USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

North Central US Climate-Drought Outlook
21 April 2022

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515-294-2013

USDA 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.purdue.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php
- **Open for questions at the end (enter them along the way).**

Agenda

- **Current Conditions**
- **Impacts**
  - **Issues/Events**
  - **Hydro**
  - **Ag (freeze, planting)**
  - **Fire**
  - **Other**
- **Outlooks**
  - **La Niña continues**
  - **Summer**

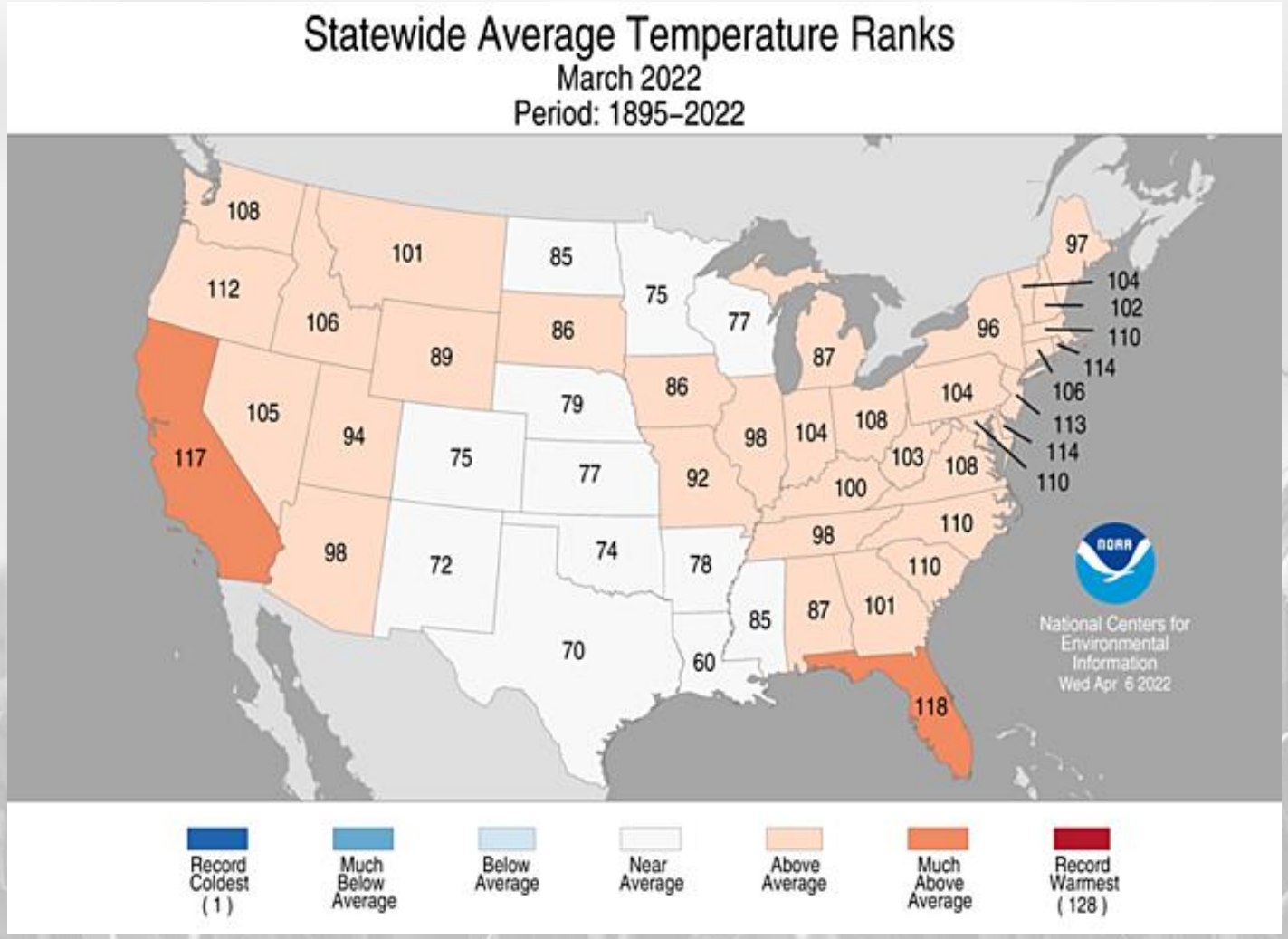
Photo:
Dennis Todey Ames, IA
18 April 2022

Photo:
Tripp County SD
Laura Edwards (SDSU-State Climatologist)

REVIEW/CURRENT CONDITIONS

March Temperature Recap

Despite some colder conditions, much of region was warmer during March.

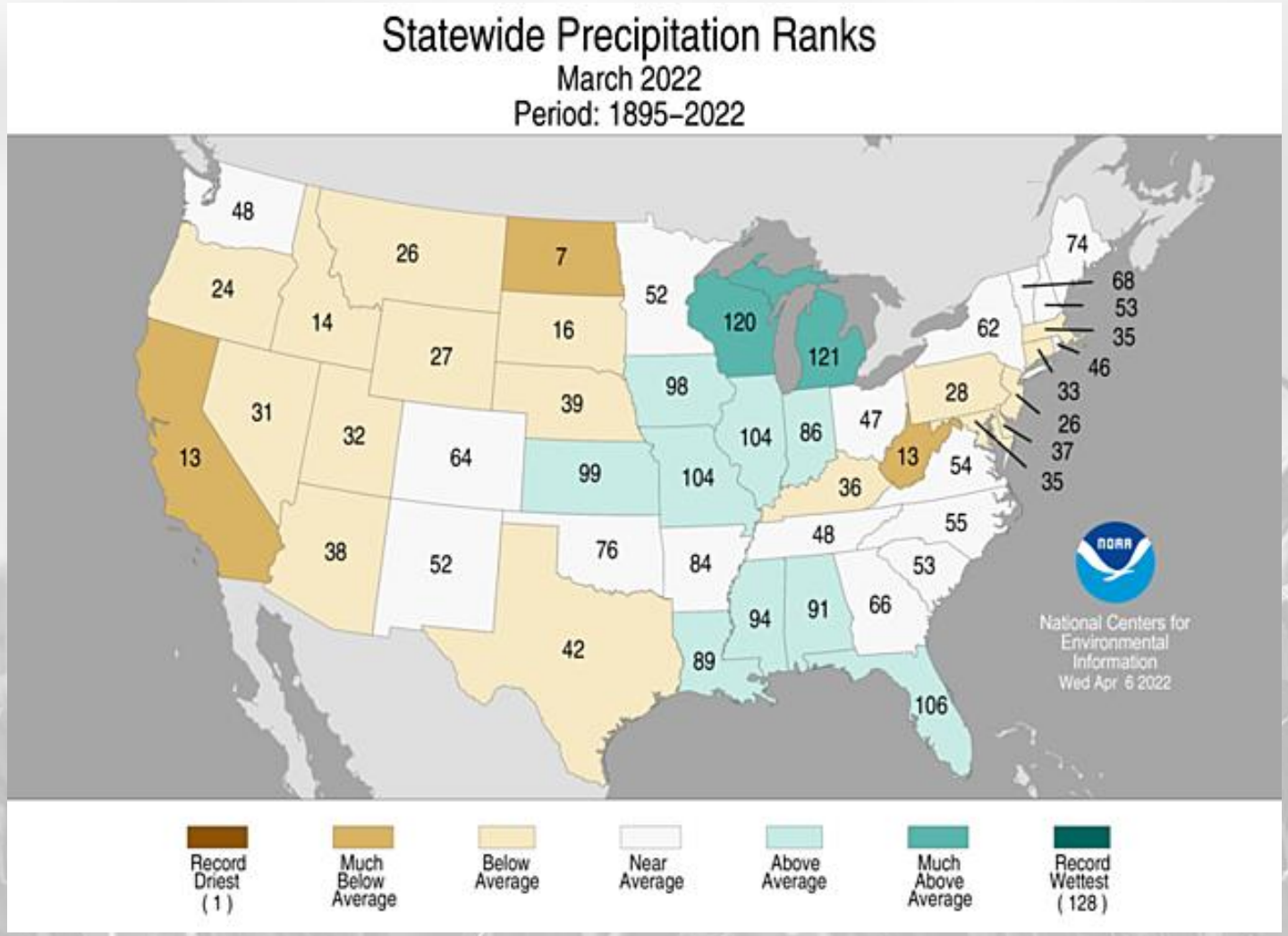


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

March Precipitation Recap

As often the case, big contrasts in March.

Top 5 wettest WI/MI. Top 10 driest ND.

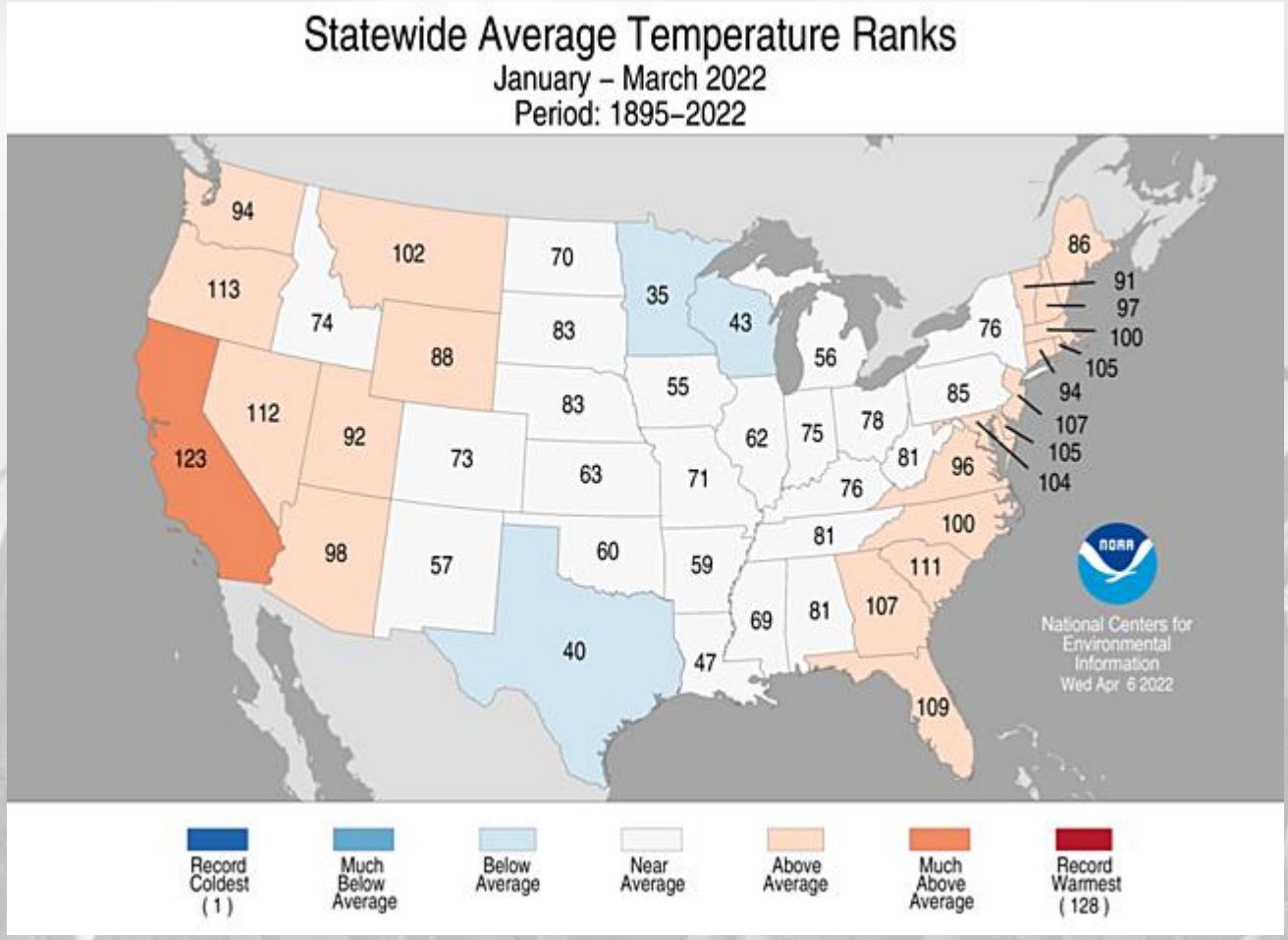


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

January-March Temperature Recap

March balanced some earlier cold leading to large areas closer to average.

MN-WI colder. MT-WY warmer.

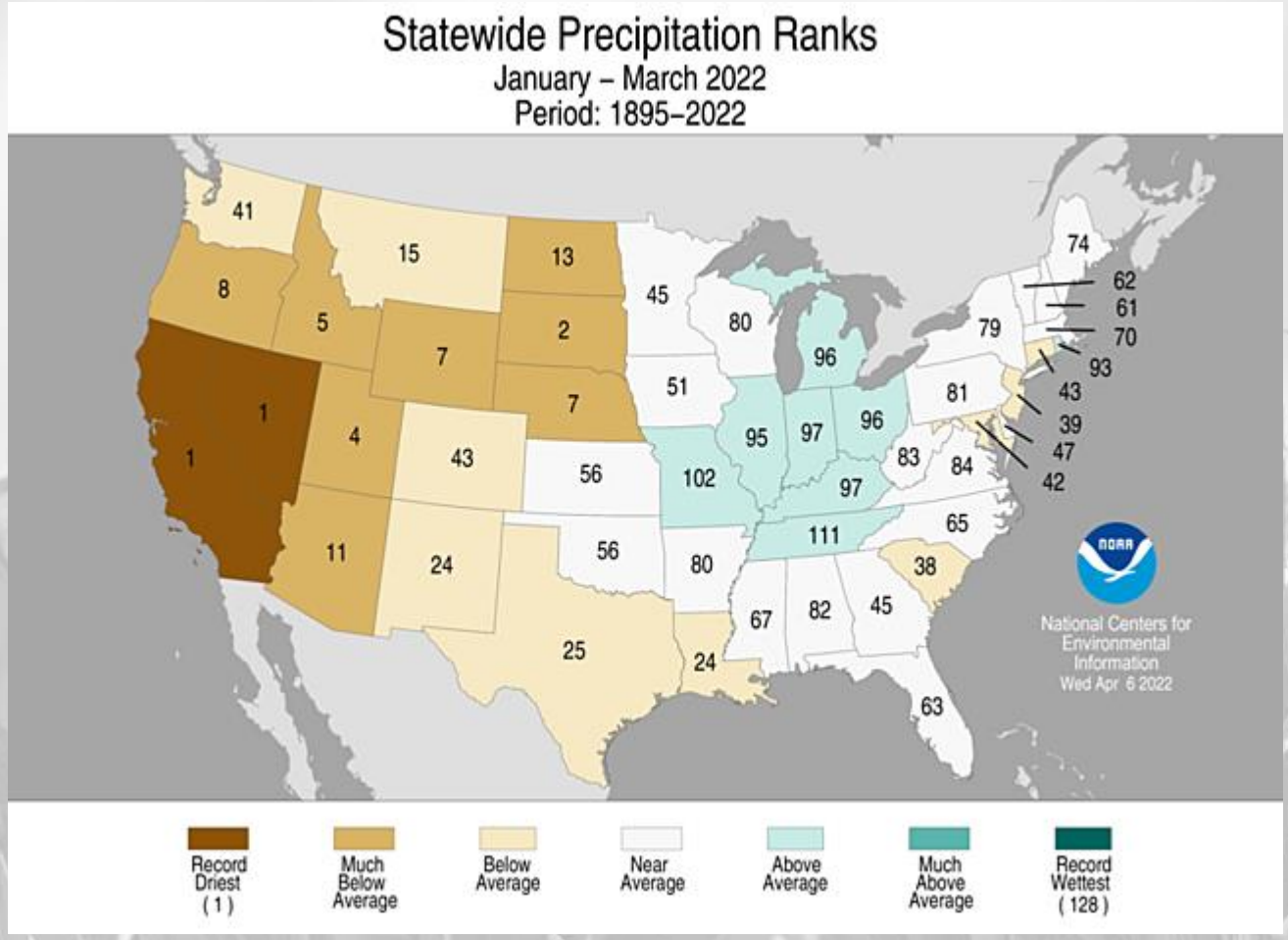


http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

January-March Precipitation Recap

Precipitation contrast shows again Jan.-Mar. Wet east-dry west.

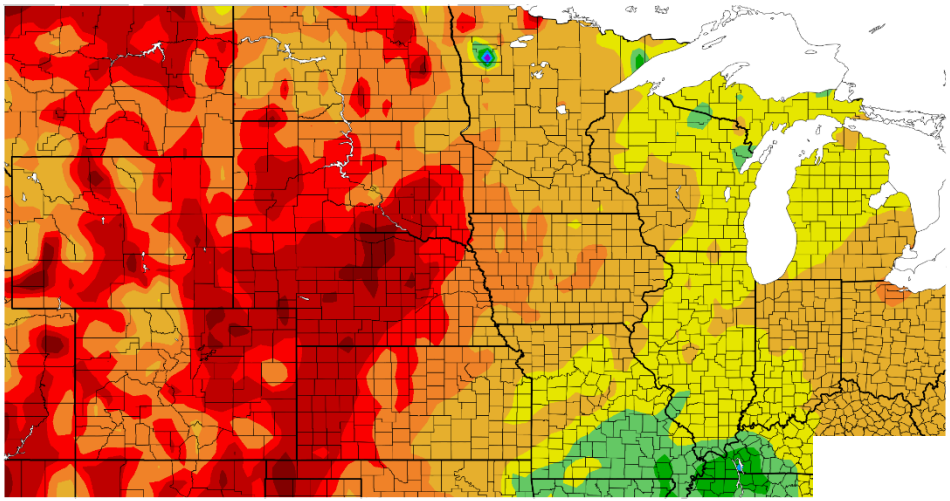
Top 10 driest many Plains states. Not as extreme but overall wetter east.



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

Last 30 days Precipitation

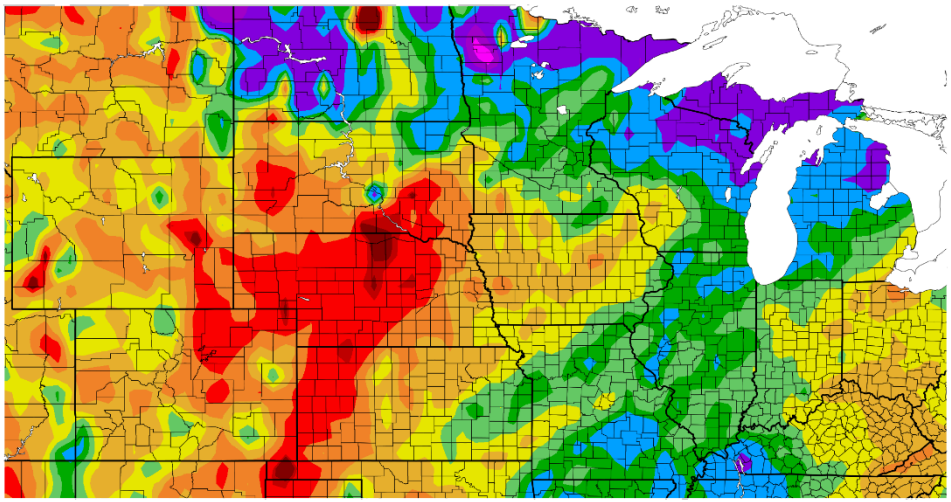
Precipitation (in)
3/21/2022 – 4/19/2022



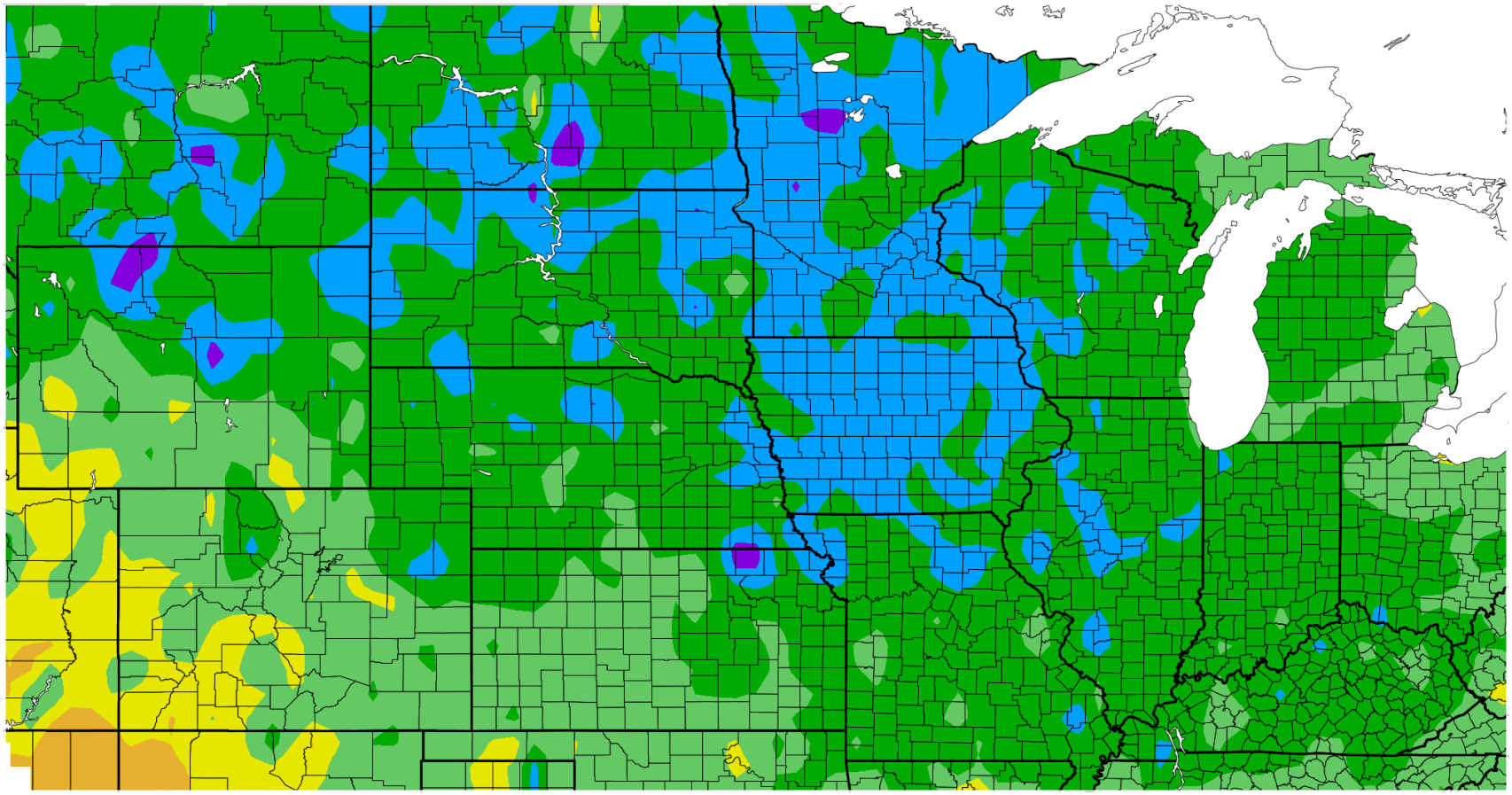
- Dry Plains (except much of ND). Extends in IA some.
- Wetter north and some east.

