Monthly Hydrometeorological Report

Report for September 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): **September 2024** DATE: **October 10th, 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

Rainfall was well below-normal across Upper Michigan during September with values at the climate stations ranging from only 0.53" inches at Iron Mountain to 2.00" inches at the Lake Superior shoreline in Munising (Table 1). The NWS Cooperative station at Watersmeet 12WSW near the Sylvania Wilderness Area only received 0.44" inches for the entire month of September. Tinder dry conditions were experienced from Watersmeet east through the remainder of the south-central U.P. where Escanaba only tallied 0.57" inches. The outlier with somewhat closer to normal precipitation was Kearsarge on the Keweenaw Peninsula with a modest 3.02" inches of rainfall.

In fact, two climate locations along the south half of Upper Michigan recorded their lowest September rainfall totals on record. Ironwood and Iron Mountain each could barely muster up a little more than a half an inch of rainfall (Table 1). Stambaugh came in 2nd place for their lowest September rainfall on record while Manistique tallied their 5th lowest total at 0.85" inches (Table 1).

September temperatures also tipped the scale and were extremely warm for the month of September. All of the climate sites were in the top four warmest except Stambaugh. The climate station's average temperatures were five or more degrees warmer than normal. Remarkably, the NWS Cooperative station on the Lake Superior shoreline in Marquette achieved their all-time warmest September on record at 64.9°F (Table 1).

The U.S. Drought Monitor graphic depicts moderate to severe drought conditions across much of Upper Michigan. Abnormally dry conditions persist over the northwest quarter of Upper Michigan from the Gogebic Range and Keweenaw east to the Marquette Range (Figure 4). Streamflow was below normal during September across much of Upper Michigan, with much below normal flows in the Michigamme, Menominee, and Tahquamenon Basins (Figure 1). Shallow and Deep soil moisture levels are very dry (Figure 8-9).

For the year-to-date, climate observation sites ranged from 86% to 112% of normal precipitation with 30.95" inches of precipitation at Munising ranking as the 12th wettest January through September time frame on record (Table 4). Munising has been the outlier for some time as overall dry conditions prevail.

For the year-to-date, temperatures were significantly warmer than last year and were between 1.3°F and 4.1°F above normal across Upper Michigan with WFO Marquette ranking as the 2nd warmest January through September time period on record (Table 5). Iron Mountain and Munising both placed 4th in their warmest January through September time period (Table 5).

(September) Precipitation Summary

Location	Precipitation	% of Normal	Average Temperature	Departure from Normal
WFO Marquette	1.07”	27%	**61.6°F / 2nd Warmest on Record**	+5.3°F
Marquette City	**1.12” / 7th Lowest on Record**	32%	**64.9°F / Warmest on Record**	+6.5°F
Quincy Hill	1.80”	M	M	M
Ironwood	**0.57” Lowest on Record**	15%	**62.2°F / 4th Warmest on Record**	+5.7°F
Iron Mountain	**0.53” Lowest on Record**	15%	**63.6°F / 4th Warmest on Record**	+6.2°F
Manistique	**0.85” / 5th Lowest on Record**	25%	**62.1°F / 2nd Warmest on Record**	+5.1°F
Munising	2.00”	51%	**61.9°F / 3rd Warmest on Record**	+4.8°F
Stambaugh	**0.60” / 2nd Lowest on Record**	17%	57.8°F	+3.1°F

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

NOTE: Precipitation after 8 AM EST August 31st was counted in September 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)	27.52”	101%	26th wettest	37.43”
Marquette City (Records: 1875-2023)	23.60”	102%	78th wettest	26.45”
Ironwood (Records: 1901-2023)	23.57”	86%	87th wettest	31.17”
Iron Mountain (Records: 1902-2023)	22.59”	96%	63rd wettest	24.09”
Manistique (Records: 1938-2023)	24.15”	105%	28th wettest	20.26”
Munising (Records: 1912-2023)	32.48”	112%	12th wettest	30.95”
Stambaugh (Records: 1900-2023)	23.38”	96%	63rd wettest	22.77”

Table 4. Total observed precipitation at long-term climate sites across Upper Michigan for January through September 2024.

Year-to-Date Temperature Summary

Location.	Avg Temp	Departure	Rank	Last Year
WFO Marquette (Records: 1962-2023)	46.9F	+3.9F	2nd warmest	45.2F
Marquette City (Records: 1875-2023)	48.7F	+3.3F	8th warmest	46.3F
Ironwood (Records: 1901-2023)	46.7F	+2.8F	9th warmest	44.9F
Iron Mountain (Records: 1902-2023)	49.6F	+4.1F	4th warmest	47.6F
Manistique (Records: 1938-2023)	45.5F	+1.3F	21st warmest	44.7F
Munising (Records: 1912-2023)	47.2F	+3.1F	4th warmest	45.2F
Stambaugh (Records: 1900-2023)	45.1F	+2.2F	15th warmest	43.4F

Table 5. Average temperature observed at long-term climate sites across Upper Michigan for January through September 2024.

