

Central Region Climate and Drought Outlook

21 March, 2024

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United States Department of Agriculture
Midwest Climate Hub



ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

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

- ❑ April 18, 2024 (1 PM CDT), Dennis Todey, USDA Midwest Climate Hub

❑ Access to Future Climate Webinars and Information

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

❑ Recordings of Past Webinars

- ❑ <https://mrcc.purdue.edu/multimedia/webinars.jsp>
- ❑ <https://hprcc.unl.edu/webinars.php>

❑ Open for questions at the end



Today's Agenda

- ❑ Recent conditions
 - ❑ February ranks
 - ❑ A recap of Winter '23-'24
 - ❑ Record warmth
- ❑ Impacts
 - ❑ Early blooming
- ❑ Outlooks
 - ❑ El Niño weakens
 - ❑ Return to La Niña?
 - ❑ What will spring bring?

Lilacs reaching bud break, West Lafayette, IN
Photo by Melissa Widhalm, March 4, 2024



Recent conditions



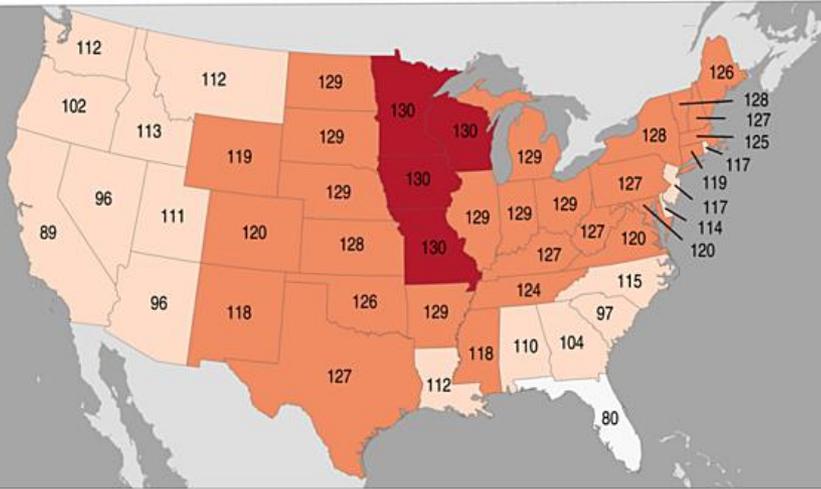
February temperature and precipitation ranks

Statewide Average Temperature Ranks

February 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information

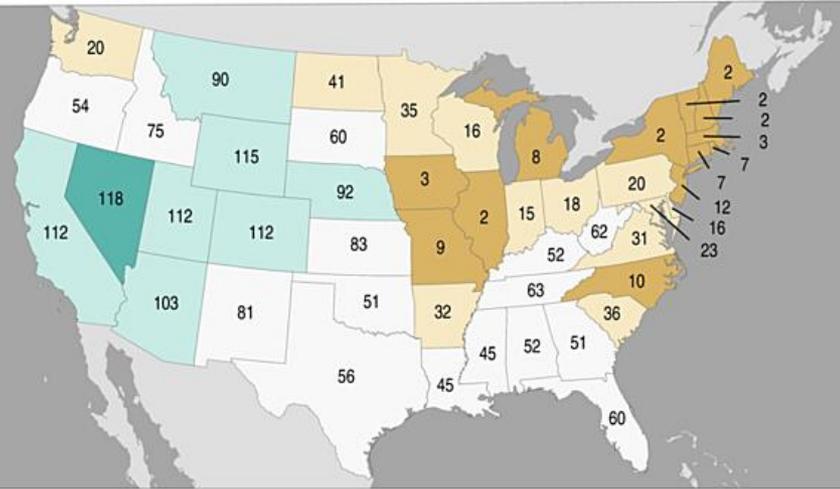


Statewide Precipitation Ranks

February 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Record warmth across Minnesota, Wisconsin, Iowa, and Missouri. Much above average temperatures for remaining central region states.

Below average precipitation eastern side of central region – 2nd driest for IL and 3rd driest for IA. Wetter to the west.



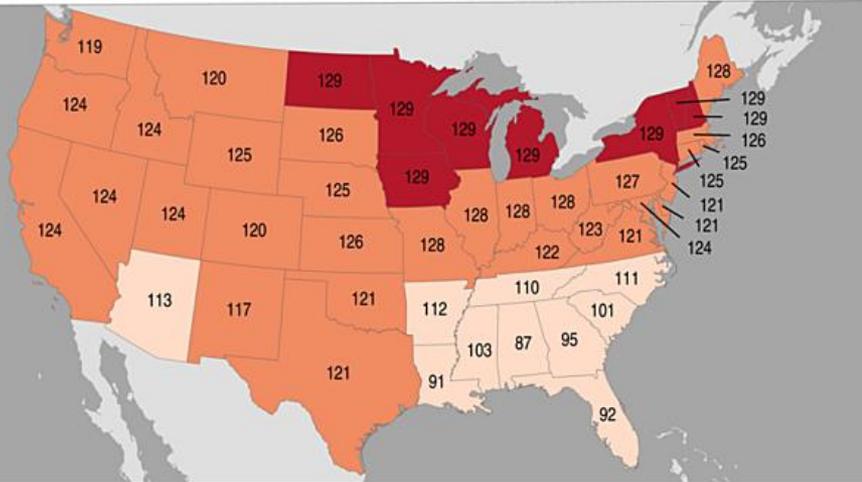
Winter temperature and precipitation ranks

Statewide Average Temperature Ranks

December 2023 – February 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information

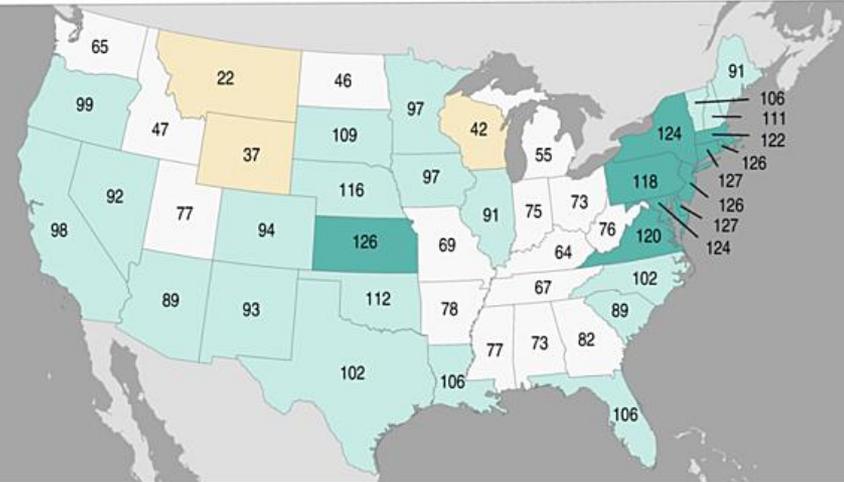


Statewide Precipitation Ranks

December 2023 – February 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Created: Wed Mar 6 2024
Source: nClimGrid - Monthly

Created: Wed Mar 6 2024
Source: nClimGrid - Monthly

Record warm winter for North Dakota, Minnesota, Iowa, Wisconsin, and Michigan. Extreme warm for most of the country!

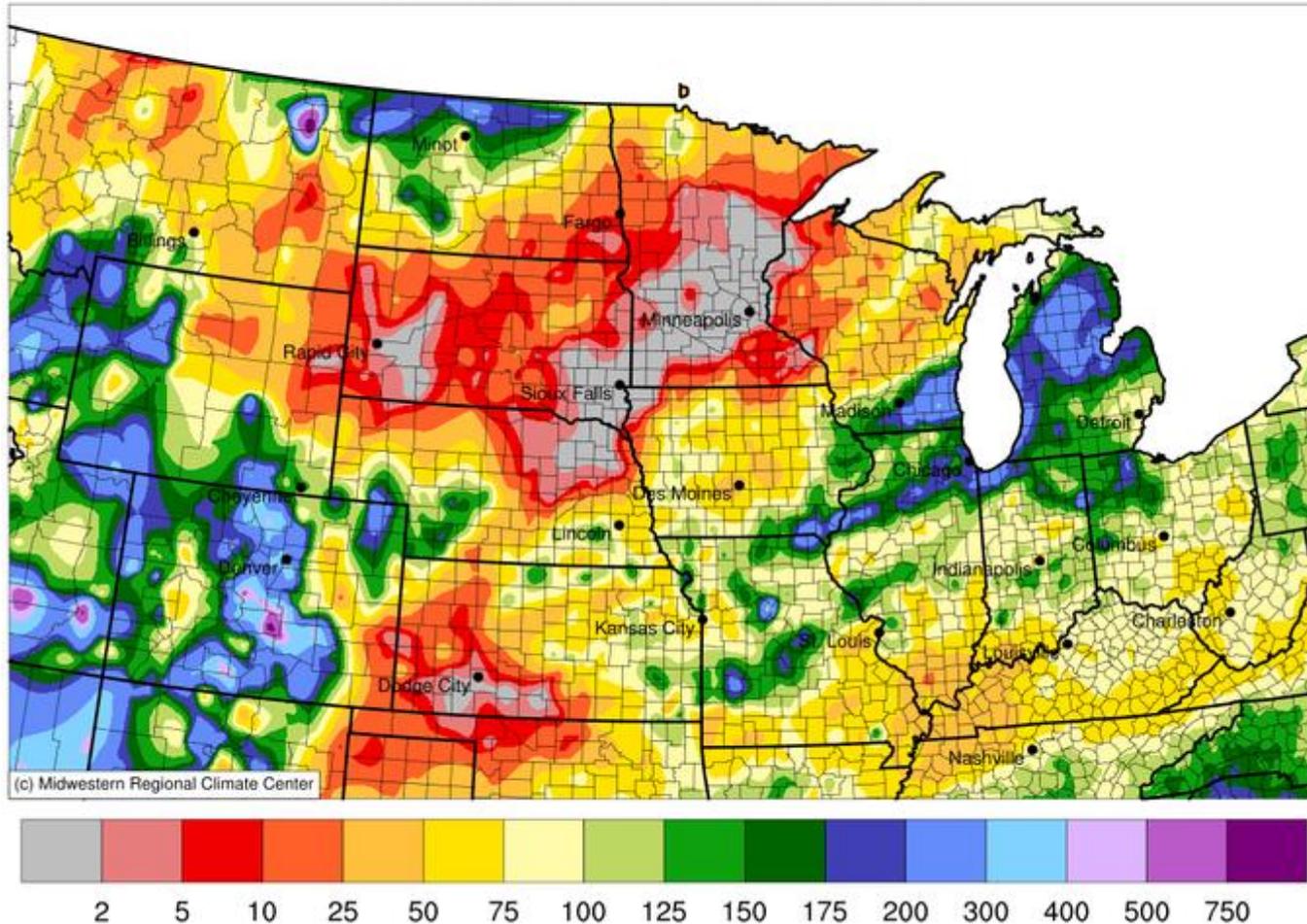
Montana, Wyoming, and Wisconsin had a drier winter. Otherwise, near average or slightly wetter. Kansas had its 4th wettest winter on record.



