Monthly Report of River and Flood Conditions

Report for November 2022

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): **November 2022** DATE: **December 14th, 2022** SIGNATURE: **Evan Kutta, Hydro Program Manager** **Robin J. Turner, 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

Above normal precipitation occurred across Upper Michigan during November, especially for favored lake effect areas such as Quincy Hill and Ironwood where more than 6.5” of liquid was measured. Snowfall also ramped up this month with each site picking up measurable snow with Ironwood and Munising picking up between 3 and 4 feet of snow during November. Warmer than normal temperatures to end November melted most of the snow that fell with a relatively small area of snow water equivalent exceeding 1 inch across higher elevations of western Upper Michigan. Above normal precipitation and substantial snowmelt resulted in near to much above normal streamflow.

Location	Precipitation	% of Normal	Snowfall
WFO Marquette	3.99”	138%	21.8”
Marquette City	3.06”	126%	8.8”
Quincy Hill	6.82”	M	27.9”
Ironwood	6.70”	233%	46.7”
Iron Mountain	3.16”	166%	2.3”
Manistique	4.84”	185%	4.0”
Munising	4.39”	127%	37.0”
Stambaugh	3.33”	189%	4.4”

NOTE: Precipitation after 8 AM EST February 28th was counted in March stats for all but the WFO Marquette site due to the reporting structure of our cooperative observers.

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Flooding Conditions

There were no flooding concerns during the month of November.

River Conditions

Streamflow was much above normal for most basins along the Lake Superior shoreline with near to above normal streamflow across the remainder of Upper Michigan.