Flooding Conditions

No river flooding concerns during the month of September 2024.

Media Links

River Conditions

Basin streamflow relative to normal

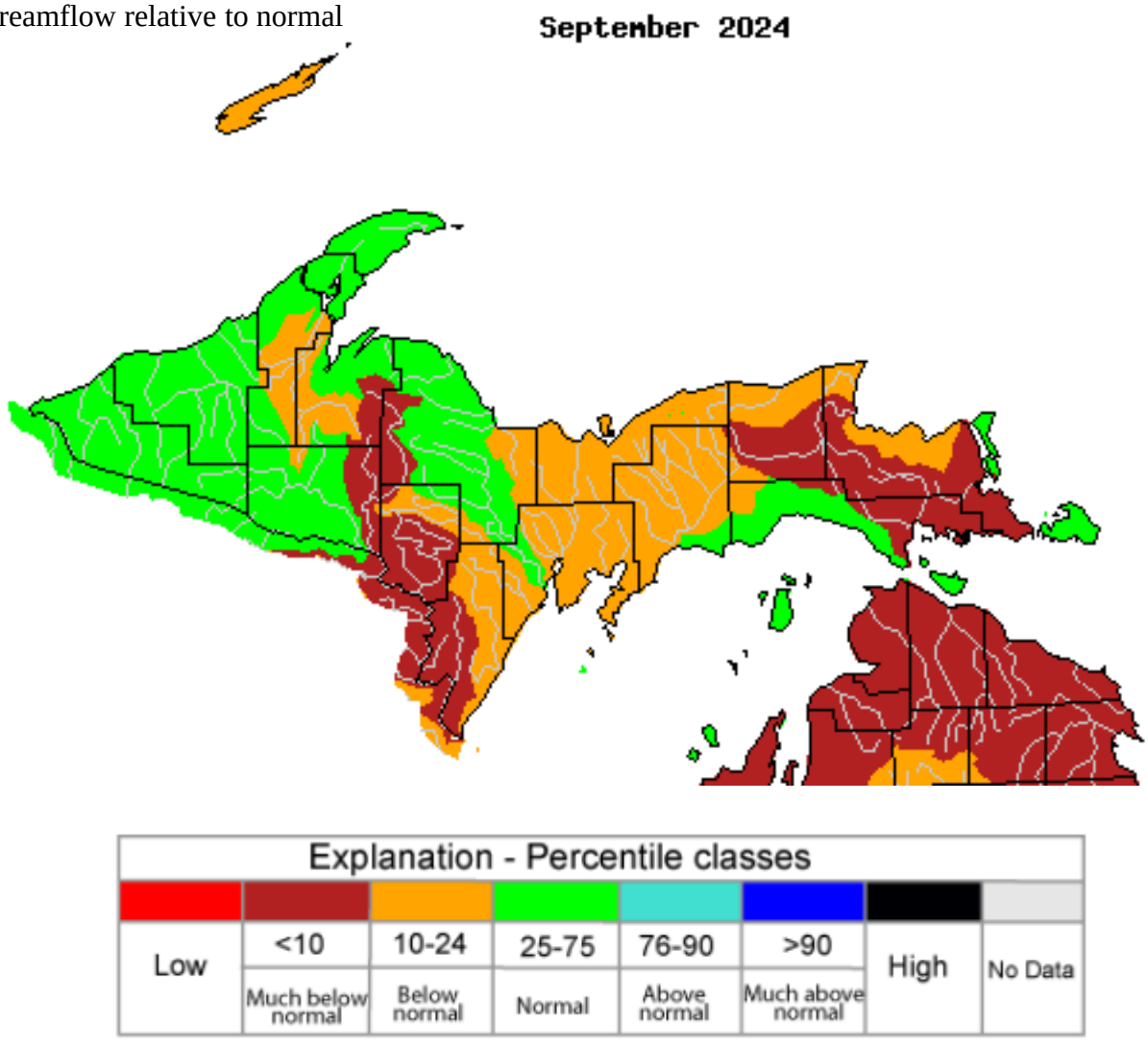

Figure 1: USGS monthly average streamflow in September 2024 across Upper Michigan

Snowpack SWE (Snow Water Equivalent) Conditions

Snowpack is on summer vacation!