- Comment: frequent – not heavy precip (east).

Percent of Normal Precipitation (%)
3/21/2022 – 4/19/2022



Departure from Normal Temperature (F)
3/21/2022 - 4/19/2022



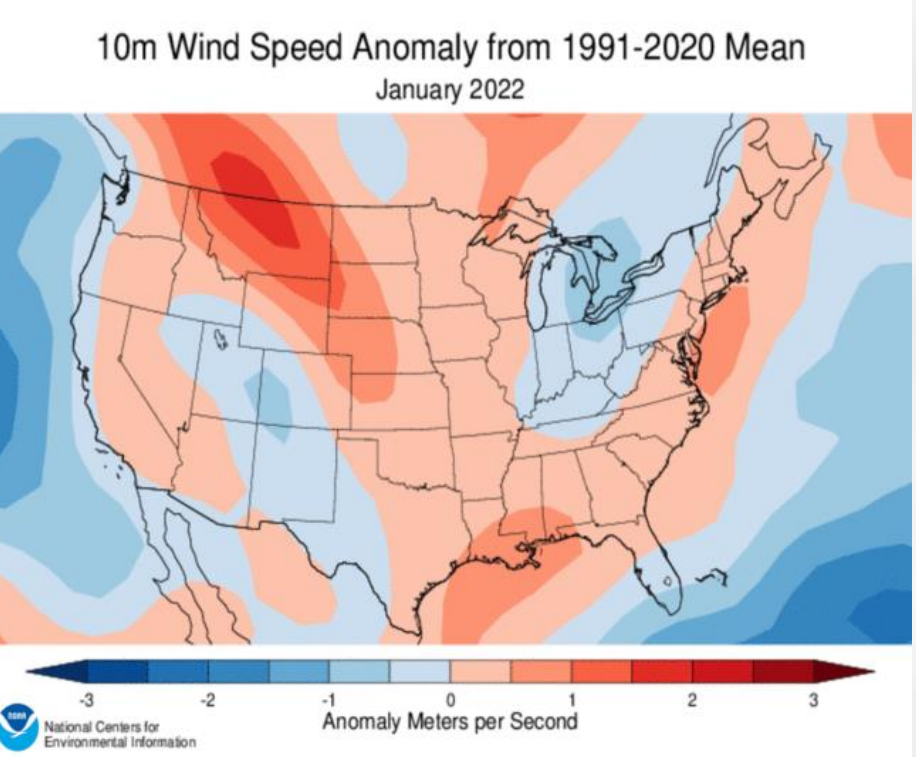
−10 −8 −6 −4 −2 0 2 4 6 8 10

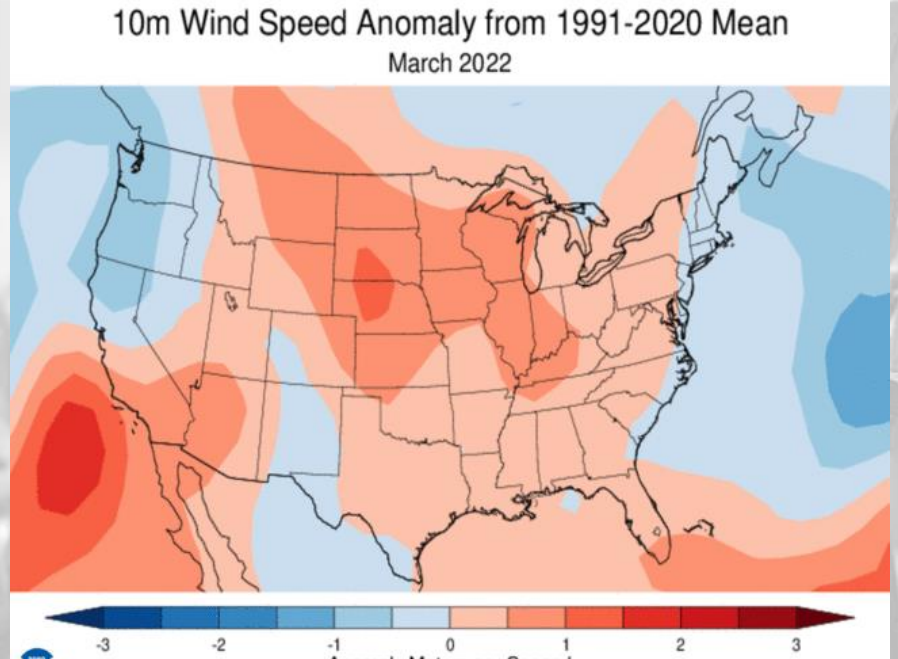
Generated 4/20/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

ISSUES/EVENTS

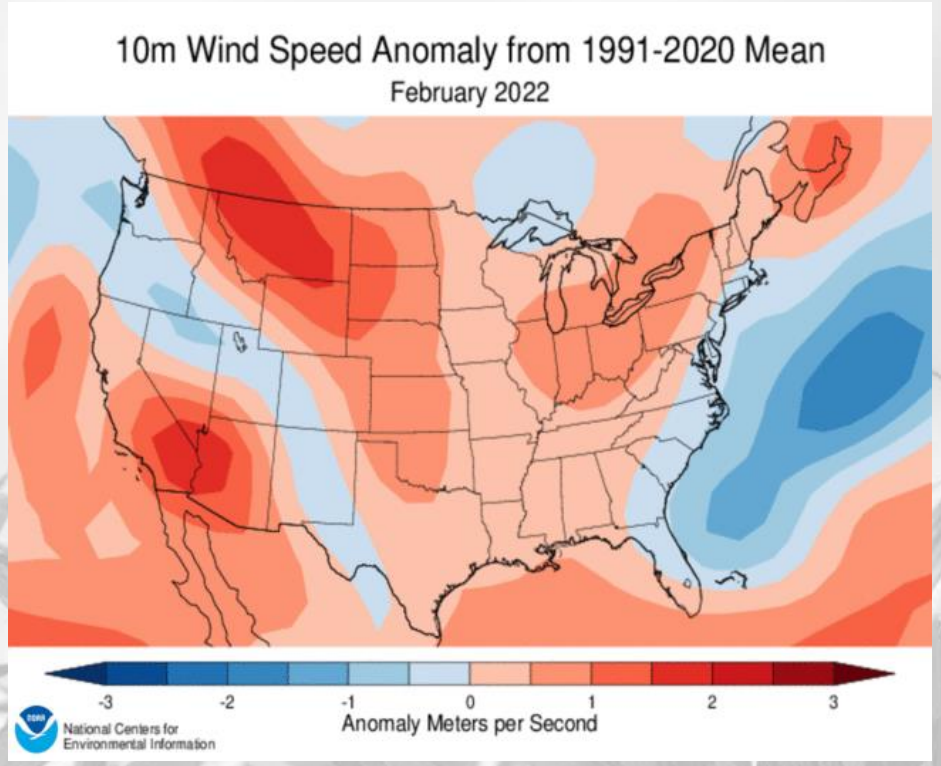
Photo:
Cattle in Glen Ullin, ND
(Courtesy Dana Wahus)
NWS Bismarck





Wind

(Winds have been strong)



1 m/sec = ~2.2 mph

2 mph anomalies for a month are on the high side.

Don't have good wind climatologies

https://www.ncdc.noaa.gov/societal-impacts/wind/maps/202203

Wind

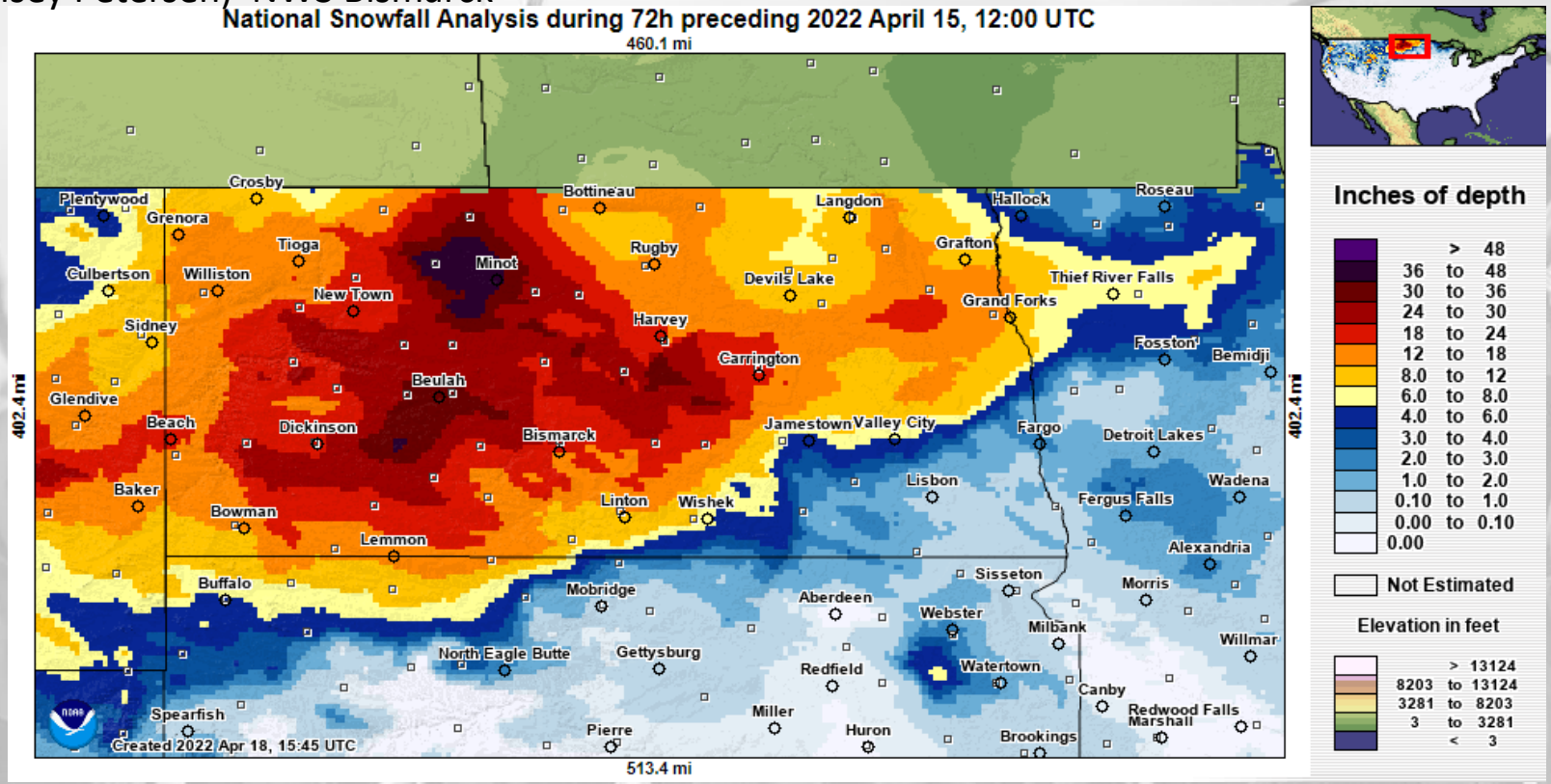
- Wind climatologies – less developed (multiple reasons)

- Sioux Falls (2022 8 days 50 mph gusts, 10 days 40 mph
- Colorado 4-7 April top 5 windiest in periods since 1992
- Wind advisories

https://t.co/9UQVxjZBpL

Plains Blizzard 12-14 April

Large snow drifts at the CHI St. Alexius Hospital in Dickinson. (Courtesy of Chelsey Petersen) NWS Bismarck



2 Day Old Calf in Bowman. (Courtesy of Tracy Boll) NWS Bismarck

- ND Shut down
- I-94 Closed
- Livestock deaths (unknown – seem less than expected)
- Water will help drought
- Some flooding possible

NDDOT Facebook NWS Bismarck

3HR Peak Winds (mph)

Minot Airport (Ward 1646ft) — **63**

Hettinger	63	Rolla	61
Sand Creek (Near Amidon)	60	Dickinson	59
Gladstone ESS,I-94	58	Washburn ESS,US-83,	58
Flasher	58	Long Lake NWR	57
Glen Ullin	56	Coleharbor US 83 MP 151.6	55
Bowman	54	Stanley	54
1 ESE Lark (NDAWN)	54	Williston	53
3 NNW Turtle Lake (NDAWN)	53	Mandan	52
Stanton	51	Hazen	51
Tioga	51	Crosby	51
Bismarck	51	7 SSW Sawyer (NDAWN)	51
Blaisdell US 2 MP 106	50	New Salem I-94 MP 126	50
7.8 N Snowden (MT DOT)	50	Raub	50
30 W Crosby	50	2 W Hazen (NDAWN)	50
4 NNW Emmet (NDAWN)	50	7 NNE Snowden	50
Watford City	49	New Town ND 23 MP 46	49
Fryburg I-94 MP 37	49	Hannover	49
5 WSW Parshall (NDAWN)	49	5 NE Sawyer (NDAWN)	49
Dunseith ESS,US-28,1	48	Wishek ND 3 MP 40.7	48

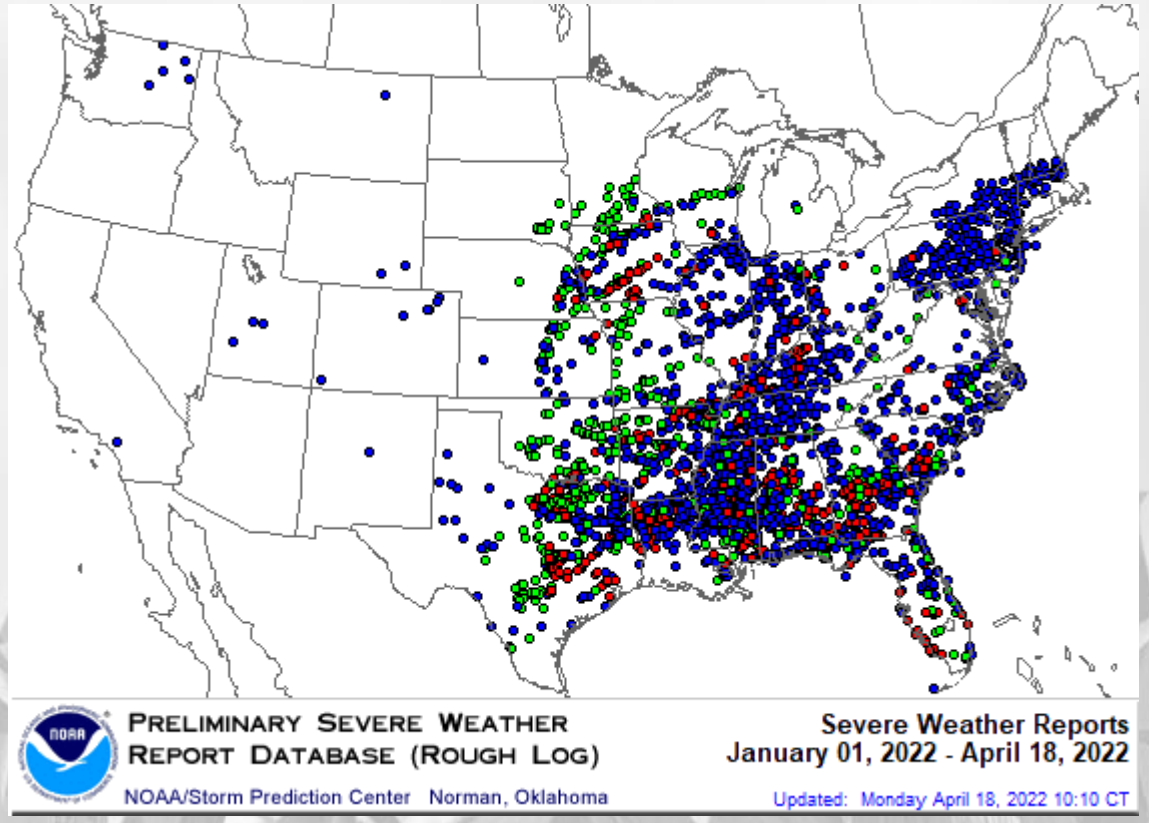
valid as of Wed Apr 13th 10:03 pm - NWS Bismarck

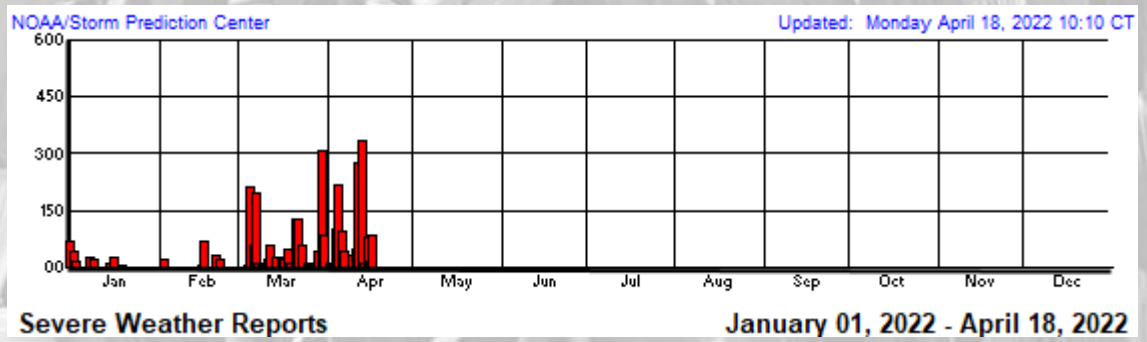
Early Severe Weather Season

- 2022 Severe Weather Reports

- Iowa numerous tornadoes – reached MN
- Deaths in IA – injuries several states.
- Closed I-35 in MN (overturned semis)

- Quieter in the Plains so far in 2022.





https://www.spc.noaa.gov/climo/online/monthly/newm.html

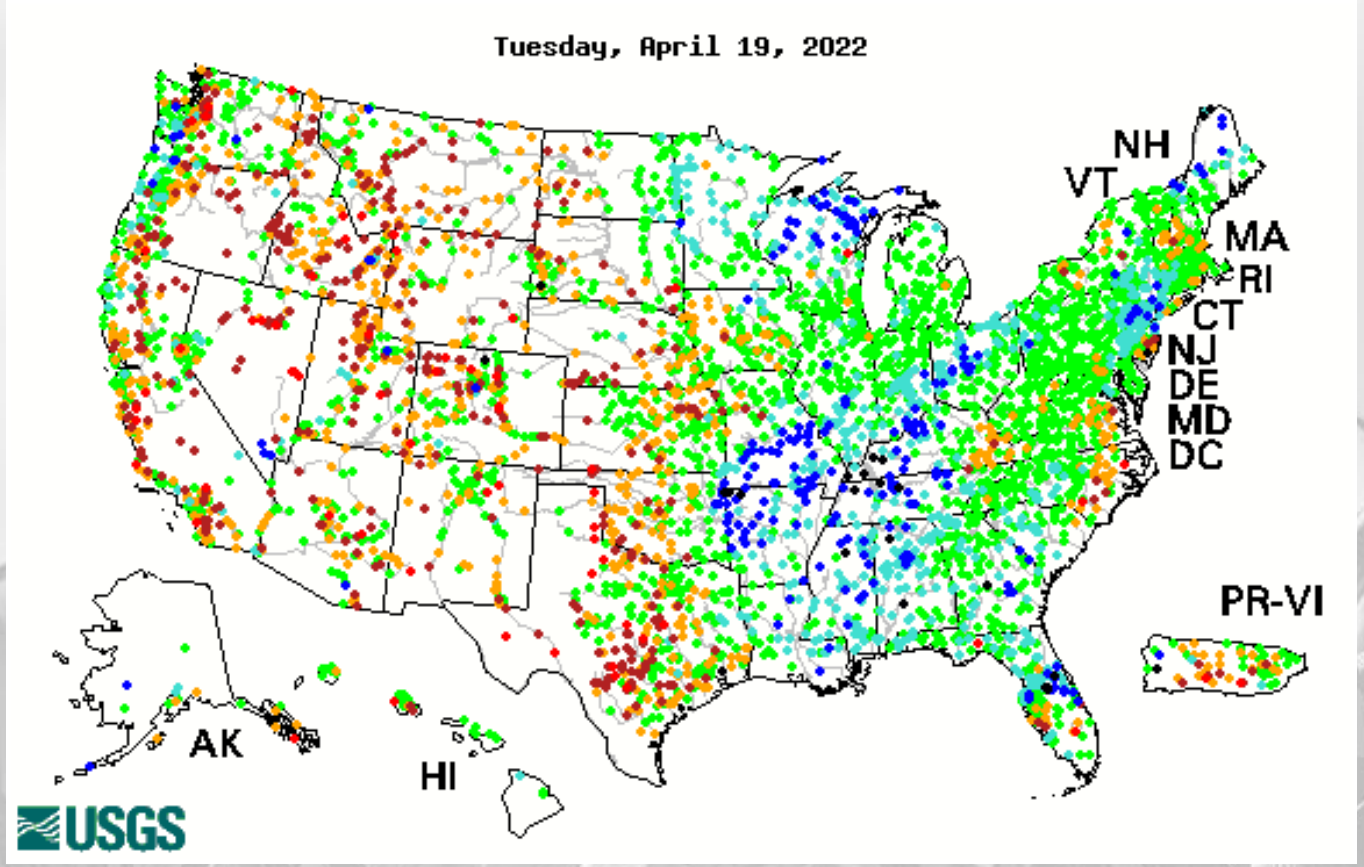
HYDROLOGIC IMPACTS

Photo:
Chip Redmond – KSU
Ellsworth Lake, KS

7-Day Average Streamflow

Wednesday, 20 April 2022

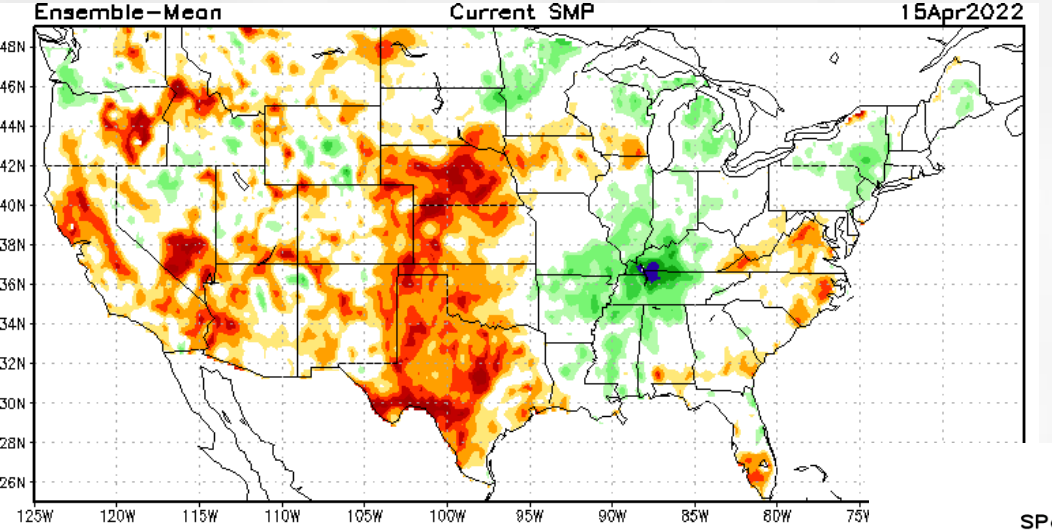
- High end streamflows srn Missouri and Ohio Valley.
- Low large chunks Plains-Iowa



