Monthly Hydrometeorological Report

Report for July 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): **July 2024** DATE: **August 9th, 2024** SIGNATURE: **James S. Salzwedel, OPL** **Ryan Metzger, MIC**

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

After a four-month wet streak the spigot was finally shut off this past July. Dry and crusty grass has been noticed at most places in Upper Michigan. Below normal precipitation was observed across nearly all of Upper Michigan (Table 1). Portions of the Gogebic Range through the Copper Country and along the Keweenaw observed well below normal rainfall as abnormally dry (D0) drought conditions returned to the western U.P. Locations near the Lake Superior shore in Ontonagon County through the Keweenaw did not even muster up an inch of precipitation in July. The NWS CO-OP station at Greenland 6N only measured 0.86 inches and the ASOS at Copper Harbor along with the Fischer & Porter weighing rain gauge at Fort Wilkins at the tip of the Keweenaw barely registered over a quarter of an inch of rainfall for the entire month of July.

A significant portion of the U.P. reached only 50% percent of the normal precipitation for the month as shown in the graphics. Marquette and Munising did barely reach their normal precipitation from the aid of a vigorous round of thunderstorms during the late afternoon and evening hours of the 15th of the month. This over achieving cluster of thunderstorms brought portions of Marquette Township and the City of Marquette around 1.50” to nearly 2.00” inches of rainfall, while the quick downpours filled the Munising rain gauge to nearly 1.50” inches. Whetstone Brook in Marquette rapidly responded on the evening of the 15th by jumping over 4.5 feet on the evening of the 15th. A few reports of minor street flooding were observed in low spots in Marquette and Munising.

Munising continues to soak up the rain as they continue their streak of a top 5 wettest year-to-date with a 4th wettest place. The Gladstone and Escanaba areas were the outliers for reaching above normal precipitation this past July with over 6.50” inches measured on the Bluff in Gladstone.

Aided by a late month heat wave, July temperatures were 1.3°F to 4.1°F warmer than normal (Table 3) with year-to-date temperatures ranking in the top 5 warmest with the triplets of WFO Marquette, Iron Mountain, and Munising all in 4th place position. An honorable mention top 9th place ranking goes out to the City of Marquette Observation Station on the shore of Lake Superior at the Water Filtration Plant. (Table 3).

Despite the dry stretch, Above normal stream flow is indicated for the interior east and sections of the south-central U.P. that drain into Lake Michigan and the Bay of Green Bay (Figure 1). Shallow and Deep soil moistures are extremely dry; especially over the Copper Country and Keweenaw (Figures 8-9).
Well below-normal rainfall brought drought conditions (D0) back to the Gogebic Range through the Copper Country and along the Keweenaw. Portions of the south central U.P. along the Menominee River in southern Dickinson and Menominee County are also experiencing (D0) drought conditions. (Figure 4).

(July) Precipitation Summary

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Location	Precipitation	% of Normal	Snowfall
WFO Marquette	2.13”	69%	0.0”
Marquette City	3.29”	106%	0.0”
Quincy Hill	0.79”	M	0.0”
Ironwood	2.27”	54%	0.0”
Iron Mountain	1.31”	38%	0.0”
Manistique	2.95”	86%	0.0”
Munising	3.52”	102%	0.0”
Stambaugh	3.79”	91%	0.0”

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

NOTE: Precipitation after 8 AM EST June 31st was counted in July stats for all but the WFO Marquette site due to the reporting structure of our NWS Cooperative Observers.

Year-to-Date Precipitation Summary

Location	Precipitation	% of Normal	Rank	Last Year
WFO Marquette (Records: 1962-2023)	22.36”	111%	19th wettest	31.88”
Marquette City (Records: 1875-2023)	17.45”	105%	69th wettest	23.01”
Ironwood (Records: 1901-2023)	20.44”	103%	51st wettest	23.91”
Iron Mountain (Records: 1902-2023)	20.21”	122%	23rd wettest	18.85”
Manistique (Records: 1938-2023)	20.88”	136%	9th wettest	17.71”
Munising (Records: 1912-2023)	27.06”	145%	4th wettest	26.67”
Stambaugh (Records: 1900-2023)	20.43”	121%	24th wettest	18.63”

Table 2. Total observed precipitation at long-term climate sites across Upper Michigan for January through July 2024.

Year-to-Date Temperature Summary

Location.	Avg Temp	Departure	Rank	Last Year
WFO Marquette (Records: 1962-2023)	42.3F	+1.5F	4th warmest	40.5F
Marquette City (Records: 1875-2023)	43.6F	+3.1F	9th warmest	41.4F
Ironwood (Records: 1901-2023)	42.0F	+2.8F	12th warmest	40.1F
Iron Mountain (Records: 1902-2023)	45.0F	+4.1F	4th warmest	43.1F
Manistique (Records: 1938-2023)	40.7F	+1.3F	23rd warmest	40.4F
Munising (Records: 1912-2023)	42.6F	+3.3F	4th warmest	40.5F
Stambaugh (Records: 1900-2023)	40.9F	+2.6F	17th warmest	38.9F

Table 3. Average temperature observed at long-term climate sites across Upper Michigan for January through July 2024.