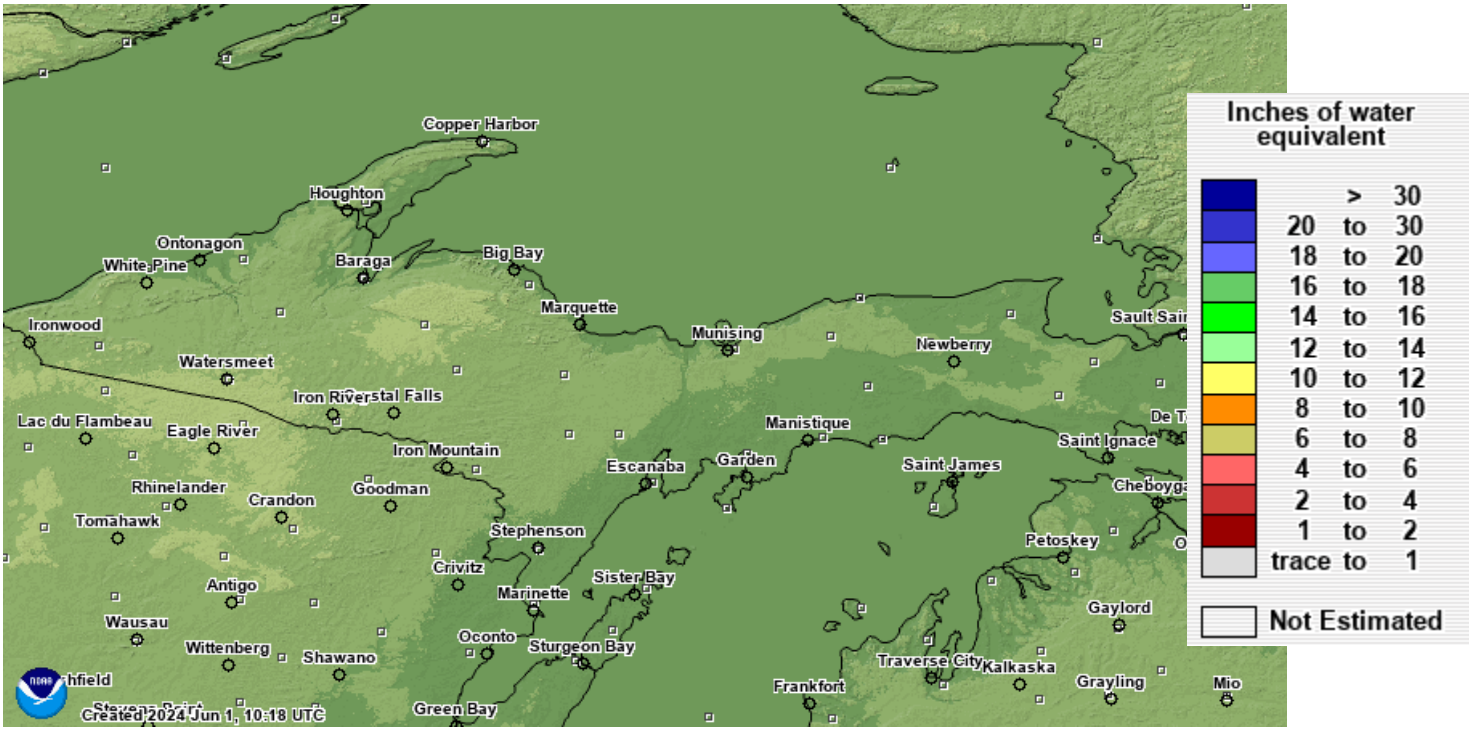

Figure 2: Current modeled snowpack snow water equivalent on October 1st, 2024.