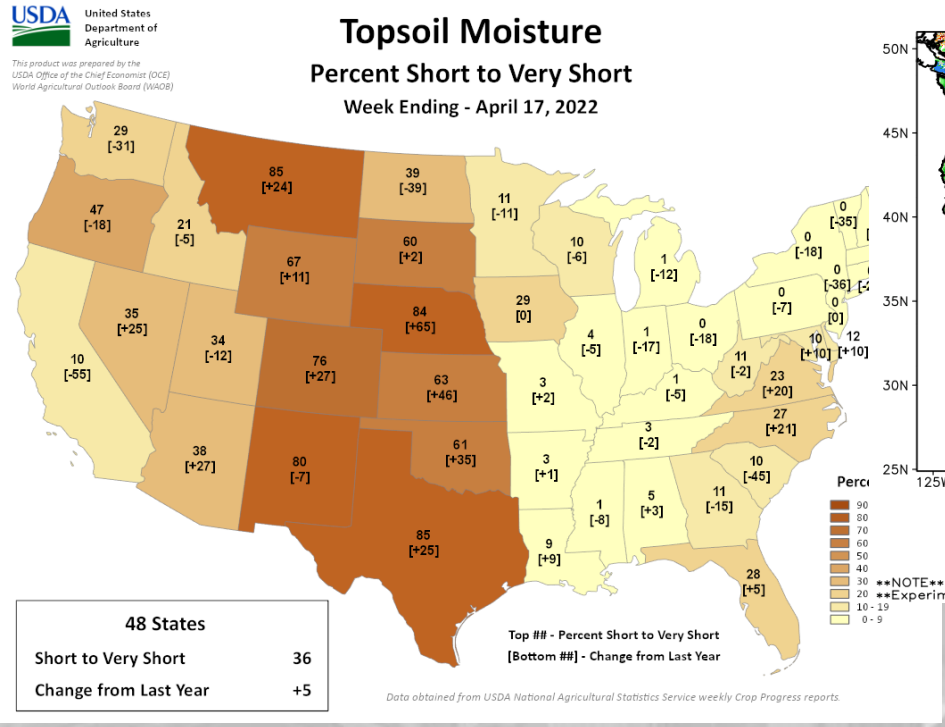
Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

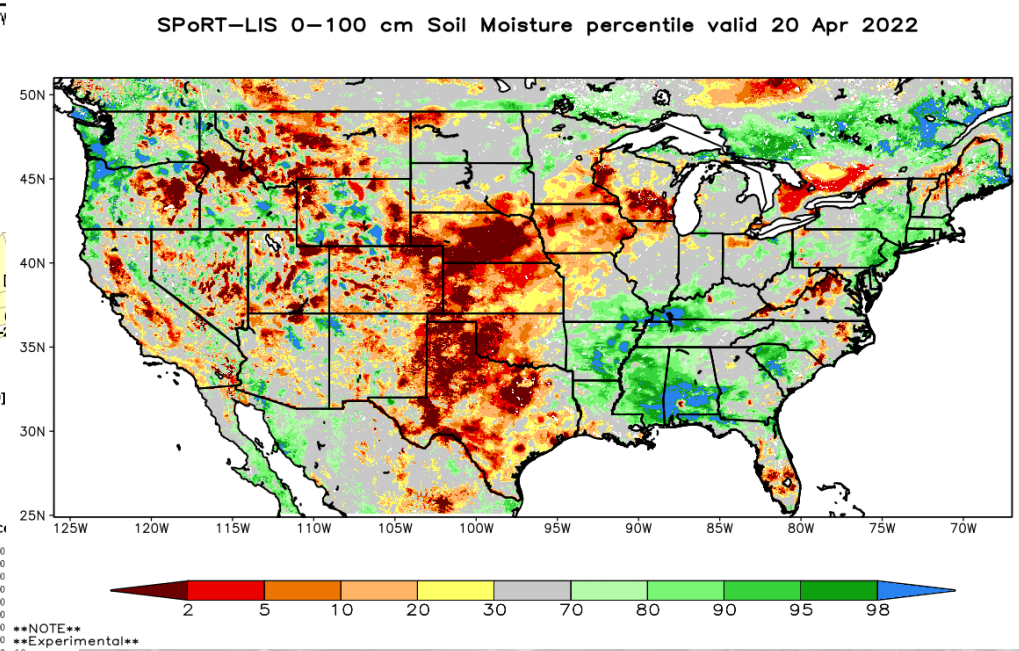
http://waterwatch.usgs.gov/index.php?id=pa07d

Soil Moisture



- Dry in plains south of Dakotas.
- Mixed nrn plains and IA/IL/WI
- "Wetter" east



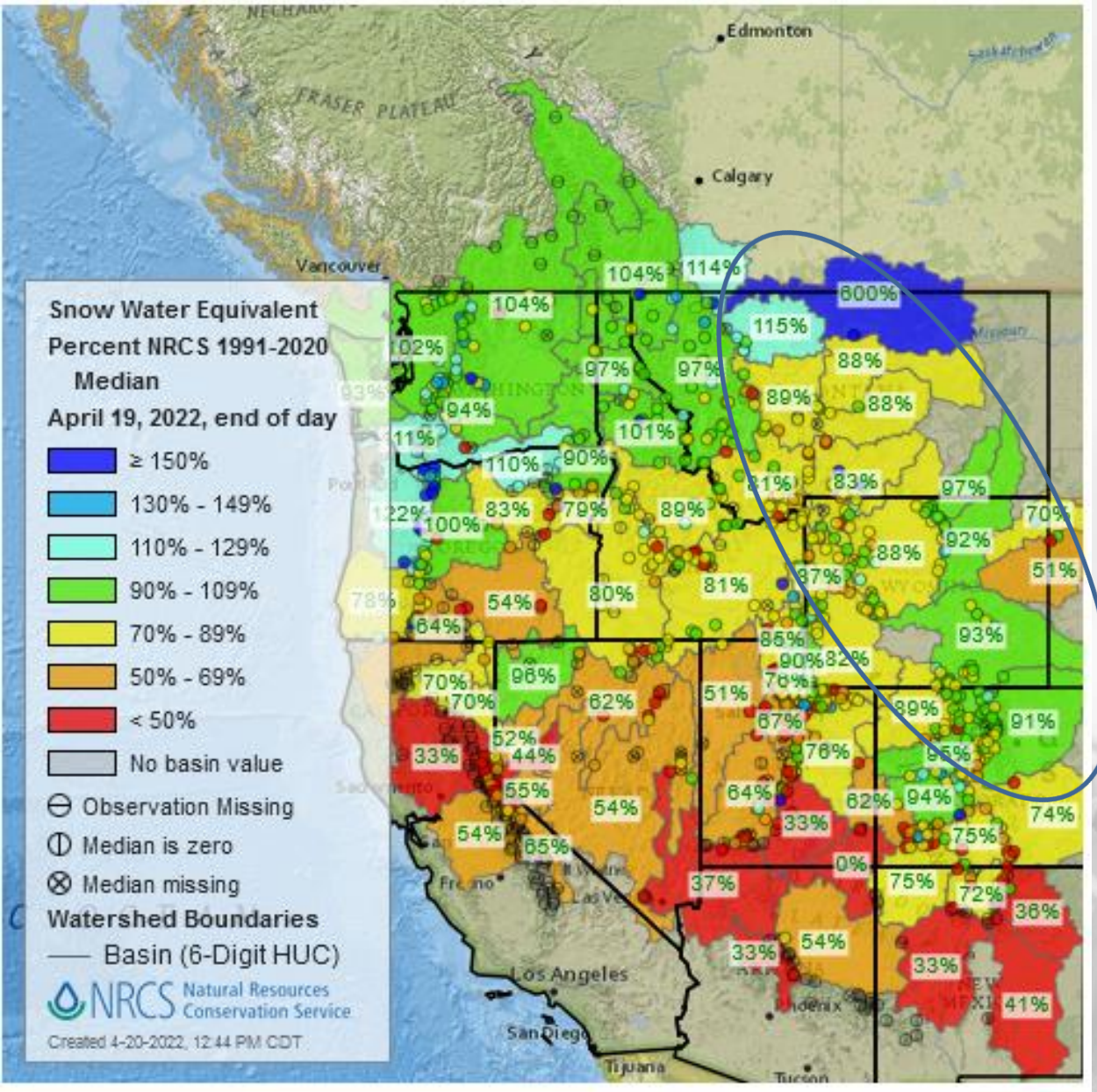


https://weather.msfc.nasa.gov/sport/case_studies/lis_CONUS.html

USDA-NASS data – map courtesy Brad Rippey USDA-OCE

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

NRCS Snow Water Equivalent



- Wetter far north-late snow
- Mostly below-Missouri
- Below but better Platte

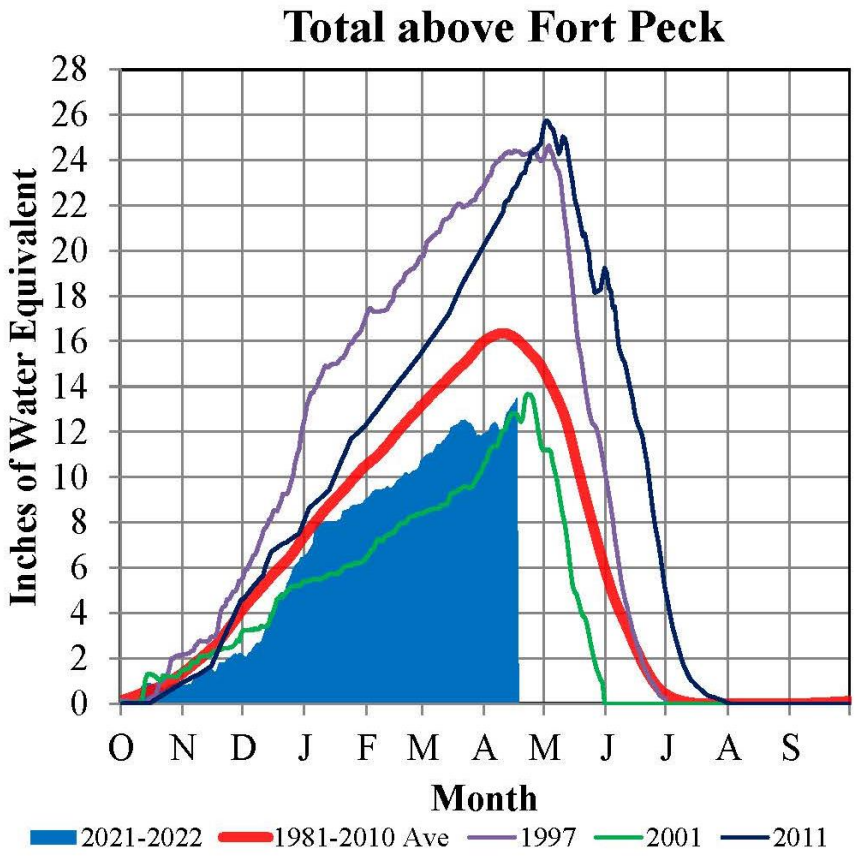
https://www.nrcs.usda.gov/wps/portal/wcc/home/

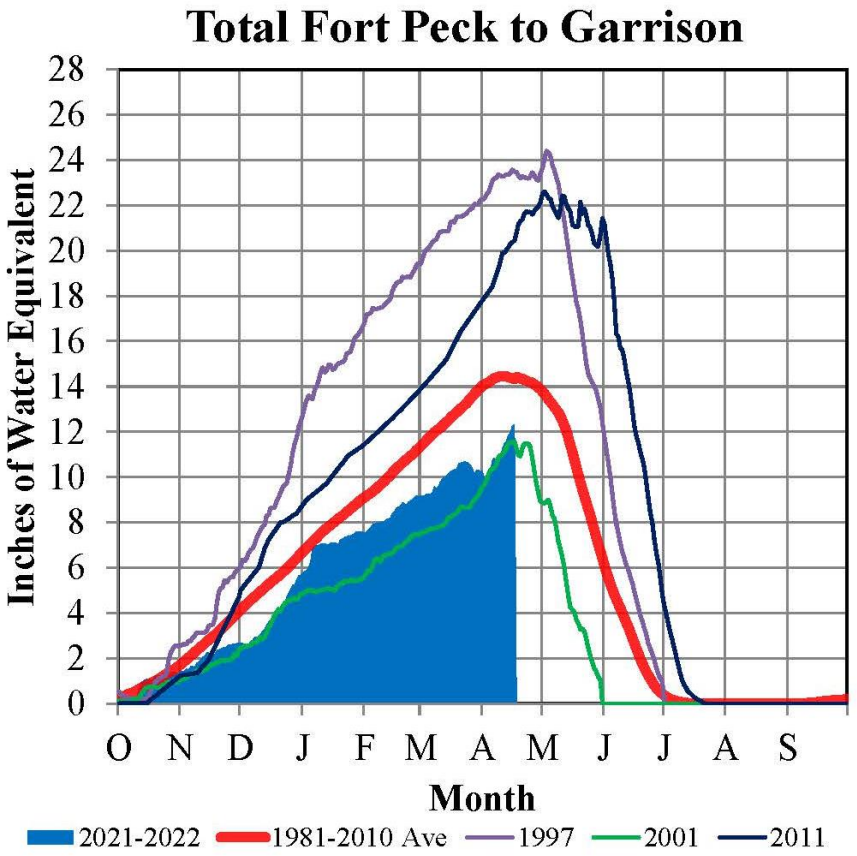
Various water issues

- Missouri River main stem reservoirs 10-12 ft lower. Minimum flow service expected. (USACE)
- Bur. Of Rec reservoirs in “fair shape” (BOR)
- Snow melt ND will add to some James River (SD) flood (NWS).
- Ohio River back to usual conditions (NWS)
- Mississippi R. high in some upper areas – no major issues.
- Lower Missouri – usual possible convective flood risk.
- Lack of surface water for livestock (west)

Missouri River Basin – Mountain Snowpack Water Content 2021-2022 with comparison plots from 1997, 2001, and 2011

17-Apr-2022



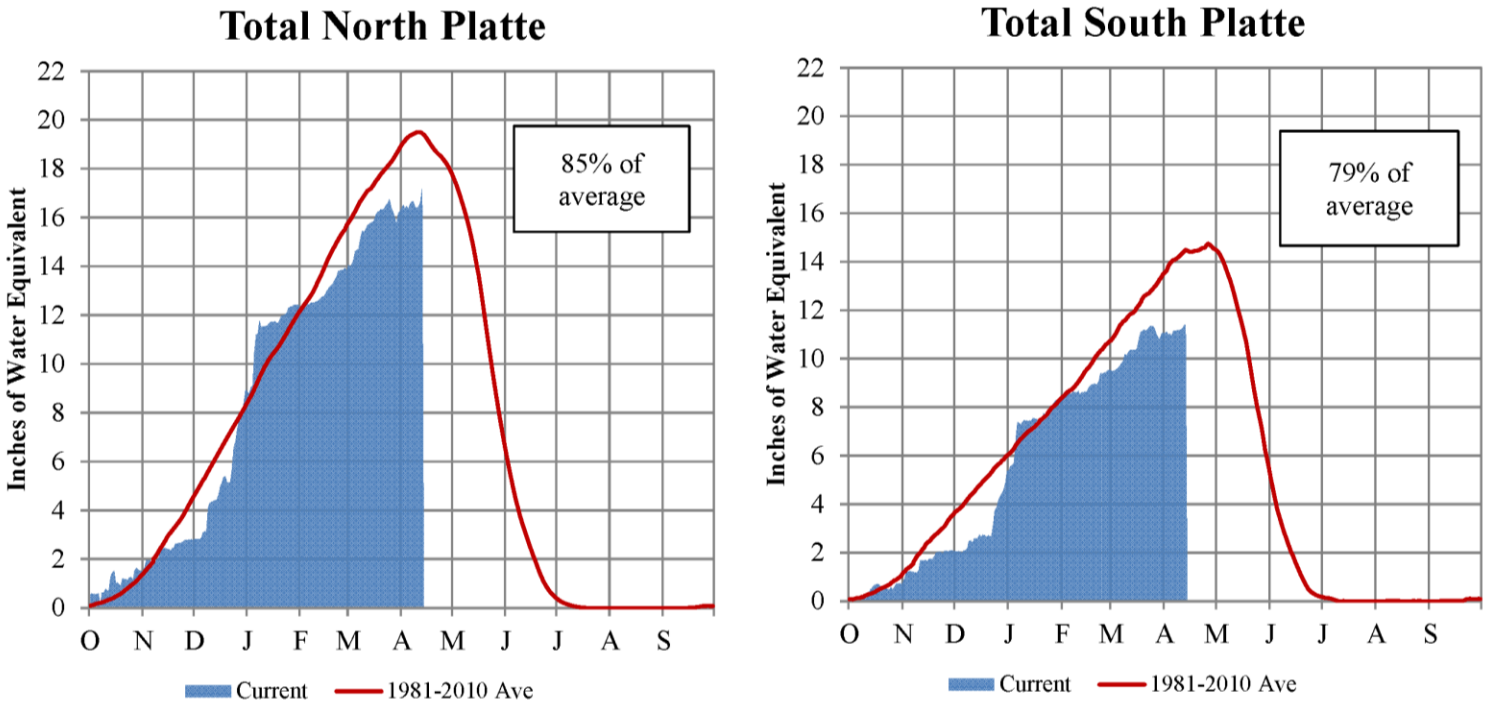


On April 17, 2022 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach is 13.5" and 84% of the (1981-2010) average. The mountain SWE in the "Fort Peck to Garrison" reach is 12.3" and 86% of the (1981-2010) average . The normal peak for both reaches occurs near April 15. The 30-year average lines (1981-2010) for both reaches will be updated when the data becomes available to (1991-2020).

Provisional data. Subject to revision.

https://www.nwd-mr.usace.army.mil/rcc/reports/snow.pdf

Platte River Basin - Mountain Snowpack Water Content
Water Year 2021-2022
April 13, 2022

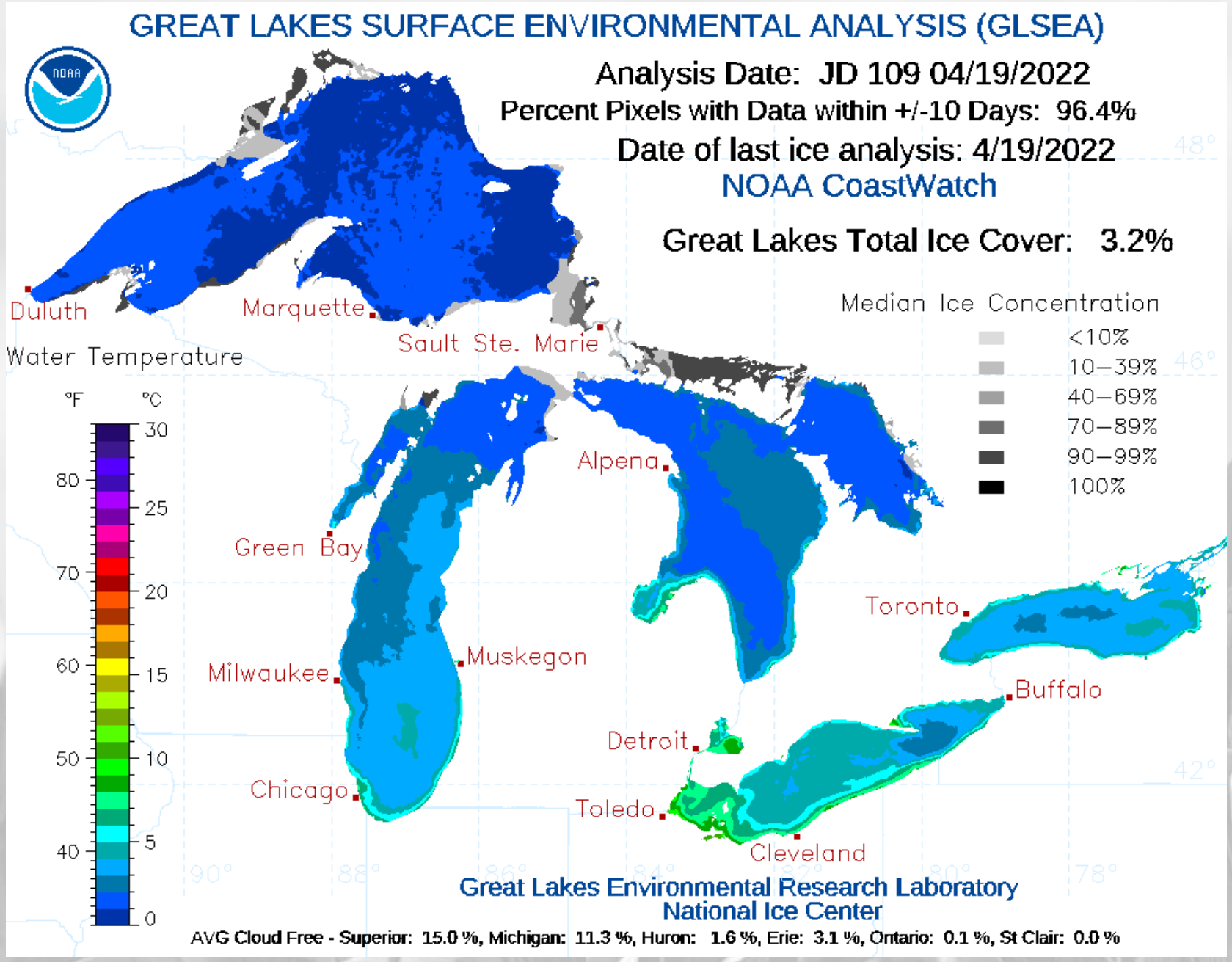


The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of April 13, 2022, the mountain snowpack SWE in the "Total North Platte" reach is currently 16.6", 85% of the (1981-2010) average. The mountain snowpack SWE in the "Total South Platte" reach is currently 11.3", 79% of the (1981-2010) average. The 30-year average lines (1981-2010) for both reaches will be updated when the data becomes available to (1991-2020).