Flooding Conditions

Reports of street and buildings with basement flooding in and around Marquette on the late afternoon of July 15th due to intense thunderstorm related rainfall. Onota and Maple Roads flooded in the City of Munising on the early evening of the 15th due to same thunderstorm cluster that affected Marquette. No observed river flooding during the month of July 2024.

Media Links

The below media link highlights the State aid for the U.P. Counties affected by the snowmelt flooding in April/May of 2023.

From TV6 WLUC, July 29, 2024. "Michigan Governor awarded Alger, Baraga, Dickinson, Iron, Houghton, Gogebic, Marquette, and Ontonagon Counties aid in the amount of $5,127,901 for rapid snowmelt flooding damages that occurred in April of 2023."

River Conditions

[Basin streamflow relative to normal]

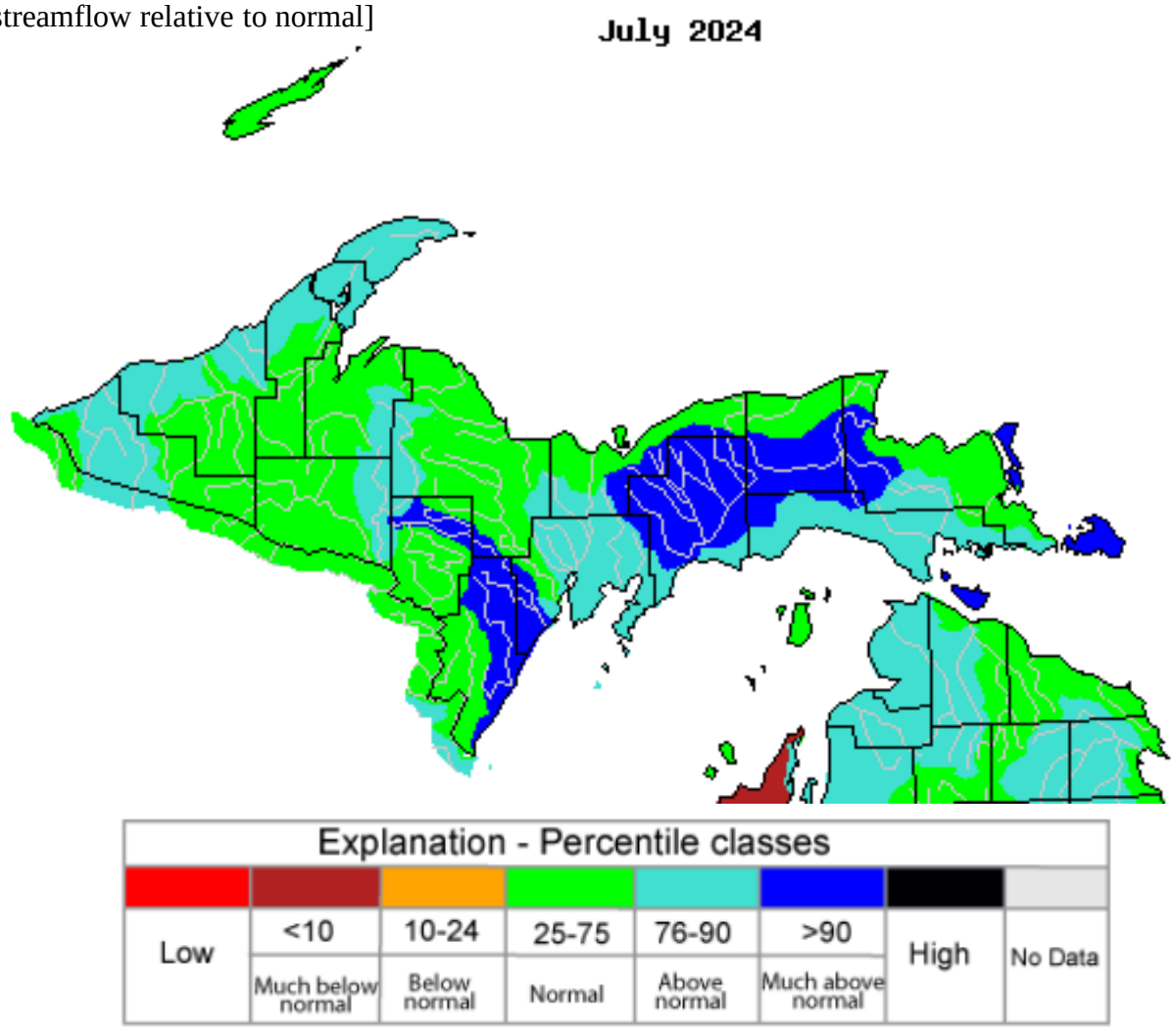

Figure 1: USGS monthly average streamflow in July 2024 across Upper Michigan

Snowpack SWE (Snow Water Equivalent) Conditions

Snowpack is on summer vacation!