Percent of normal precipitation for March

Accumulated Precipitation (in): Percent of 1991-2020 Normals

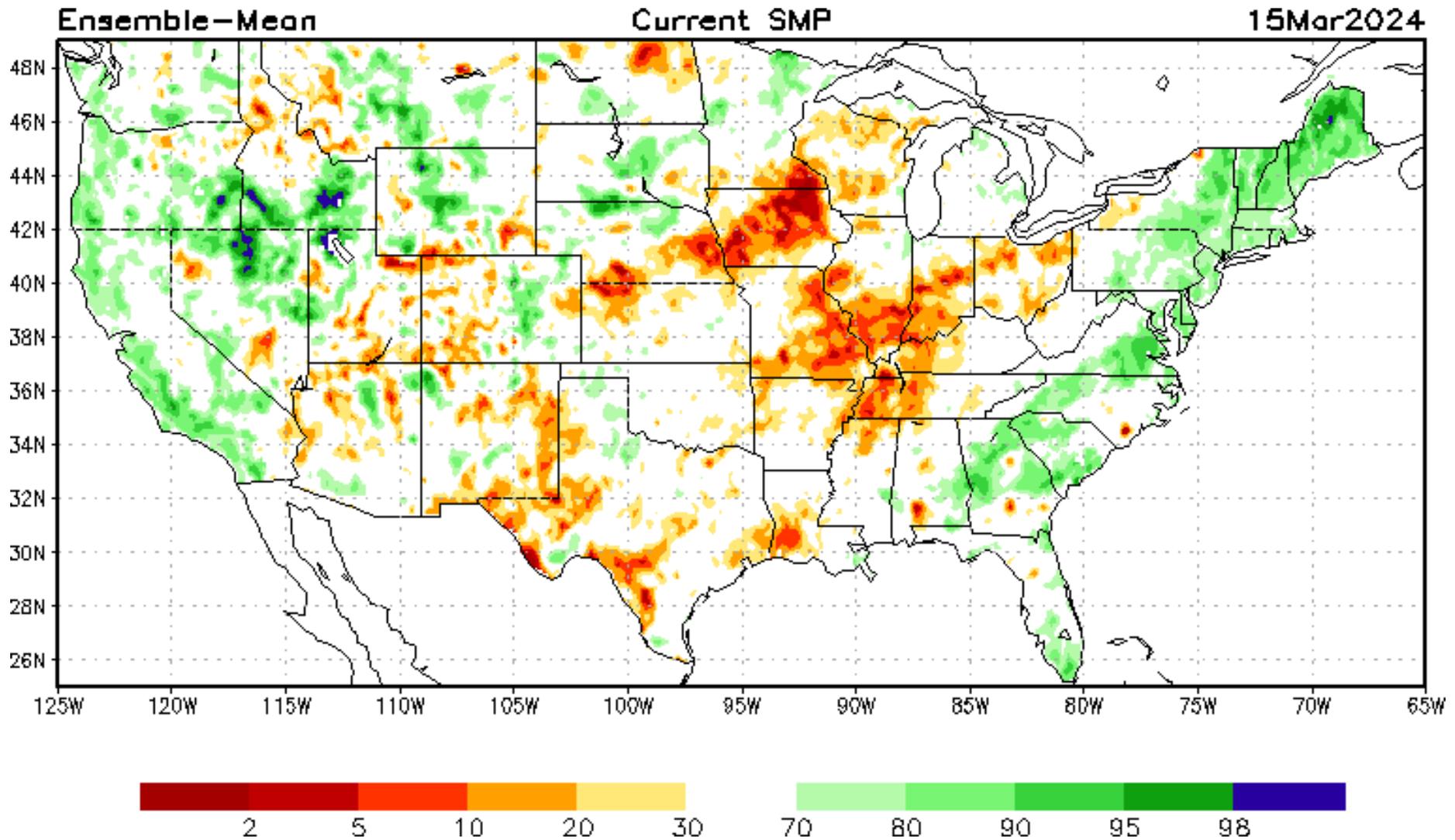
March 01, 2024 to March 20, 2024



<https://mrcc.purdue.edu/CLIMATE/>



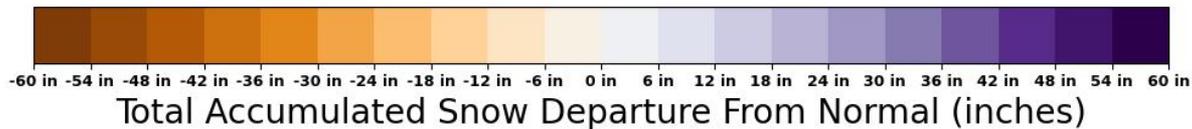
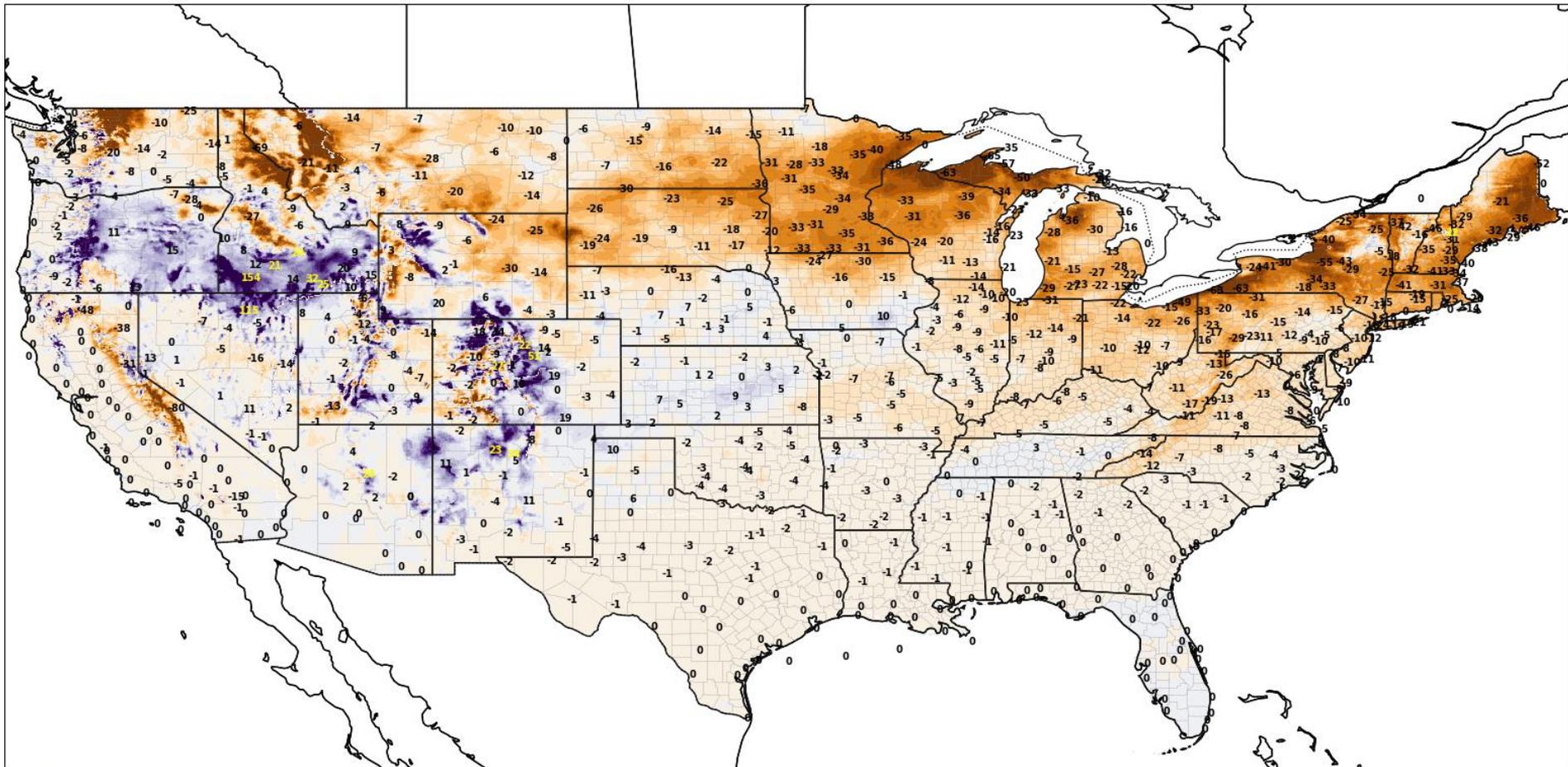
Soil moisture



https://www.cpc.ncep.noaa.gov/products/Drought/Monitoring/smp_new.shtml



Seasonal snow departure from normal

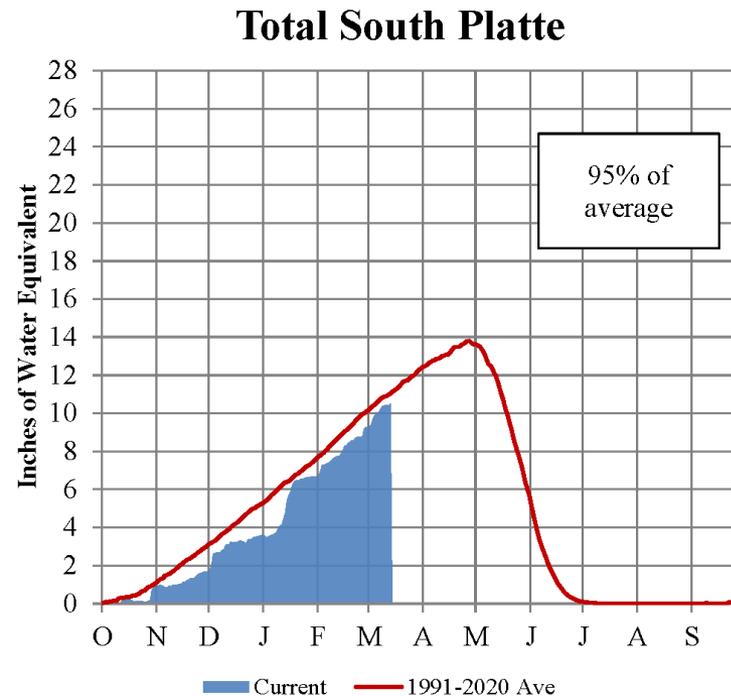
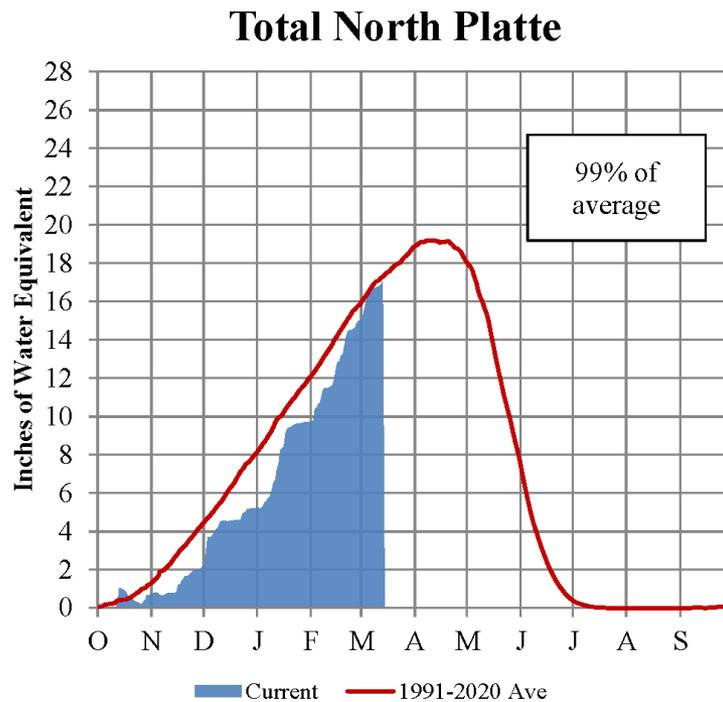


https://ag-wx.com/snow_depart.png



Platte River Basin - Mountain Snowpack Water Content Water Year 2023-2024

March 13, 2024



The North and South Platte River Basin mountain snowpacks normally peak near April 10 and the end of April, respectively. As of March 13, 2024, the mountain snowpack SWE in the "Total North Platte" reach is 17.0", 99% of the (1991-2020) average. The mountain snowpack SWE in the "Total South Platte" reach is 10.5", 95% of the (1991-2020) average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