SNODAS SWE, Percent of 20 Year Median, 2004-2024 Oct 03

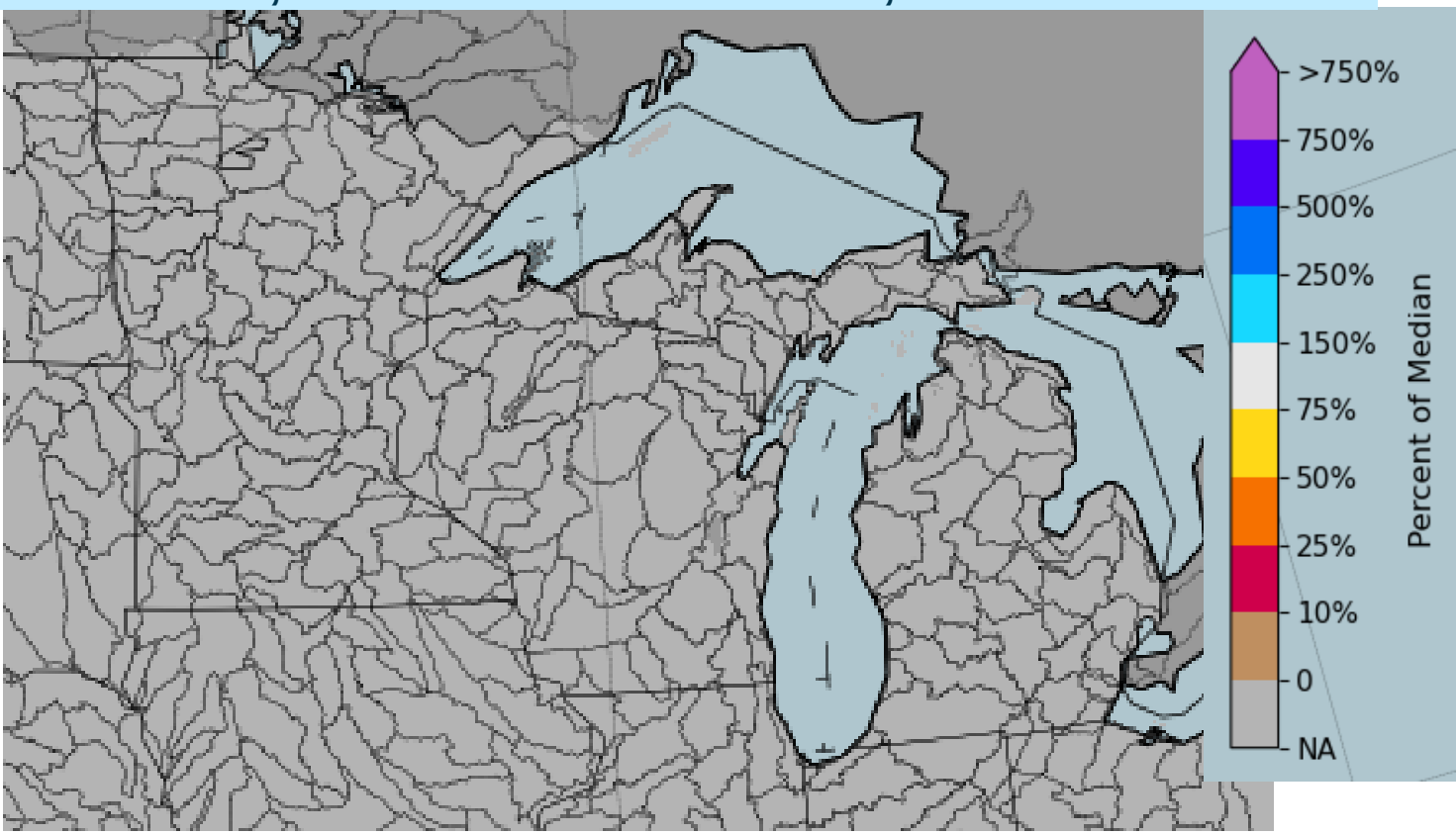

Figure 3: Modeled snow water equivalent for drainage basins on October 3rd , 2024 as a percent of 20-year median.

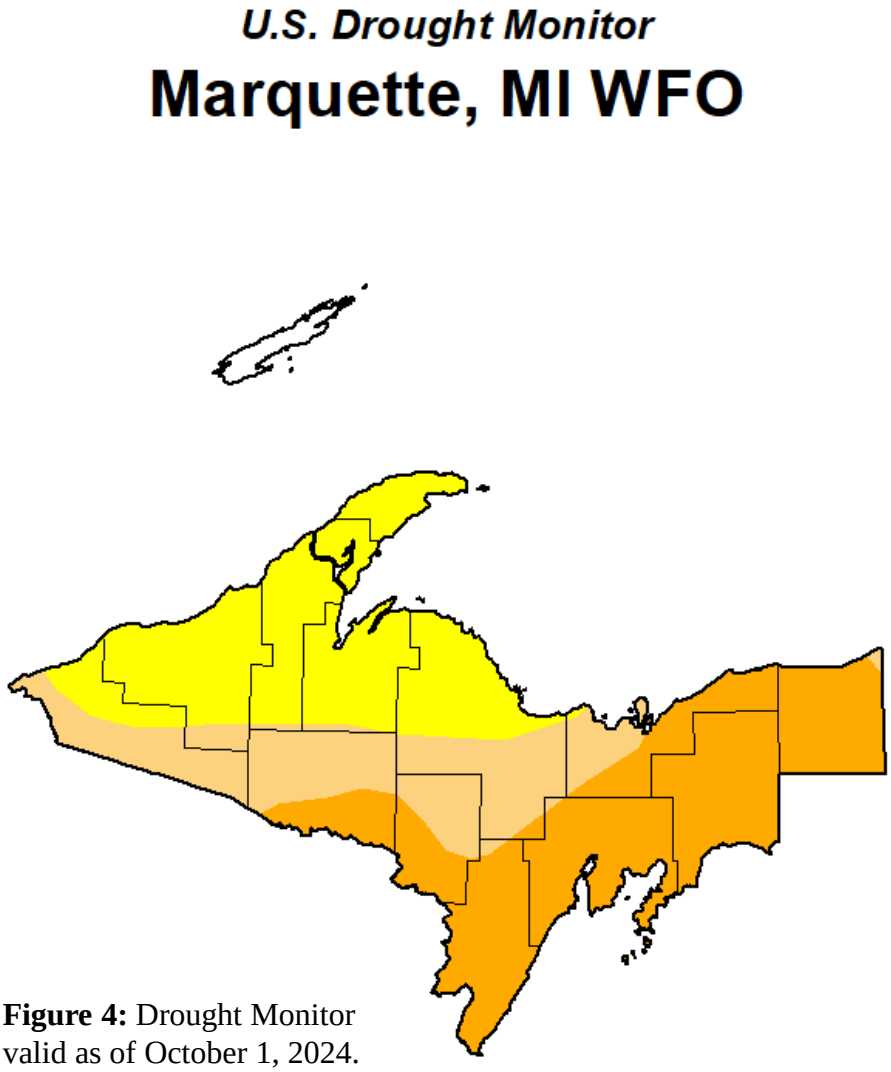

Figure 4: Drought Monitor valid as of October 1, 2024.