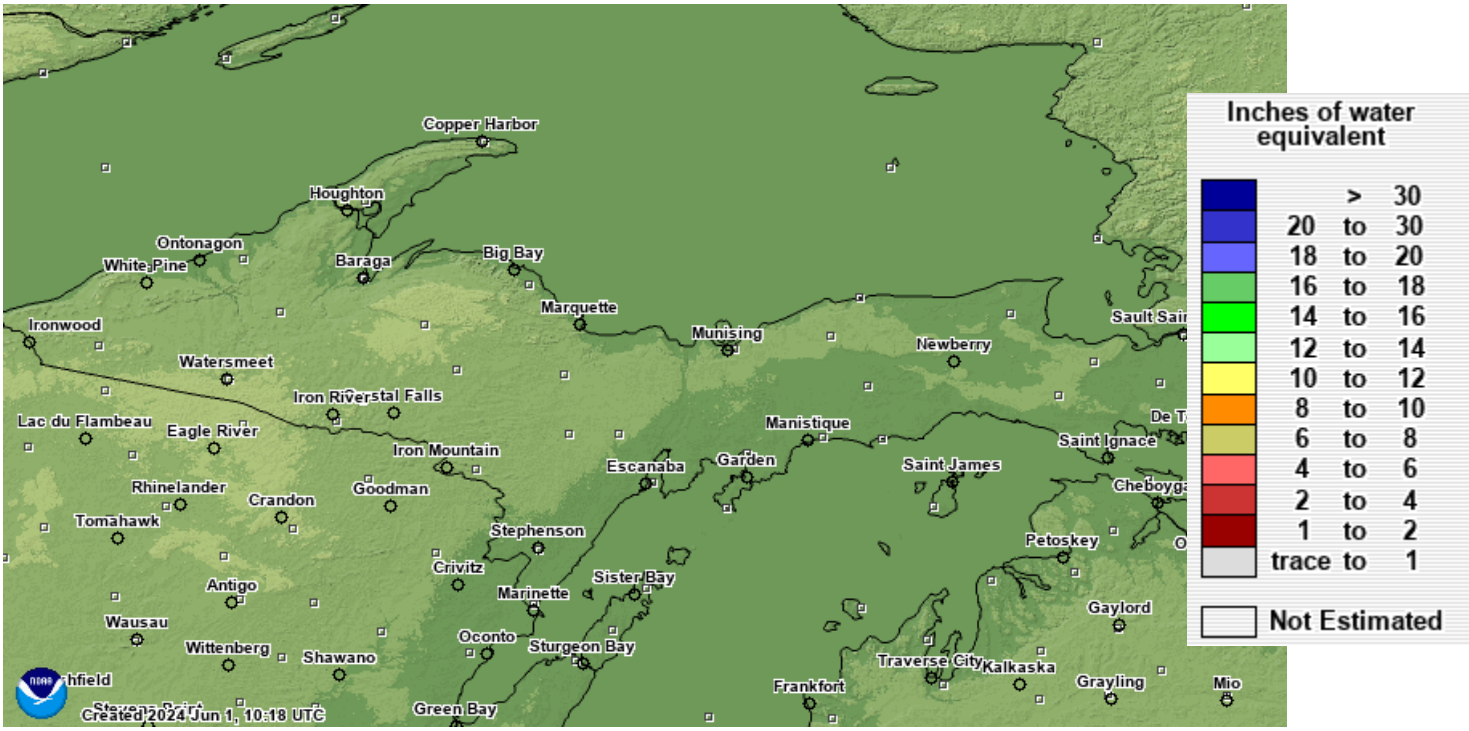

Figure 2: Current modeled snowpack snow water equivalent on August 1st, 2024.