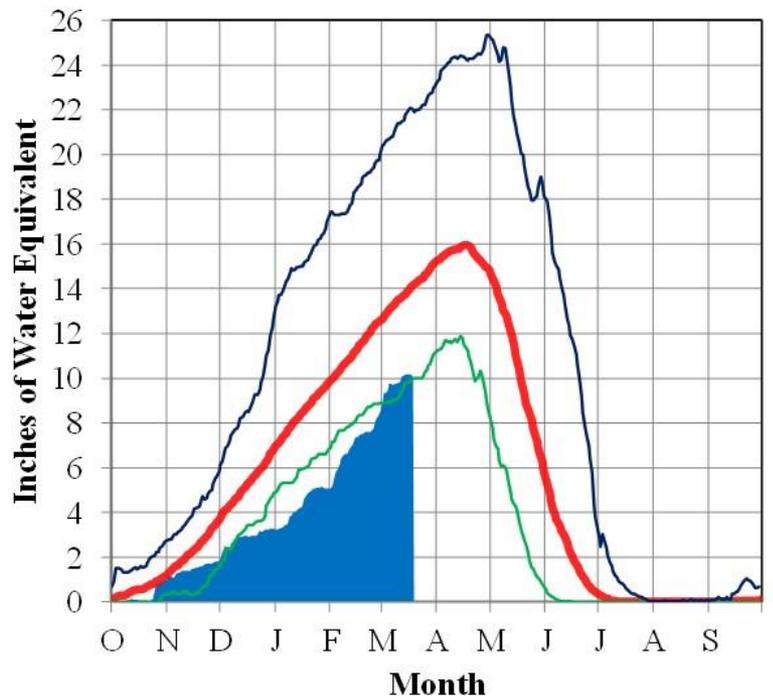
https://www.nwd-mr.usace.army.mil/rcc/reports/platte_snow.png



Missouri River Basin – Mountain Snowpack Water Content 2023-2024 with comparison plots from recent high and low years

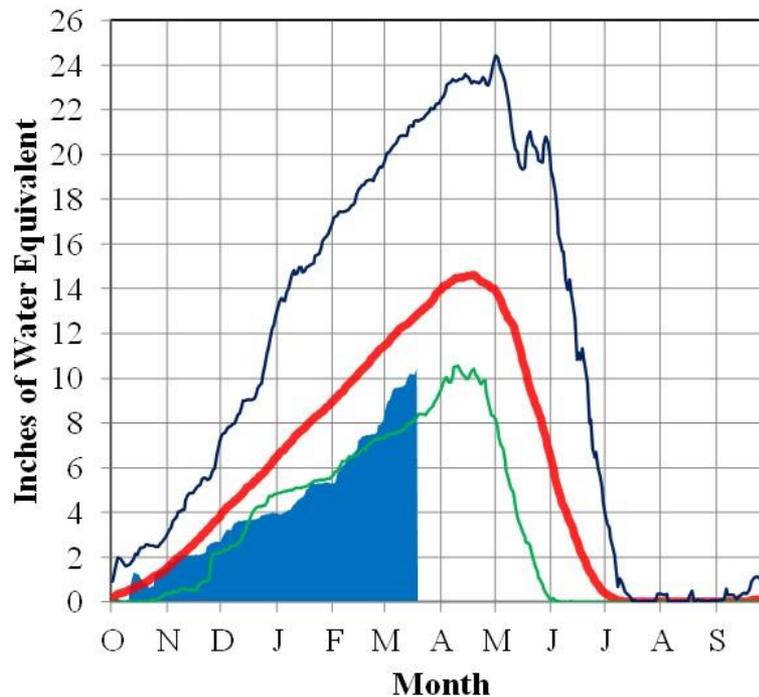
18-Mar-2024

Total above Fort Peck



■ 2023-2024 — 1991-2020 Ave — *Minimum — *Maximum

Total Fort Peck to Garrison



■ 2023-2024 — 1991-2020 Ave — *Minimum — *Maximum

On March 18, 2024 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach is 10.1" and 71% of the (1991-2020) average. The mountain SWE in the "Fort Peck to Garrison" reach is 10.5" and 82% of the (1991-2020) average. The normal peak for both reaches occurs near April 17.

*Refers to the minimum or maximum SWE in the basin for that day in the historical years 1991-2020.

Provisional data. Subject to revision.

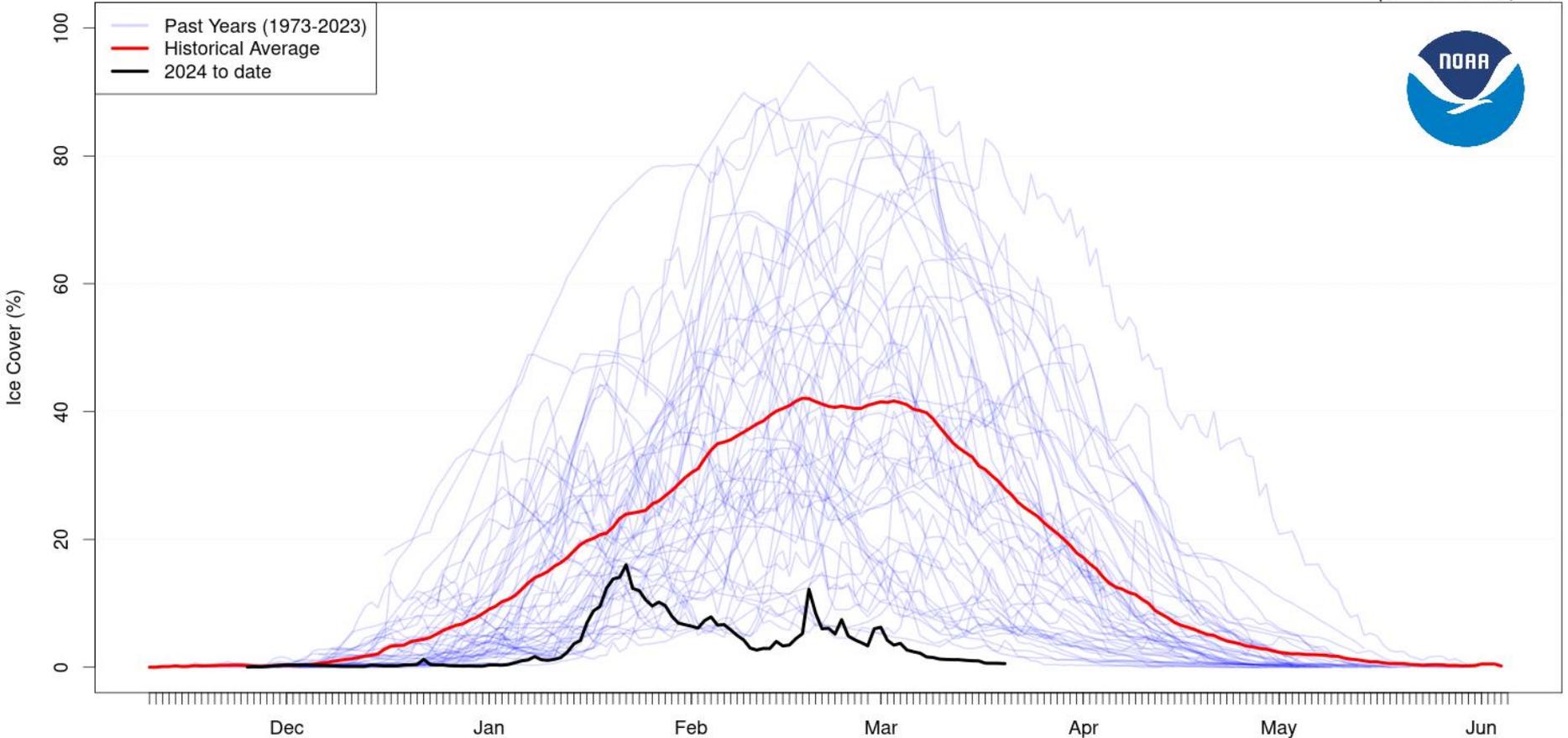
<https://www.nwd-mr.usace.army.mil/rcc/reports/snow.jpg>



Average and current winter ice cover

Great Lakes Average Ice Cover

updated: Mar 20, 2024



https://www.glerl.noaa.gov/data/ice/spaghetti/bas_ice_compare.png



GREAT LAKES SURFACE ENVIRONMENTAL ANALYSIS (GLSEA)