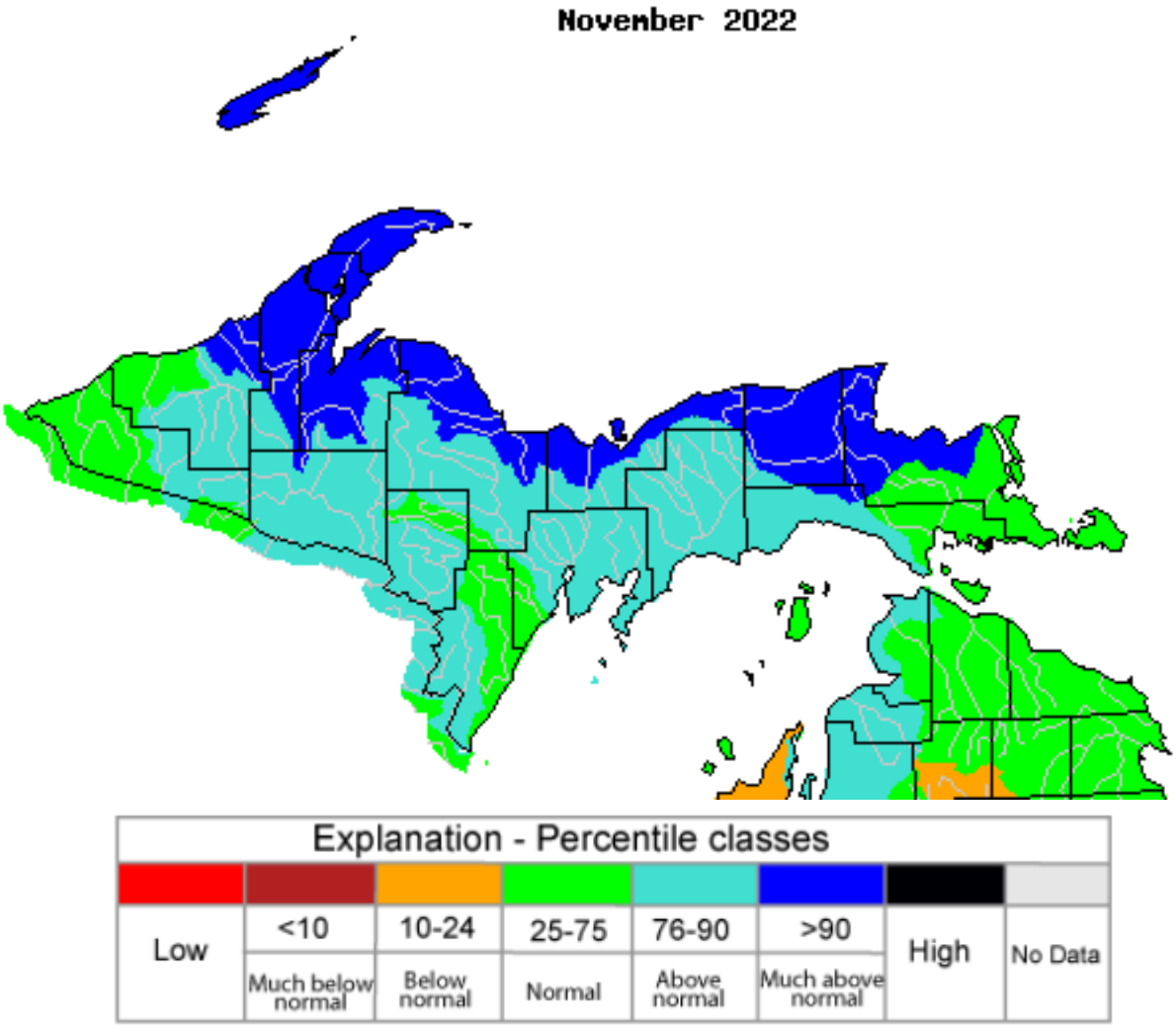

Figure 1: USGS monthly average streamflow in March 2021 across Upper Michigan

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Snowpack SWE (Snow Water Equivalent) Conditions

Snow water equivalent was less than 1 inch across all but western Upper Michigan, especially higher elevations between Ironwood and Painesdale.