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)	30

Precipitation Summary

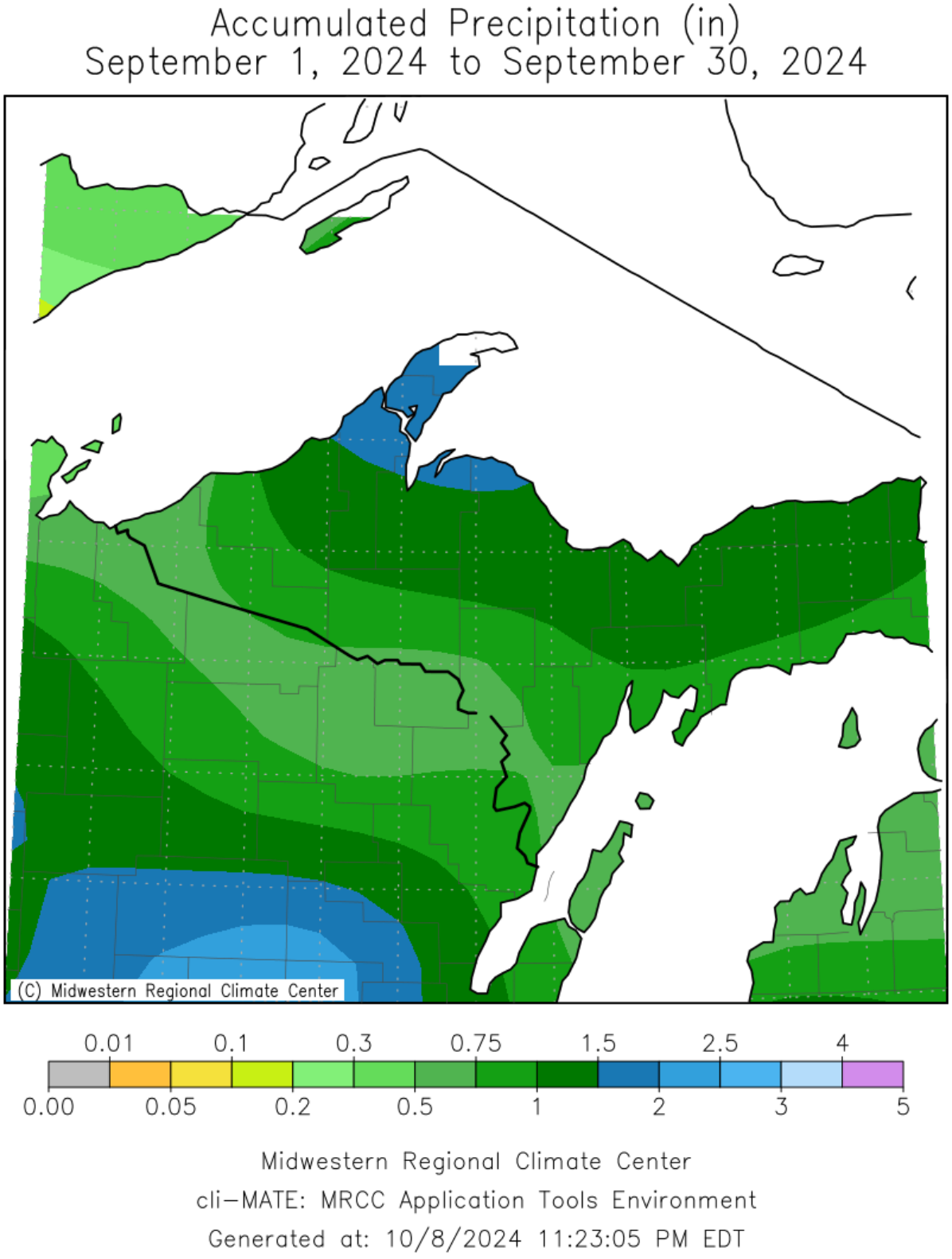

Figure 5: September 2024 Monthly Precipitation Totals.