Source: USDA, Natural Resource Conservation Service

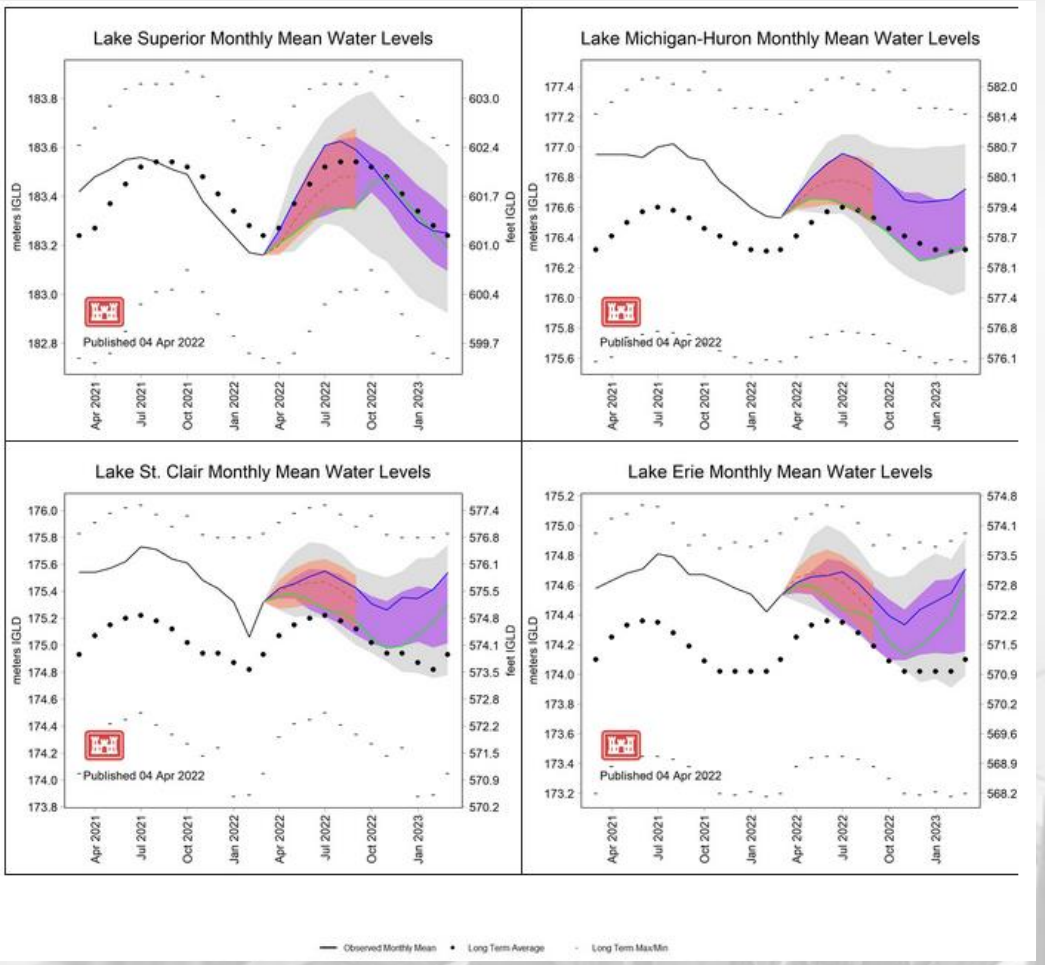
Provisional Data. Subject to Revision

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



- Lake levels down from highs.
- Most lower lakes still above long term averages
- Superior a little below.
- Coming in to runoff period with expected level increases.

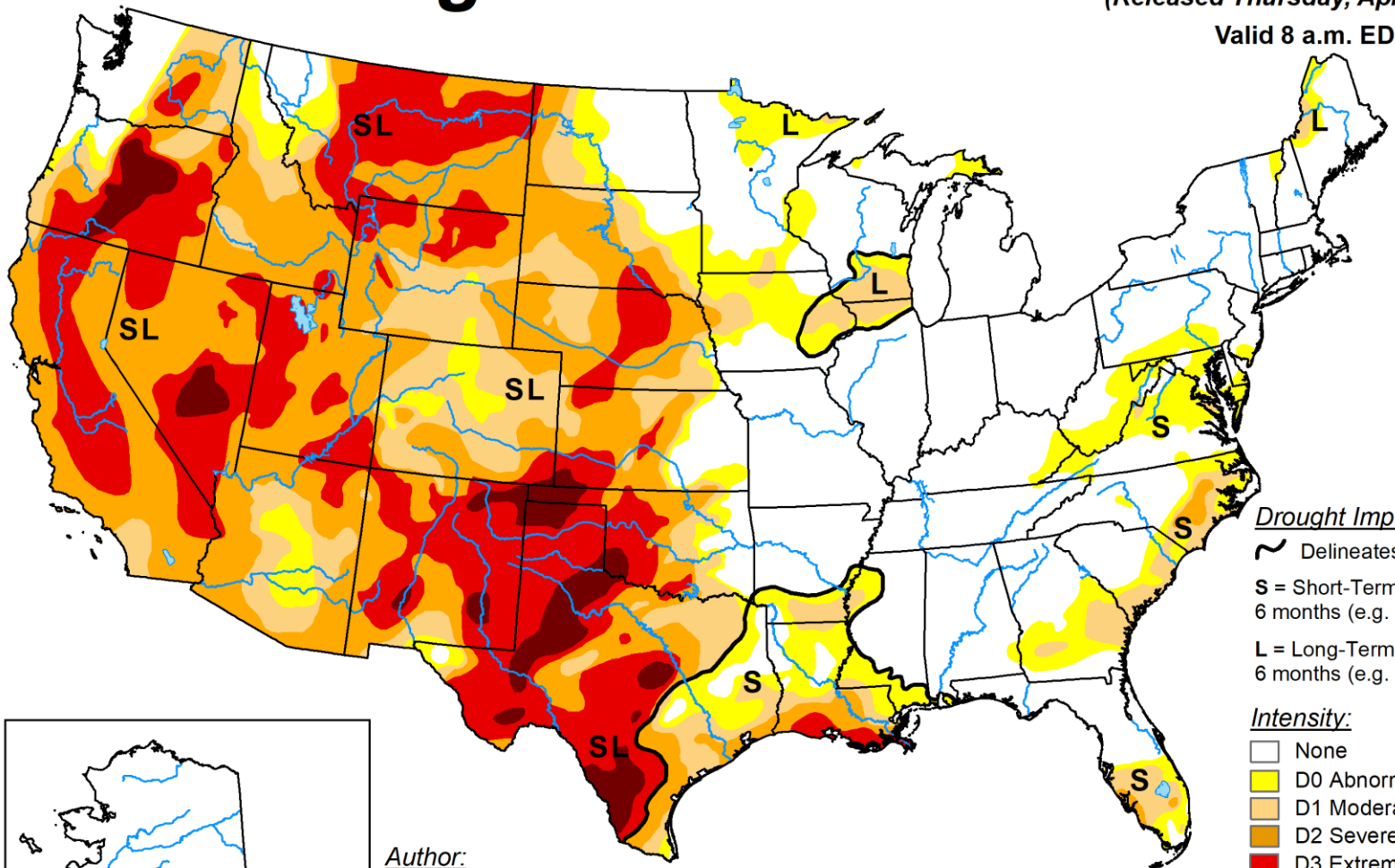
https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Level-Future-Scenarios/

U.S. Drought Monitor

April 19, 2022

(Released Thursday, Apr. 21, 2022)

Valid 8 a.m. EDT



Drought Impact Types:

~ Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Author:

Brad Rippey

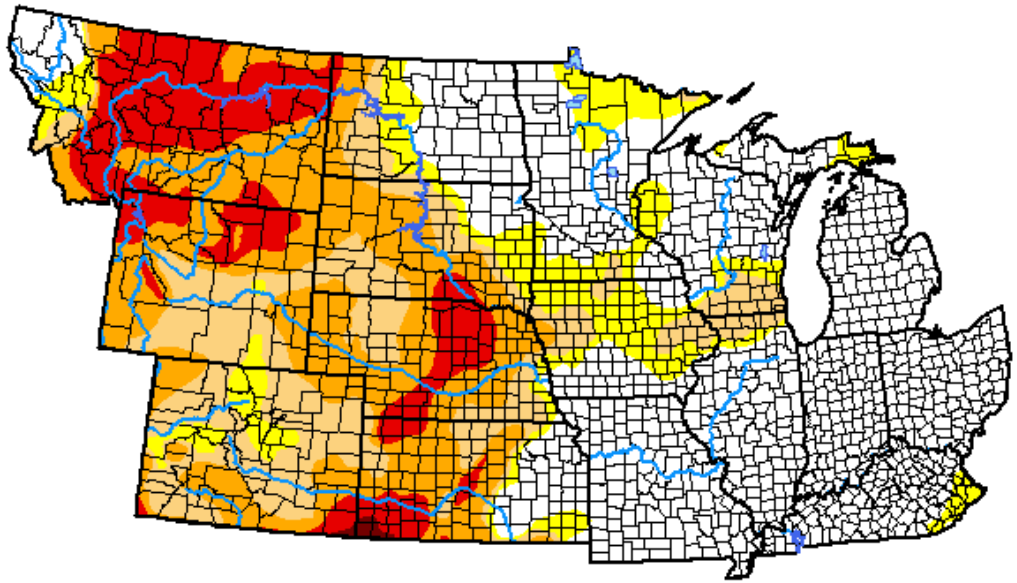
U.S. Department of Agriculture

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

USDA NDMC NOAA

droughtmonitor.unl.edu

U.S. Drought Monitor
NWS Central



April 19, 2022
(Released Thursday, Apr. 21, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.01	57.99	47.49	31.76	11.70	0.19
Last Week *04-12-2022*	41.33	58.67	48.23	30.54	10.67	0.19
3 Months Ago *01-18-2022*	33.21	66.79	46.86	27.52	9.11	0.91
Start of Calendar Year *01-04-2022*	33.94	66.06	46.53	27.27	10.67	1.77
Start of Water Year *09-28-2021*	31.08	68.92	50.85	37.30	18.35	3.17
One Year Ago *04-20-2021*	39.62	60.38	41.63	21.63	10.73	1.32

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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Author:

Brad Rippey
U.S. Department of Agriculture

droughtmonitor.unl.edu

U.S. Drought Monitor

NWS Central Region

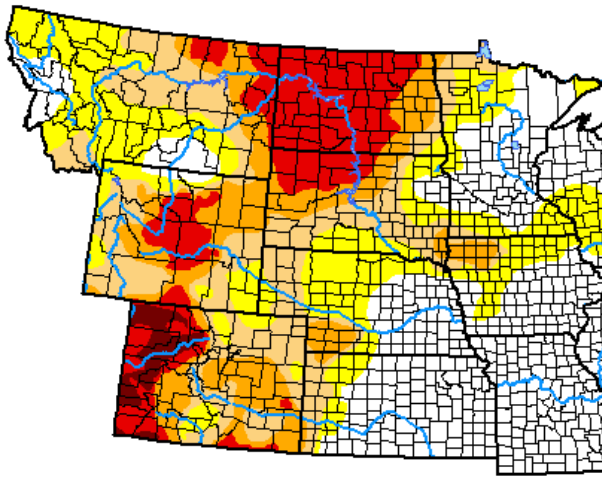
April 13, 2021

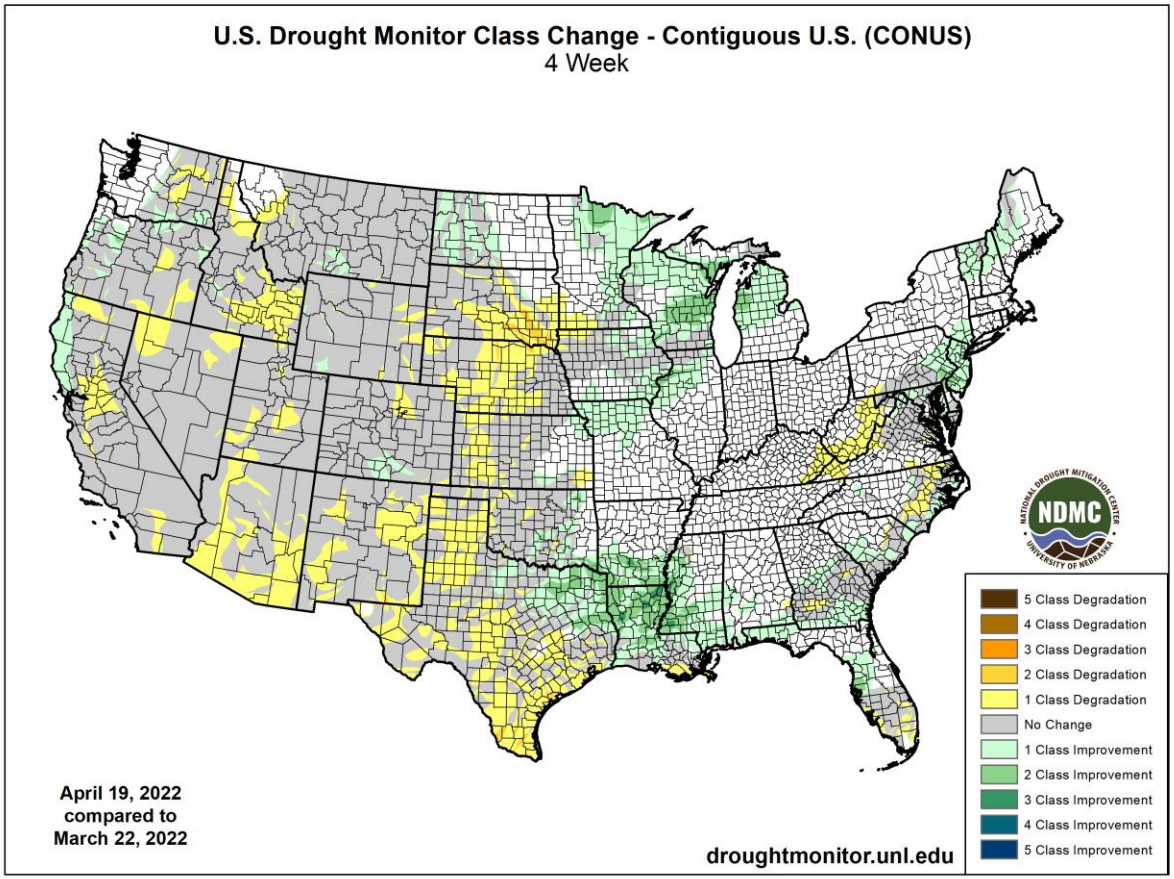
(Released Thursday, Apr. 15, 2021)

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						





https://droughtmonitor.unl.ed

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
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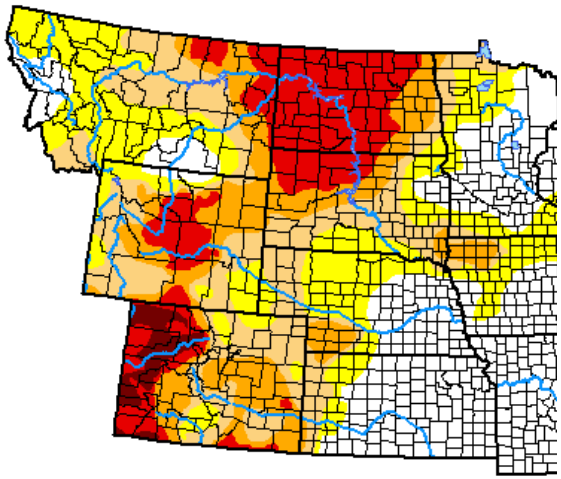
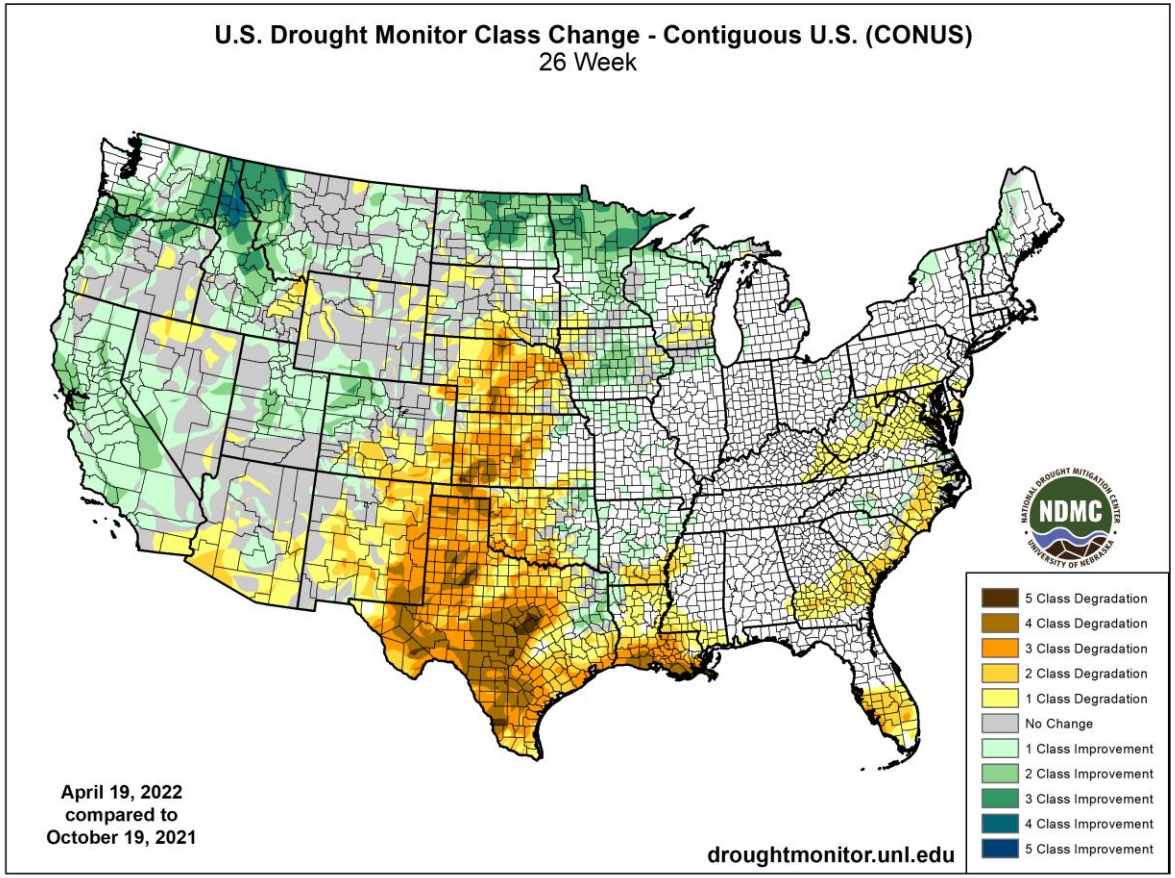


https://droughtmonitor.unl.

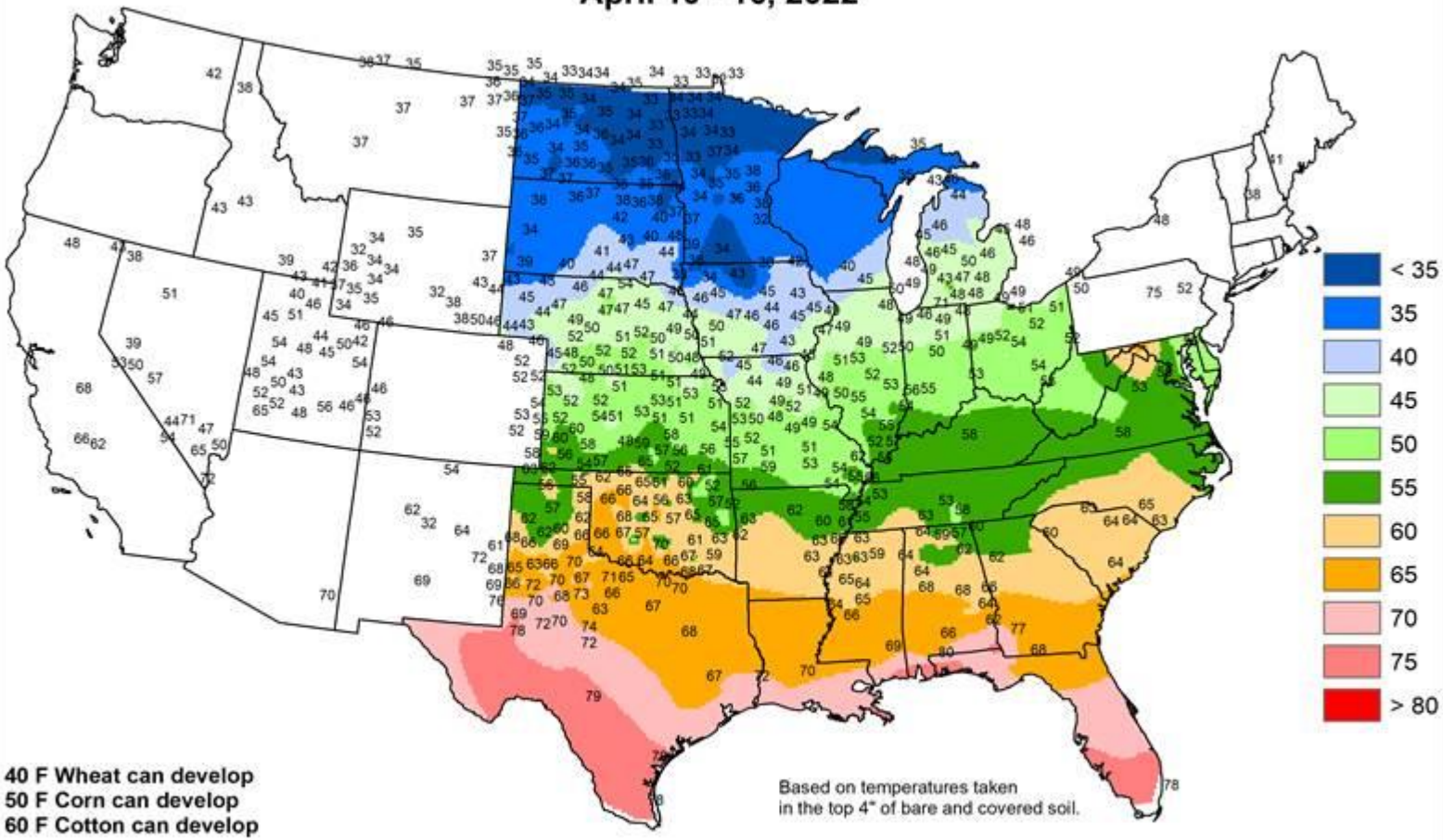


AGRICULTURAL IMPACTS

Photo:
Indiana Wheat – Hans Schmitz (Purdue)