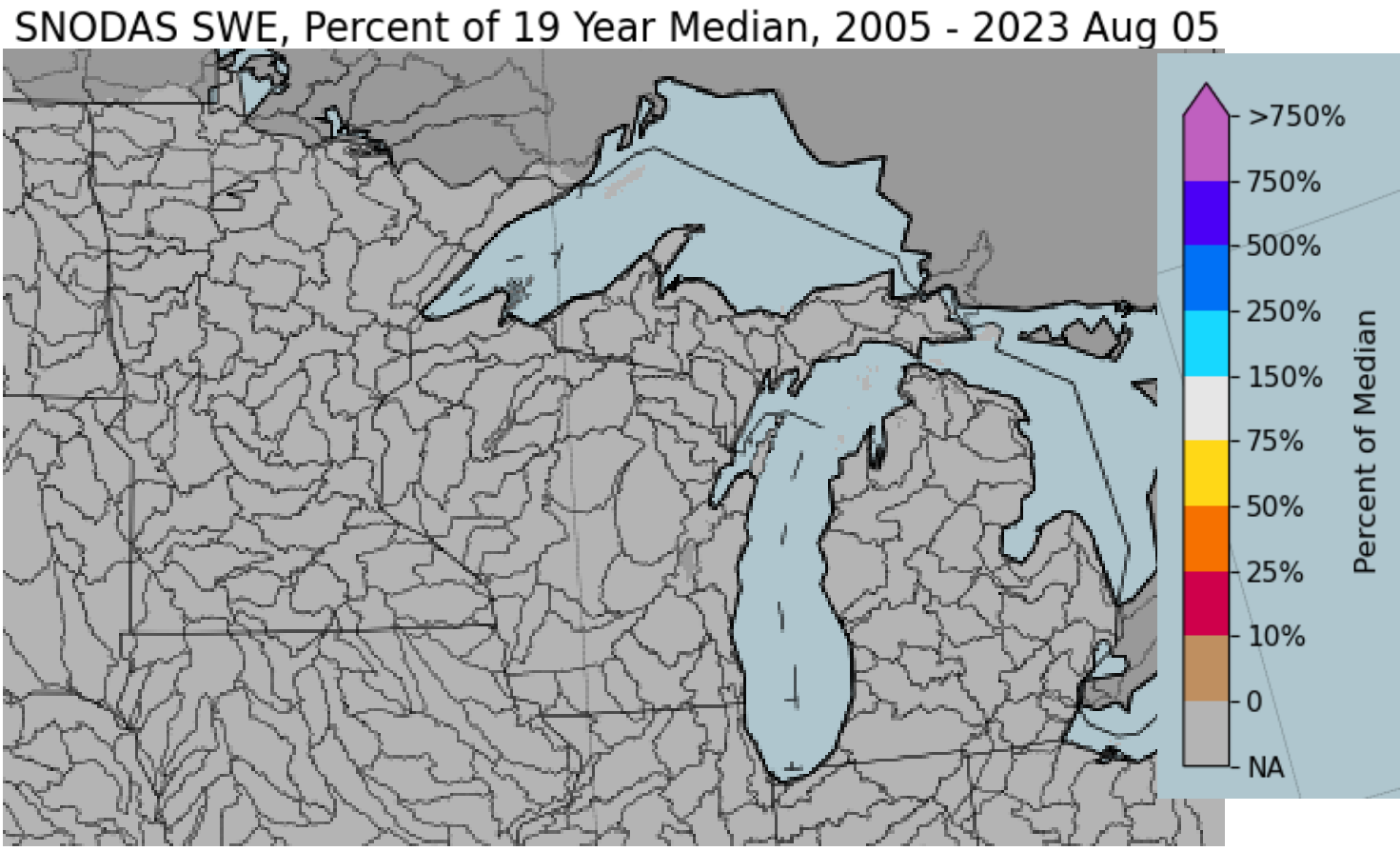

Figure 3: Modeled snow water equivalent for drainage basins on August 1st, 2024 as a percent of 19-year median.

Drought Discussion

Portions of the Gogebic Range through the Copper Country and along the Keweenaw observed well below normal rainfall as abnormally dry (D0) drought conditions returned to the western U.P. Locations near the Lake Superior shore in Ontonagon County through the Keweenaw did not even muster up an inch of precipitation in July. The NWS CO-OP station at Greenland 6N only measured 0.86 inches and the ASOS at Copper Harbor along with the Fischer & Porter weighing rain gauge at Fort Wilkins at the tip of the Keweenaw barely registered over a quarter of an inch of rainfall for the entire month of July.

For the latest drought status, please visit http://www.drought.gov.

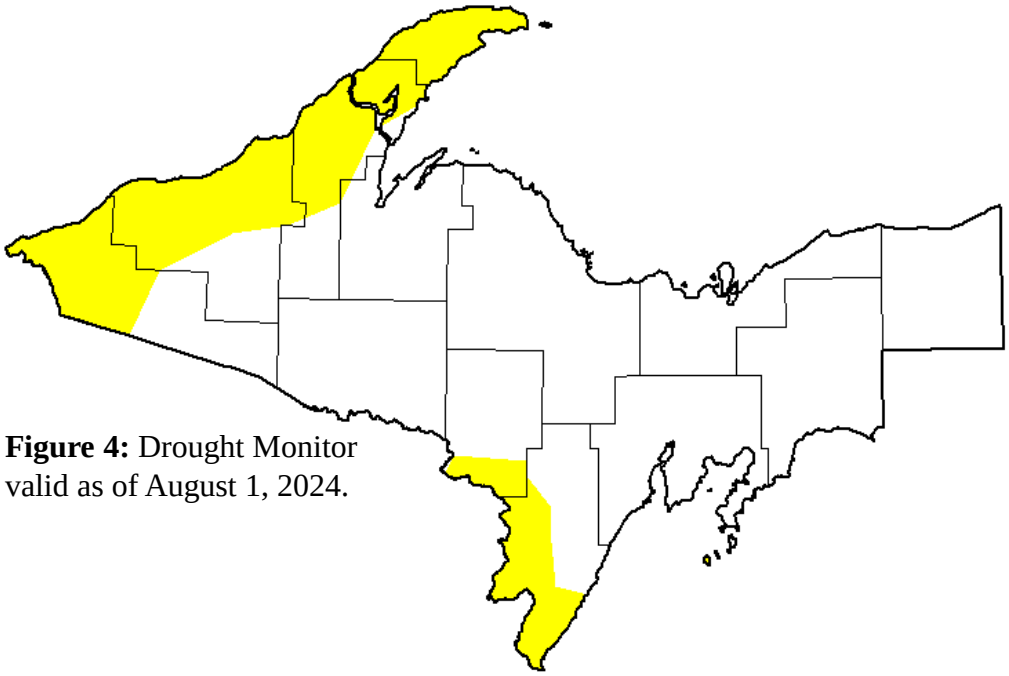

Figure 4: Drought Monitor valid as of August 1, 2024.