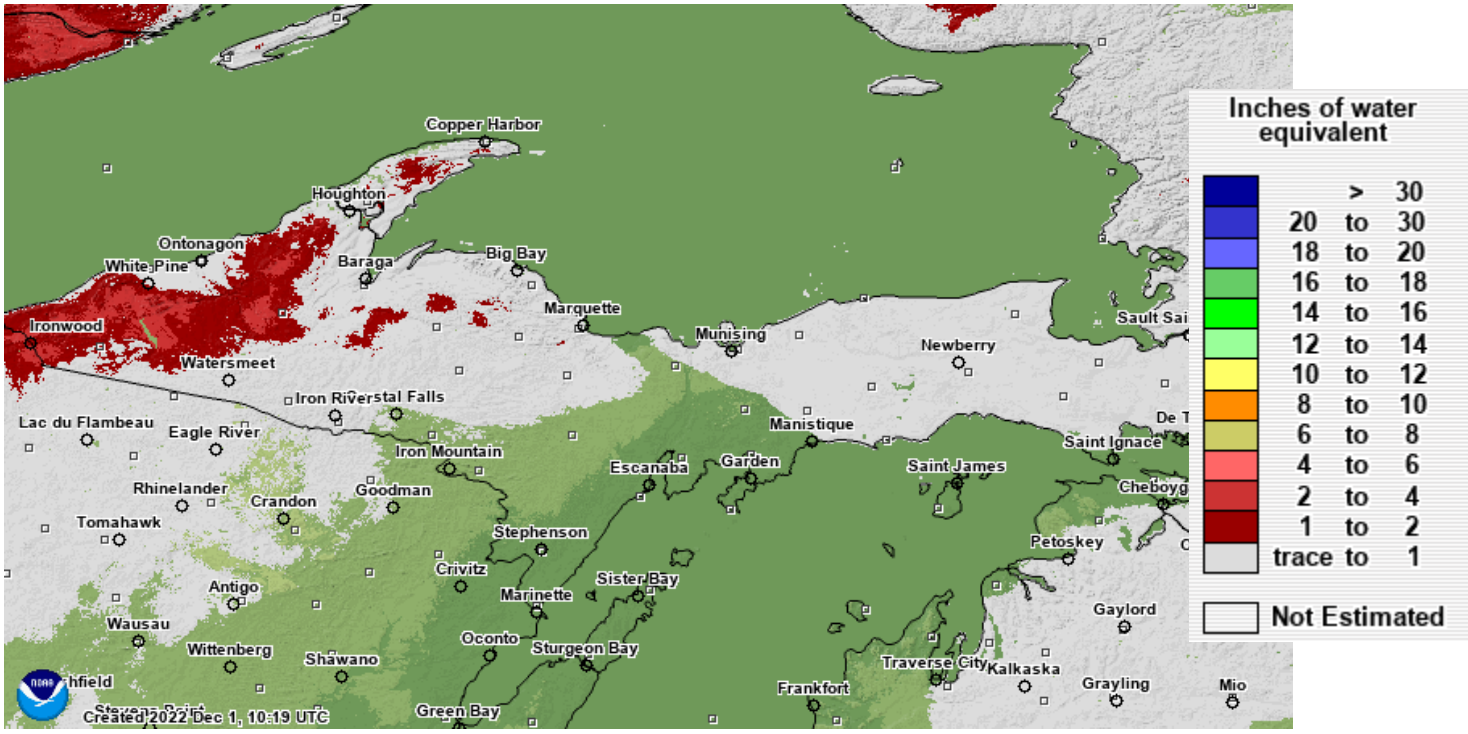
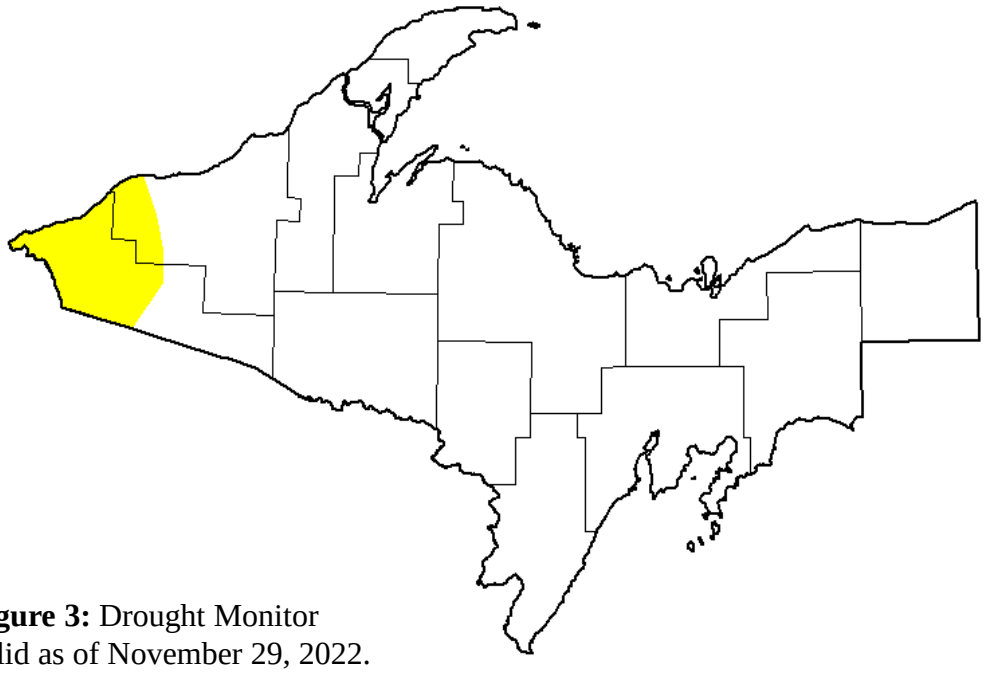


Figure 2: Current modeled snowpack snow water equivalent on December 1st.

Drought Discussion

Drought was not present at the end of November. For the latest drought status, please visit http://www.drought.gov.



December 6, 2022

(Released Thursday, Dec. 8, 2022)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	93.94	6.06	0.00	0.00	0.00	0.00
Last Week 11-29-2022	94.16	5.84	0.00	0.00	0.00	0.00
3 Months Ago 09-06-2022	94.97	5.03	0.00	0.00	0.00	0.00
Start of Calendar Year 01-04-2022	26.00	74.00	35.44	0.51	0.00	0.00
Start of Water Year 09-27-2022	88.48	11.52	1.94	0.00	0.00	0.00
One Year Ago 12-07-2021	18.11	81.89	35.49	0.51	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

Author:

David Simeral
Western Regional Climate Center

droughtmonitor.unl.edu

Figure 3: Drought Monitor valid as of November 29, 2022.