Average Soil Temperature (Deg. F)

April 10 - 16, 2022

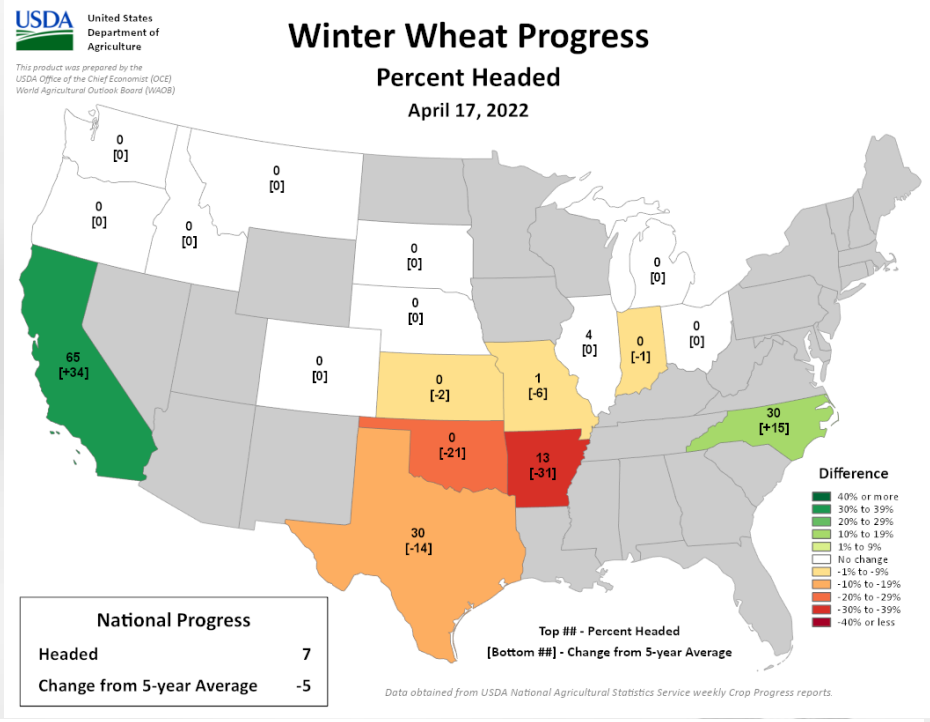


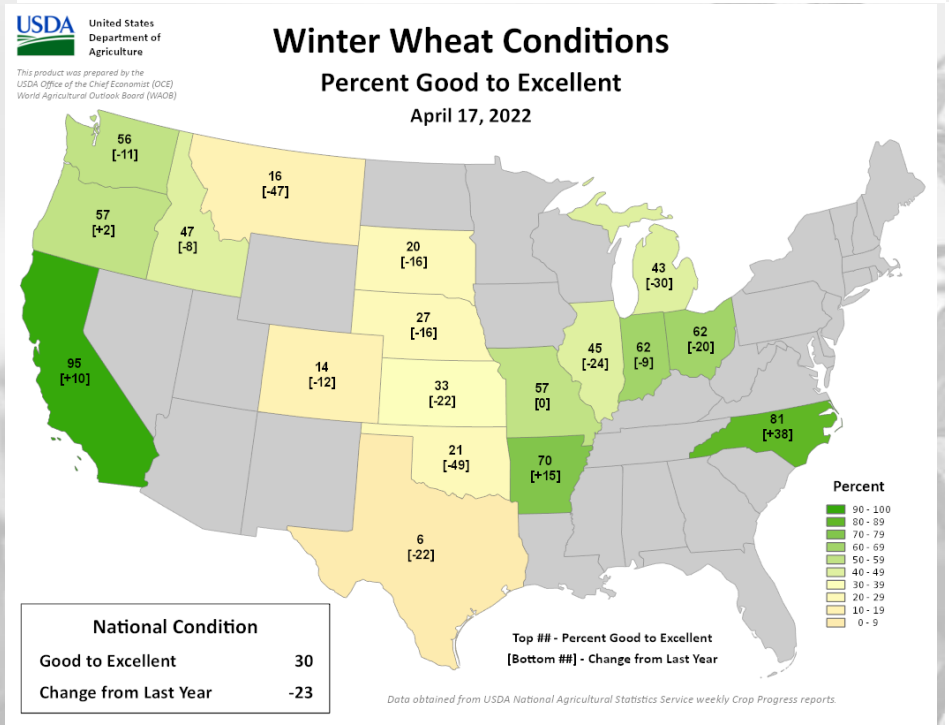
40 F Wheat can develop
50 F Corn can develop
60 F Cotton can develop

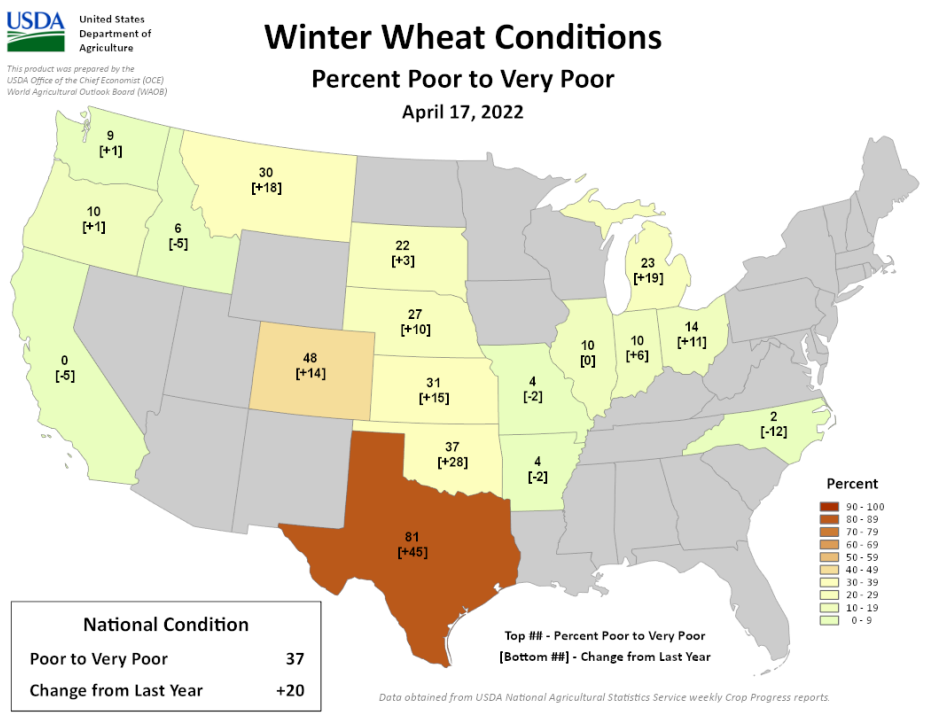
Data provided by the Climate Prediction Center, High Plains Regional Climate Center, Nebraska Mesonet at Univ of Nebraska, CoAgMet at Colorado State Univ, Kansas Mesonet at Kansas State Univ, North Dakota Agricultural Weather Network at North Dakota State Univ, Wyoming State Climate Office at the Univ of Wyoming, Illinois State Water Survey, Iowa State University, Oklahoma Mesonet, Purdue University, University of Missouri, Illinois State Water Survey, Michigan Automated Weather Network, West Texas Mesonet, South Dakota State Univ. Mesonet, Ohio Agricultural Research and Development Center, Univ. of Missouri and USDA/NRCS.

USDA United States Department of Agriculture

USDA NASS Crop Progress Winter Wheat







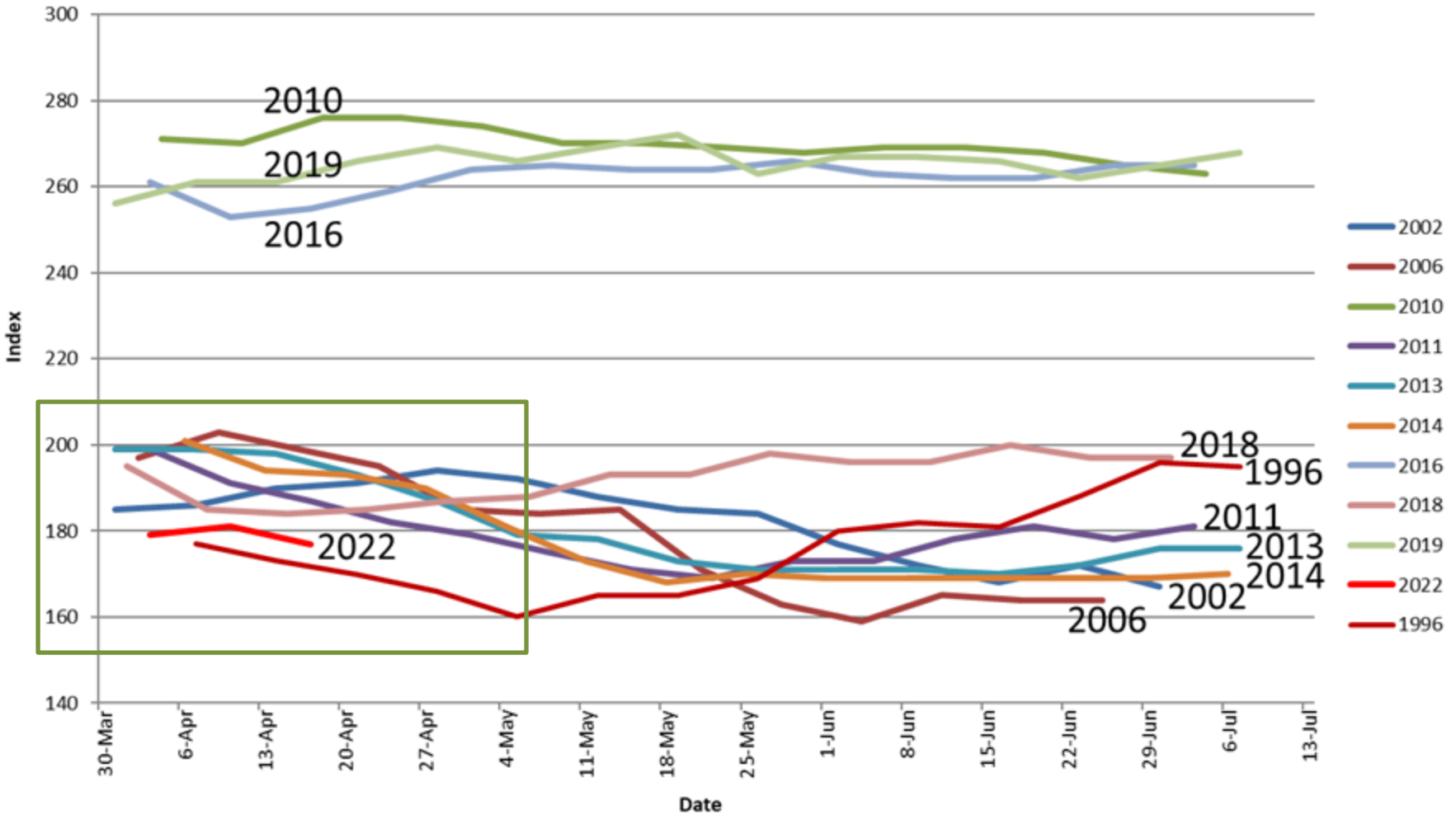
USDA United States Department of Agriculture

This product was prepared by the USDA Office of the Chief Economist (OCE)

Winter Wheat Progress

Percent Headed

U.S. WINTER WHEAT Condition Index



Based on NASS crop progress data.

Condition Index = 4*Excellent + 3*Good + 2*Fair + 1*Poor

National Condition	
Good to Excellent	30
Change from Last Year	-23

Top ## - Percent Good to Excellent
[Bottom ##] - Change from Last Year

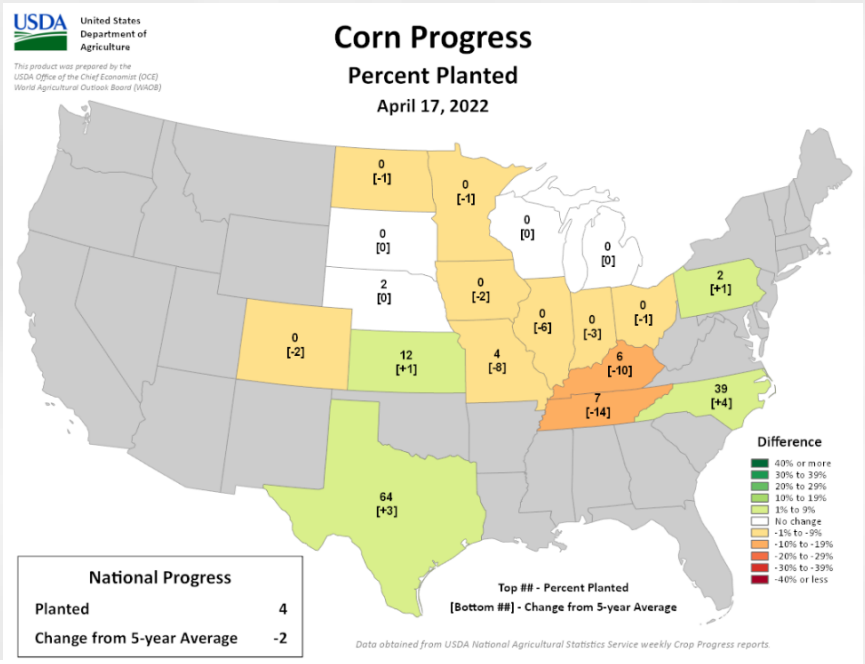
Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

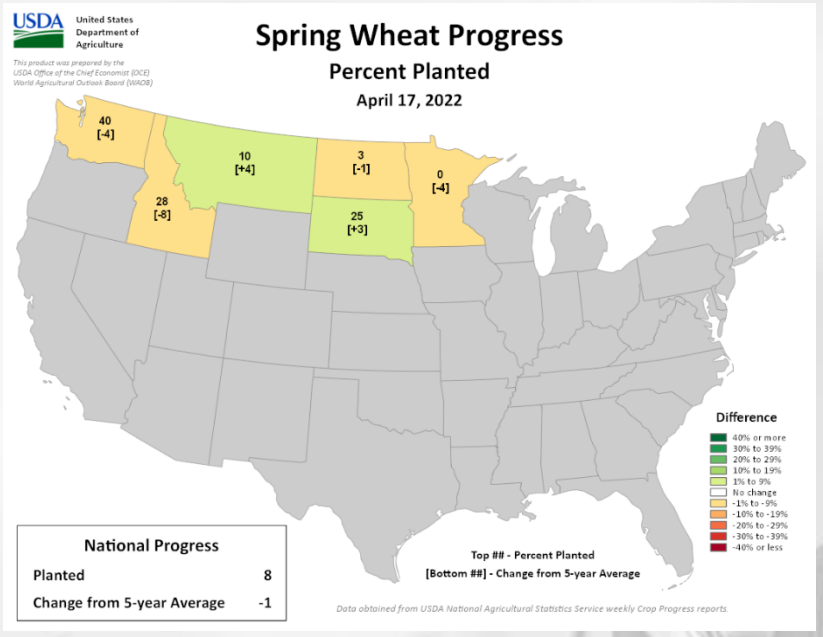
National Condition	
Poor to Very Poor	37
Change from Last Year	+20

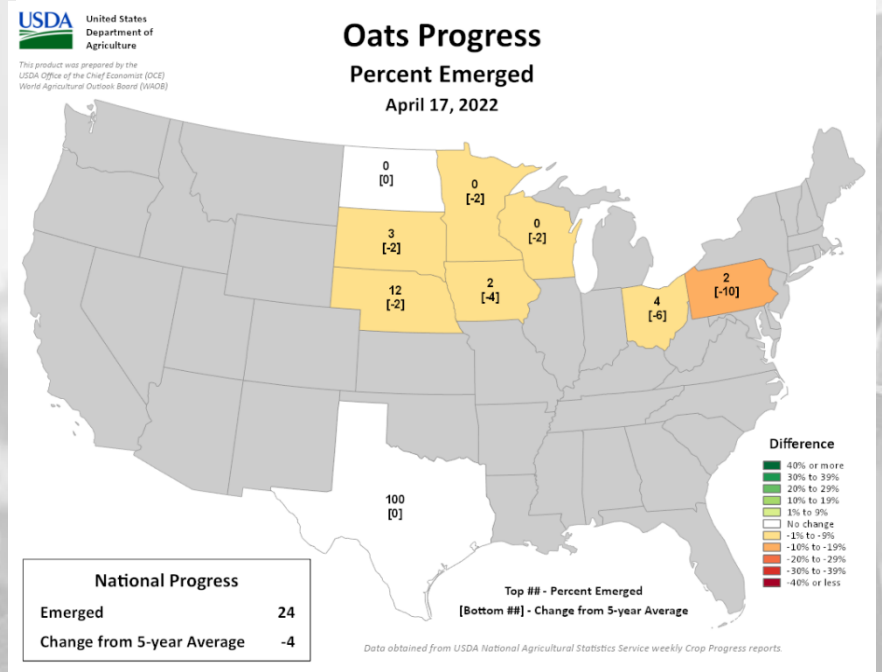
Top ## - Percent Poor to Very Poor
[Bottom ##] - Change from Last Year

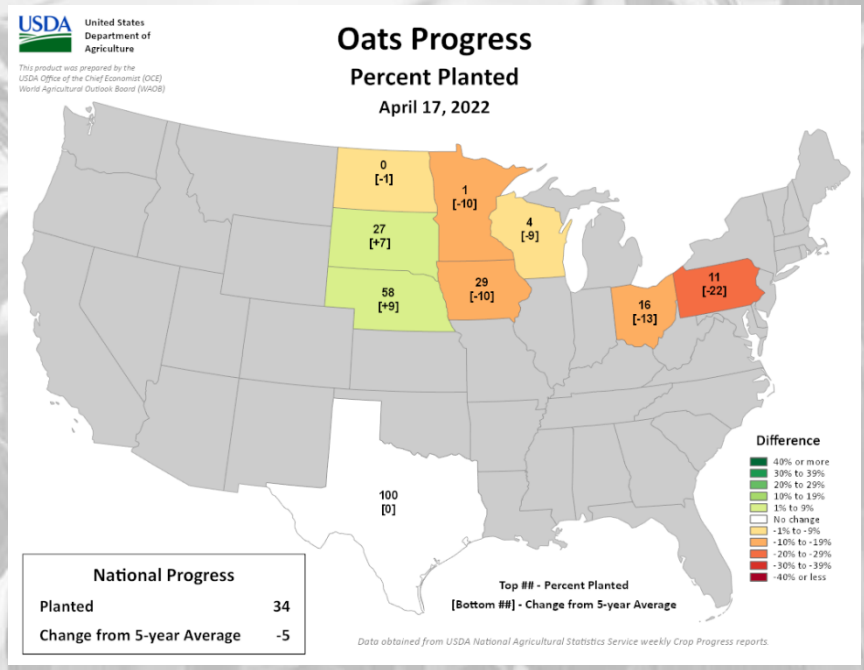
Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

USDA NASS Crop Progress









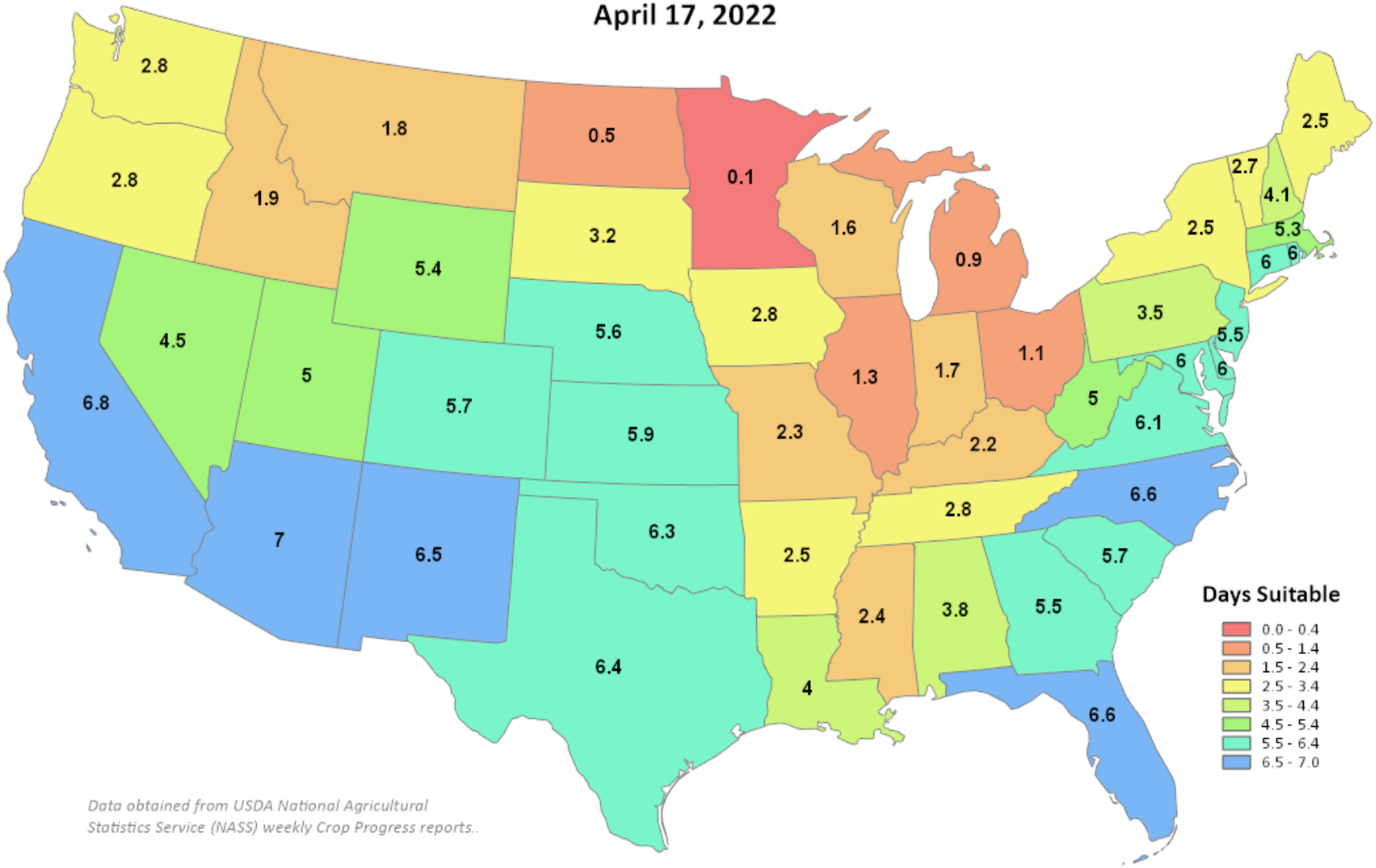
United States Department of Agriculture

Days Suitable for Fieldwork

Week Ending

April 17, 2022

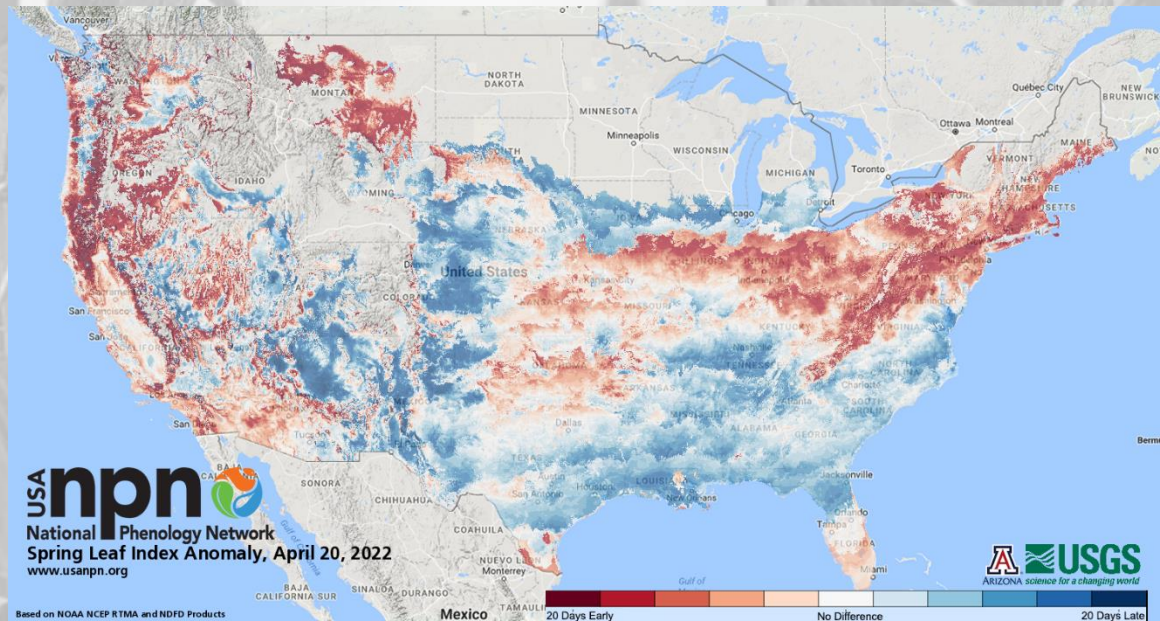
This product was prepared by the USDA Office of the Chief Economist (OCE) World Agricultural Outlook Board (WAOB)