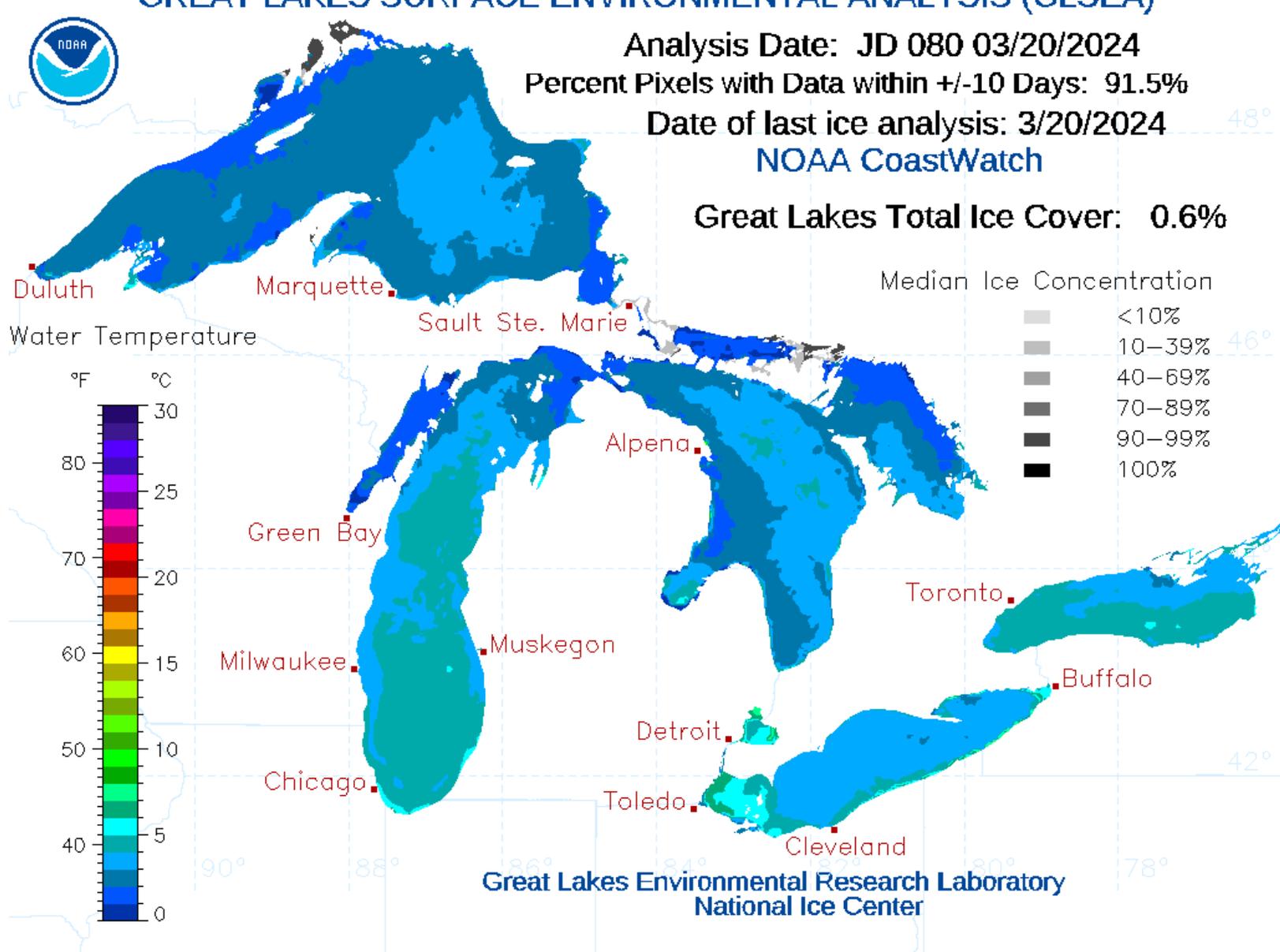
Analysis Date: JD 080 03/20/2024

Percent Pixels with Data within +/-10 Days: 91.5%

Date of last ice analysis: 3/20/2024

NOAA CoastWatch

Great Lakes Total Ice Cover: 0.6%



Great Lakes Environmental Research Laboratory
National Ice Center

<https://www.glerl.noaa.gov/data/ice/>

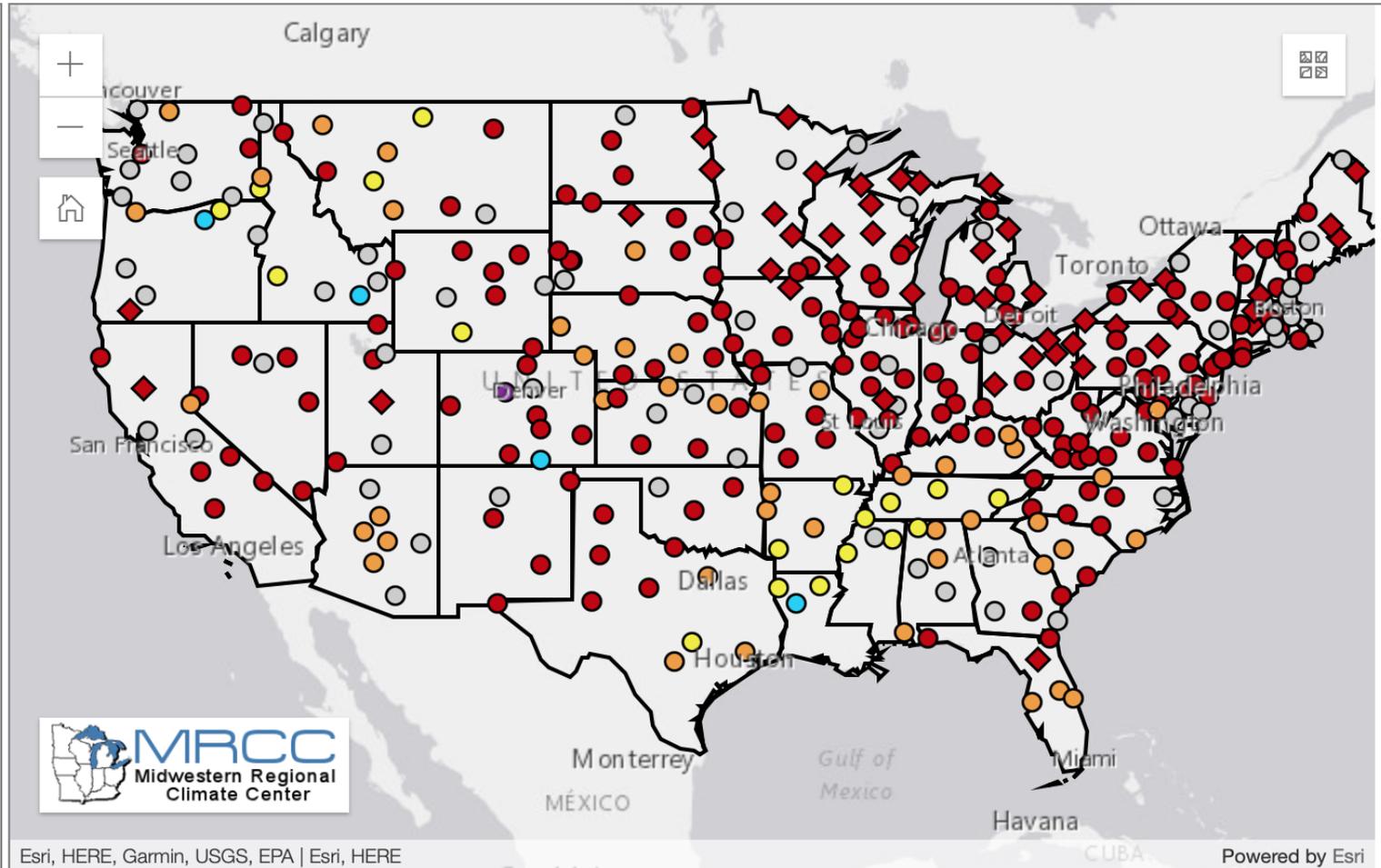


Accumulated Winter Seasonal Severity Index

AWSSI Category

- Extreme
- Severe
- Average
- Moderate
- Mild
- Not current
- Record

Data Last Updated:
3/21/2024 11:20 CDT

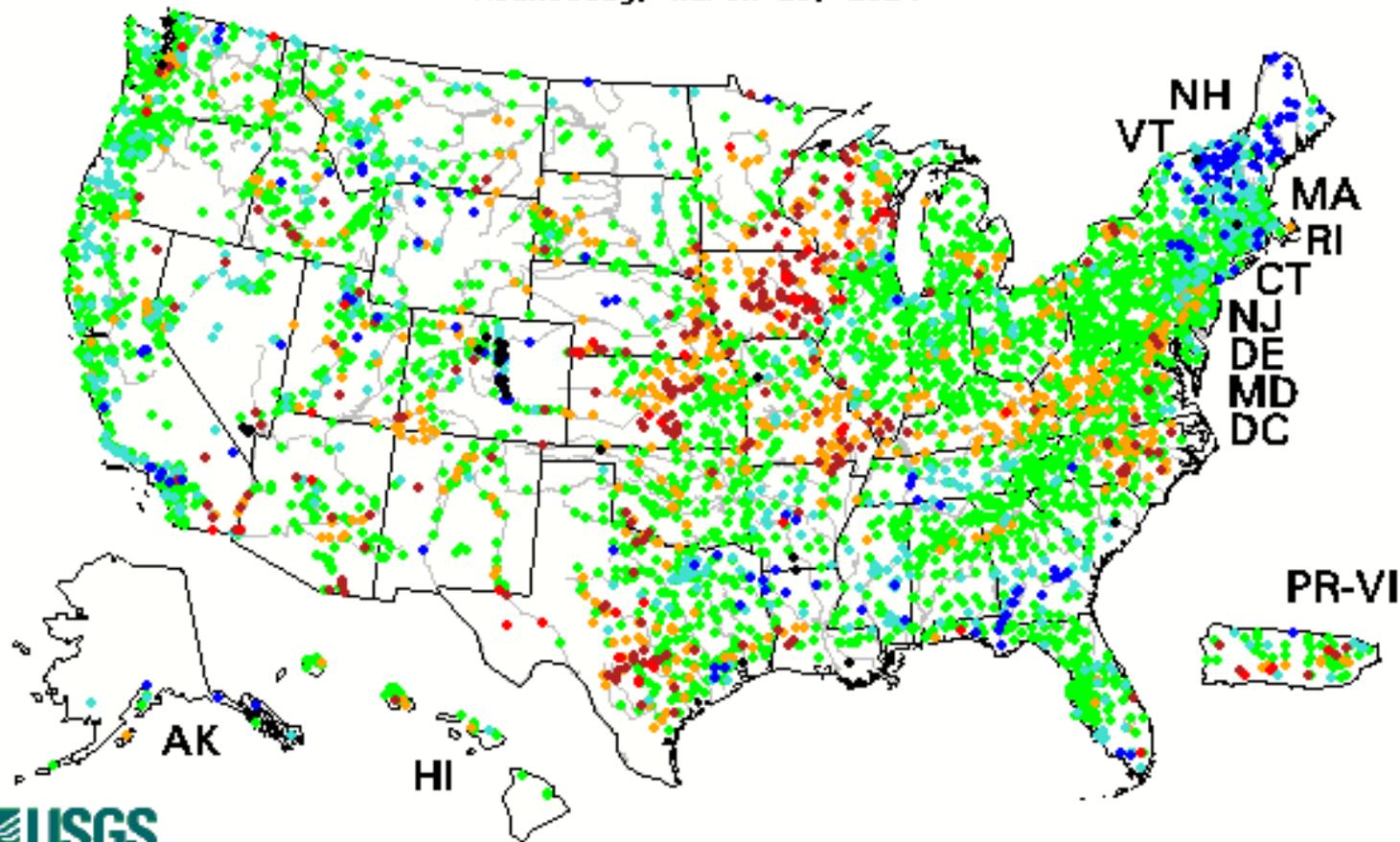


<https://mrcc.purdue.edu/research/awssi>



USGS 7-day averaged streamflows

Wednesday, March 20, 2024



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

<https://waterwatch.usgs.gov/?id=pa07d>

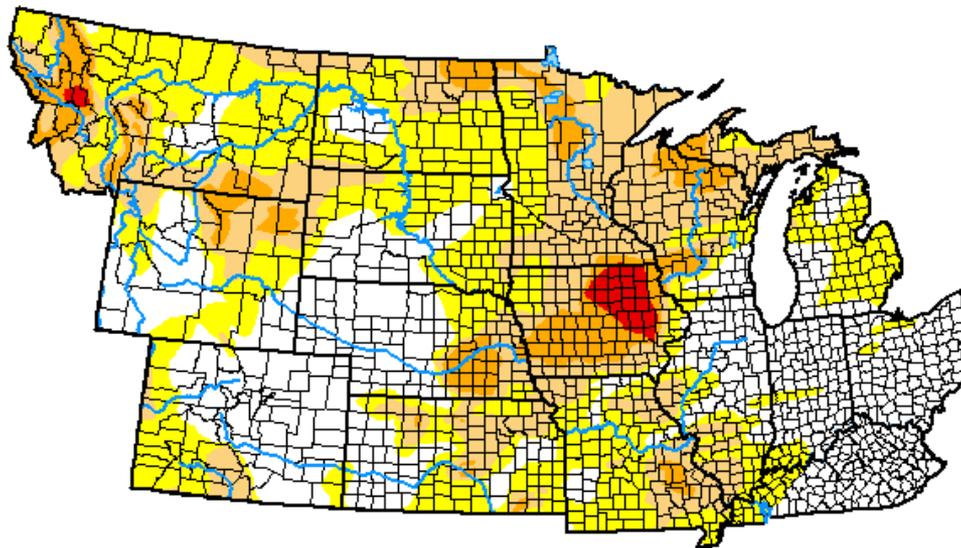


U.S. Drought Monitor NWS Central

March 19, 2024
(Released Thursday, Mar. 21, 2024)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.40	65.60	31.32	8.97	1.11	0.00
Last Week <i>03-12-2024</i>	34.05	65.95	32.65	9.83	1.30	0.00
3 Months Ago <i>12-19-2023</i>	39.58	60.42	32.81	14.43	3.04	0.17
Start of Calendar Year <i>01-02-2024</i>	39.12	60.88	34.11	13.18	2.68	0.01
Start of Water Year <i>09-26-2023</i>	39.86	60.14	40.32	19.88	6.29	0.49
One Year Ago <i>03-21-2023</i>	47.05	52.95	33.04	14.17	6.37	2.97



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:

