Monthly Hydrometeorological Report

Report for February 2024

NWS FORM E-5 U.S. DEPARTMENT OF COMMERCE NOAA, NATIONAL WEATHER SERVICE **MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS** TO: NATIONAL WEATHER SERVICE (W/OH12x1) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 7116 SILVER SPRING, MD 20910	HSA OFFICE: **Marquette, MI** REPORT FOR (MONTH / YEAR): **February 2024** DATE: **March 15th, 2024** SIGNATURE: **Evan Kutta, Hydro Program Manager** **Matt Zika, AMIC**
When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).	

X An X inside this box indicates no flooding occurred within this Hydrologic Service Area.

Summary

February was another warm and dry month across Upper Michigan with most observation sites observing less than an inch of precipitation during February (Table 1). For the December-February period as a whole, most observation sites recorded between 57% and 77% of normal precipitation and all sites observed either the warmest or second warmest winter season on record (Tables 2 and 3). Even though most of the February precipitation fell as snow, warm spells melted much of the snowfall resulting in above to much-above normal streamflow for the lake effect snow belt areas (Figure 1). While some seasonal snow pack persisted through February, as of the time of this writing (March 15th) no seasonal snow pack remained across Upper Michigan (Figures 2 and 3). The persistently warm and dry weather since May 2023 resulted in dry soils (Figures 7-9) and drought across most of Upper Michigan (Figure 4).

Location	Precipitation	% of Normal	Snowfall
WFO Marquette	1.07”	48%	22.8”
Marquette City	0.94”	64%	10.7”
Quincy Hill	0.95”	M	12.3”
Ironwood	0.38”	26%	5.6”
Iron Mountain	0.48”	42%	5.0”
Manistique	0.49”	36%	5.0”
Munising	2.44”	103%	28.5”
Stambaugh	0.37”	39%	5.5”

Table 1. Observed liquid equivalent precipitation, percent of normal, and snowfall at long-term climate sites across Upper Michigan during February 2024.

NOTE: Precipitation after 8 AM EST February 29th was counted in March stats for all but the WFO Marquette site due to the reporting structure of our cooperative observers.

Winter (December-February) Precipitation Summary

Location	Precipitation	% of Normal	Rank	Last Year
WFO Marquette (Records: 1962-2024)	6.46	92%	31st driest	10.61
Marquette City (Records: 1875-2024)	4.11	77%	34th driest	5.96
Ironwood (Records: 1901-2024)	4.27	75%	29th driest	10.00
Iron Mountain (Records: 1902-2024)	2.43	62%	20th driest	6.16
Manistique (Records: 1938-2024)	3.27	66%	16th driest	6.74
Munising (Records: 1912-2024)	7.71	95%	45th wettest	11.17
Stambaugh (Records: 1900-2024)	2.01	57%	11th wettest	5.06

Table 2. Total observed precipitation at long-term climate sites across Upper Michigan for December, January, February of the 2023-24 winter season.

Winter (December-February) Temperature Summary

Location	Avg Temp	Departure	Rank	Last Year
WFO Marquette (Records: 1962-2024)	25.2	+9.2	1st warmest	20.5
Marquette City (Records: 1875-2024)	28.8	+7.9	2nd warmest	24.3
Ironwood (Records: 1901-2024)	24.3	+9.6	1st warmest	17.3
Iron Mountain (Records: 1902-2024)	26.8	+9.7	1st warmest	21.6
Manistique (Records: 1938-2024)	26.6	+6.6	2nd warmest	24.1
Munising (Records: 1912-2024)	27.3	+7.3	1st warmest	23.6
Stambaugh (Records: 1900-2024)	23.9	+9.4	1st warmest	18.0

Table 3. Average temperature observed at long-term climate sites across Upper Michigan for December, January, February of the 2023-24 winter season.

Flooding Conditions

There were no flooding concerns during the month of February.

Media Links

None.

River Conditions

Streamflow was near to much above-normal during February, mainly due to very warm temperatures melting seasonal snow cover early.

