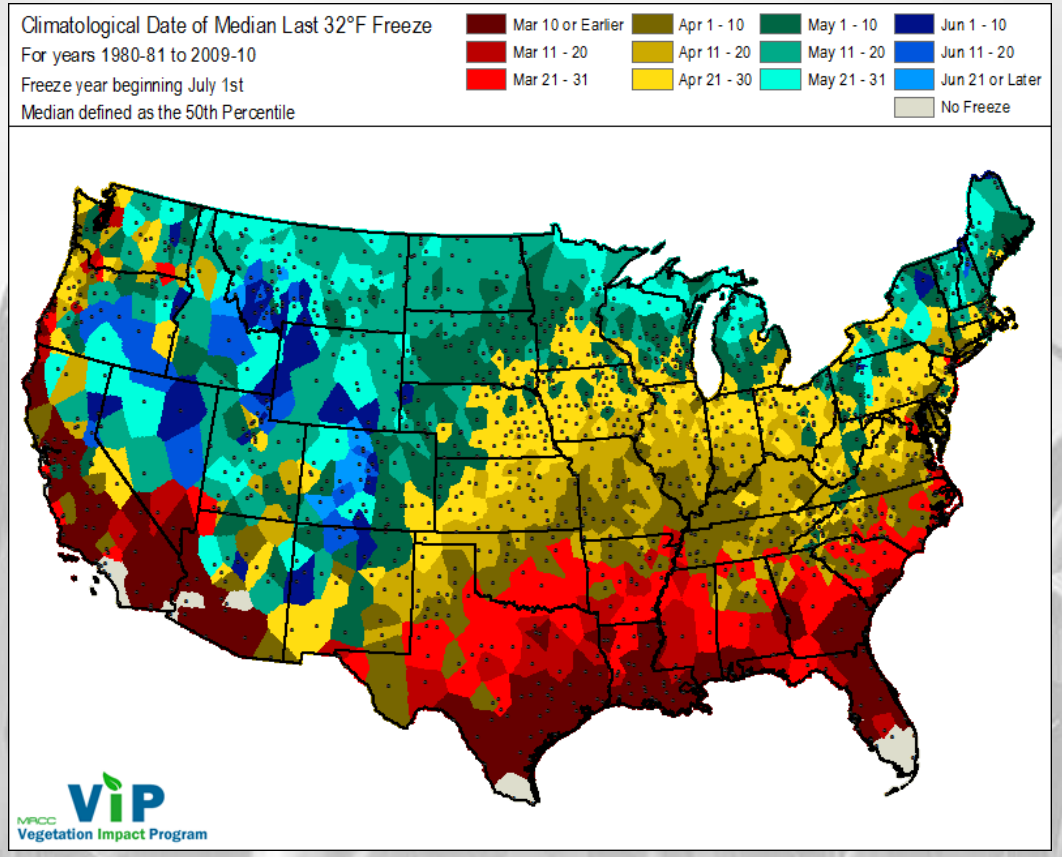
Various ag

- Early planting – cool slowing – generally good conditions
- Maple syrup production reduced (OH) cold Feb-warm March limiting period of collection
- Cicadas
- KS – cold issues (Feb.) and cattle losses 1/3 counties

Photo:
Pat Guinan
Columbia, MO.

2021 Central US Freeze Events

- Situations
  - Extreme cold Feb.
  - Freeze event
  - Possible upcoming



Freeze events are combinations of climatology and phenology. Freeze damage affected by severity of cold, period of time, crop phenology and crop types.

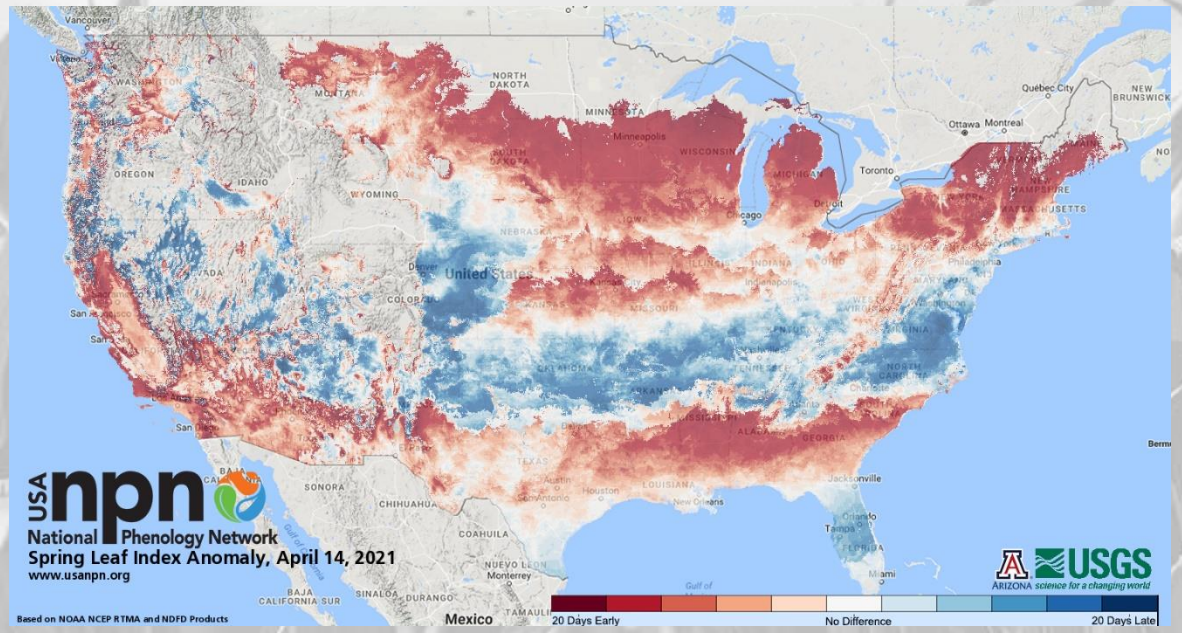
https://mrcc.illinois.edu/VIP/index.html

Spring 21 Progress

- Warm winter/early spring helped push vegetation earlier than average.
- Slowed by cold in Feb (blue band)
- Red areas well ahead of average.
- 2-3 weeks ahead in place
- Risk of freeze