Brad Rippey
U.S. Department of Agriculture



droughtmonitor.unl.edu



Impacts



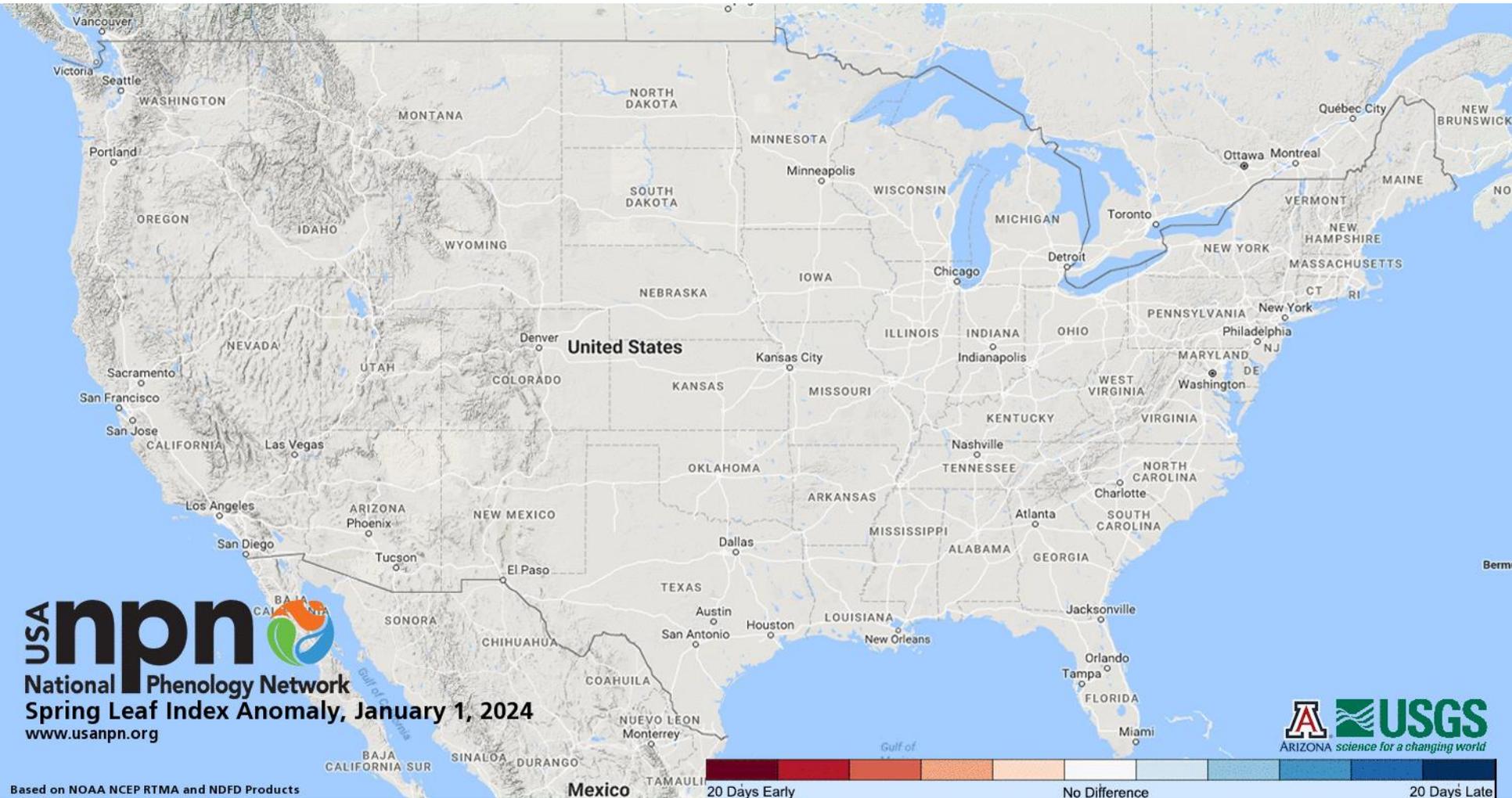
Warmth brings an early spring



Sprinklers on in Ohio and Indiana, photo courtesy Aaron Wilson



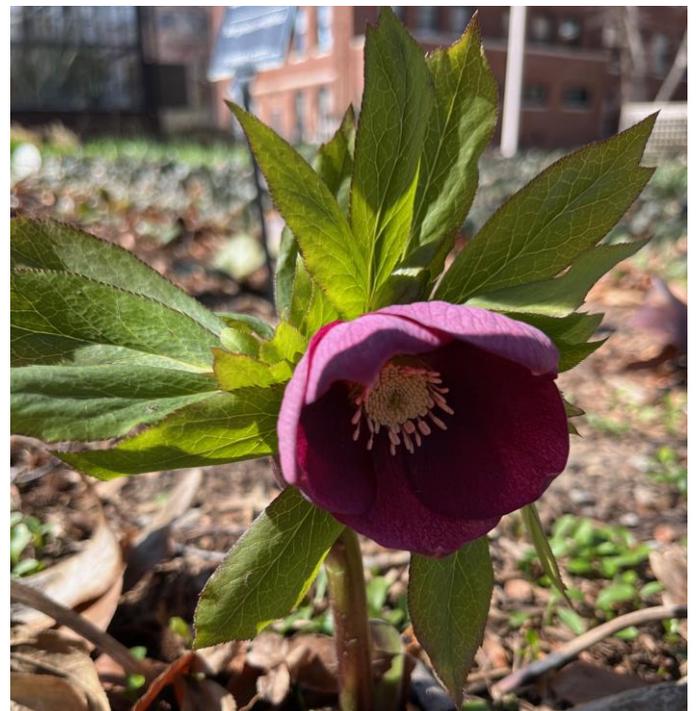
Spring Leaf Index



<https://www.usanpn.org/data/maps/spring>



Early blooms, flowers out!



Photos courtesy Melissa Widhalm, Aaron Wilson, and Hans Schmitz



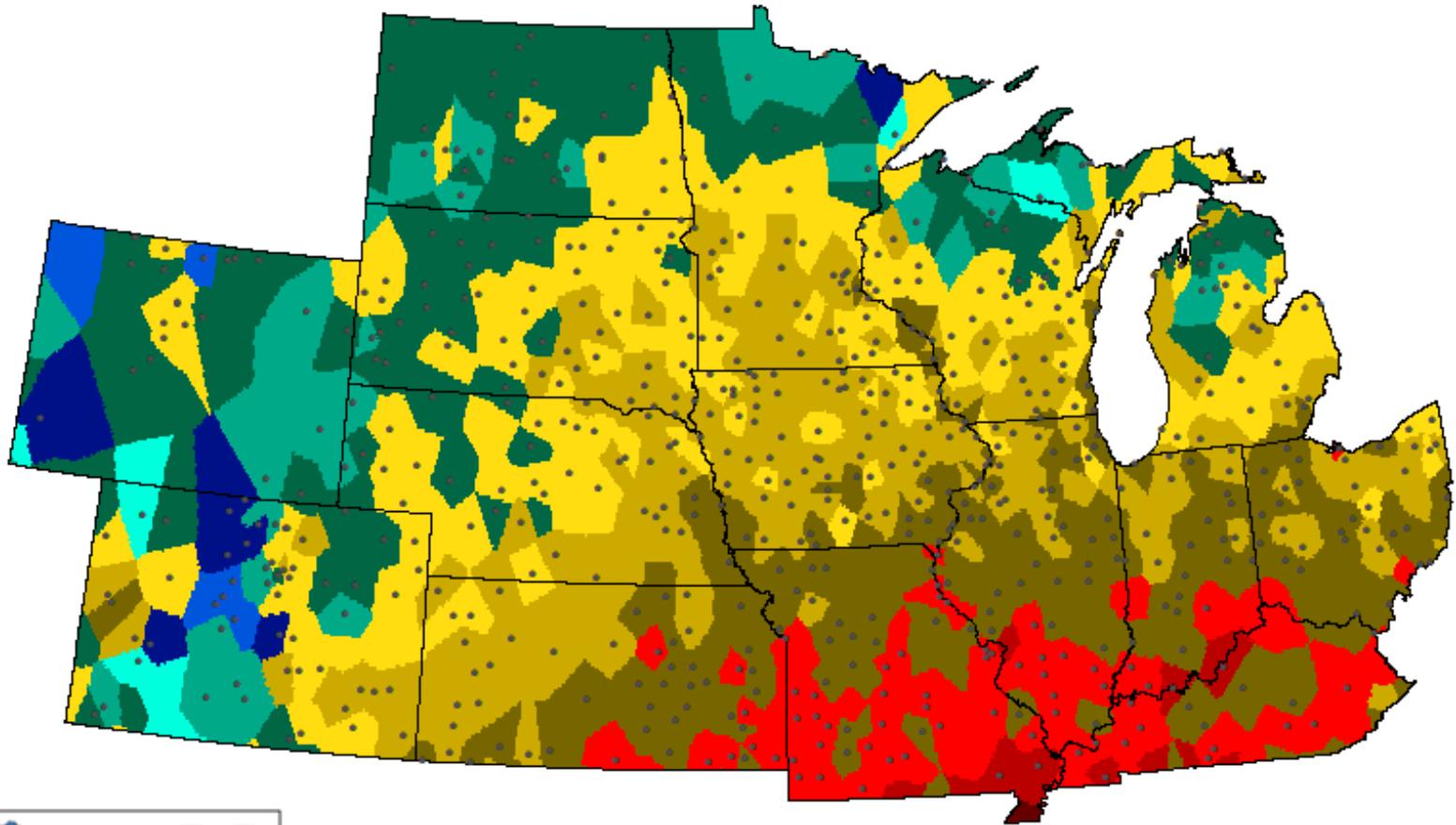
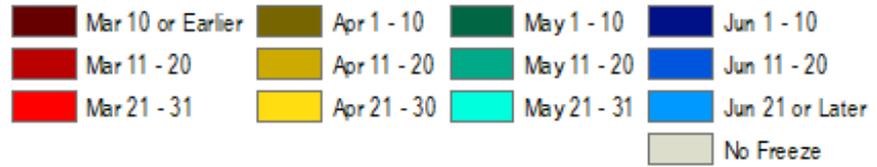
Concerns with spring freezes

Date of Median Last 28°F Freeze

For years 1990-91 to 2019-20

Freeze year beginning July 1st

Median defined as the 50th Percentile



<https://mrcc.purdue.edu>

Powered by ACIS
Regional Climate Centers



Severe weather



Hailstone, Doug Kluck



Photo courtesy Missouri DOT

Large hail reports already from Ohio, Indiana, Illinois, and Missouri.



Tornadoes and fires

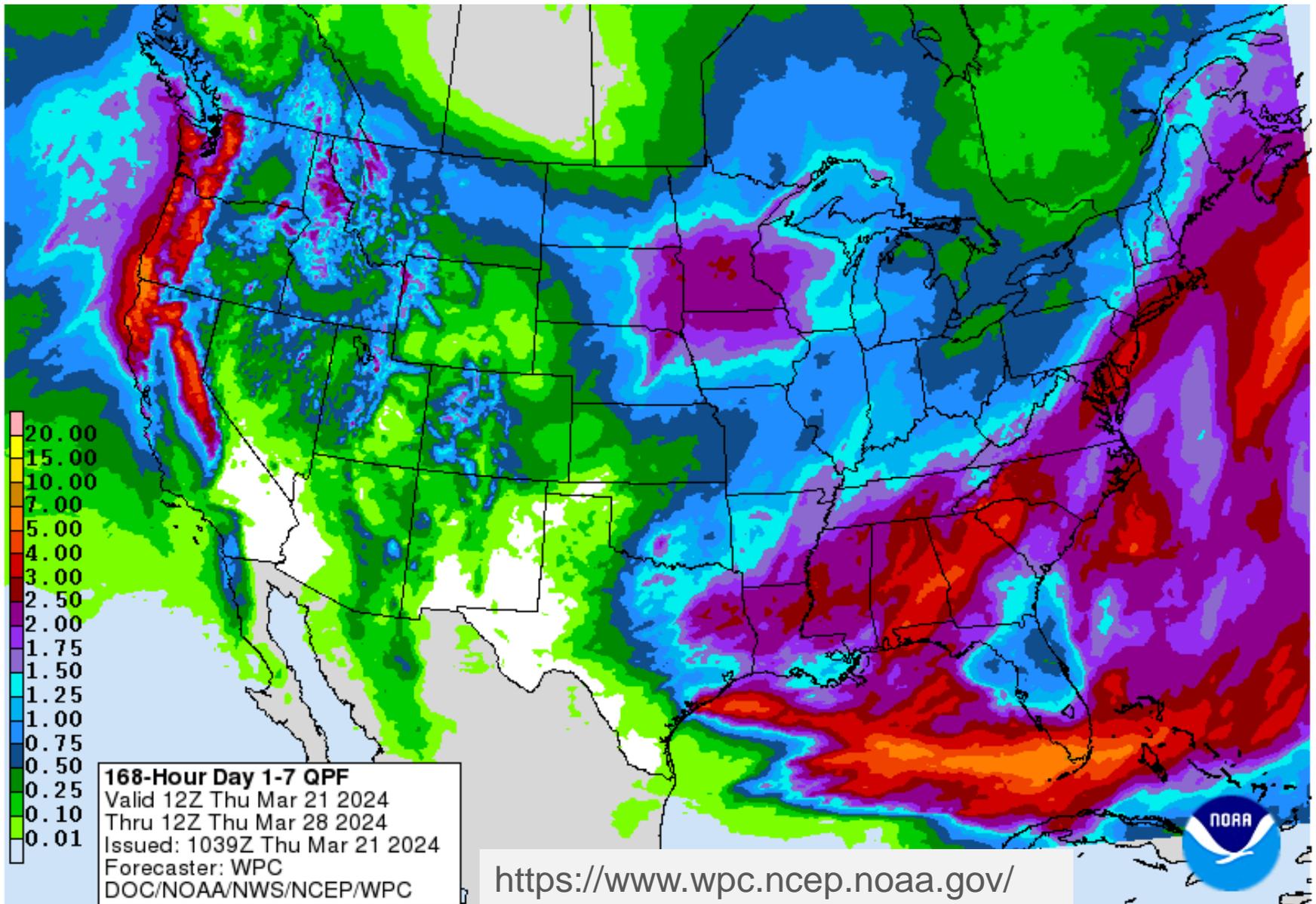
- ❑ 18 tornadoes reported before the start of spring. EF-3 tornado in Ohio, some fatalities, 50-mile track tornado from Indiana to Ohio.
- ❑ EF-3 tornado in Randolph County, IN, max width of 700 yards. 38 injuries reported. Taco Bell destroyed.
- ❑ Gusty winds and ditch fires in Indiana. Some grass fires and wildfires reported in Illinois.
- ❑ 2,000 acre wildfire in Minnesota.
- ❑ 70,000 acre fire in Lincoln County, Nebraska.