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Media Links

None.

Hydro Products Issued

Product	Number
Hydrologic Outlook (ESF)	1
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)	31
Daily River Forecasts (RVD)	1

Precipitation Summary

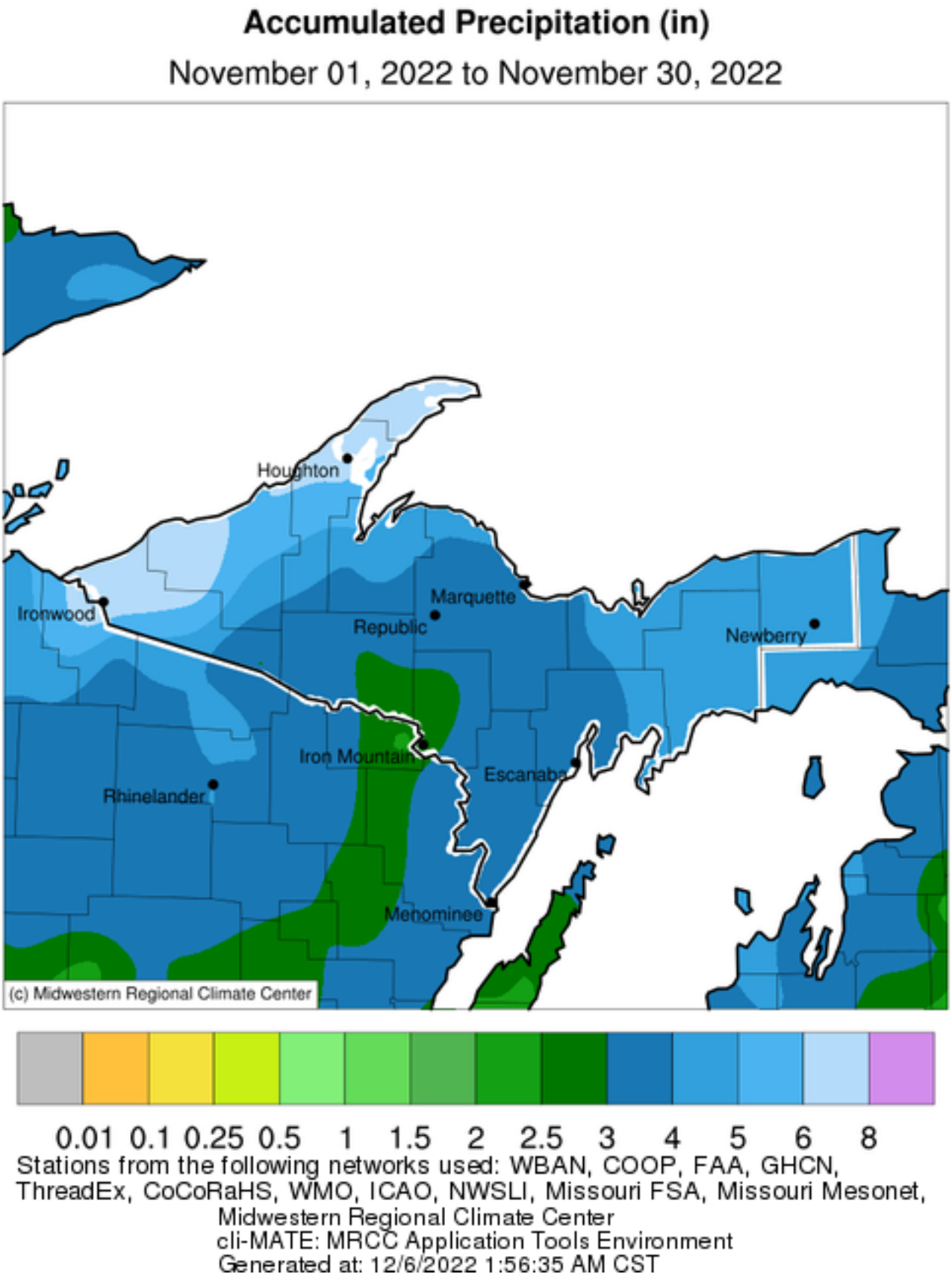

Figure 4: November 2022 Monthly Precipitation Totals.