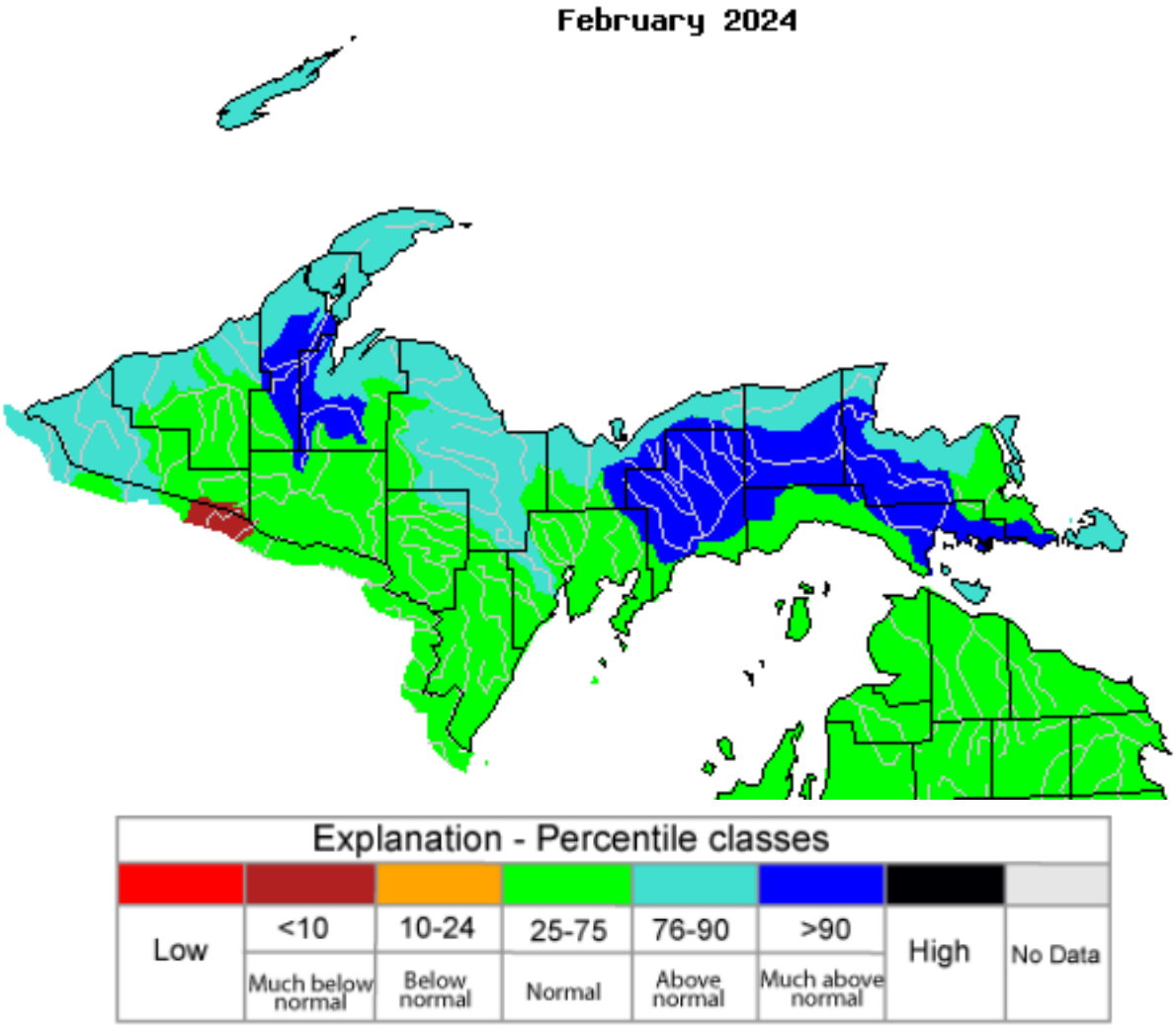


Figure 1: USGS monthly average streamflow during February 2024 across Upper Michigan

Snowpack SWE (Snow Water Equivalent) Conditions

Much below normal snowfall combined with record or near record warmth severely limited snow water equivalent values with snowbelt regions having 2-4 inches of SWE with less than 1 inch elsewhere. At the time of report issuance, no seasonal snow pack remains.