Outlook



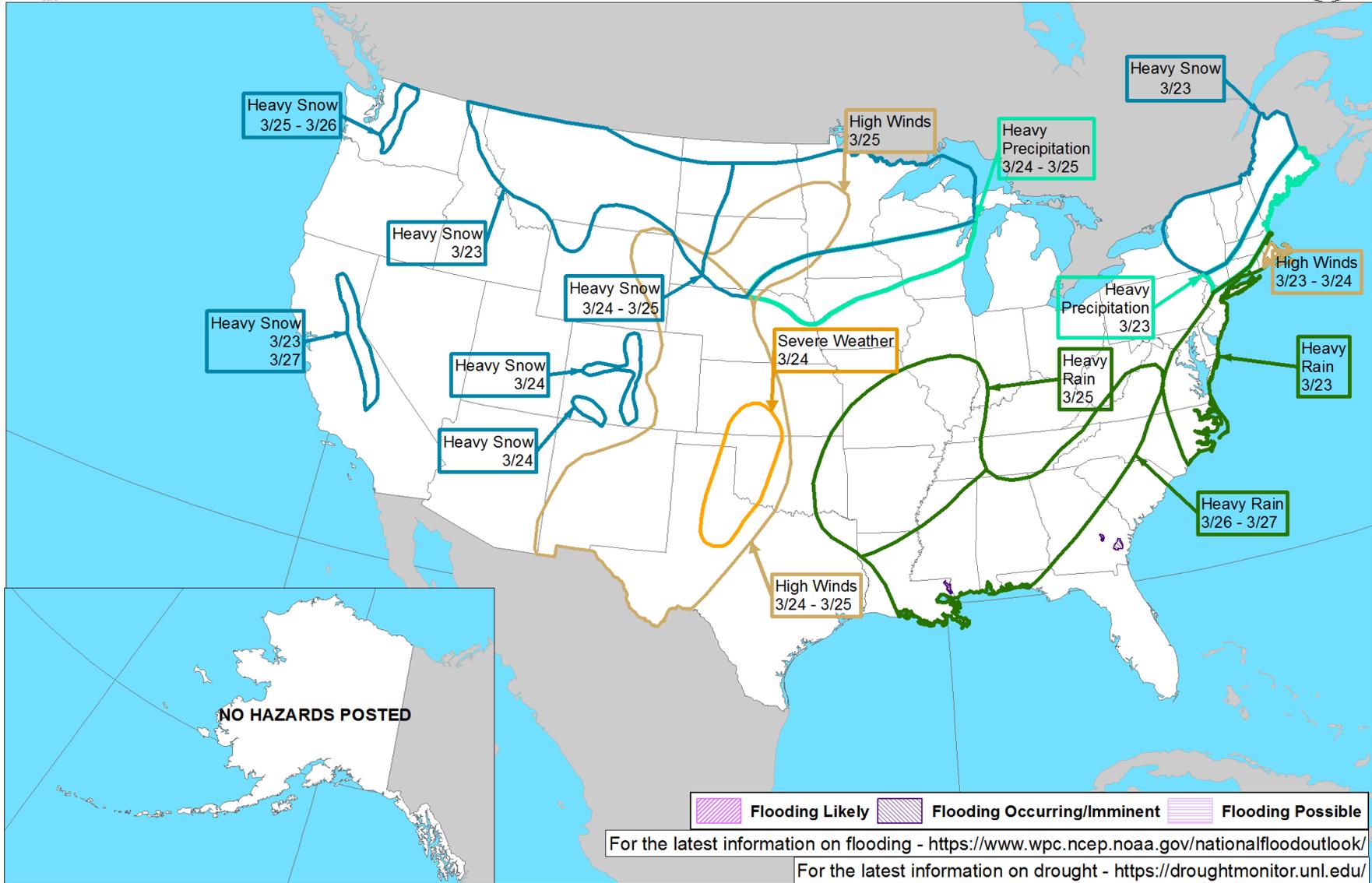
7-day precipitation forecast





Day 3-7 U.S. Hazards Outlook

Valid: 03/23/2024-03/27/2024



Weather Prediction Center
Made: 03/20/2024 04:06 PM EDT

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8-14 day outlook



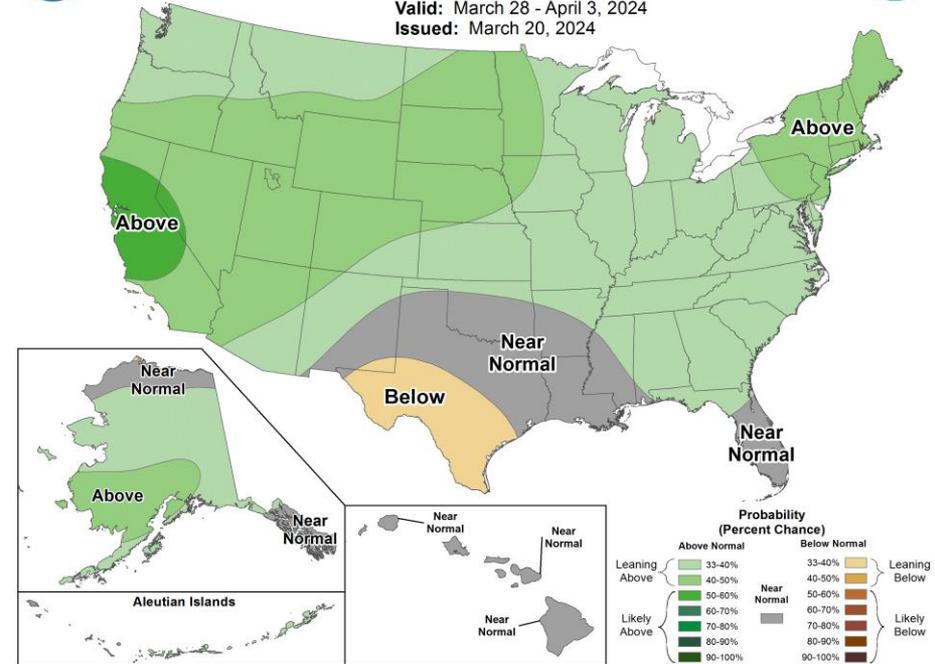
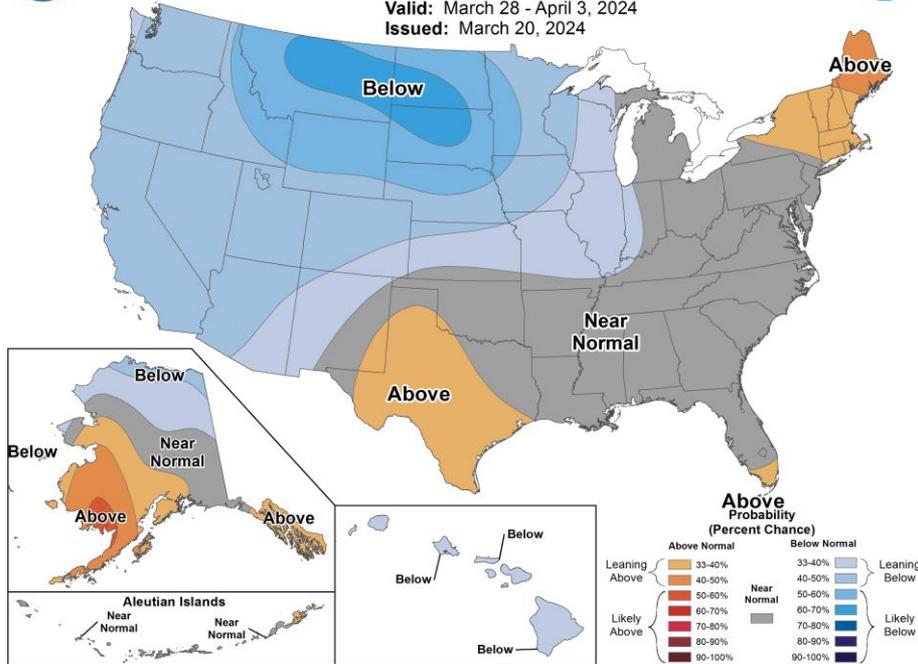
8-14 Day Temperature Outlook