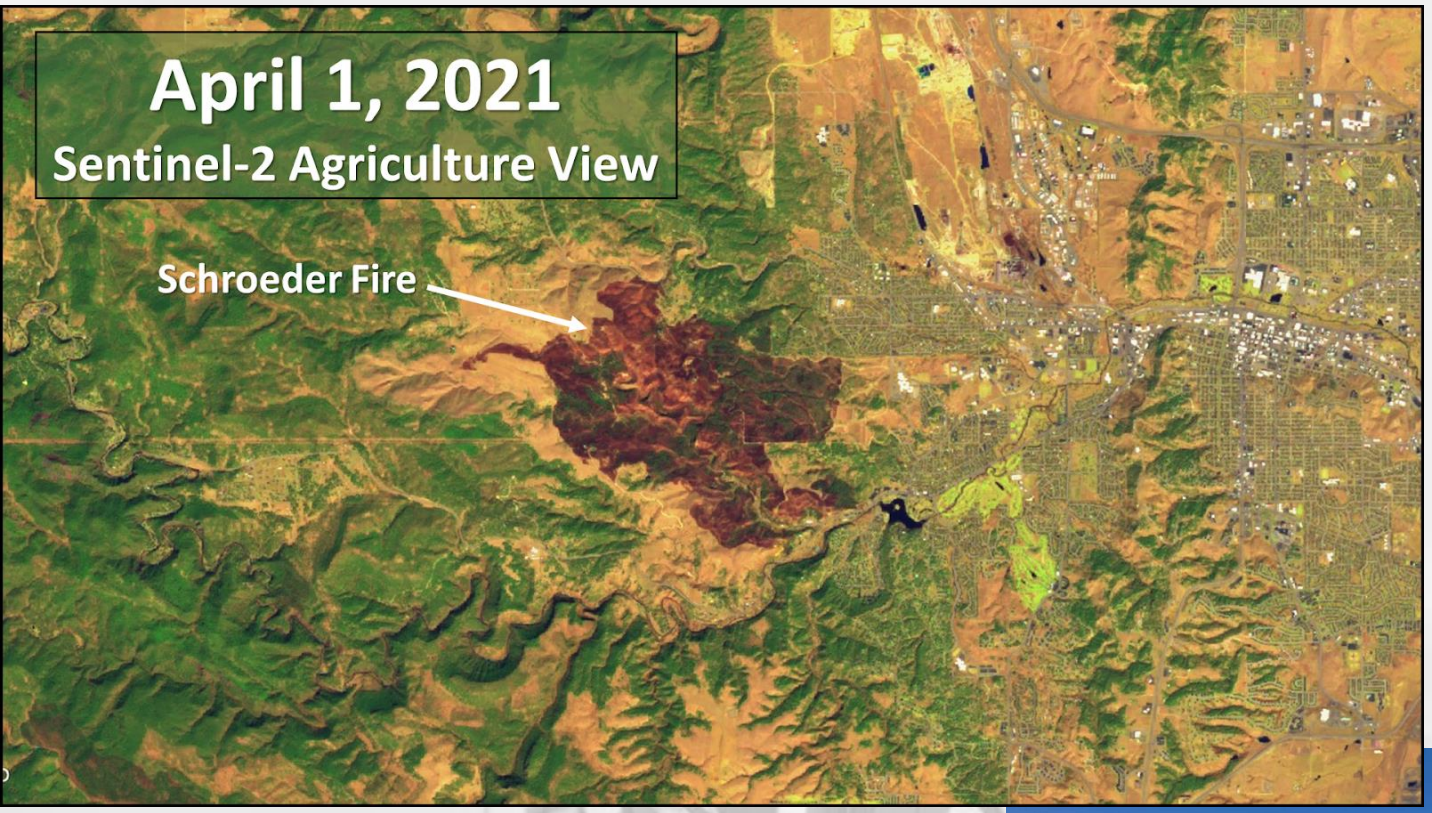
Leaf Out
14 April 2021

Photo: Ray Wolf NWS Quad Cities



USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

https://www.usanpn.org/news/spring
https://hprcc.unl.edu/maps.php?map=ACISClimateMaps



Schroder Fire
burn area
NWS Rapid City

WILDFIRE

KS Fire
Photo: Mar
Knapp

Fires

- MN Ox Cart fire 13,000 acres $400k structure damage
- ND fires – 300K acres burned 5K Roosevelt NP
- SD fires – Rapid City/Black Hills (closed Mt. Rushmore. Grassland areas outside BH.
- KS – picture some places dry grasses but wet soils – management issue.
- NE – Small fire closed I-80 temporarily
- Driven by warm very wind dry conditions