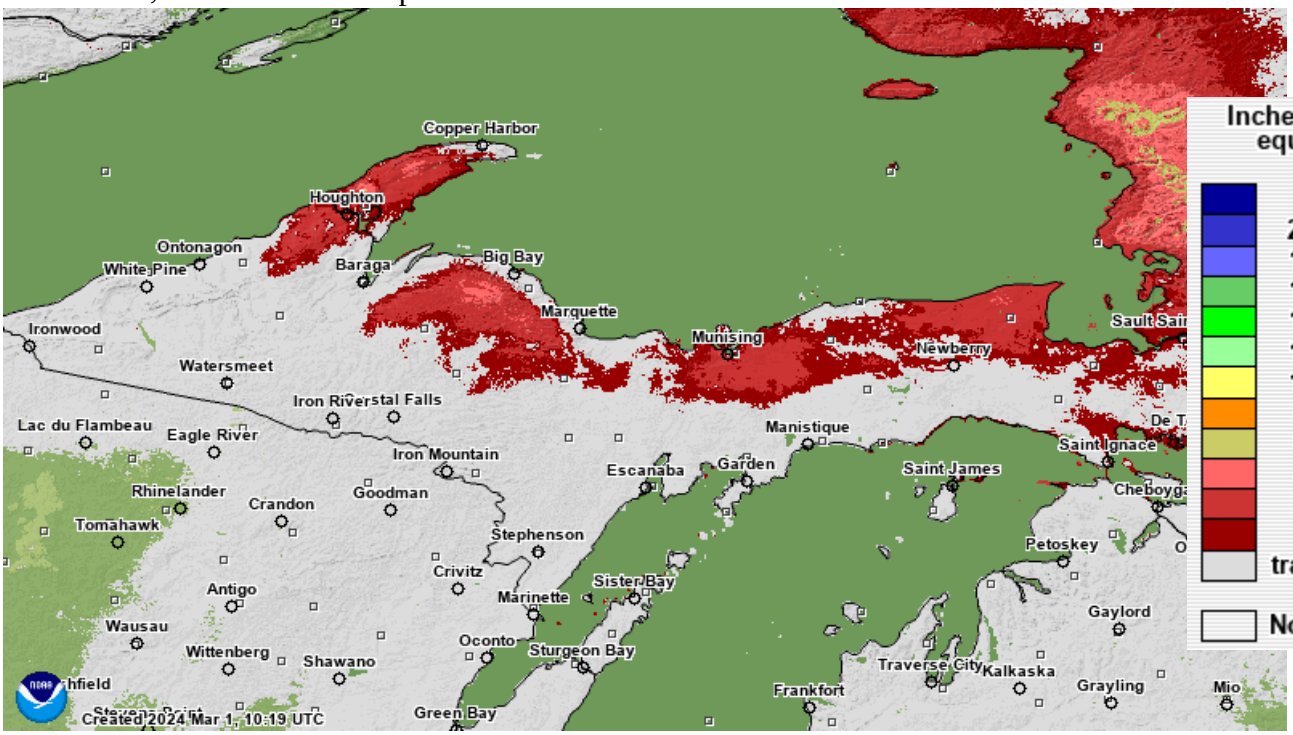


Figure 2: Current modeled snowpack snow water equivalent on March 1st, 2024.