August 6, 2024
(Released Thursday, Aug. 8, 2024)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	77.76	22.24	0.00	0.00	0.00	0.00
Last Week 07-30-2024	77.76	22.24	0.00	0.00	0.00	0.00
3 Months Ago 05-07-2024	55.29	44.71	18.34	3.90	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 08-08-2023	69.05	30.95	10.77	1.48	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

Hydro Products Issued

Product	Number
Hydrologic Outlook (ESF)	00
Flood Watch (FFA)	00
Flood Warning (FLW)	00
Flood Advisories and Statements (FLS)	00
Flash Flood Warning (FFW)	00
Flash Flood Statement (FFS)	00
Hydrologic Summary (RVA)	31

Precipitation Summary

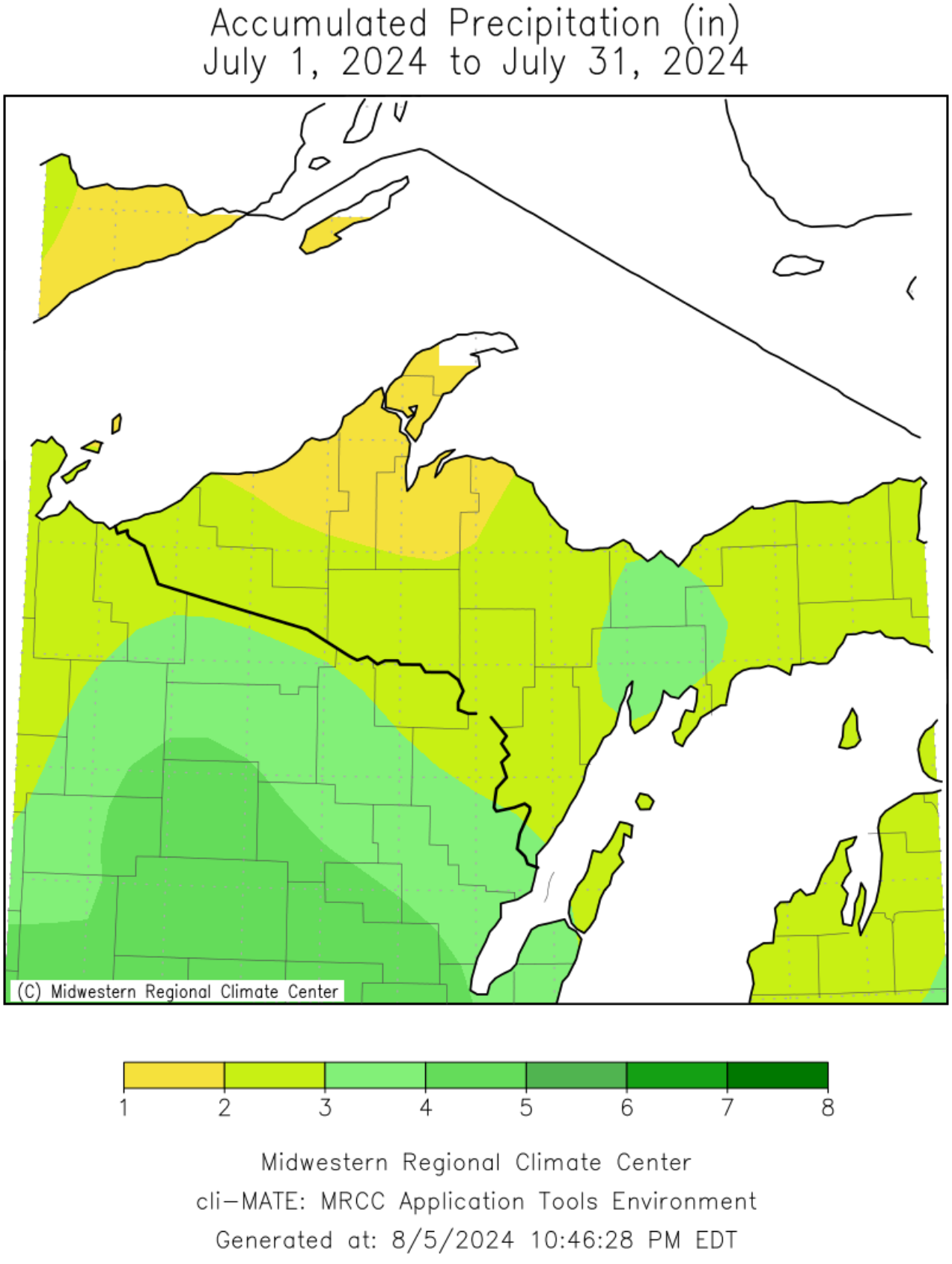

Figure 5: July 2024 Monthly Precipitation Totals.