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

Various ag

- Delayed progress east – wetter conditions
- Some progress west – drier
- Slow phenology – colder conditions
  - Actually good for perennials with impending cold
  - Still some at risk OH-MO w/impending cold
- Cool season grasses doing well (MO)
- Weeds getting start lack of application



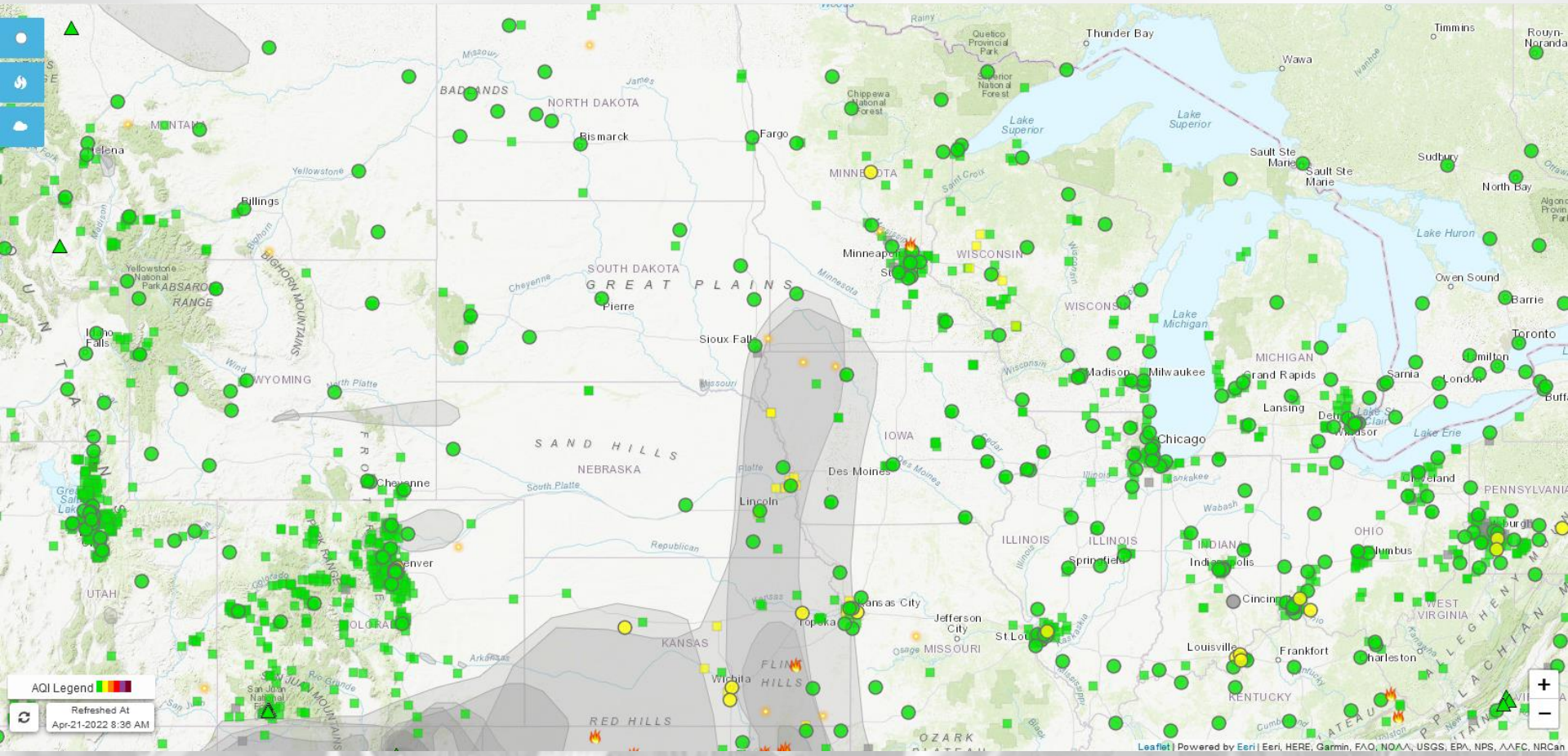
https://www.usanpn.org/news/spring

Schroder Fire
burn area
NWS Rapid City

WILDFIRE

KS Fire
Photo: Chip
Redmond

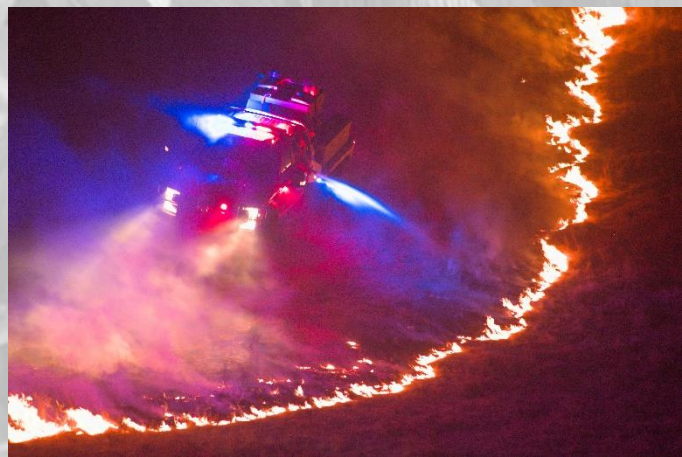
Fire/Air Quality Status



https://fire.airnow.gov/

Fires

- Driven by warm very wind dry conditions have caused numerous fires.
- Cool/dry delayed green-up
- Record number red flag warnings
- SD – fortunate fewer starts
- NE - Elwood



KS Fire
Photo: Chip
Redmond-KSU

Fires

- NE – Elwood Fire (1 death)
- Winds 50-60 mph
- Movement 1 mile every 5 minutes
- Backfire 1.5 miles
- 8 homes – 30 structures lost
- Center pivot watering blew away
- Pivots damaged –burned tires/kinked water lines
- Fence lines damaged

Photo:
Doug Kluck (NOAA-KC)

OUTLOOKS

Photo:
KS Pasture
Gannon Rush
(UNL/HPRCC)

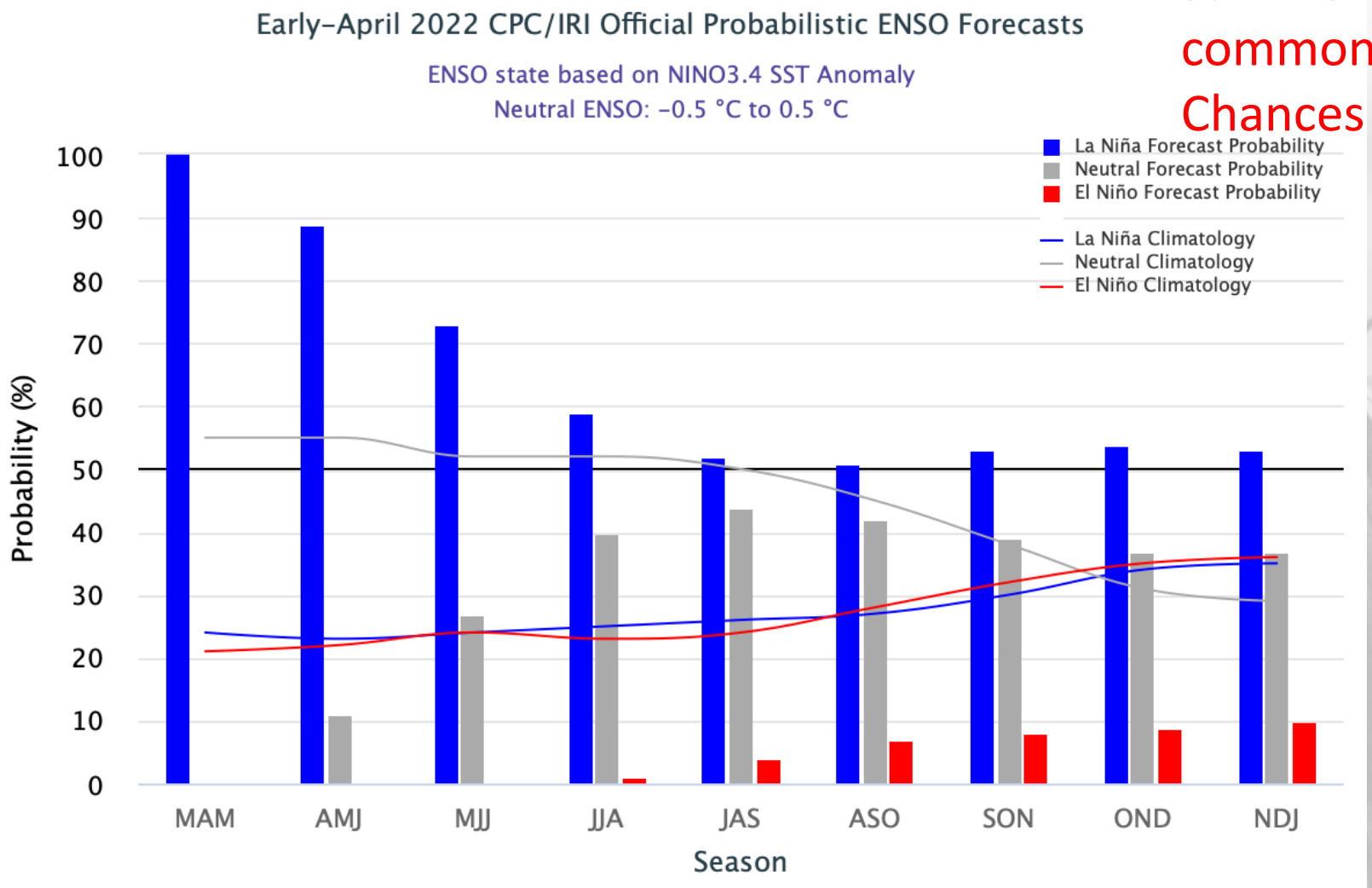
Climate Outlooks

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

Photo:
Jim Noel - NWS

ENSO Outlook Status

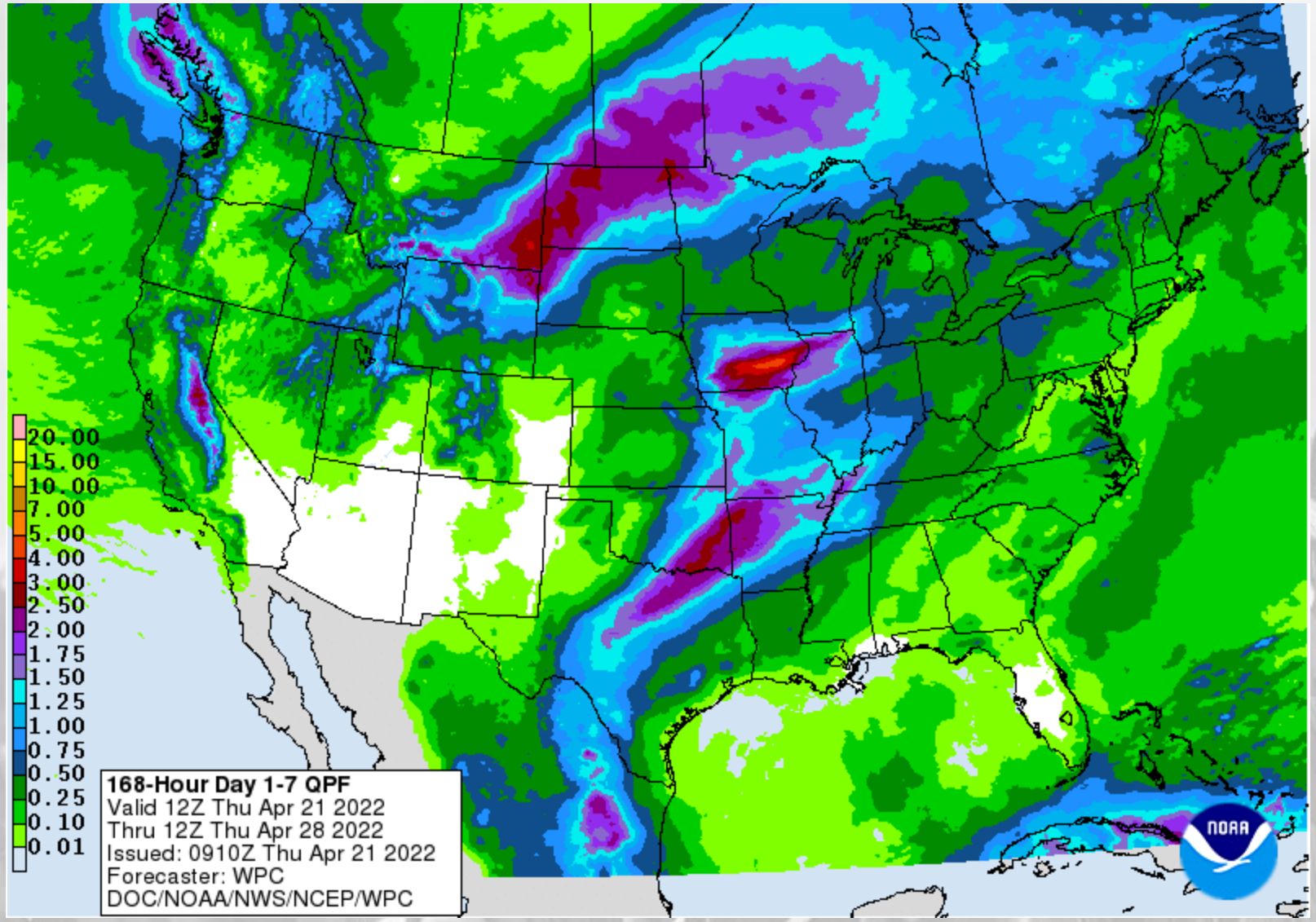
La Niña more likely to persist through summer (not that common). Chances weaker…



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

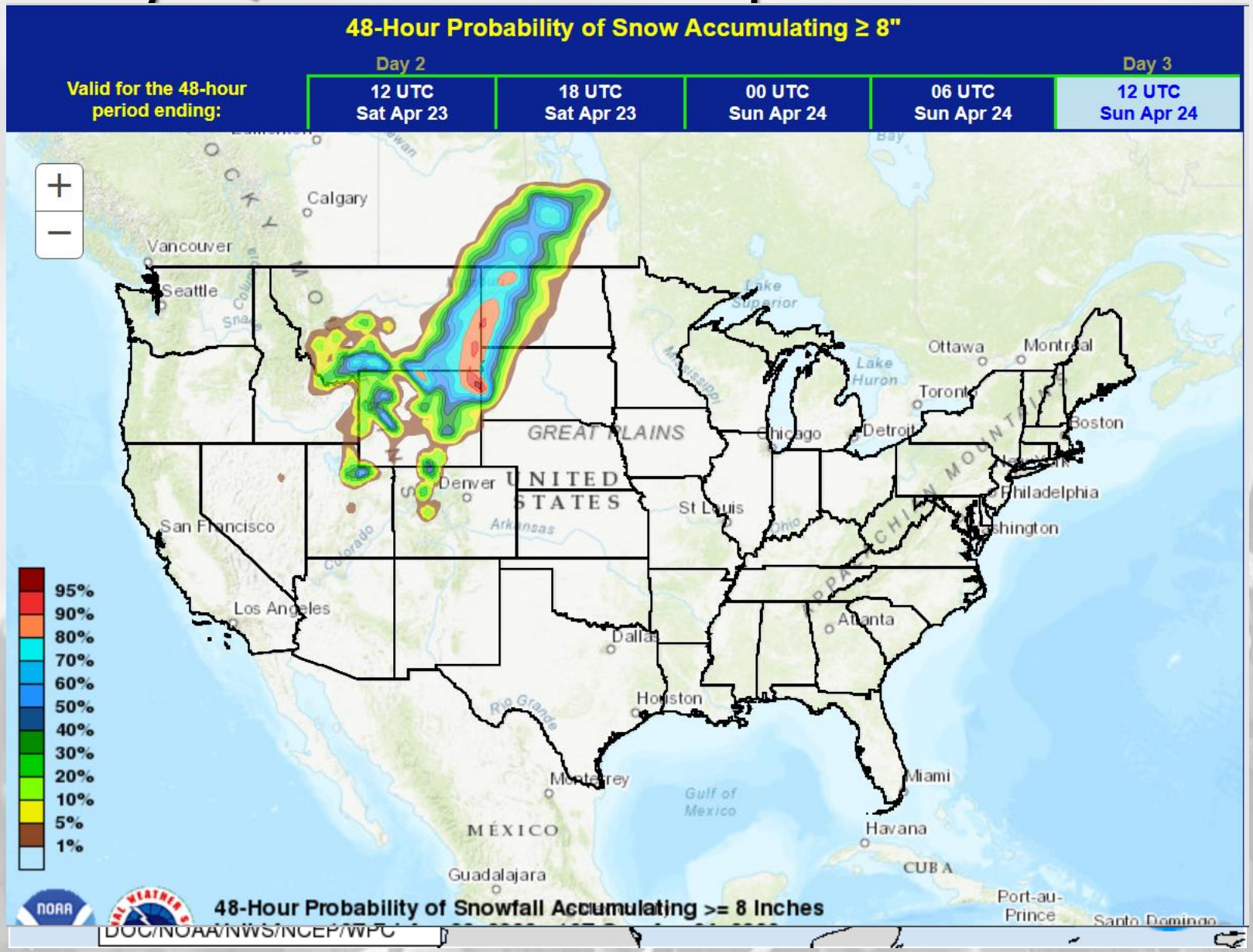
7-day Quantitative Precipitation Forecast

Valid: 7 AM Thu 20 April – 7 AM Thu 27 April



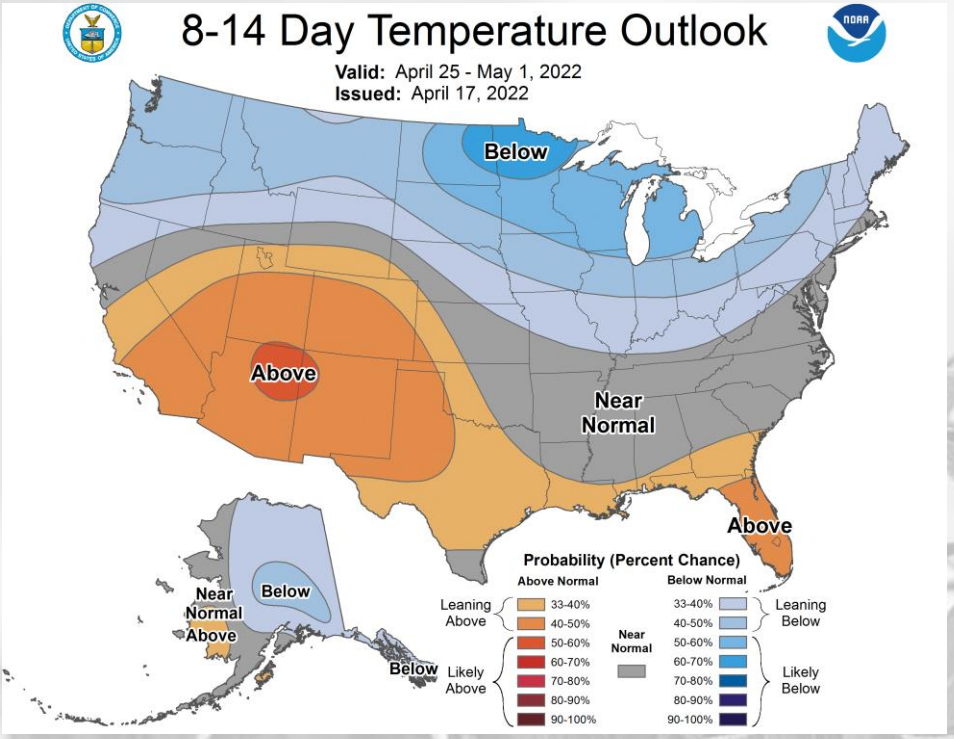
http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml

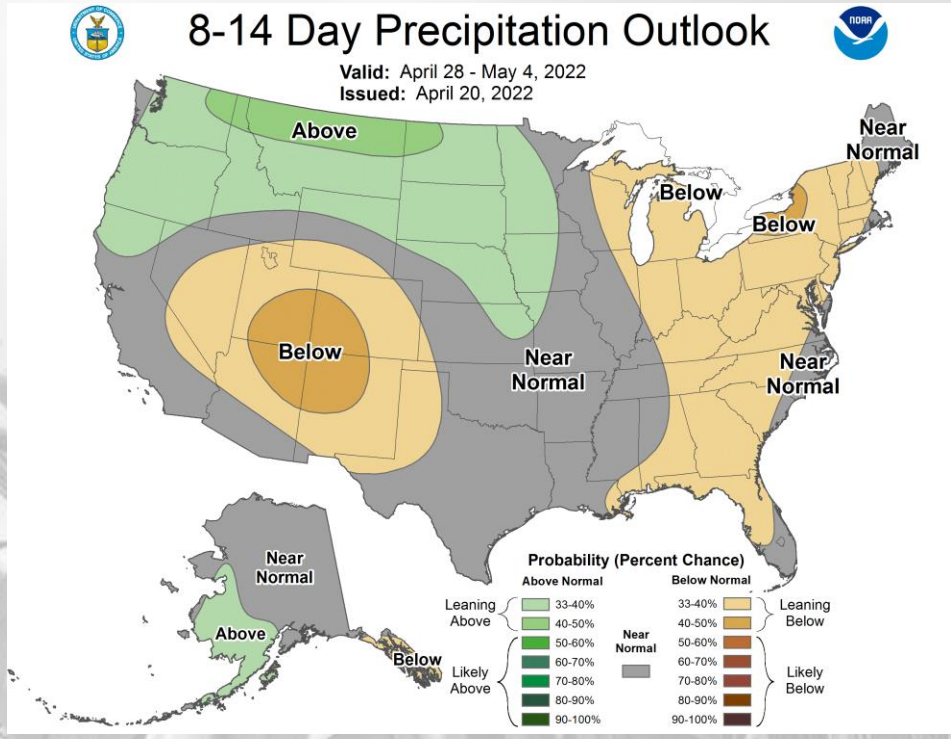
7-day Quantitative Precipitation Forecast



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

Temperature and Precipitation Probabilities for 25 April – 1 May 2022



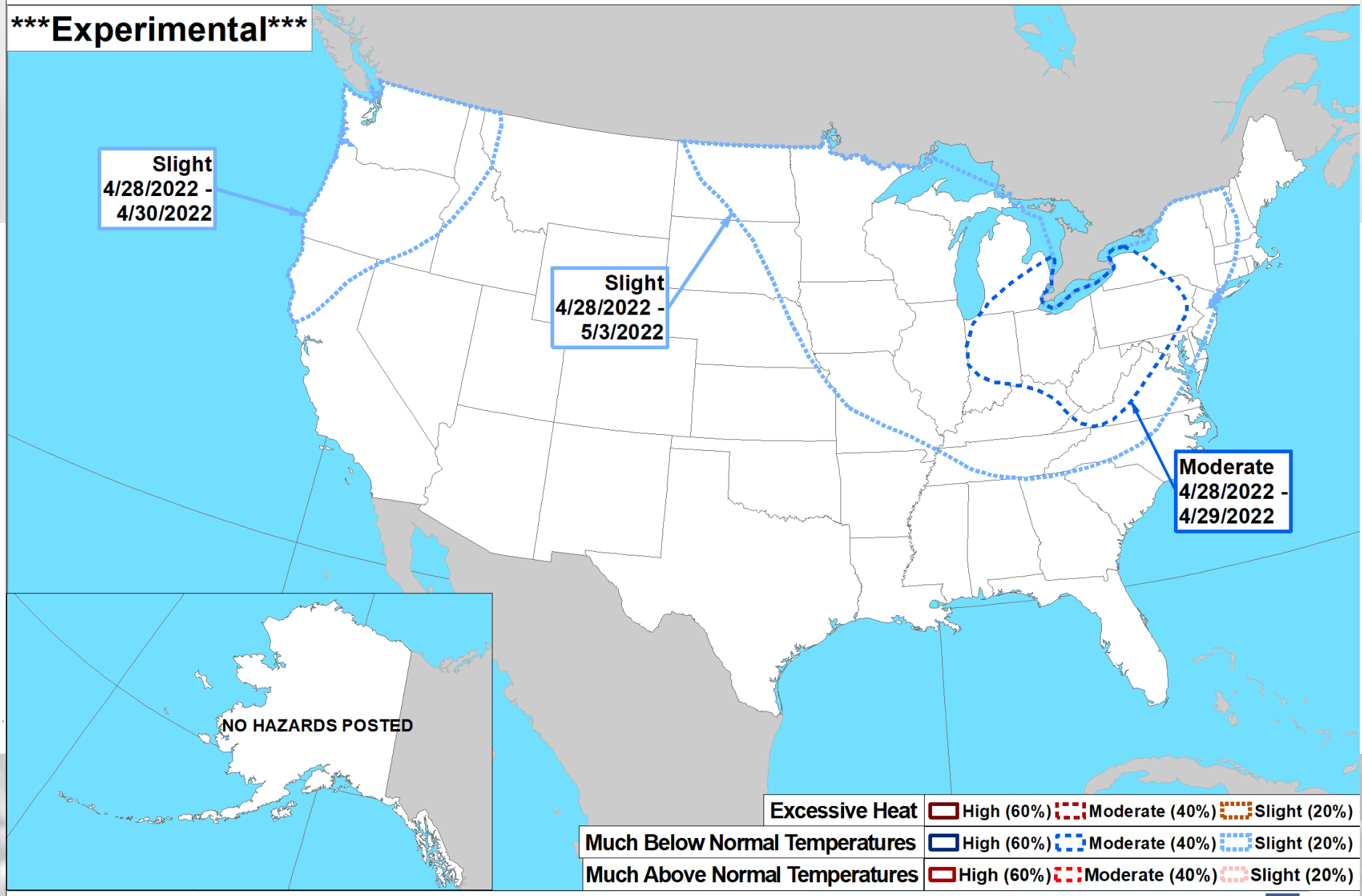


Temperature **Precipitation**

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

Risk of Hazardous Temperatures
Valid: 04/28/2022-05/04/2022

Experimental



Excessive Heat	High (60%)	Moderate (40%)	Slight (20%)
Much Below Normal Temperatures	High (60%)	Moderate (40%)	Slight (20%)
Much Above Normal Temperatures	High (60%)	Moderate (40%)	Slight (20%)

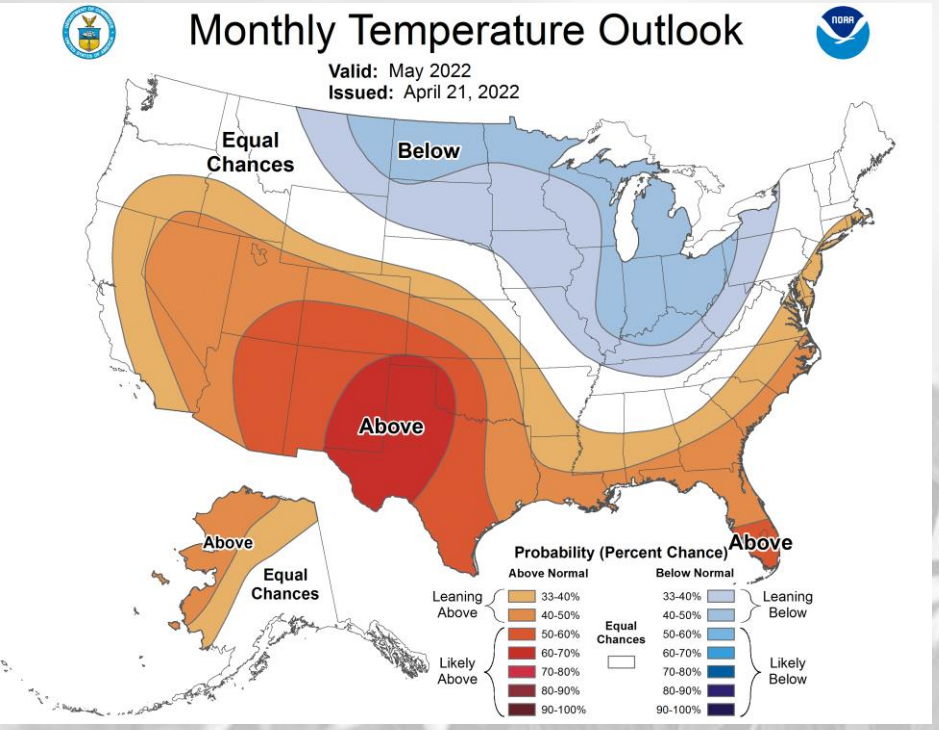
Climate Prediction Center

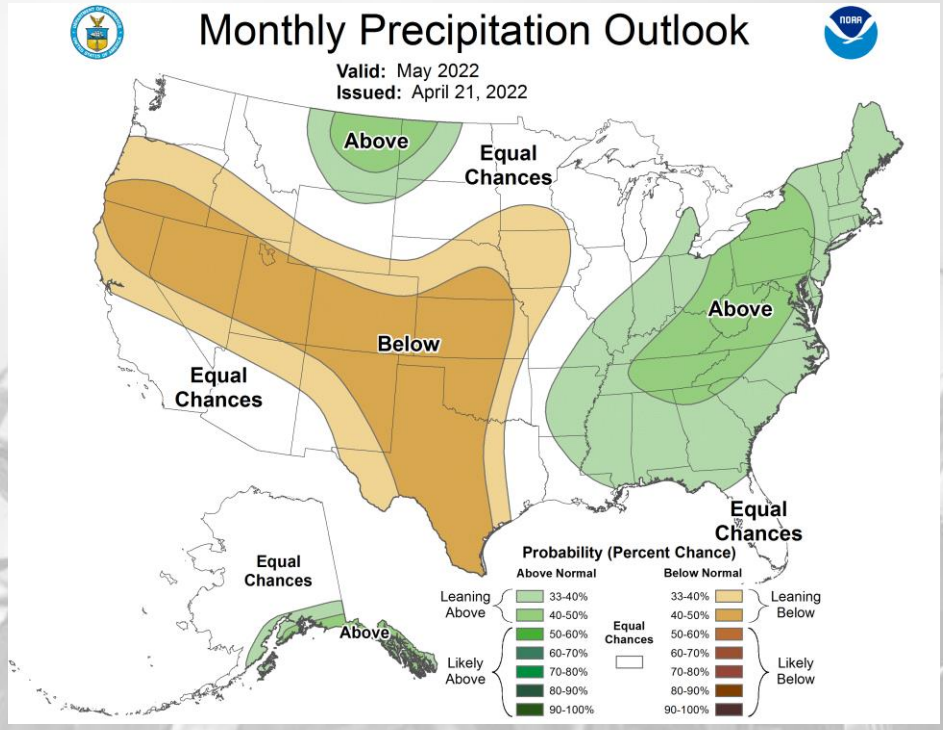
Follow us:

Made: 04/20/2022 3PM EDT

www.cpc.ncep.noaa.gov

May Temperature and Precipitation Probabilities

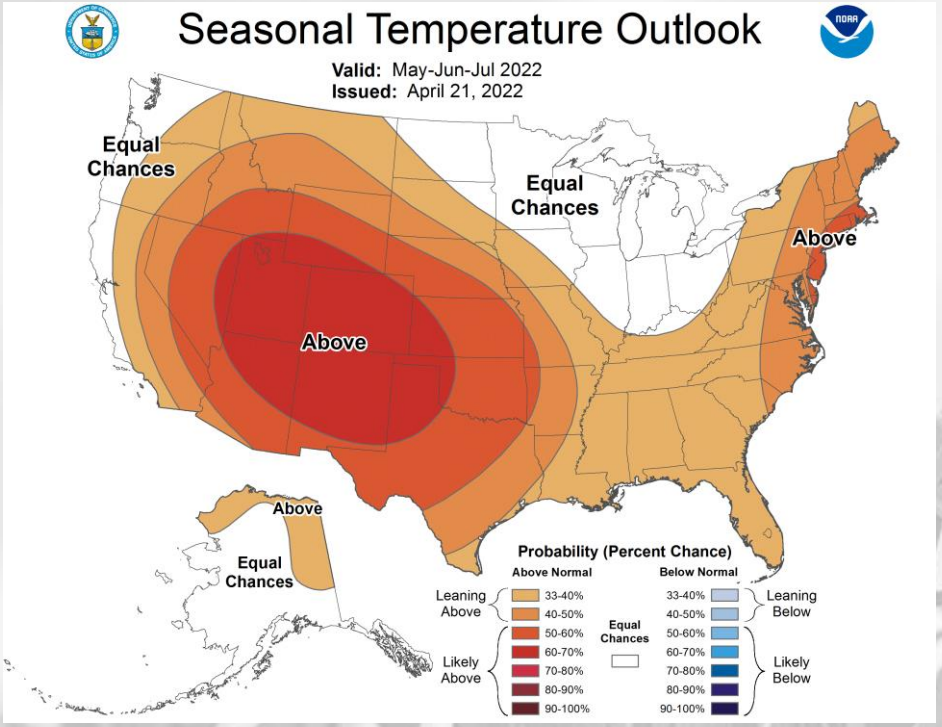


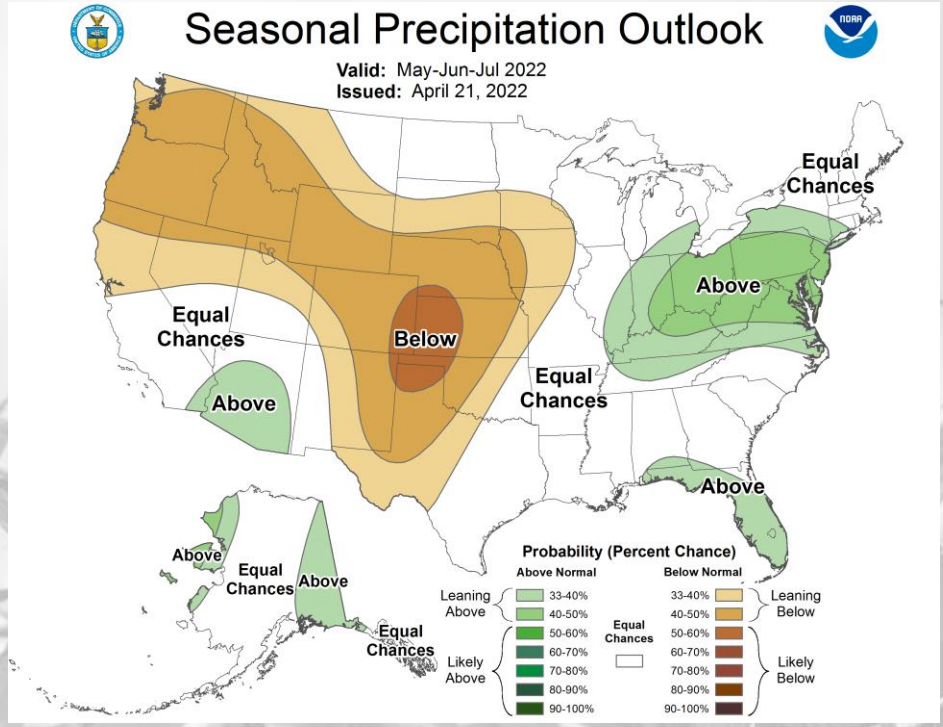


Temperature **Precipitation**

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

May-July Temperature and Precipitation Probabilities

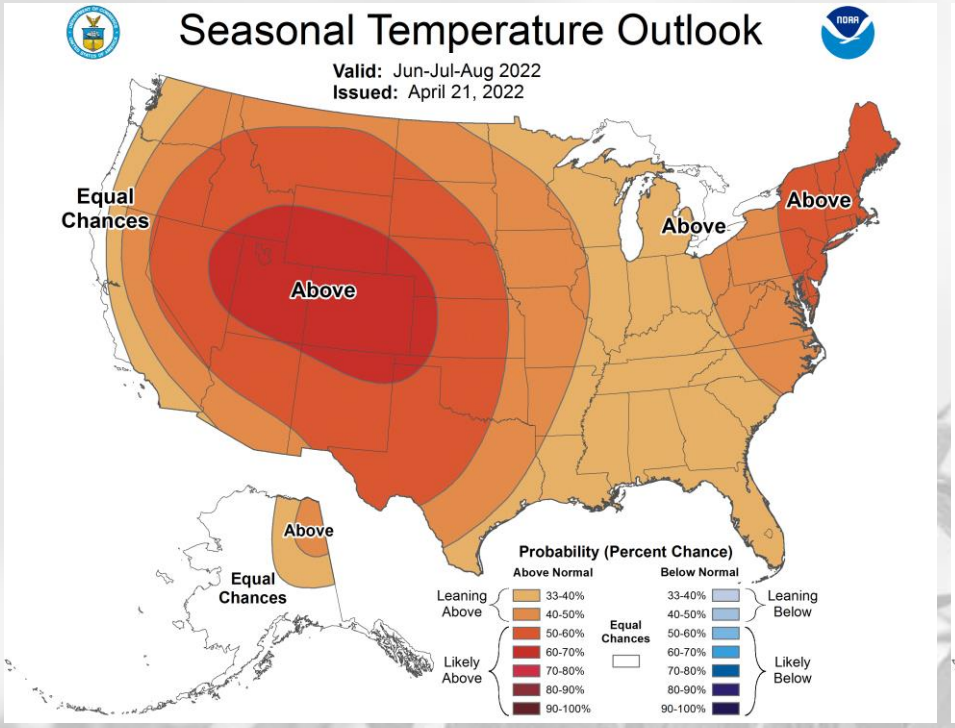


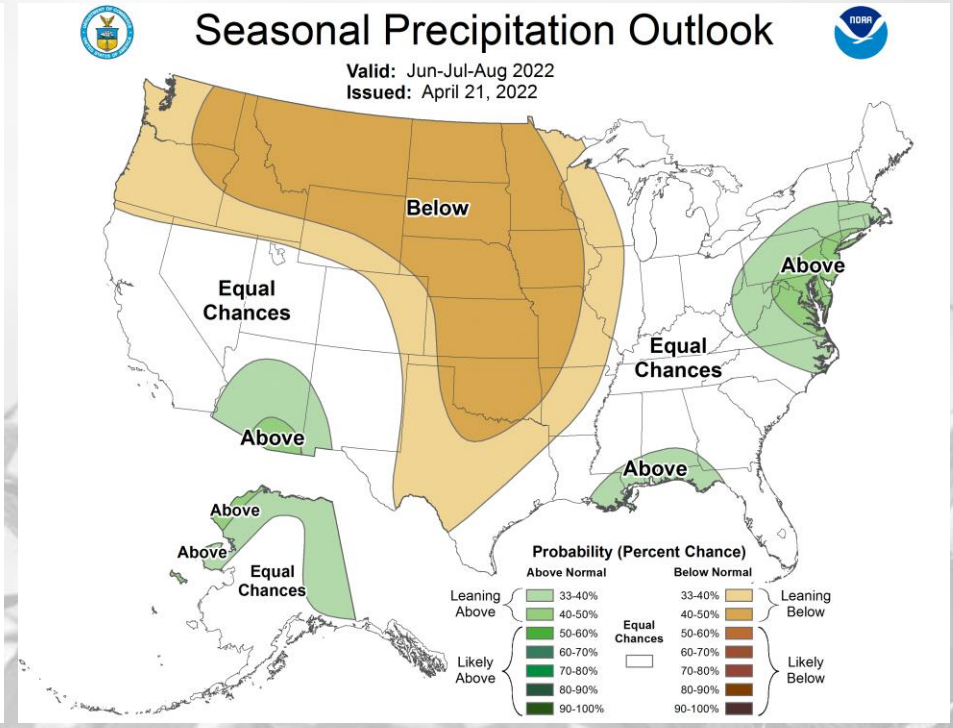


Temperature **Precipitation**

http://www.cpc.ncep.noaa.gov/

June-August Temperature and Precipitation Probabilities

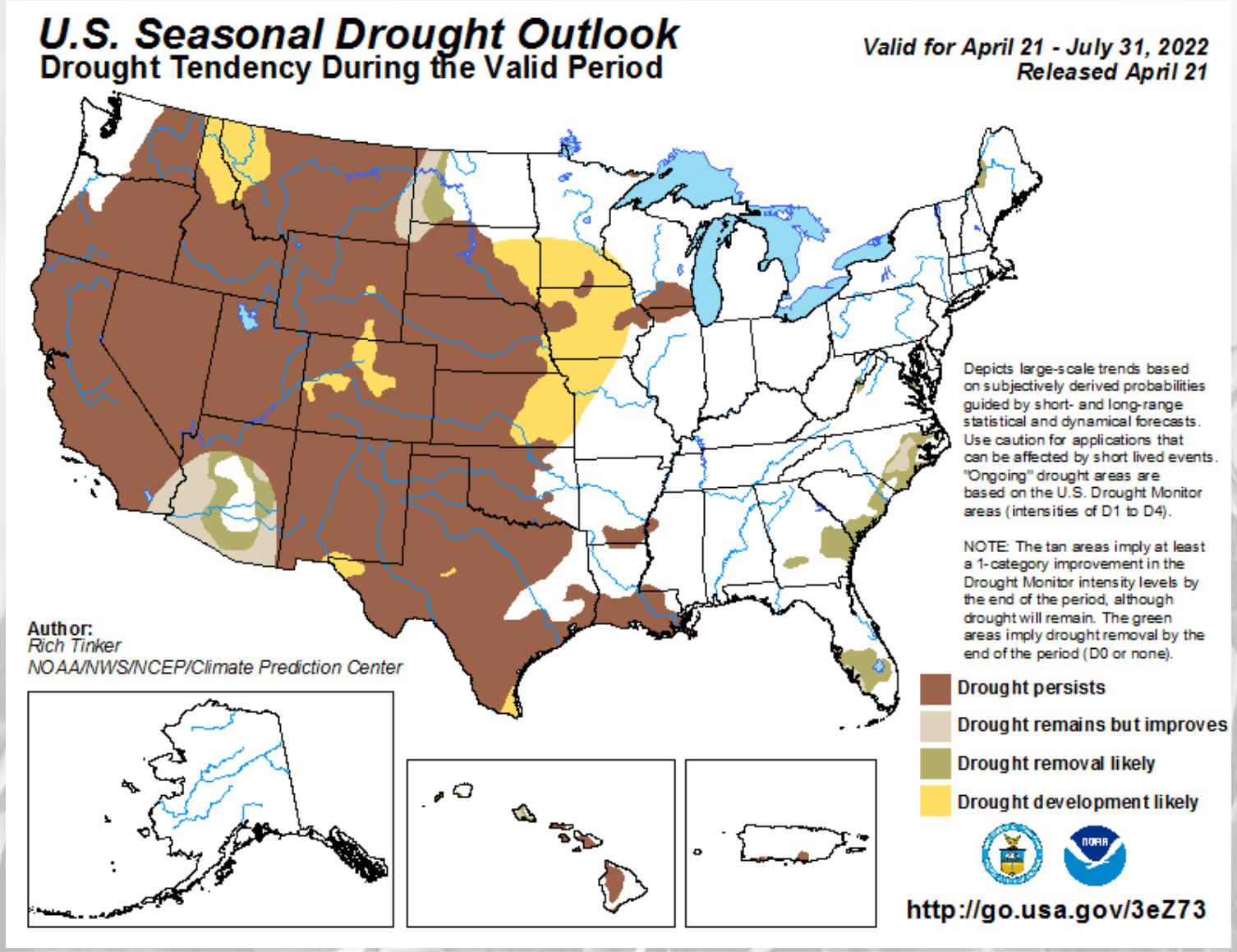




Temperature **Precipitation**

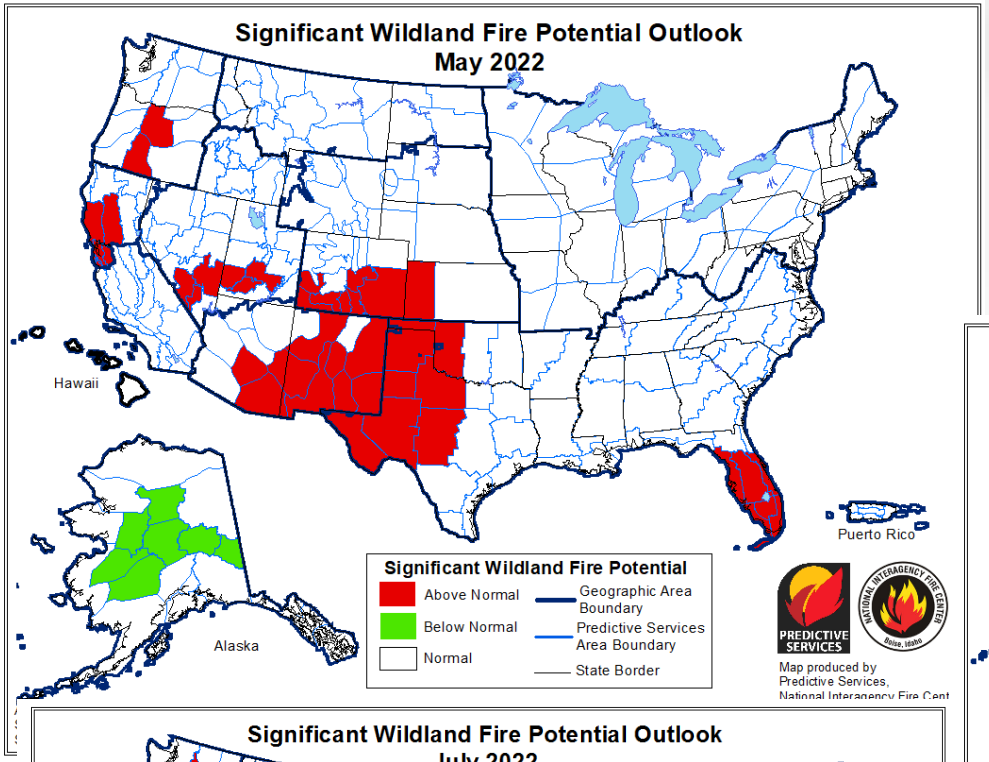
https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=02