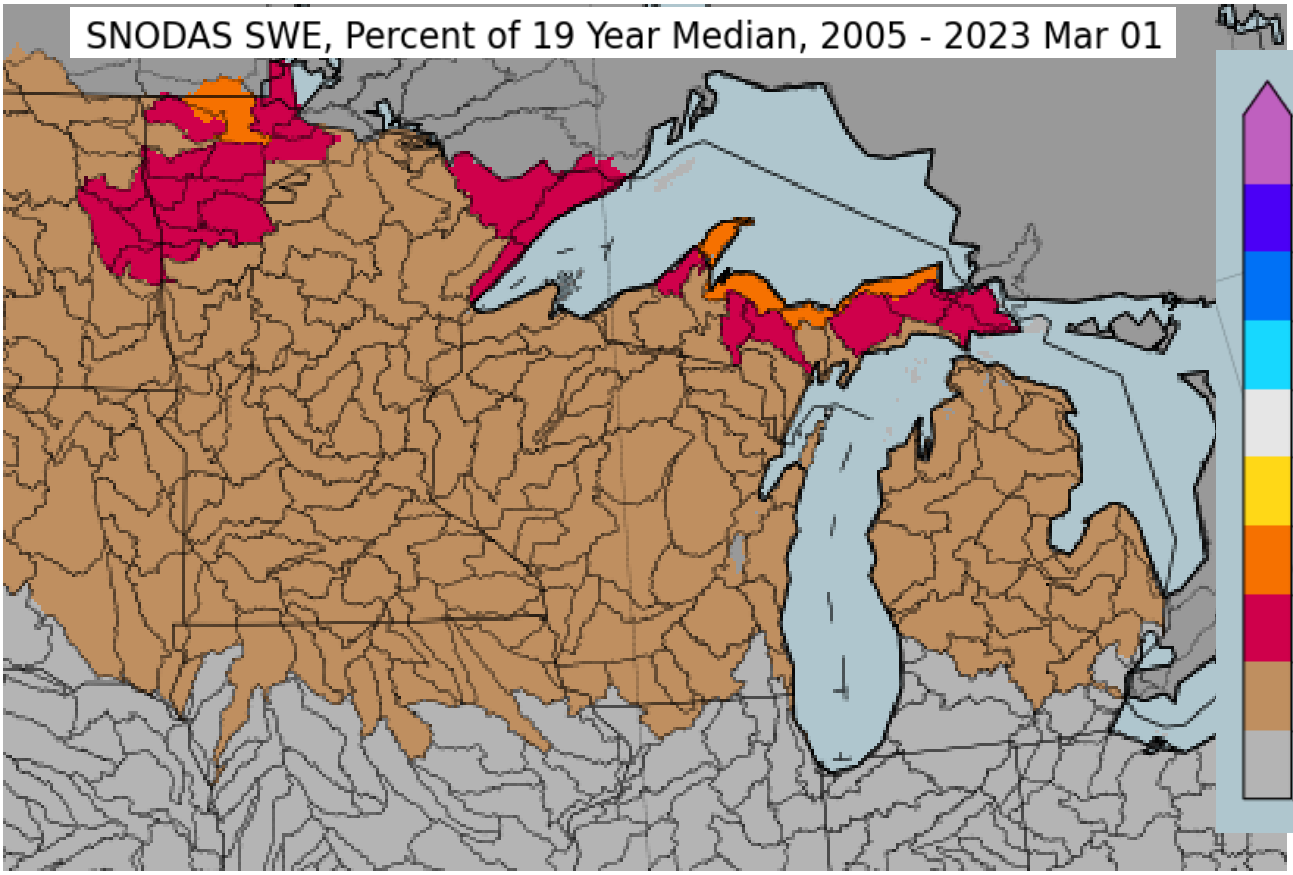
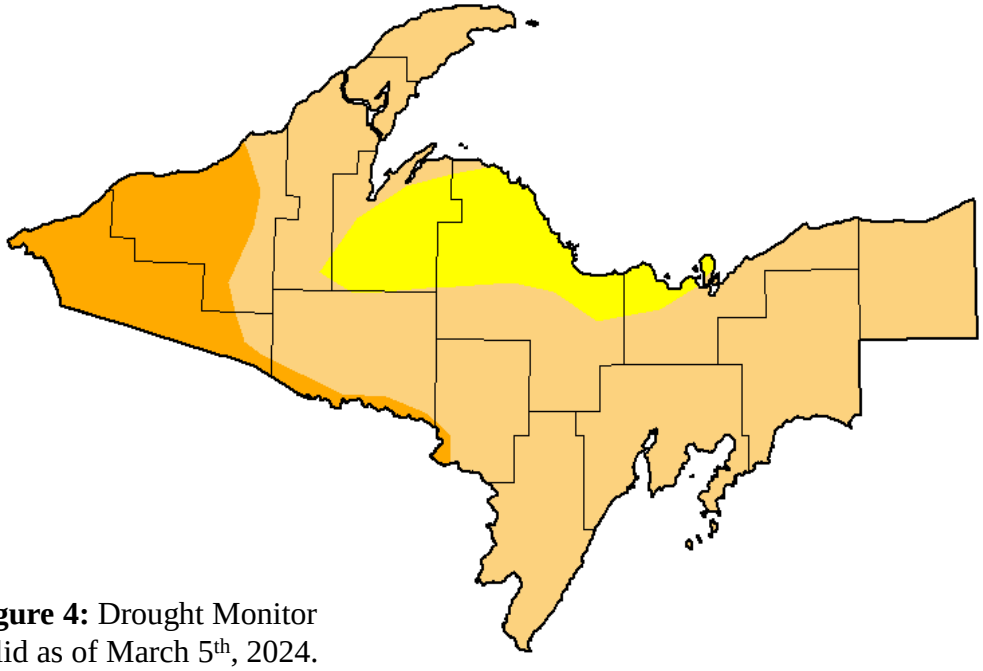


Figure 3: Modeled snow water equivalent for drainage basins on March 1st as a percent of 19-year median.

Drought Discussion

A persistently warm and dry pattern developed last May and has continued through the winter season with moderate to severe drought across most of Upper Michigan. For the latest drought status, please visit http://www.drought.gov.



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	0.00	100.00	87.64	15.32	0.00	0.00
Last Week 03-12-2024	0.00	100.00	87.64	14.60	0.00	0.00
3 Months Ago 12-19-2023	0.01	99.99	15.20	4.96	0.00	0.00
Start of Calendar Year 01-02-2024	0.01	99.99	15.20	4.96	0.00	0.00
Start of Water Year 09-26-2023	55.88	44.12	13.42	5.42	0.00	0.00
One Year Ago 03-21-2023	100.00	0.00	0.00	0.00	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

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droughtmonitor.unl.edu

Figure 4: Drought Monitor valid as of March 5th, 2024.