Precipitation Summary Continued

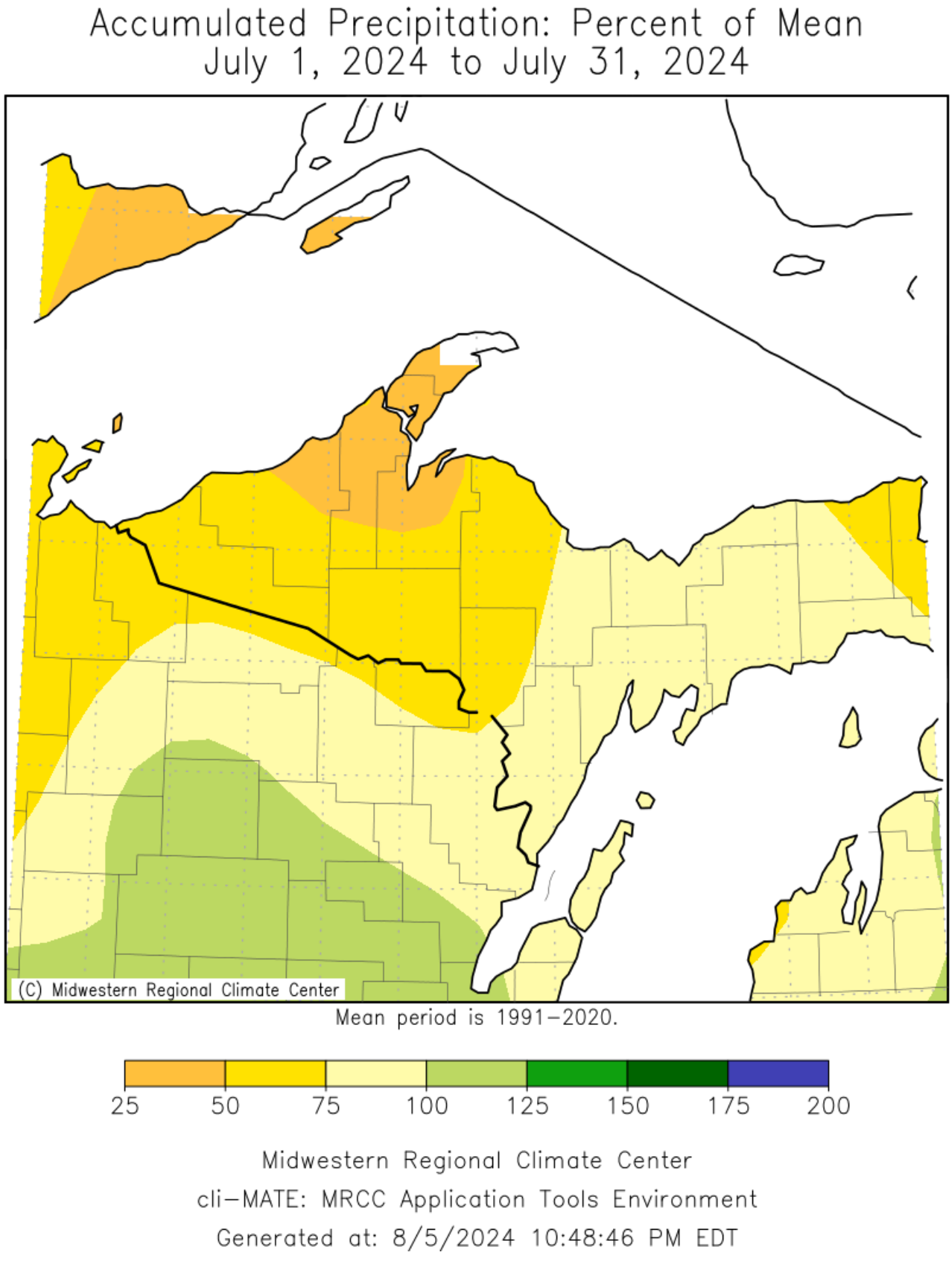

Figure 6: July 2024 Percent of Normal of Accumulated Precipitation.