Valid: March 28 - April 3, 2024
Issued: March 20, 2024



8-14 Day Precipitation Outlook

Valid: March 28 - April 3, 2024
Issued: March 20, 2024



<https://www.cpc.ncep.noaa.gov>



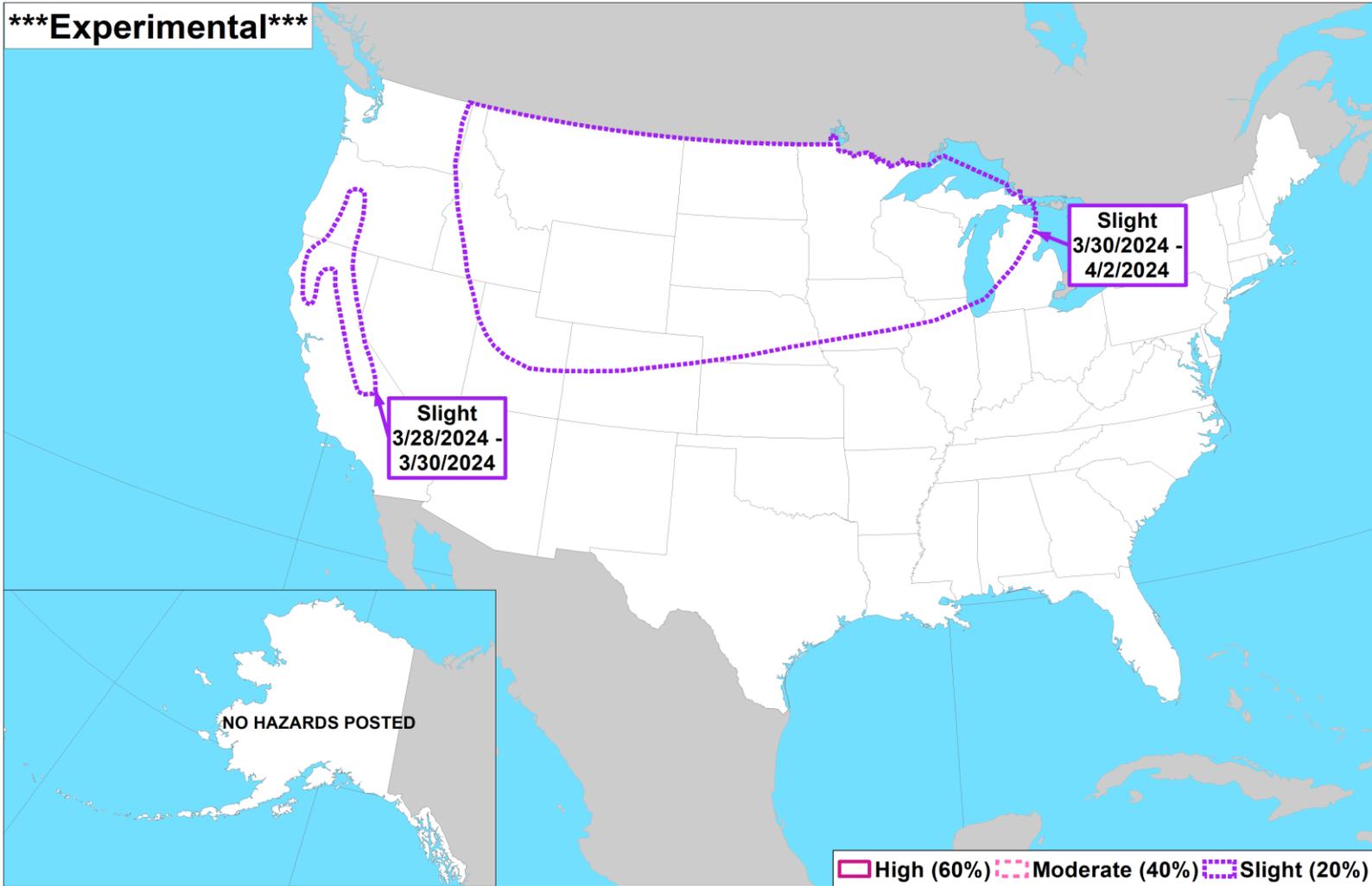
8-14 day hazards



Risk of Heavy Snow
Valid: 03/28/2024-04/03/2024



Experimental



Climate Prediction Center

Made: 03/20/2024 3PM EDT

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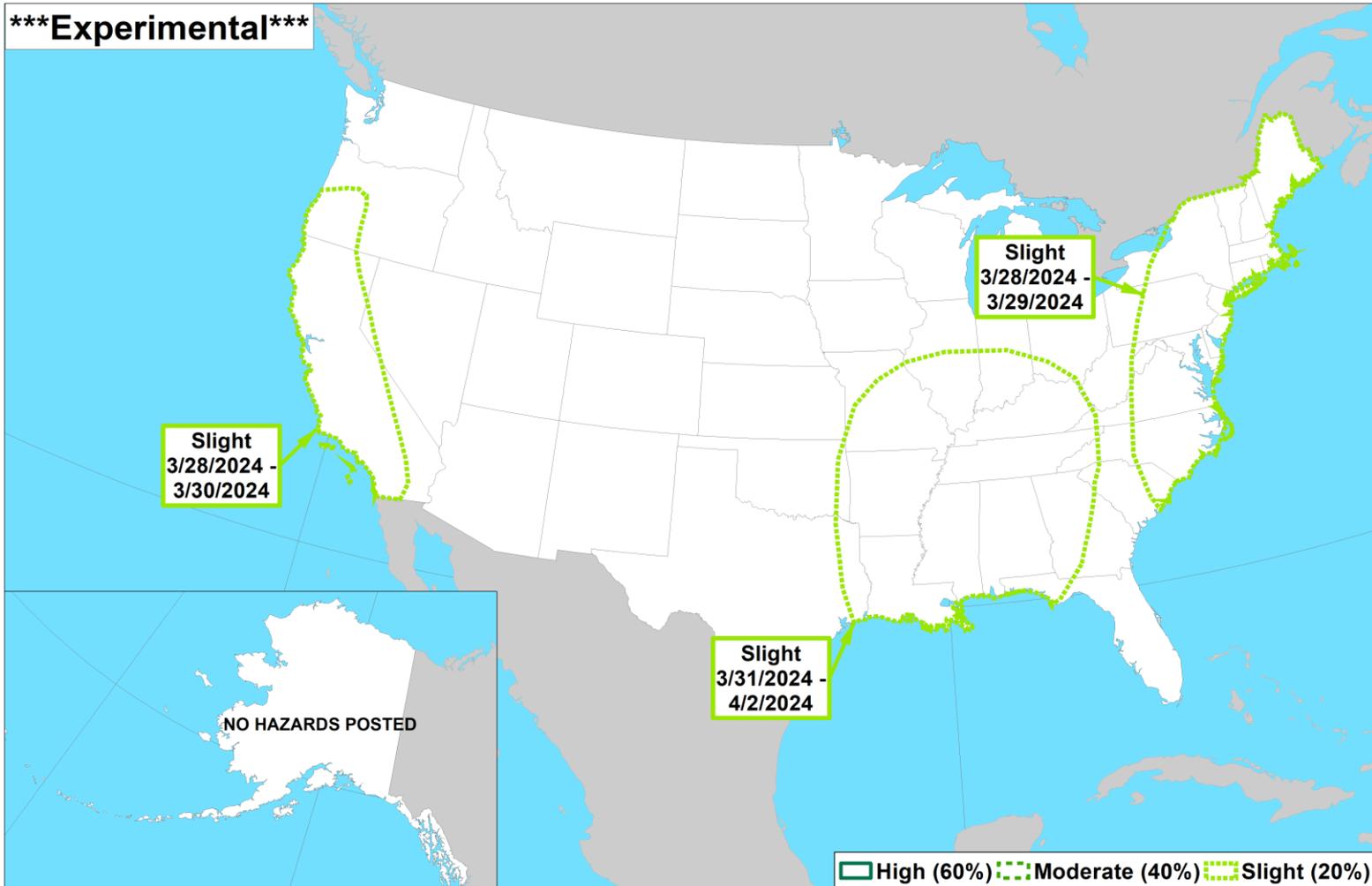
8-14 day hazards



Risk of Heavy Precipitation
Valid: 03/28/2024-04/03/2024



Experimental



Climate Prediction Center
Made: 03/20/2024 3PM EDT

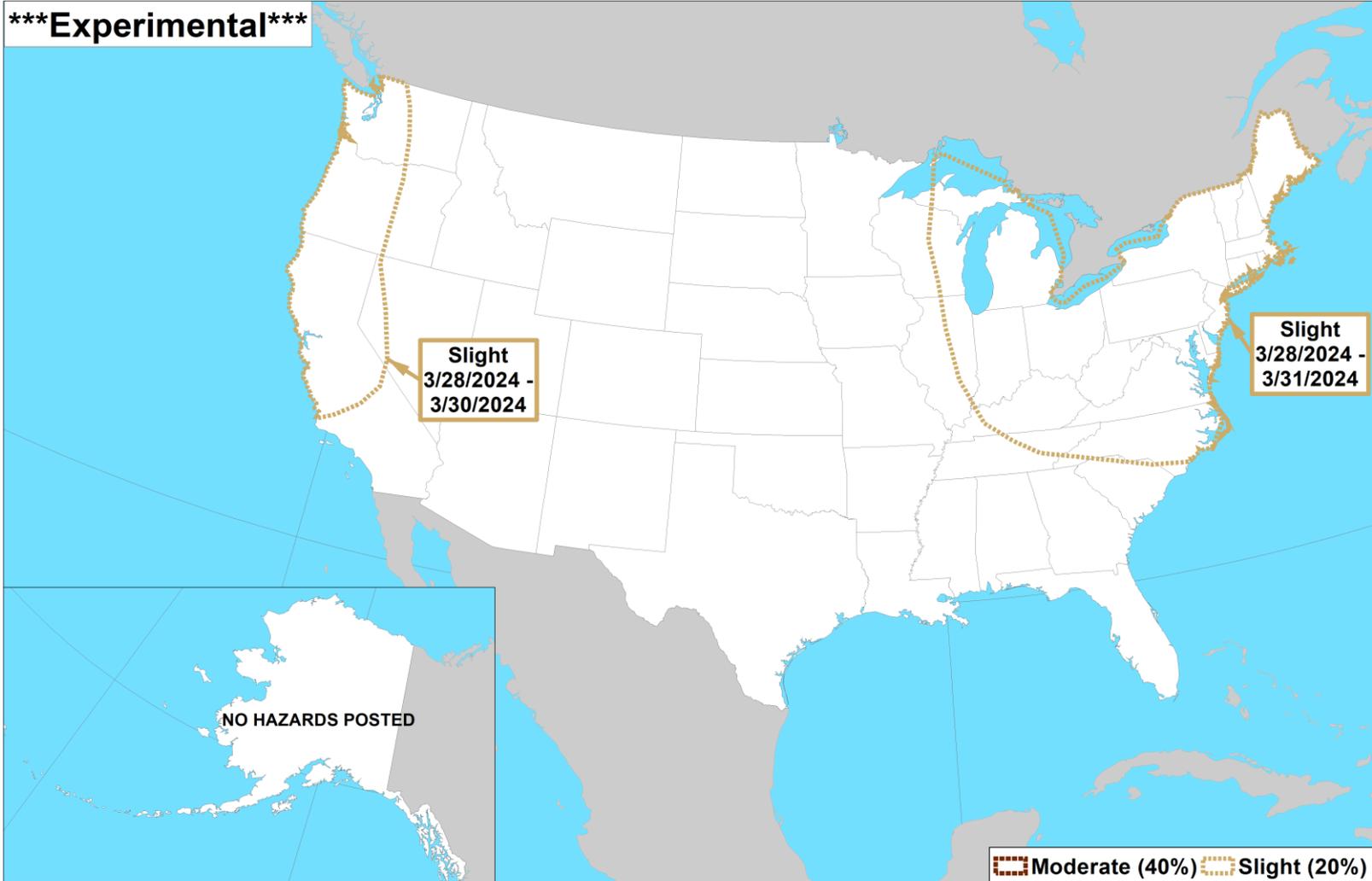
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8-14 day hazards



Risk of High Winds
Valid: 03/28/2024-04/03/2024



Climate Prediction Center

Made: 03/20/2024 3PM EDT

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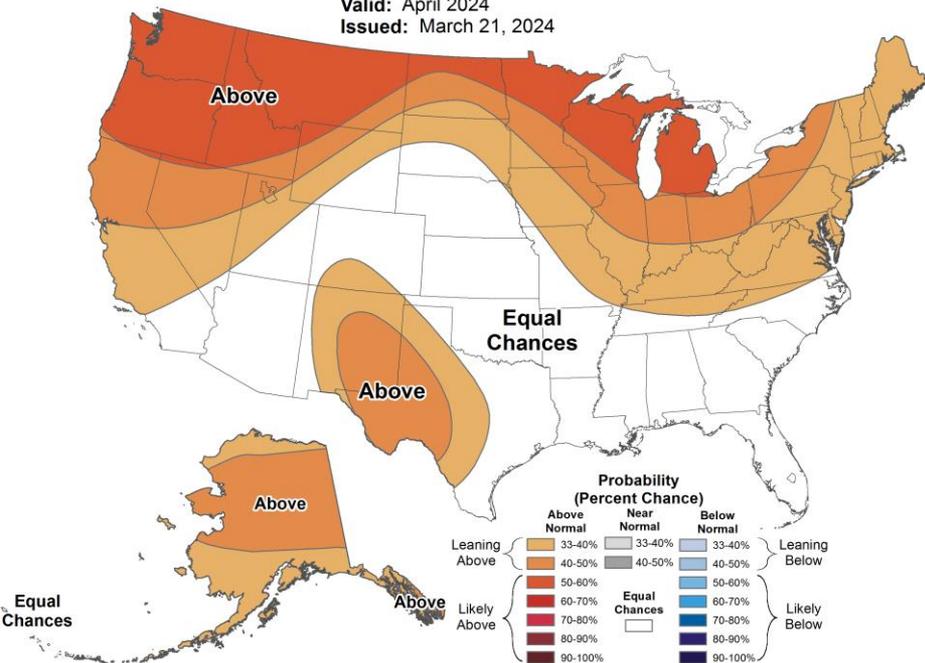
April outlook