Hydro Products Issued

Product	Number
Hydrologic Outlook (ESF)	6
Flood Watch (FFA)	0
Flood Warning (FLW)	0
Flood Advisories and Statements (FLS)	0
Flash Flood Warning (FFW)	0
Flash Flood Statement (FFS)	0
Hydrologic Summary (RVA)	29

Precipitation Summary

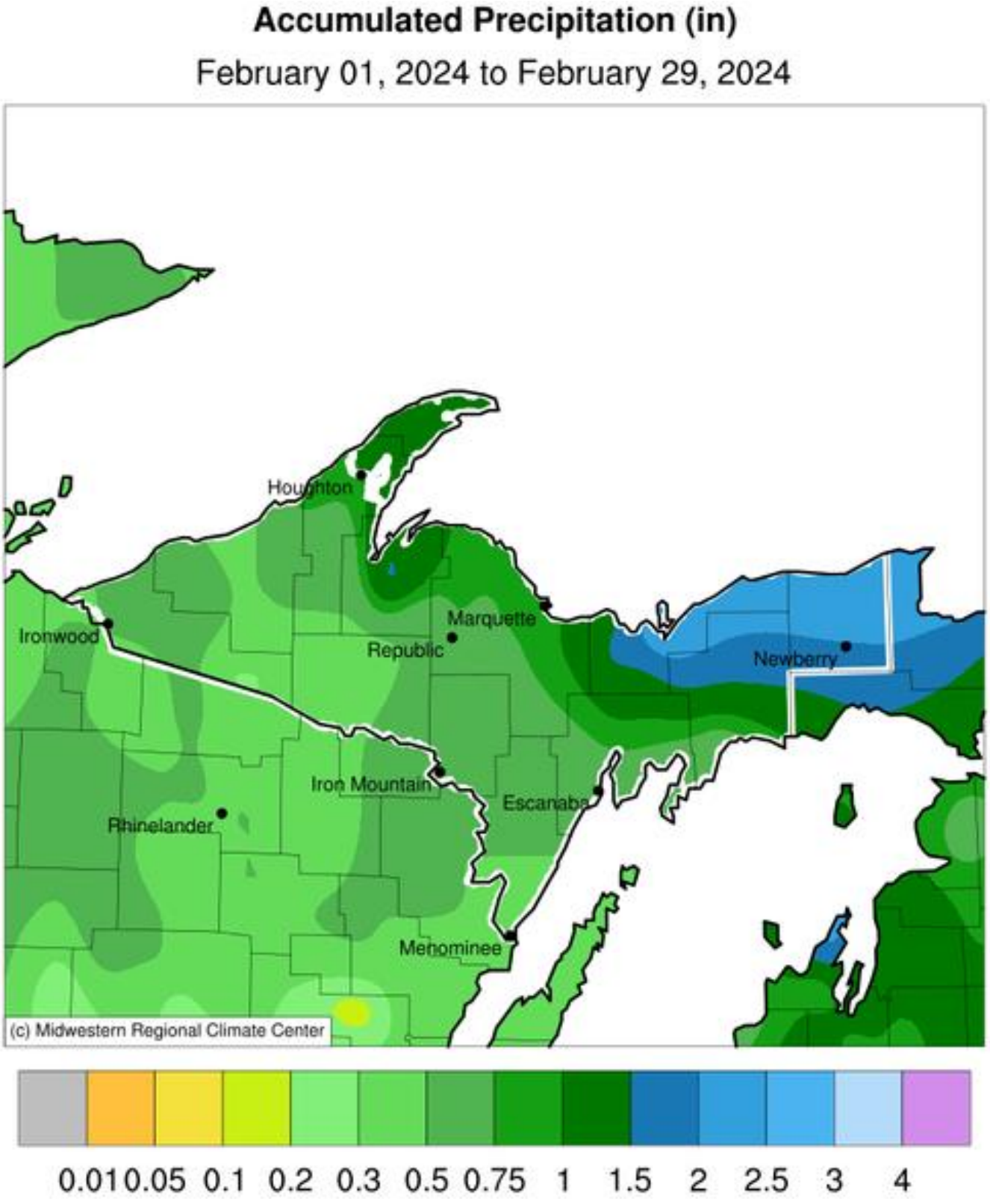

Figure 5: February 2024 Monthly Precipitation Totals.