Precipitation Summary Continued

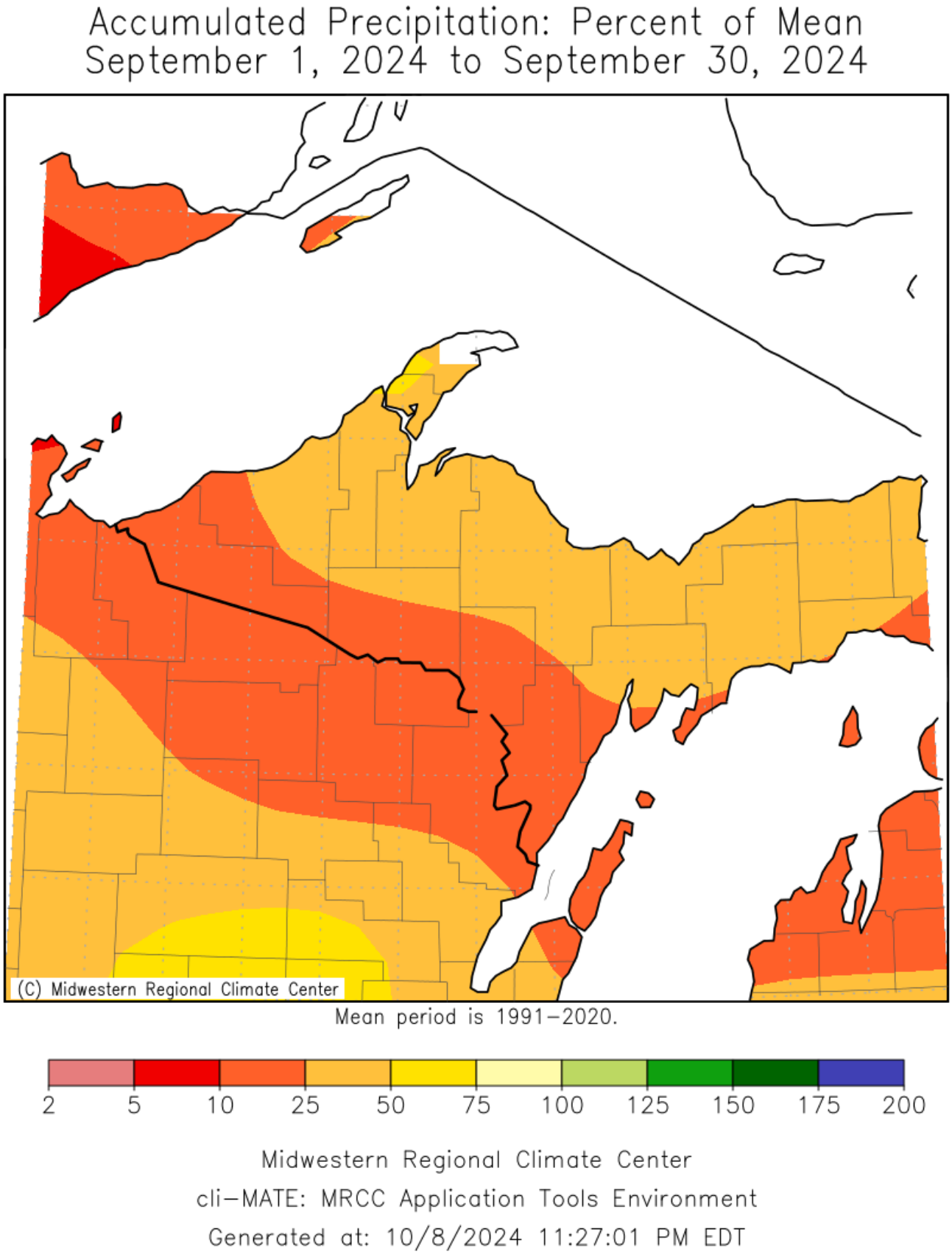

Figure 6: September 2024 Percent of Normal of Accumulated Precipitation.