OUTLOOKS

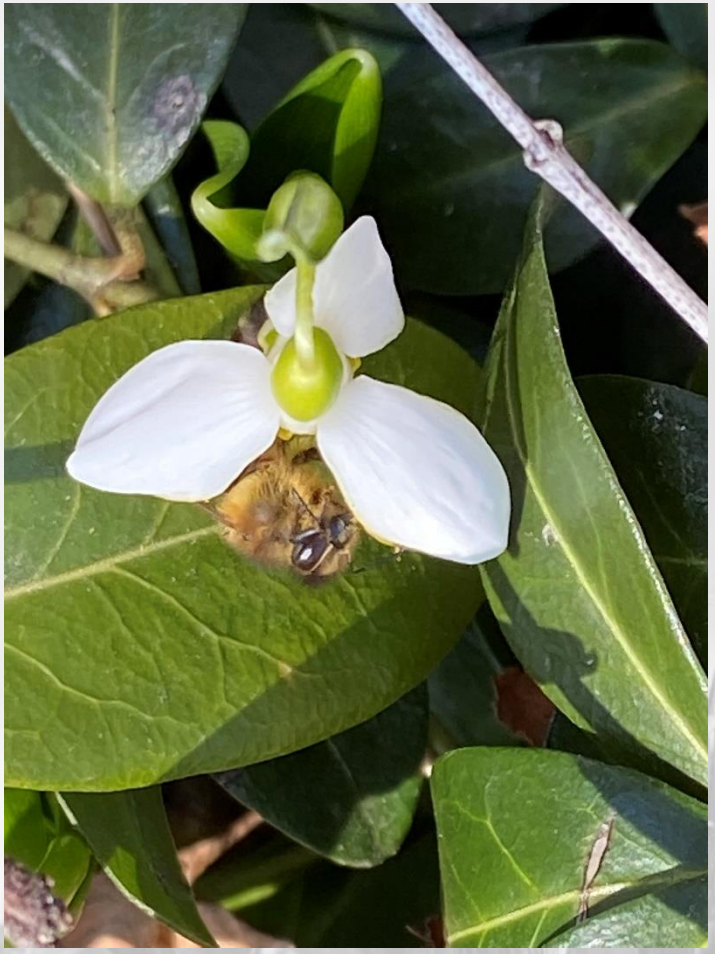


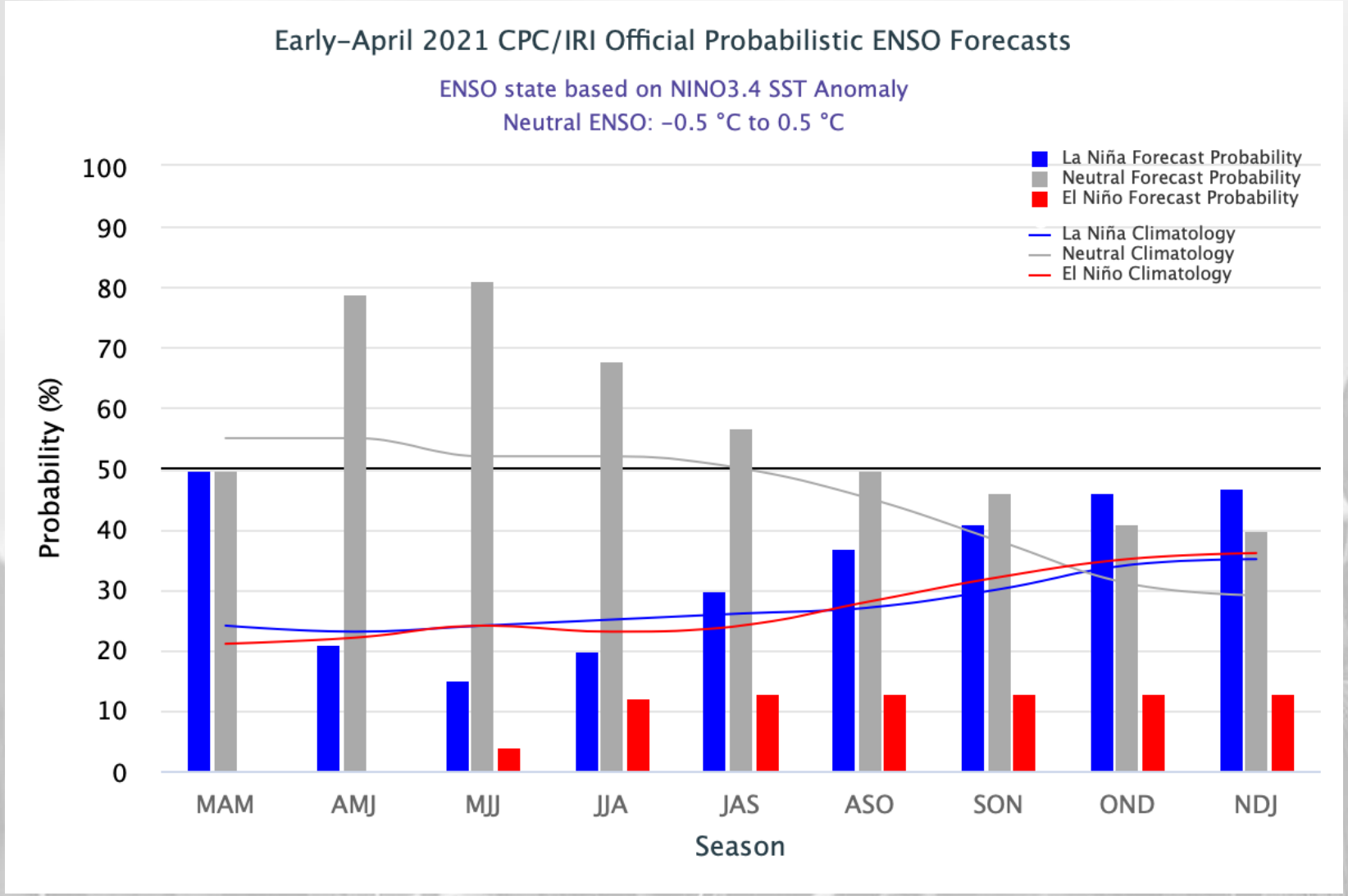
Photo: Ray Wolf
NWS Quad Cities

Climate Outlooks

- **La Niña status…..**
- **7-day precipitation forecast**
- **8-14 day outlook**
- **May**
- **Seasonal/Summer season**

Photo:
Natalie Umphlett – UNL HPRCC
Lincoln, NE

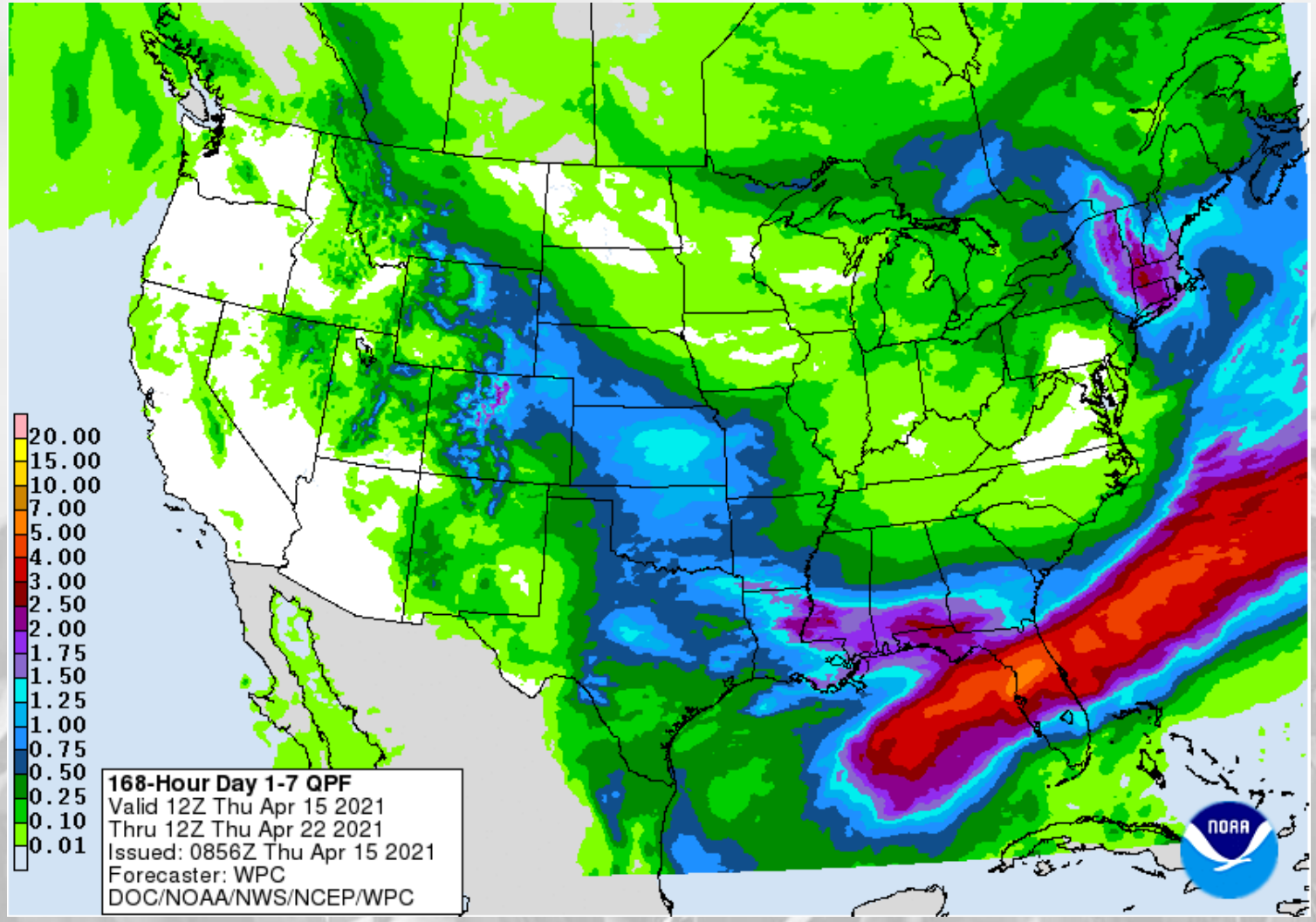
ENSO Outlook Status



https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/?enso_tab=enso-cpc_plume