Precipitation Summary Continued

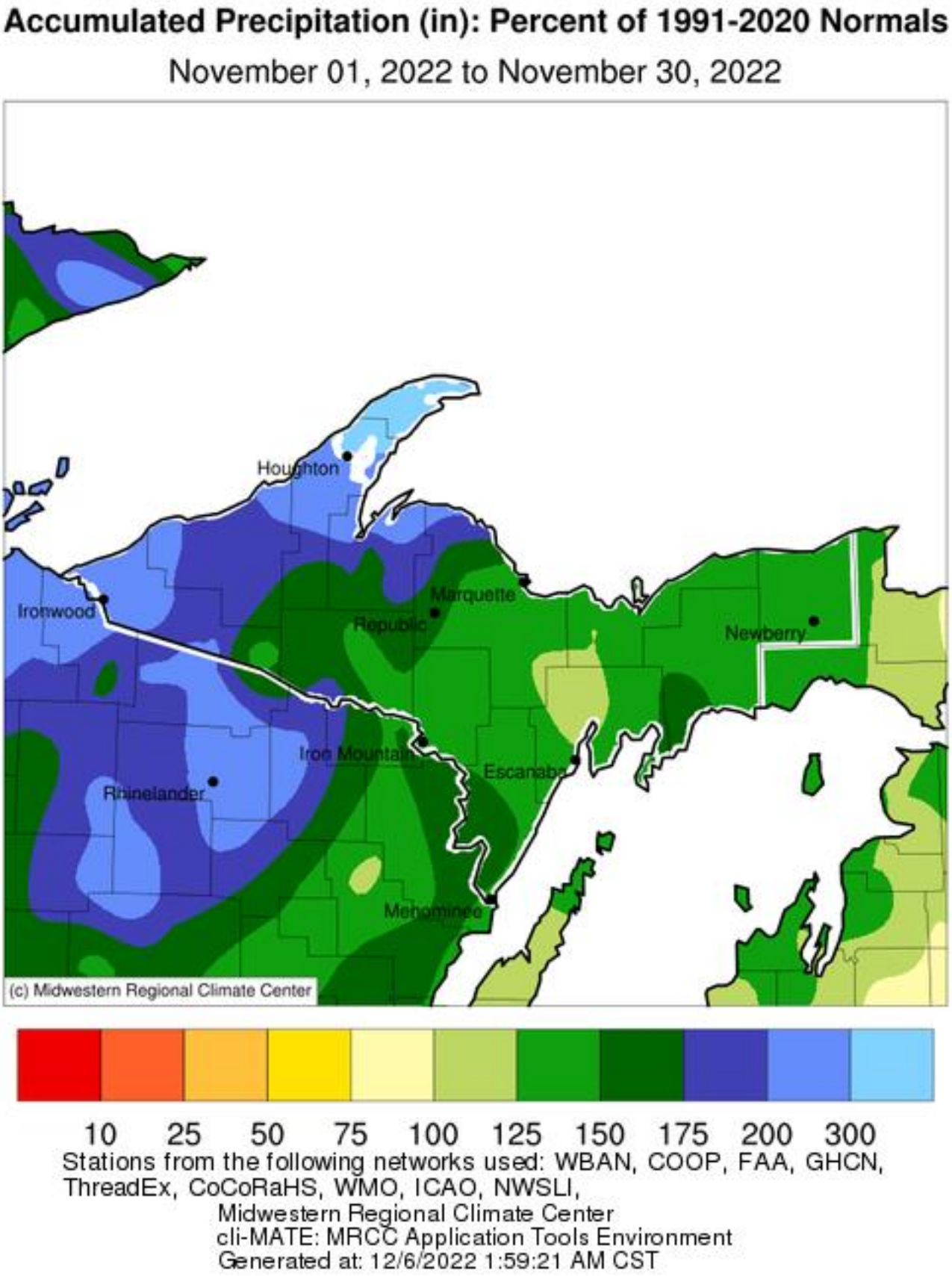

Figure 5: November 2022 Percent of Normal Accumulated Precipitation.