Soil Moisture Anomaly

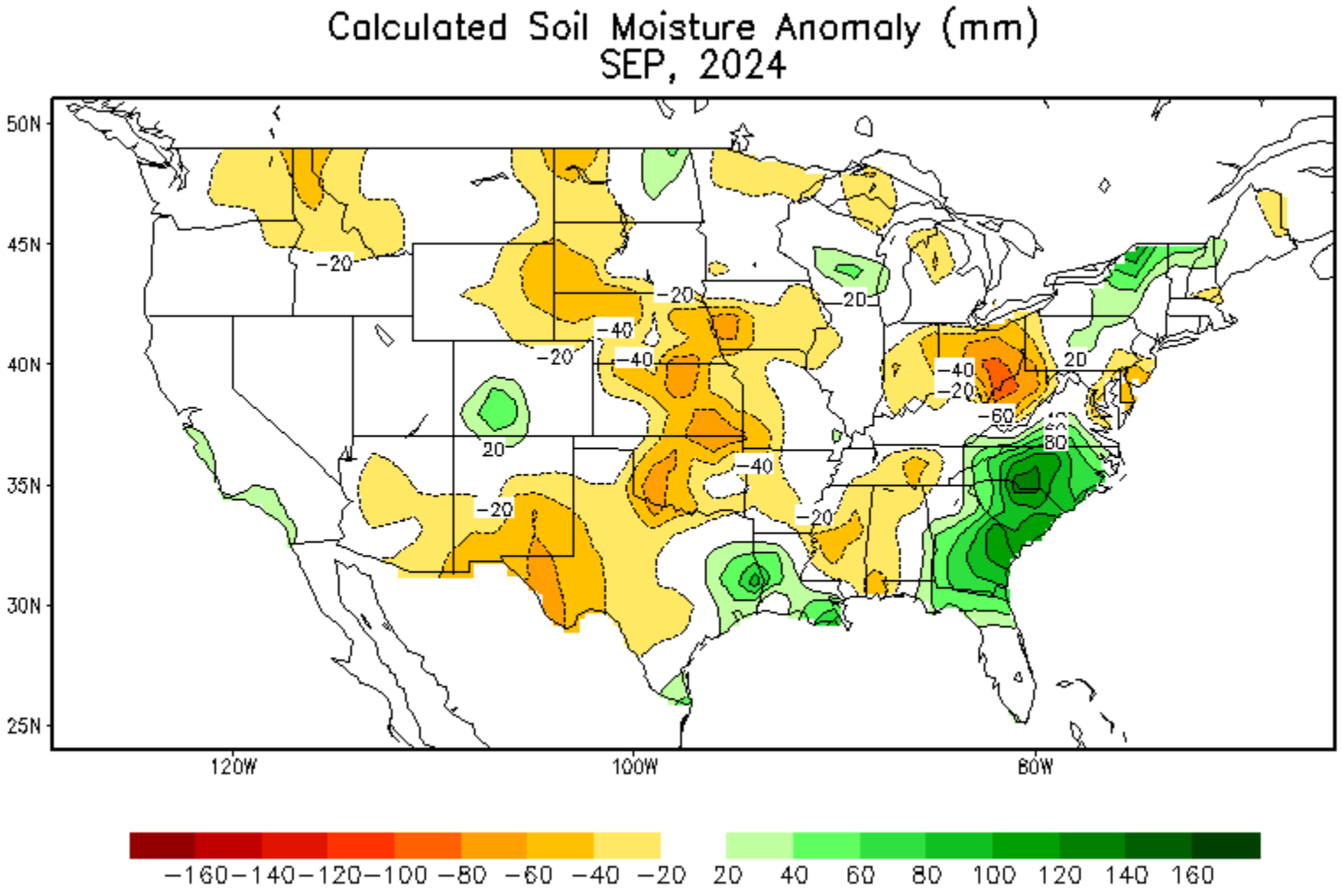

Figure 7: Climate Prediction Center's monthly average soil moisture anomaly for September 2024.