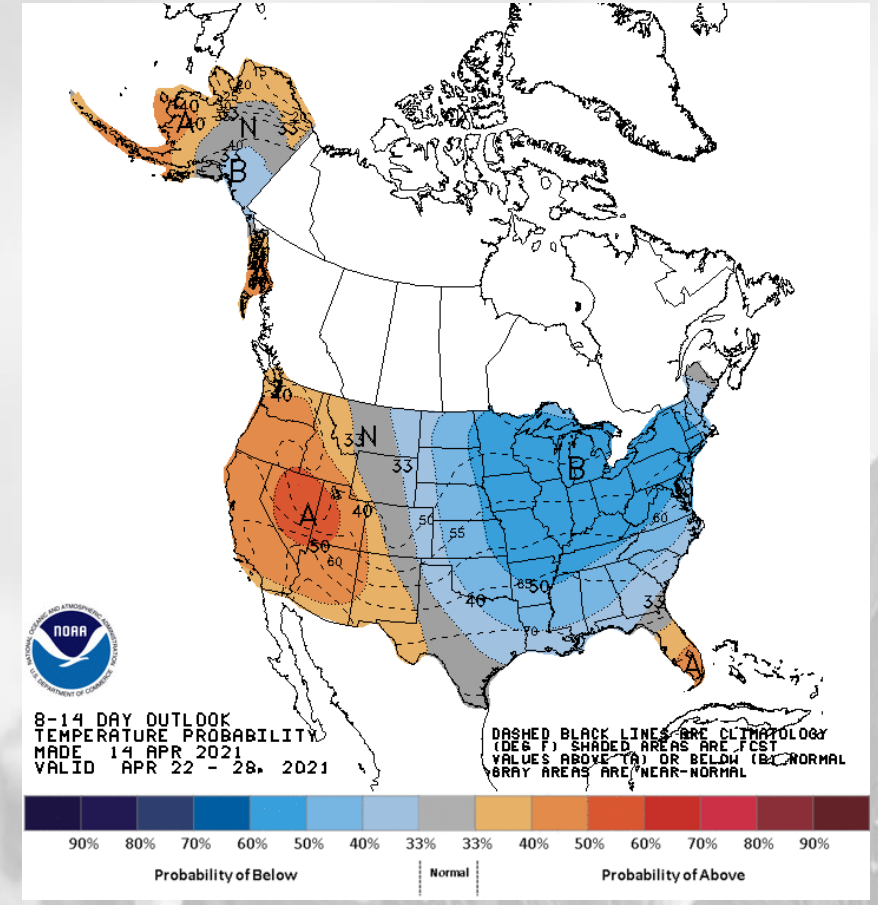
7-day Quantitative Precipitation Forecast