Precipitation Summary Continued

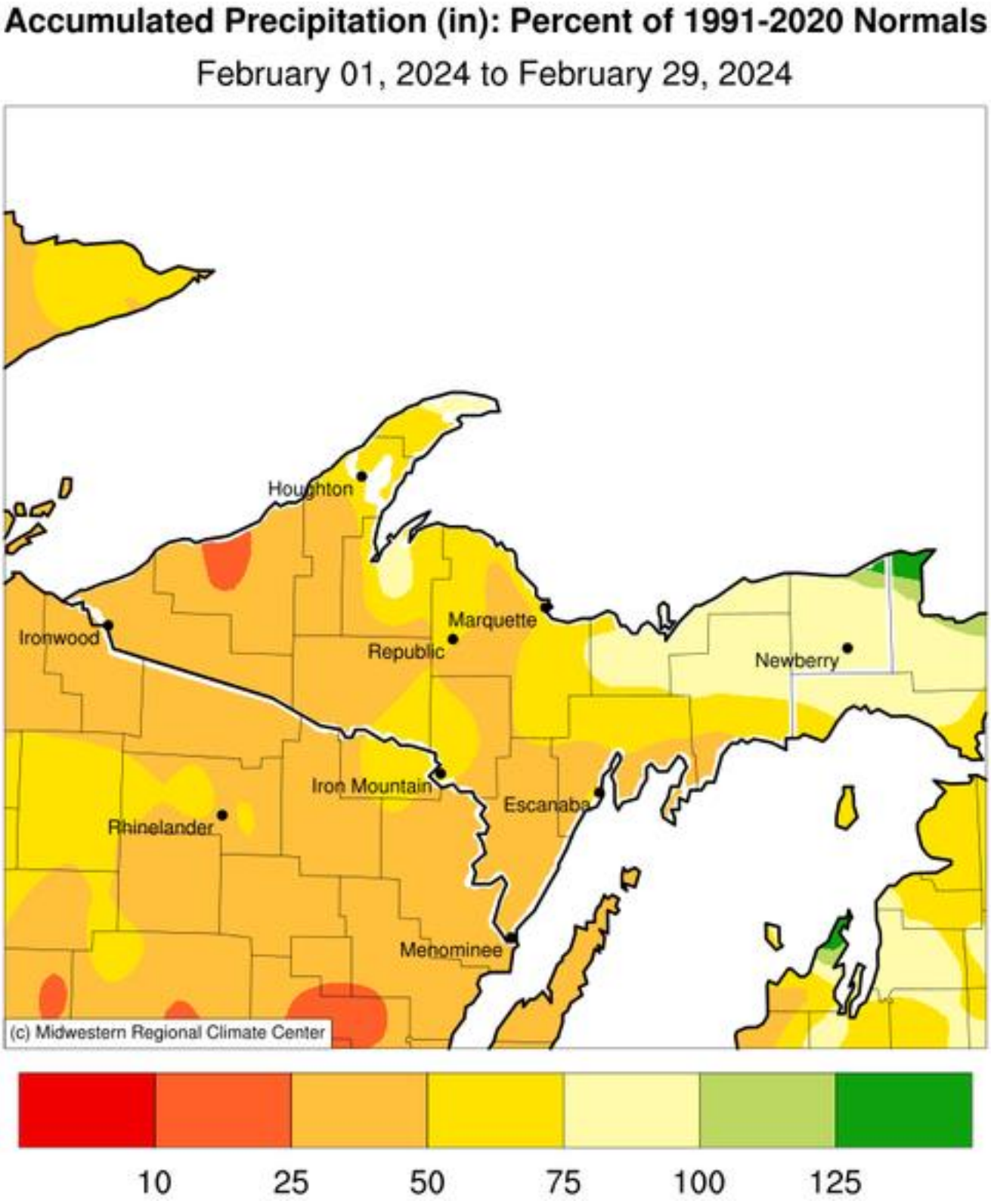

Figure 6: February 2024 Percent of Normal of Accumulated Precipitation.