Soil Moisture Anomaly

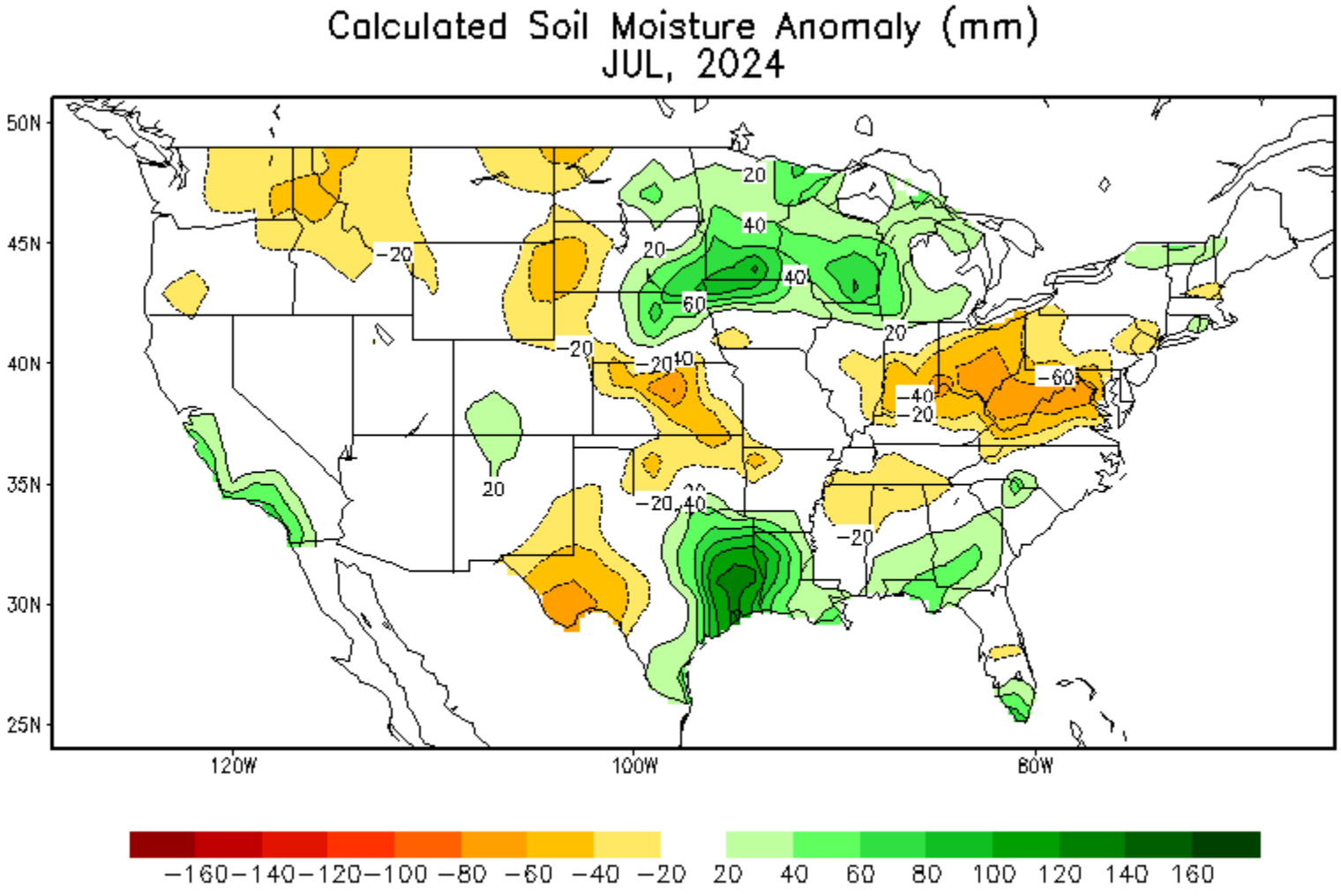

Figure 7: Climate Prediction Center's monthly average soil moisture anomaly for July 2024.