Valid: 7 AM Thu 15 April – 7 AM Thu 22 April

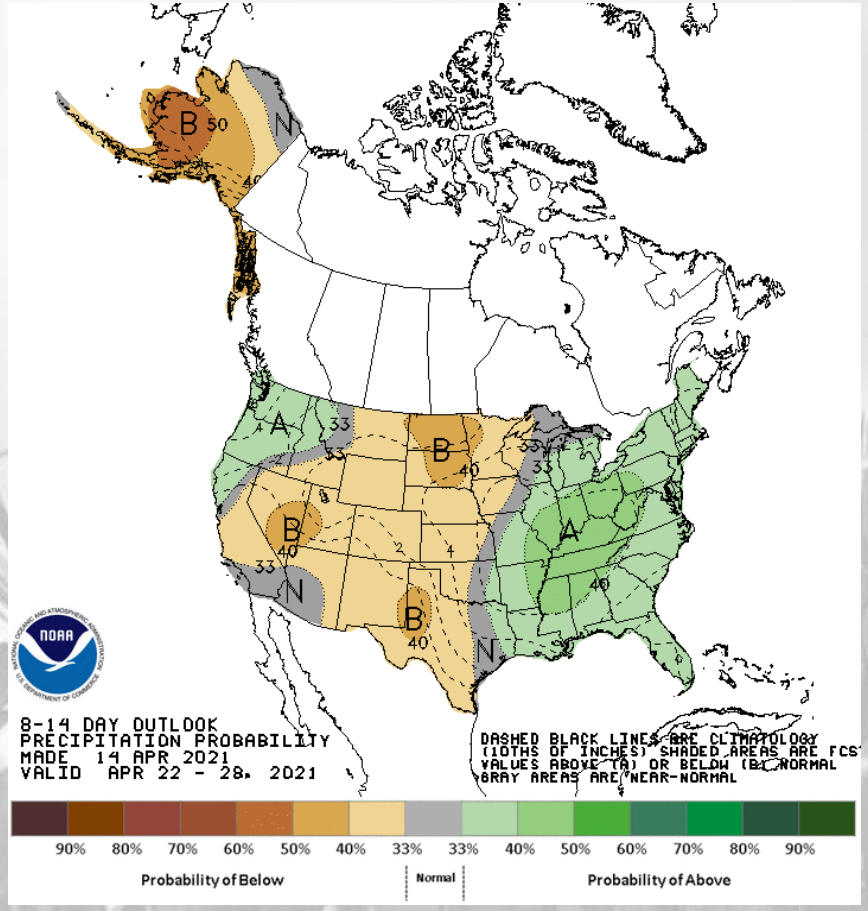


http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml

Temperature and Precipitation Probabilities for 22 April – 28 April 2021



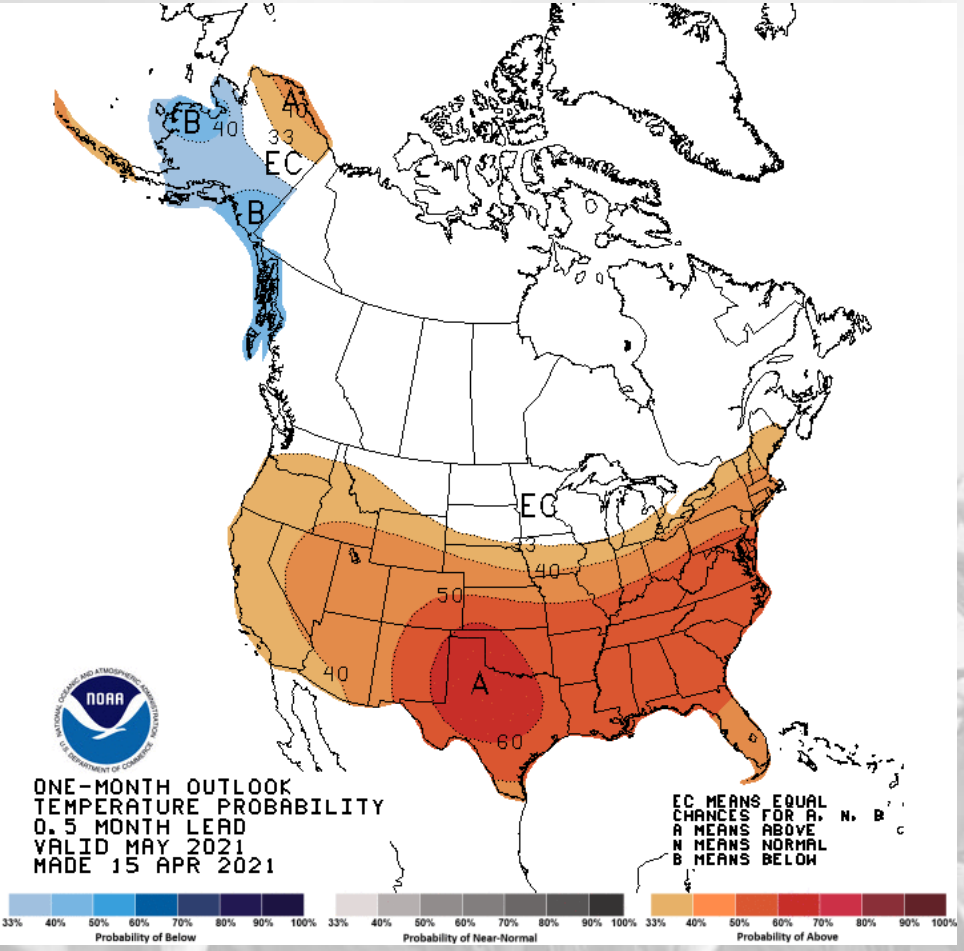
Temperature



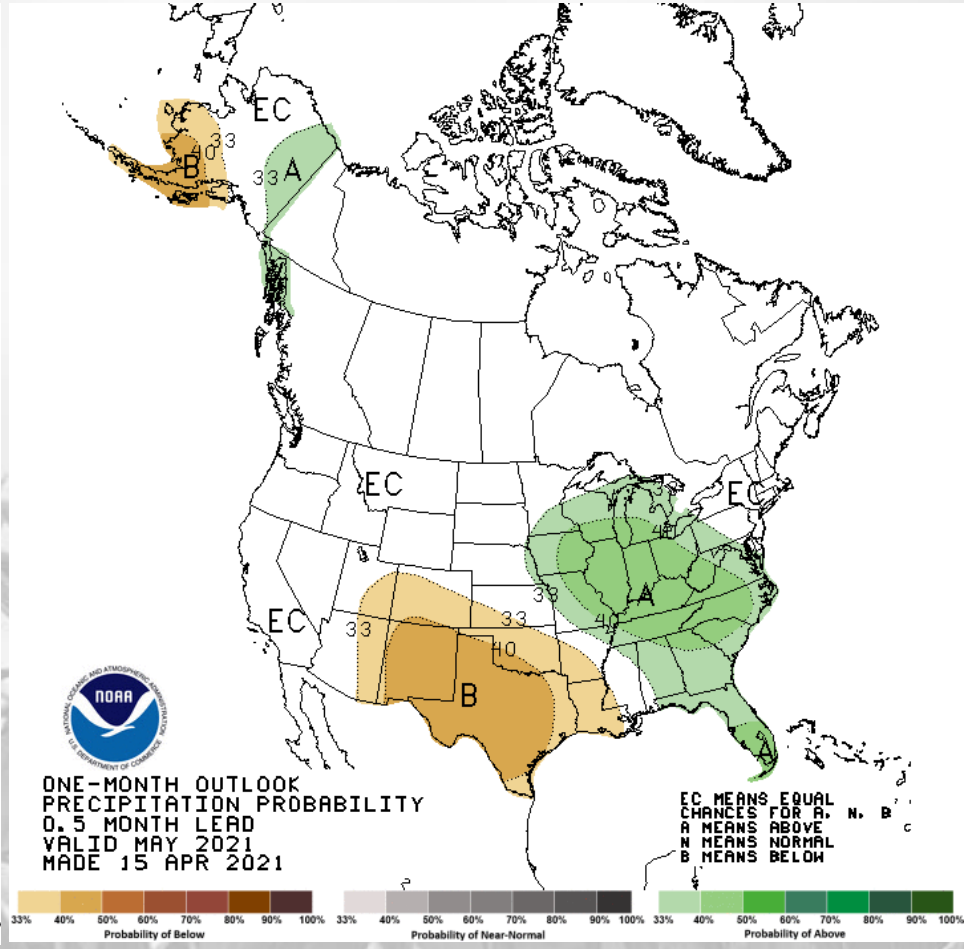
Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php