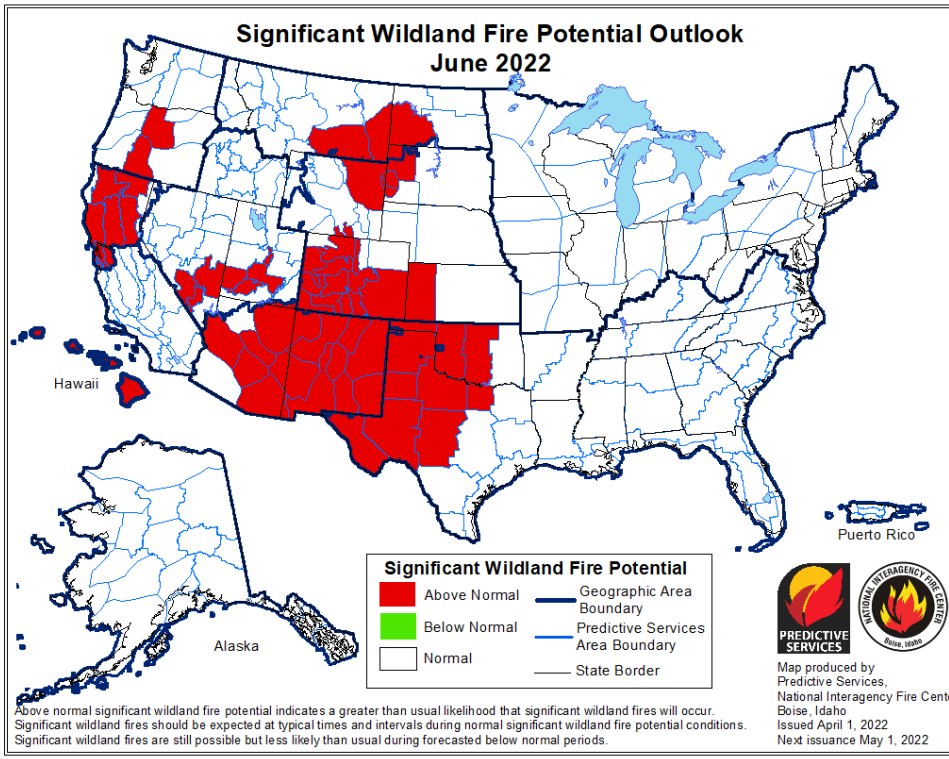
Drought Outlook through 31 July

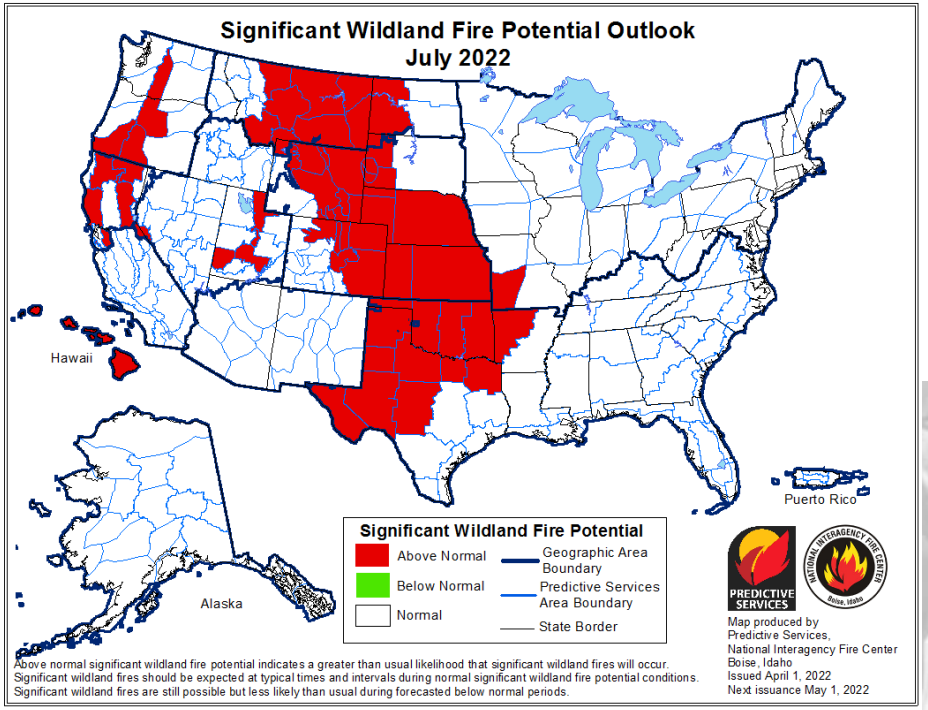


http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif/

Wildland Fire Potential







https://www.nifc.gov/nicc/predictive/outlooks/outlooks.htm

Summary - Conditions

* Generally wetter east/drier west – some smaller variations
* Cooler recently and much of 2022 overall.
* Drought issues persist much of Plains. Smaller pockets east (IA/IL/WI)

* Wetness/cool soils slowing start of spring field season east
* Fire problems many areas west
* Other longer term drought issues west (surface water/rangeland/winter wheat)

Summary - Outlooks

* La Niña likely persisting into summer and beyond
* Sets background issues for outlooks

* Cooler more likely early May-north
* Drier plains – wetter east (May)
* Drought likely to persist in Plains – could expand eastward during summer.
* Warm also more likely into summer.
* Fire potential expand during summer.

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
  - https://mrcc.purdue.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/
- USDA Climate Hubs https://www.climatehubs.usda.gov/
- State climatologists
  - http://www.stateclimate.org
- Regional climate centers
  - http://mrcc.purdue.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
  - Melissa Widhalm: mwidhalm@purdue.edu 765-494-8191
  - 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

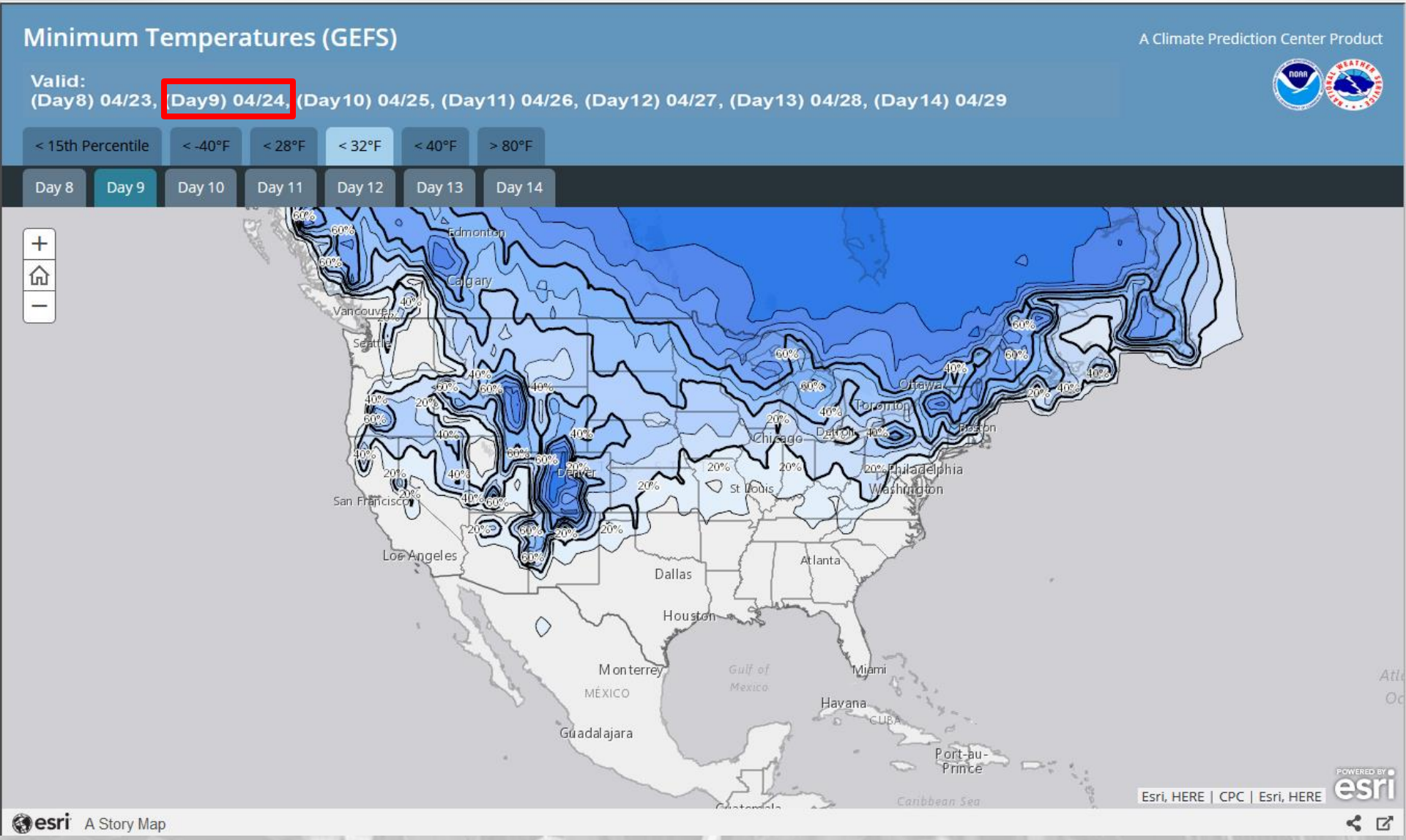
515-294-2013

Dennis.todey@ars.usda.gov

Wabash Spring Fire Custer, SD
https://gpfireinfo.blogspot.com/

National Laboratory for Agriculture and the Environment
Attn: Midwest Climate Hub
1015 N University Blvd
Ames, Iowa 50011-3611

Risk of Temperature < 32 F

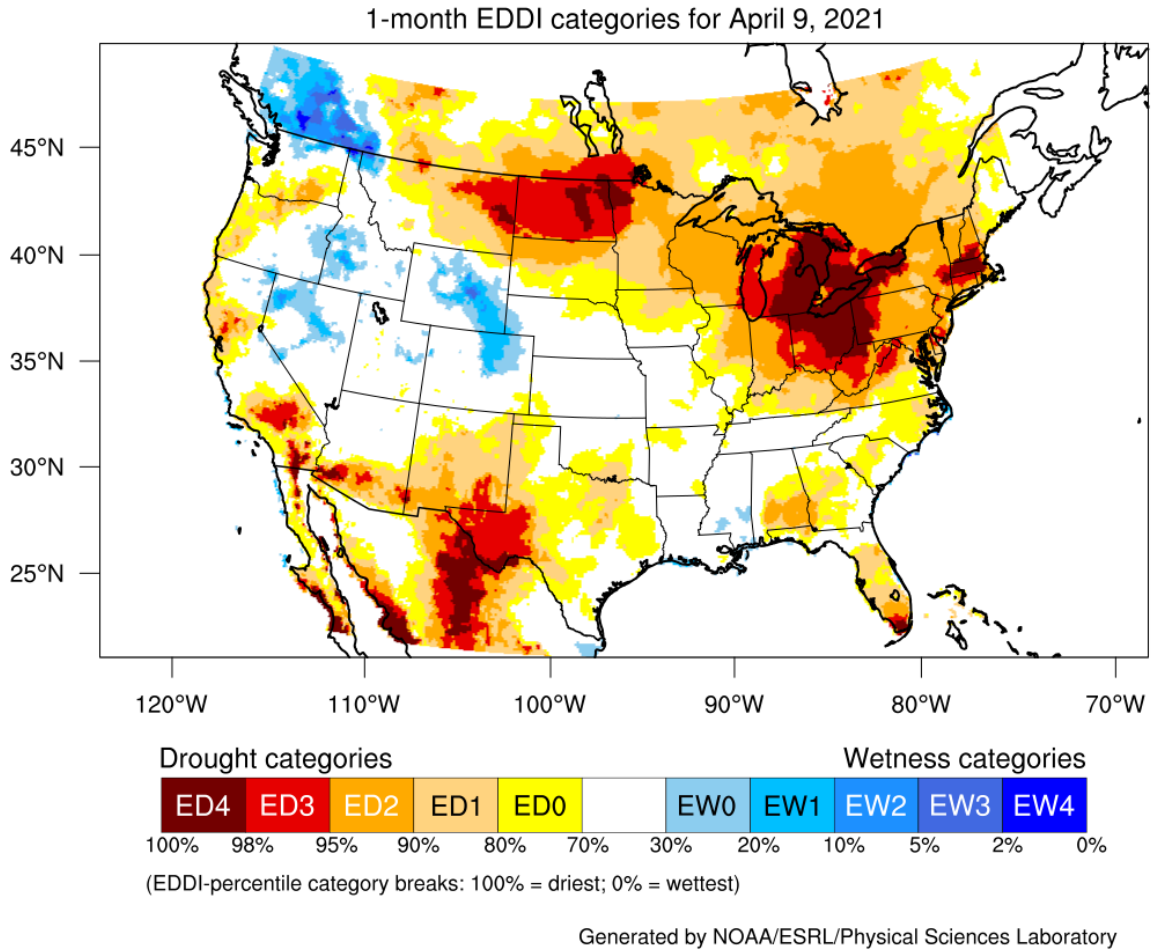


Other Crop Impacts

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/

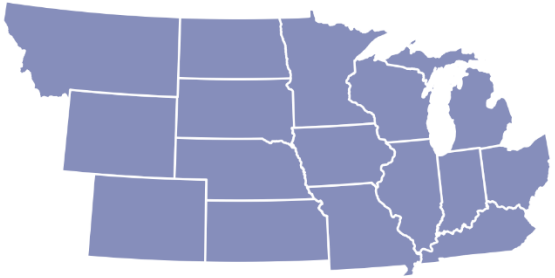
March Precip Details

- 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

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

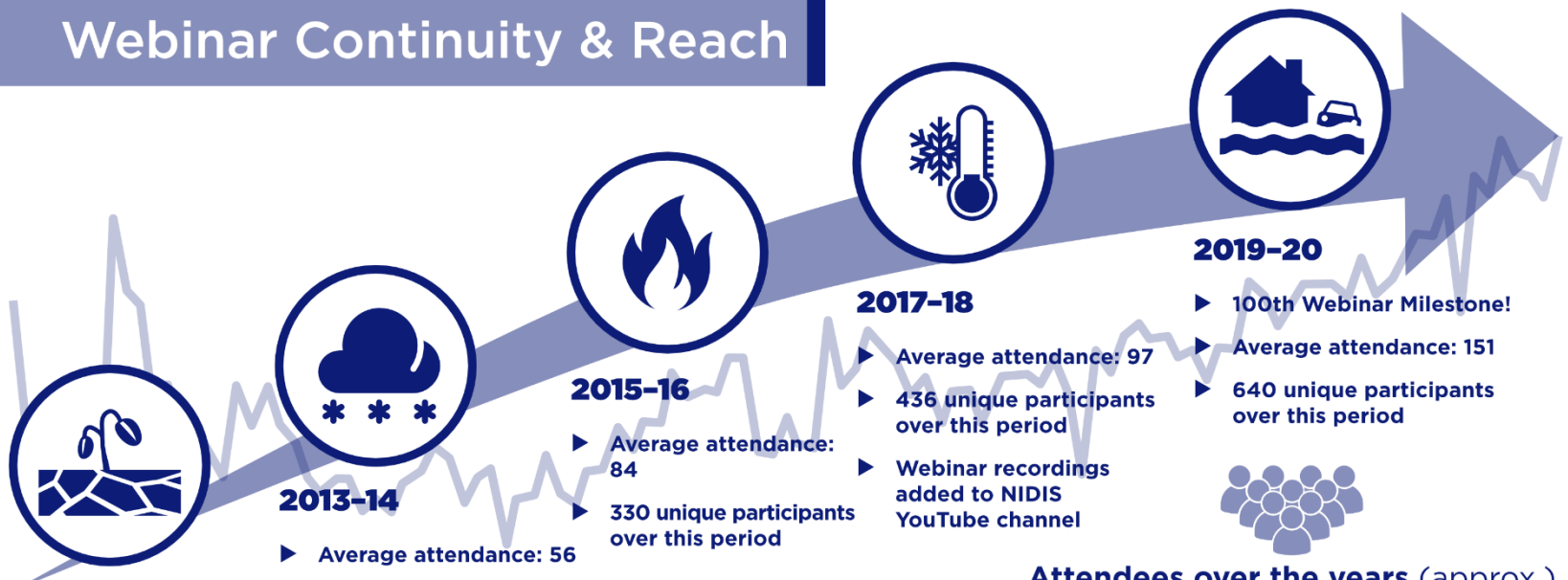
- Livestream
- 45-minute presentation
- 15-minute audience interaction Q&A
- Recording and presenter slides archived for later viewing and sharing: **NIDIS** | **MRCC** | **HPRCC**
  click names to view

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."

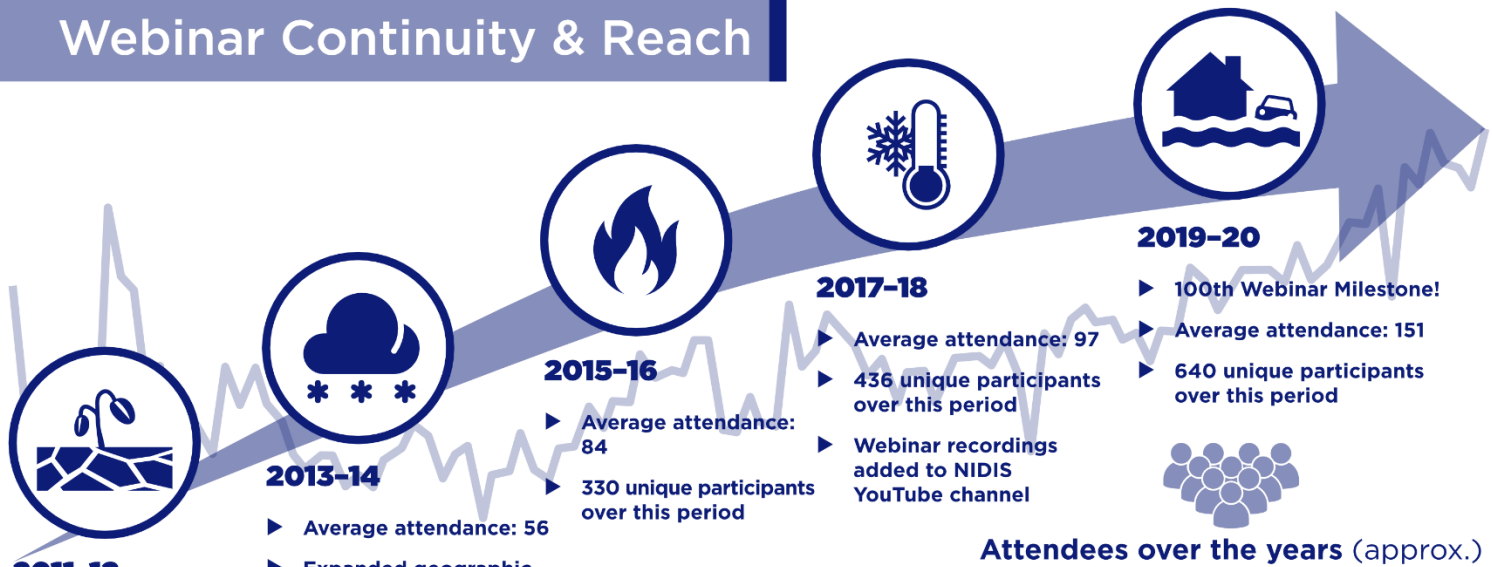
Attendees over the years (approx.)

- 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