Shallow and Deep Soil Moisture Percentiles

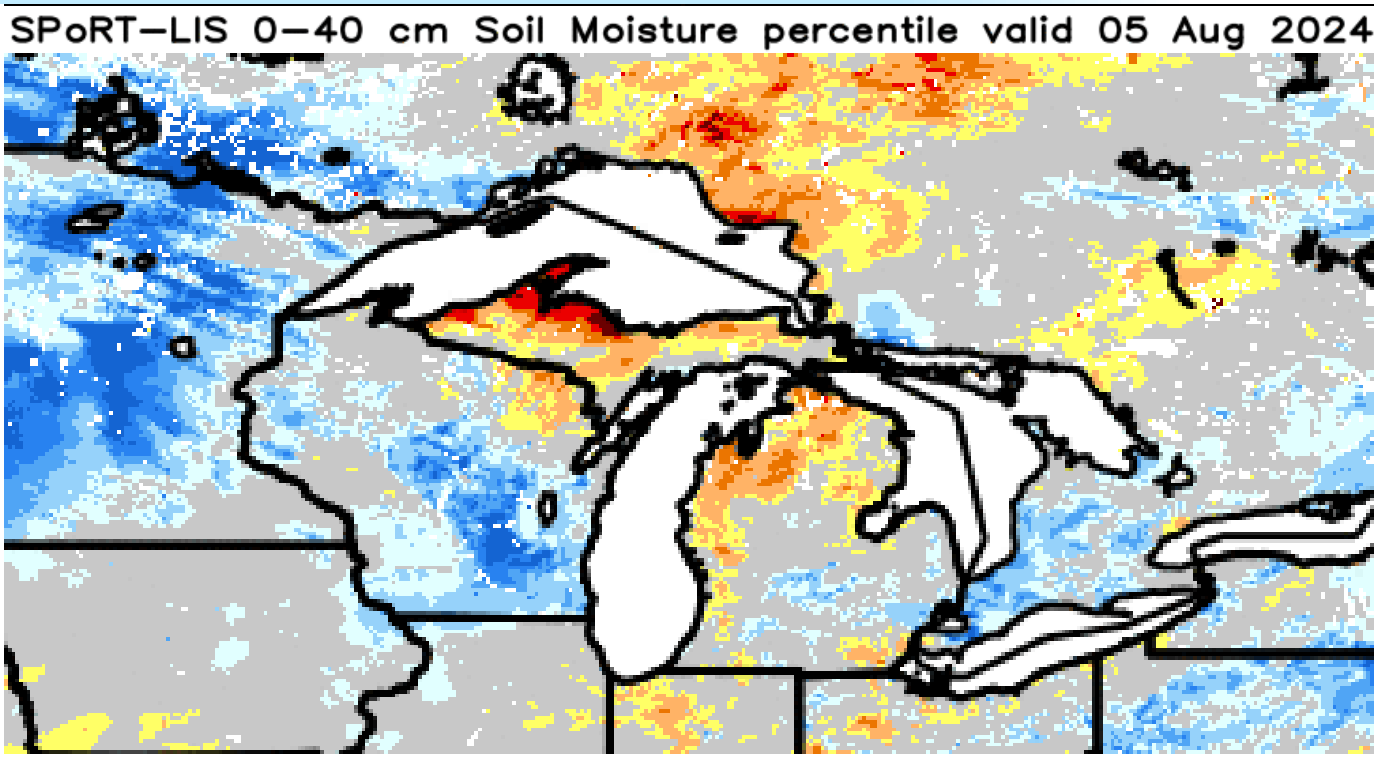

Figure 8: NASA's Short-term Prediction Research and Transition (SPoRT) Center's shallow (0-40 cm) soil moisture percentile valid August 5, 2024.

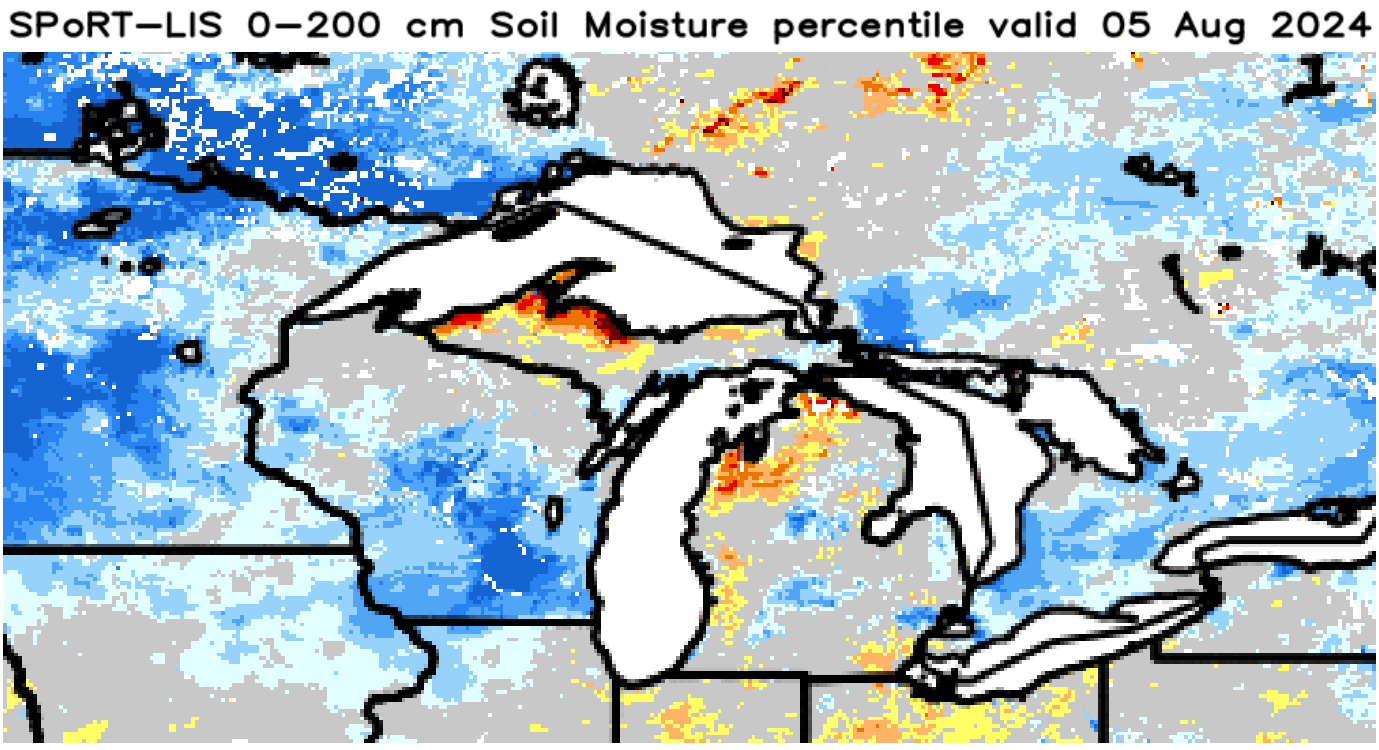

Figure 9: NASA's Short-term Prediction Research and Transition (SPoRT) Center's deep (0-200 cm) soil moisture percentile valid August 5, 2024.