May Temperature and Precipitation Probabilities



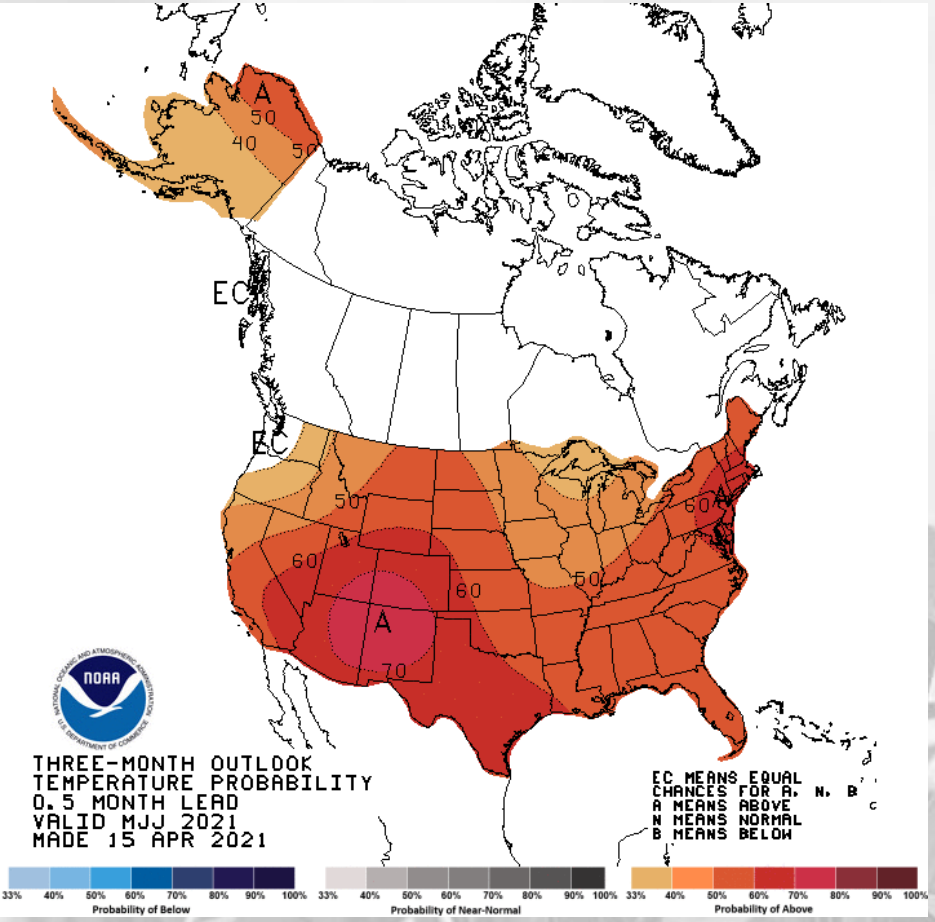
Temperature

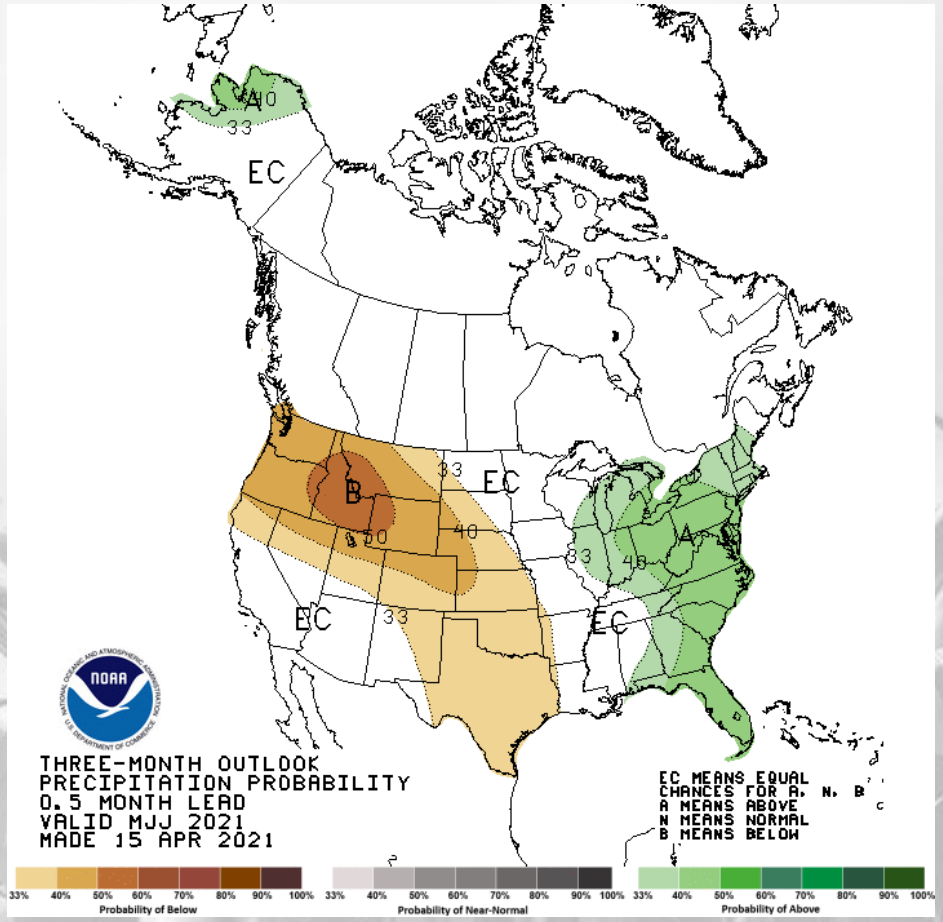


Precipitation

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

May-July Temperature and Precipitation Probabilities

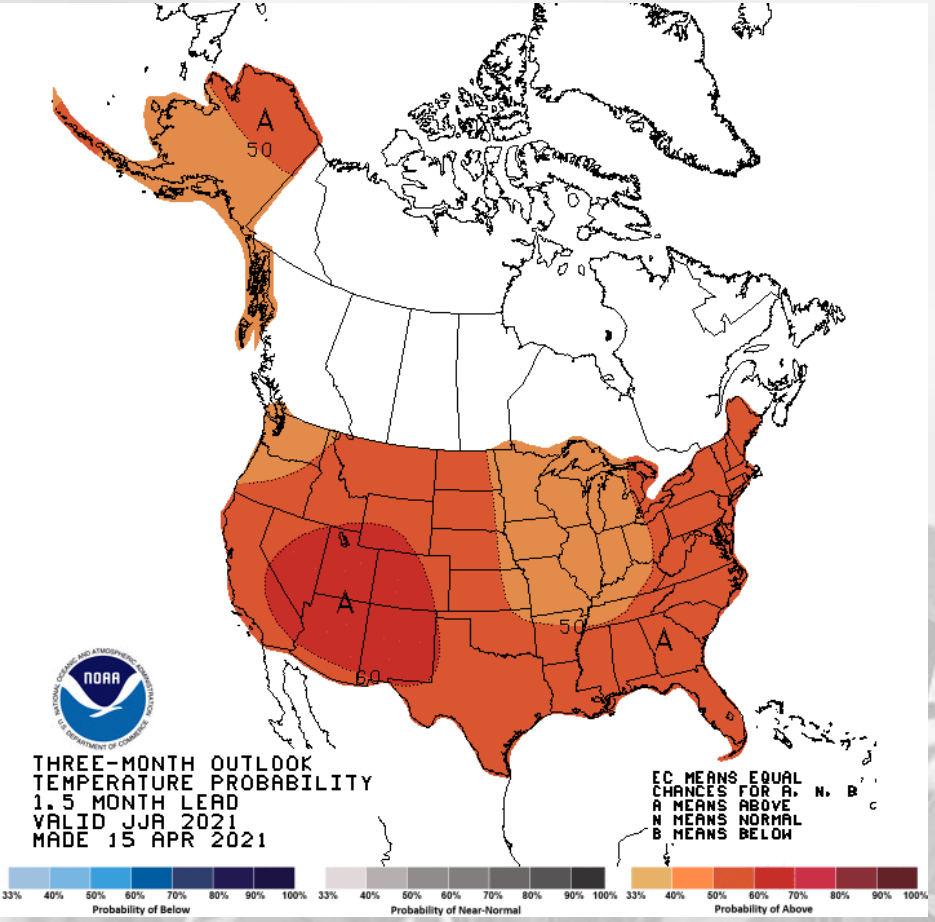


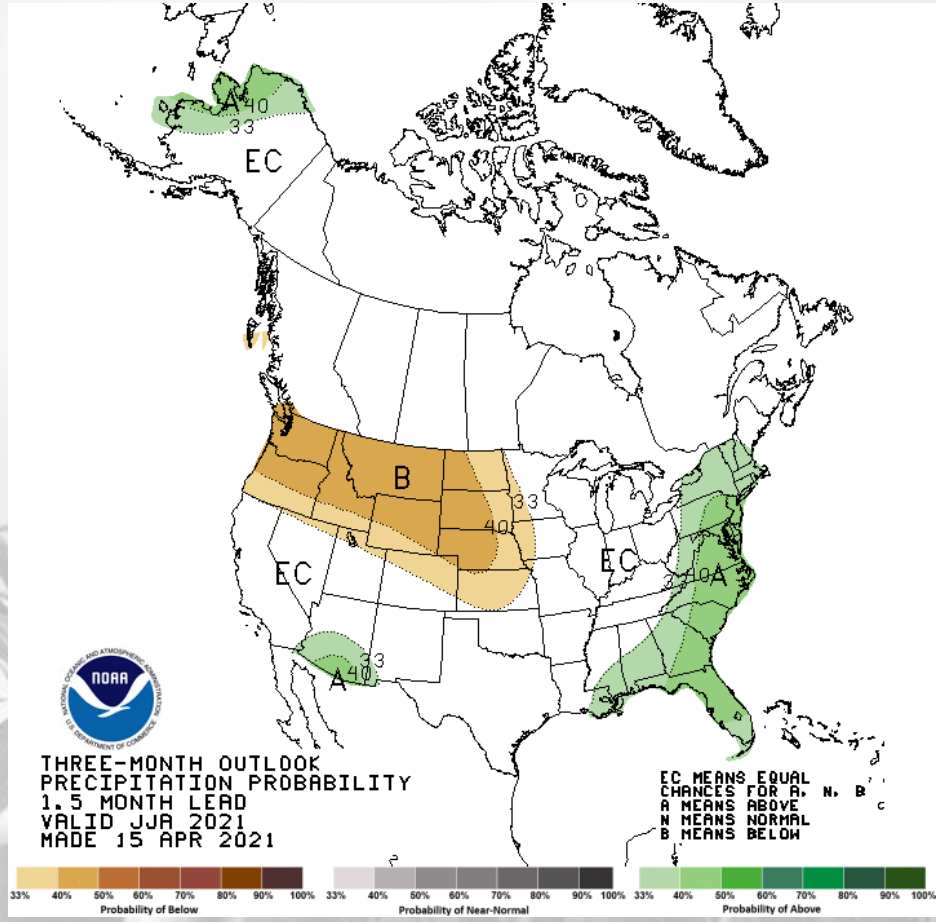


Temperature **Precipitation**

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=2

June-August Temperature and Precipitation Probabilities

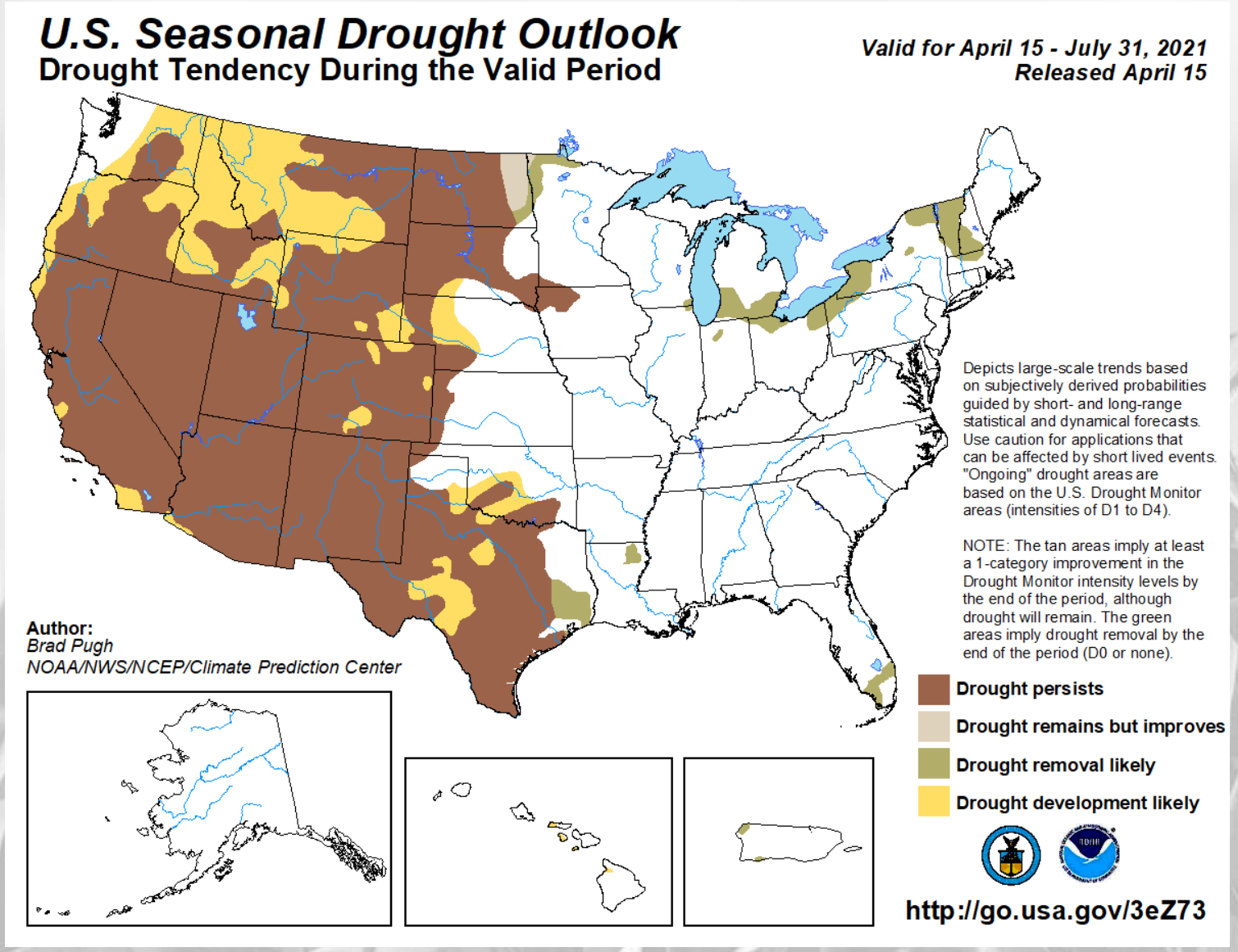




Temperature **Precipitation**

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=2

Drought Outlook through 31 July



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

Summary - Conditions

- Split over region, mostly wetter south and drier north (with some regionally differences
- Mostly much warmer than average but several freeze events

- Drought issues persist northern Plains. Smaller pockets elsewhere.
- Limited water in west in places
- Smaller wetness issues
- Fire problems many areas
- Generally good ag conditions but cool temps slowing planting.

Summary - Outlooks

* Weakening La Niña into summer.
* Likely to be neutral conditions summer into fall – minor to no impact on outlooks

* Warmer likely everywhere – less in Midwest
* Drier more likely plains, some wetter chances east
* Drought ongoing in plains, possible further development.

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
  - https://mrcc.illinois.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php
- 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@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