Monthly Temperature Outlook



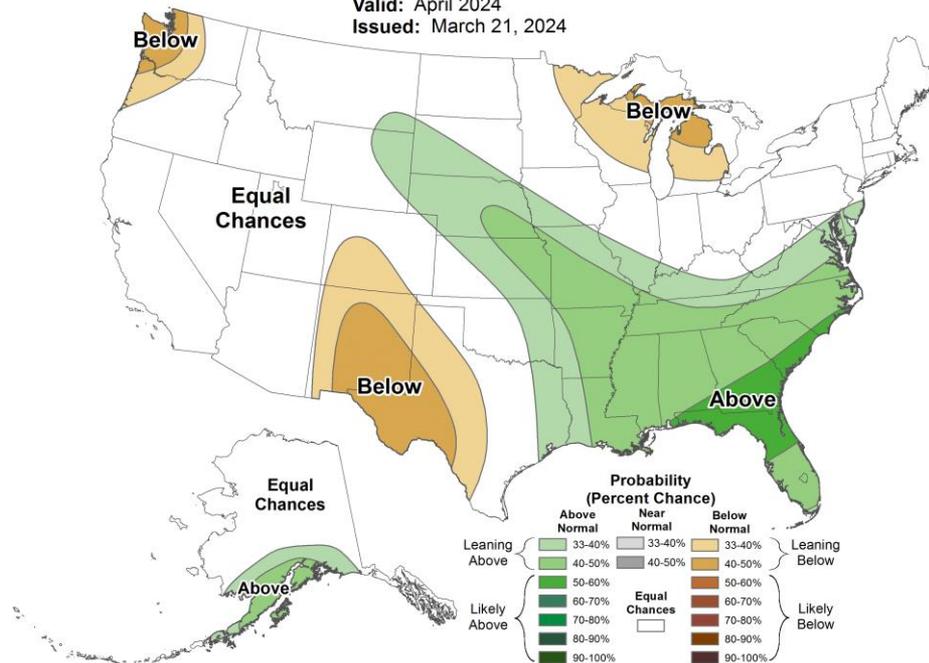
Valid: April 2024
Issued: March 21, 2024



Monthly Precipitation Outlook



Valid: April 2024
Issued: March 21, 2024



<https://www.cpc.ncep.noaa.gov>



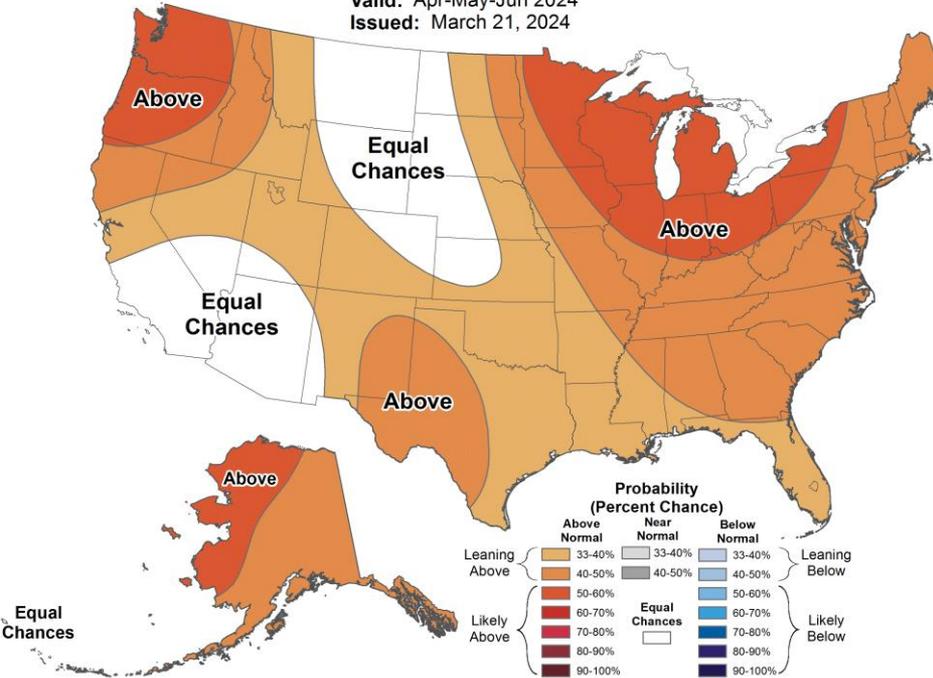
3-month outlook – Apr-May-Jun



Seasonal Temperature Outlook



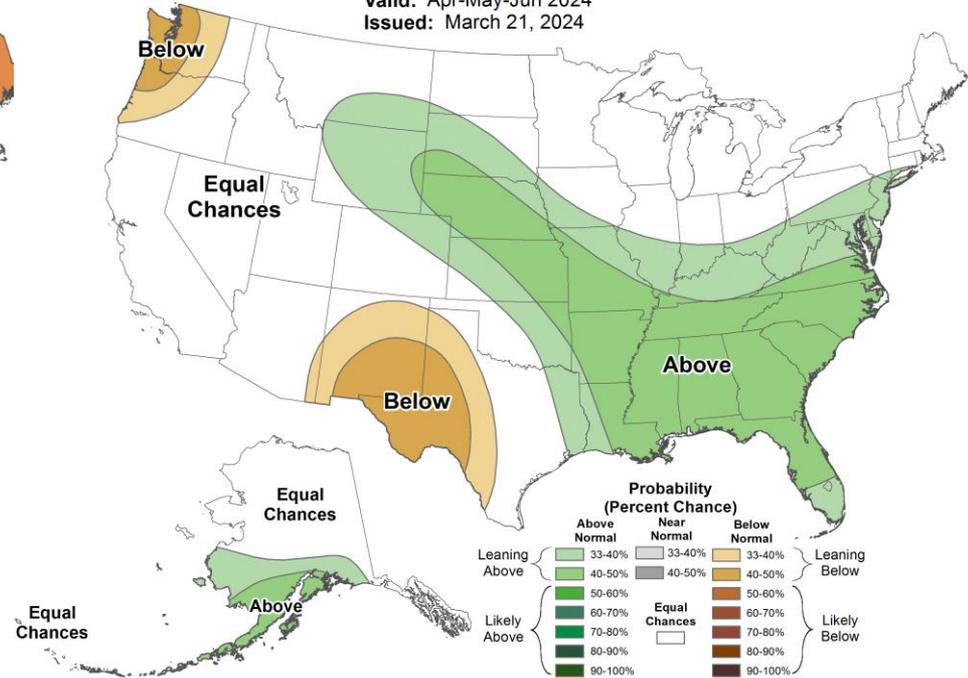
Valid: Apr-May-Jun 2024
Issued: March 21, 2024



Seasonal Precipitation Outlook



Valid: Apr-May-Jun 2024
Issued: March 21, 2024



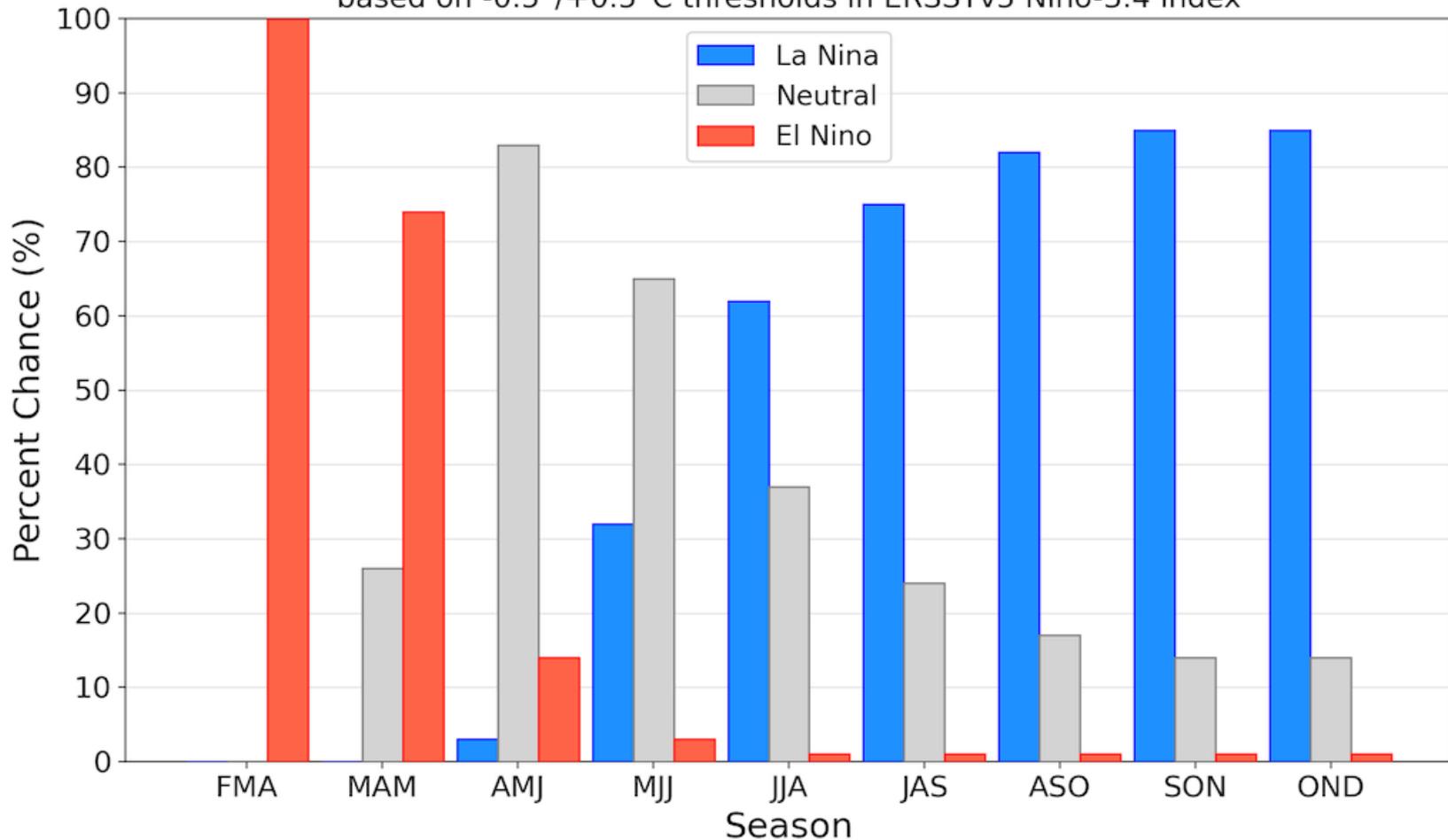
<https://www.cpc.ncep.noaa.gov>



El Niño exiting the building...

Official NOAA CPC ENSO Probabilities (issued Mar. 2024)

based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index



<https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>



Outlook key messages

- ❑ Expect above average temperatures to continue for much of the region through April, May, and June. Some wetter conditions are possible across the middle of the central region.
- ❑ Despite warm signals, there is still a risk for hard freezes through April and May. Could see widespread damage to orchards and other early blooms.
- ❑ Lower risk for floods later in the spring and higher risk of low flows.
- ❑ Rapid transition from El Niño to La Niña is a concern. Risk of drought resurgence, and heat over the Midwest.



Further Information – Partners

☐ Today's and Past Recorded Presentations:

- ☐ <https://mrcc.purdue.edu/multimedia/webinars.jsp>
- ☐ <https://hprcc.unl.edu/webinars.php>

☐ 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: <https://drought.unl.edu/>

☐ State climatologists: <https://www.stateclimate.org>

☐ Regional climate centers

- ☐ <https://mrcc.purdue.edu>
- ☐ <https://hprcc.unl.edu>





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Thank you



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