Soil Moisture Anomaly

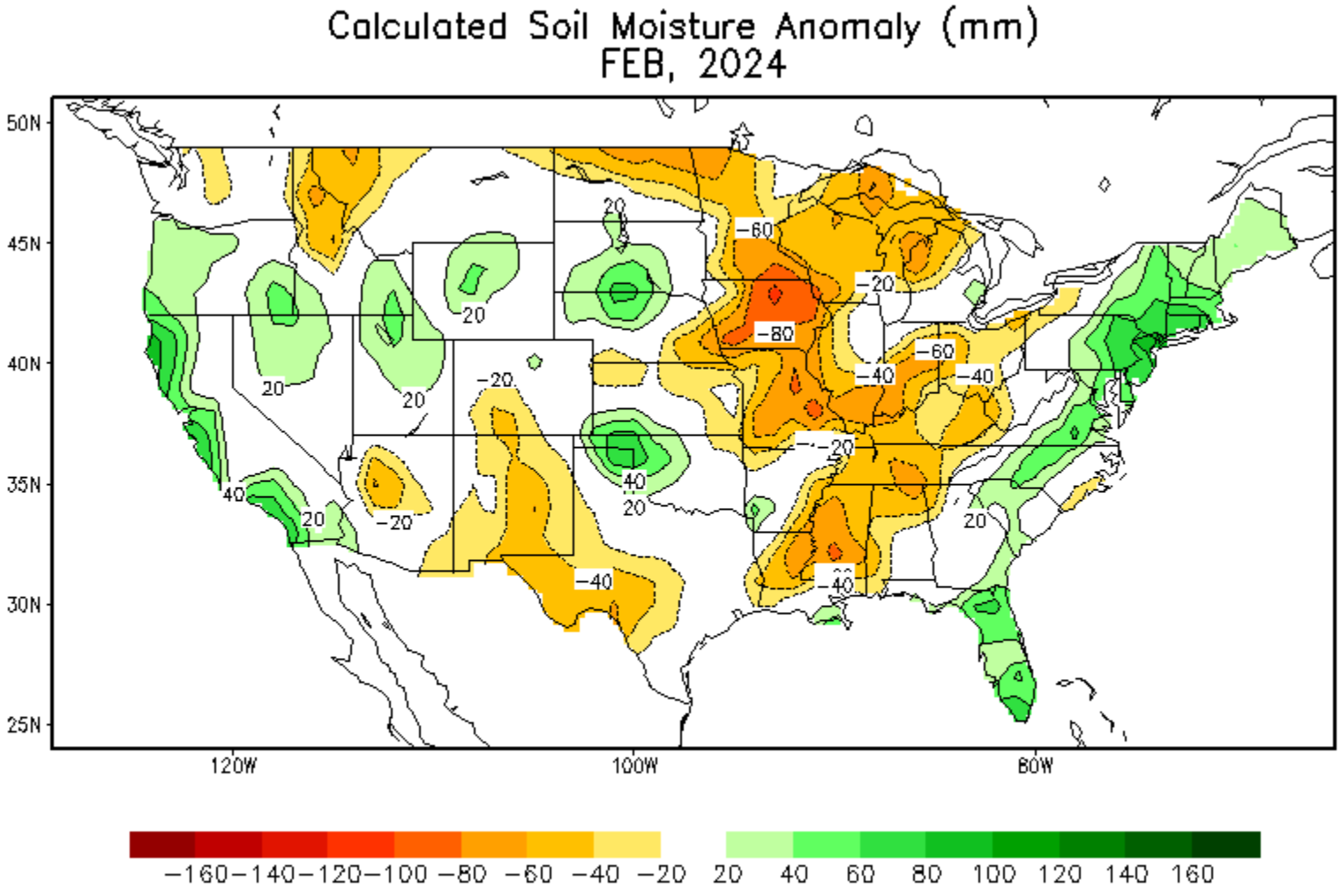

Figure 7: Climate Prediction Center's monthly average soil moisture anomaly for February 2024.