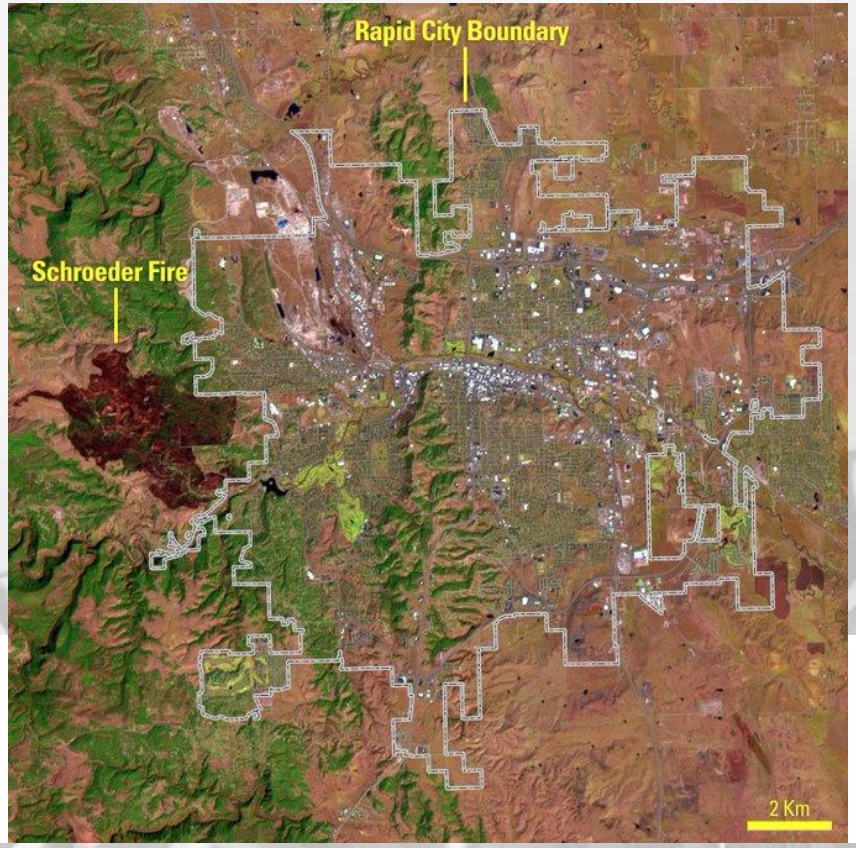
  - **Weather:**
  - crhroc@noaa.gov

For More Information

Midwest Climate Hub

@dennistodey

https://www.climatehubs.oce.usda.gov/hubs/midwest



Dennis Todey, Director

515-294-2013

Dennis.todey@ars.usda.gov

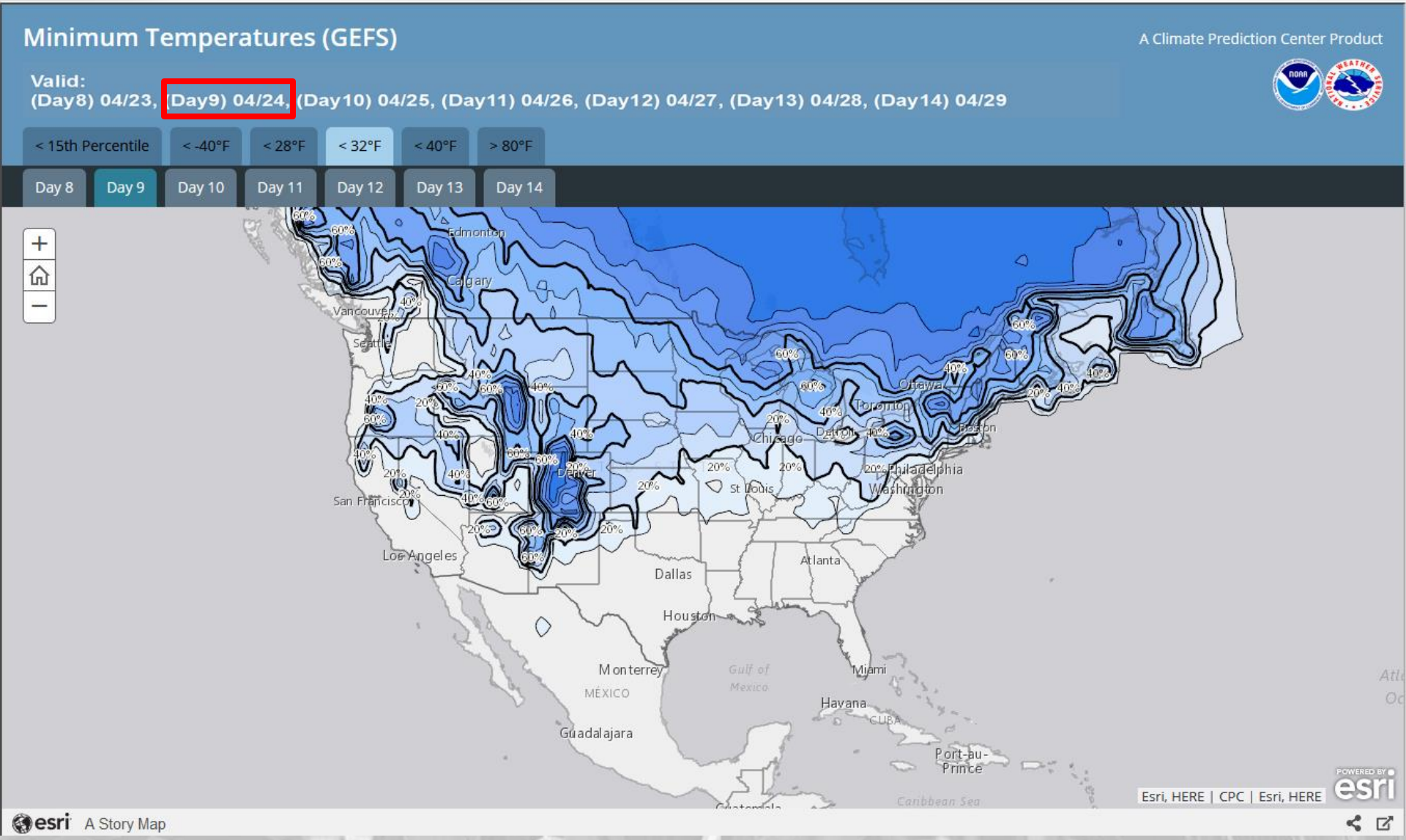
National Laboratory for Agriculture and the Environment

Attn: Midwest Climate Hub

1015 N University Blvd

Ames, Iowa 50011-3611

Risk of Temperature < 32 F

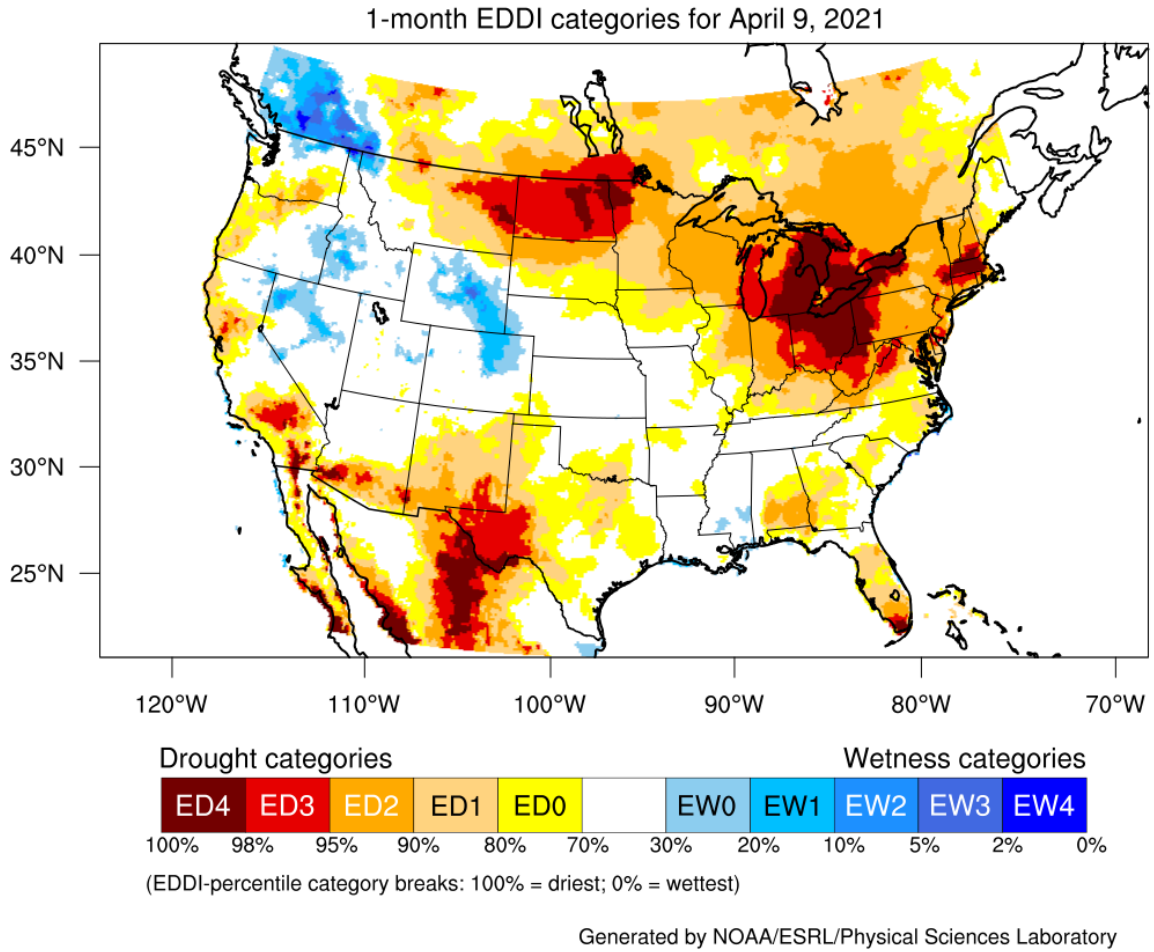


Other Crop Impacts

Frozen soybeans IL Chelsea Harbach, Director of the U of I Northwestern Illinois Ag R&D Center

- Other crop reports
  - Some small grain/cover crop damage in Northern Plains
  - Row crops mostly unaffected (corn, soybeans, others). Some early planted soybeans in IL probably lost.
  - Not emerged from soil or can recover from freeze

EDDI – Evaporative Demand Index



https://www.esrl.noaa.gov/psd/eddi/