Shallow and Deep Soil Moisture Percentiles

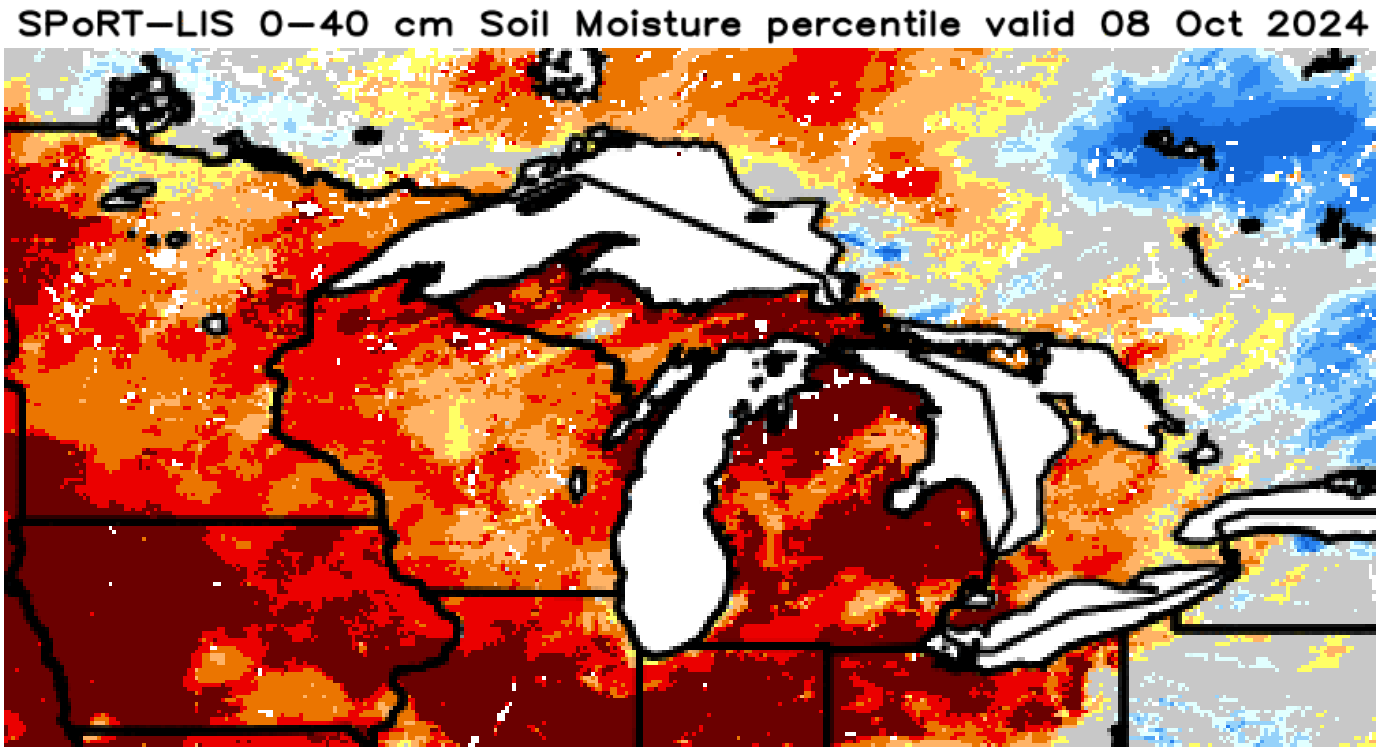

Figure 8: NASA's Short-term Prediction Research and Transition (SPoRT) Center's shallow (0-40 cm) soil moisture percentile valid October 8, 2024.

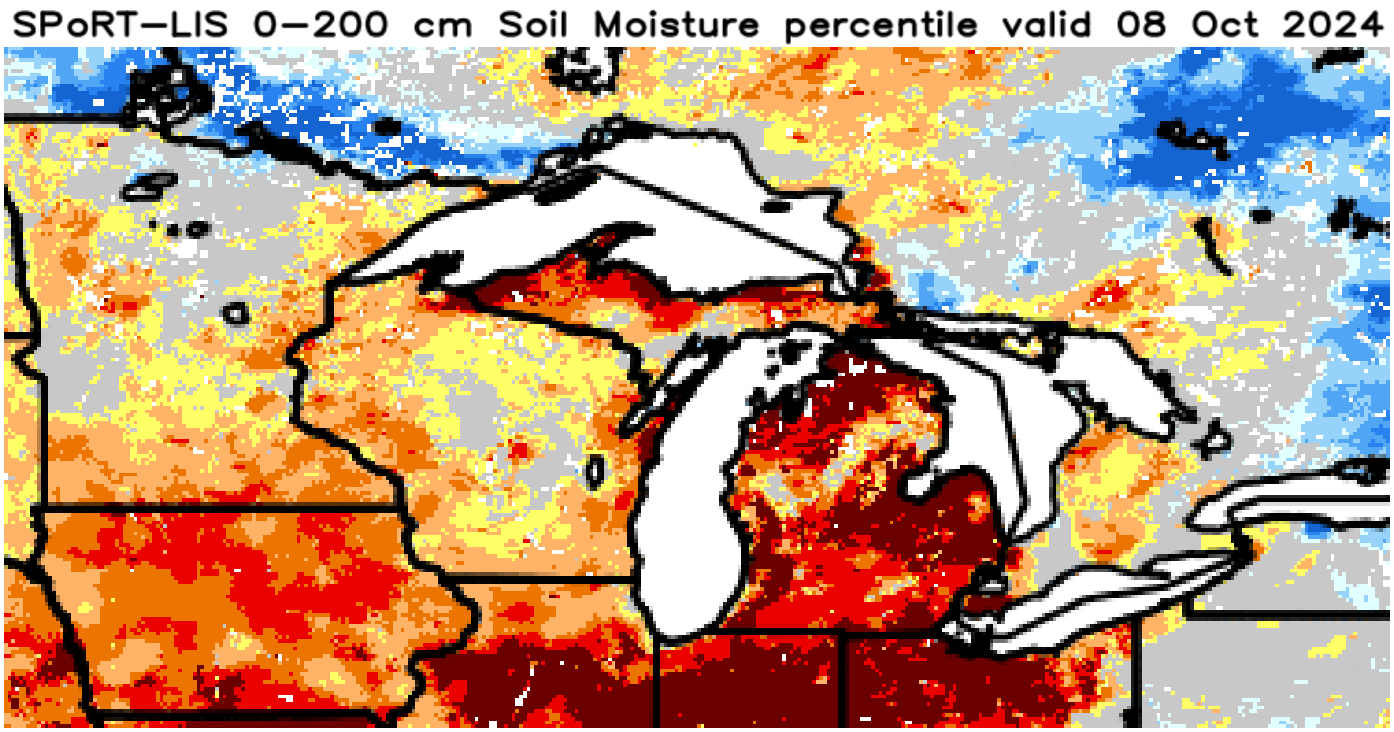

Figure 9: NASA's Short-term Prediction Research and Transition (SPoRT) Center's deep (0-200 cm) soil moisture percentile valid October 8, 2024.