Shallow and Deep Soil Moisture Percentiles

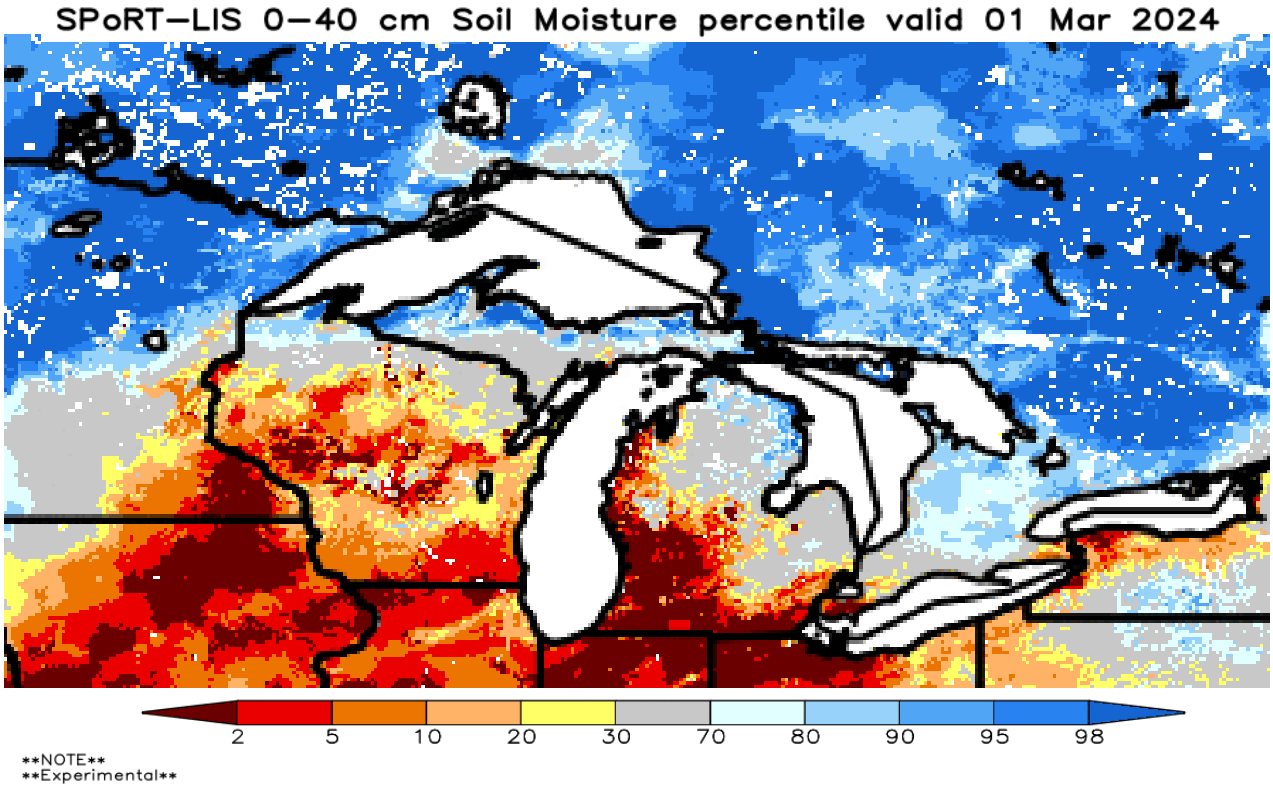

Figure 8: NASA's Short-term Prediction Research and Transition (SPoRT) Center's shallow (0-40 cm) soil moisture percentile valid March 1, 2024.

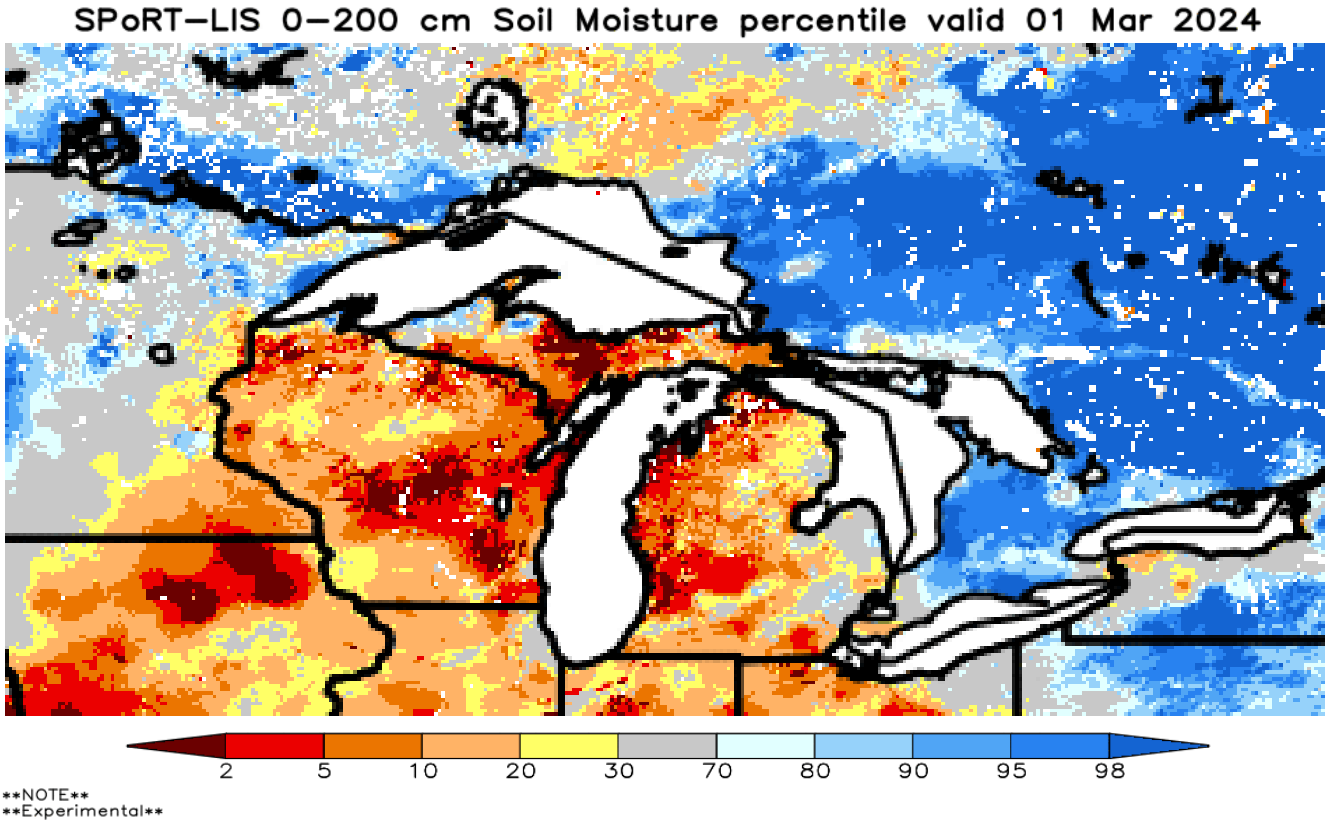

Figure 9: NASA's Short-term Prediction Research and Transition (SPoRT) Center's deep (0-200 cm) soil moisture percentile valid March 1, 2024.