Soil Moisture Anomaly

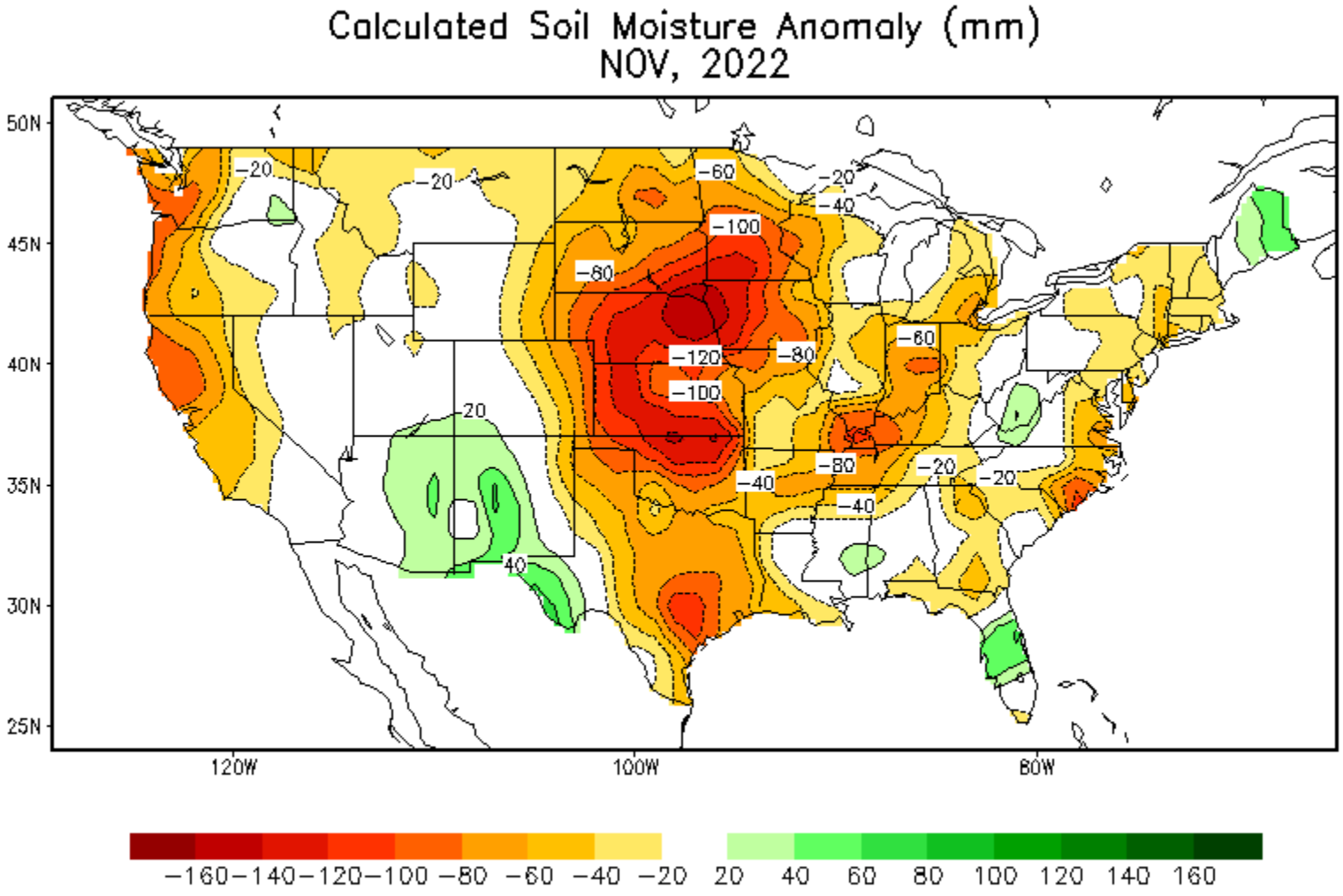

Figure 6: Climate Prediction Center's monthly average soil moisture anomaly for November 2022.

Shallow and Deep Soil Moisture Percentiles

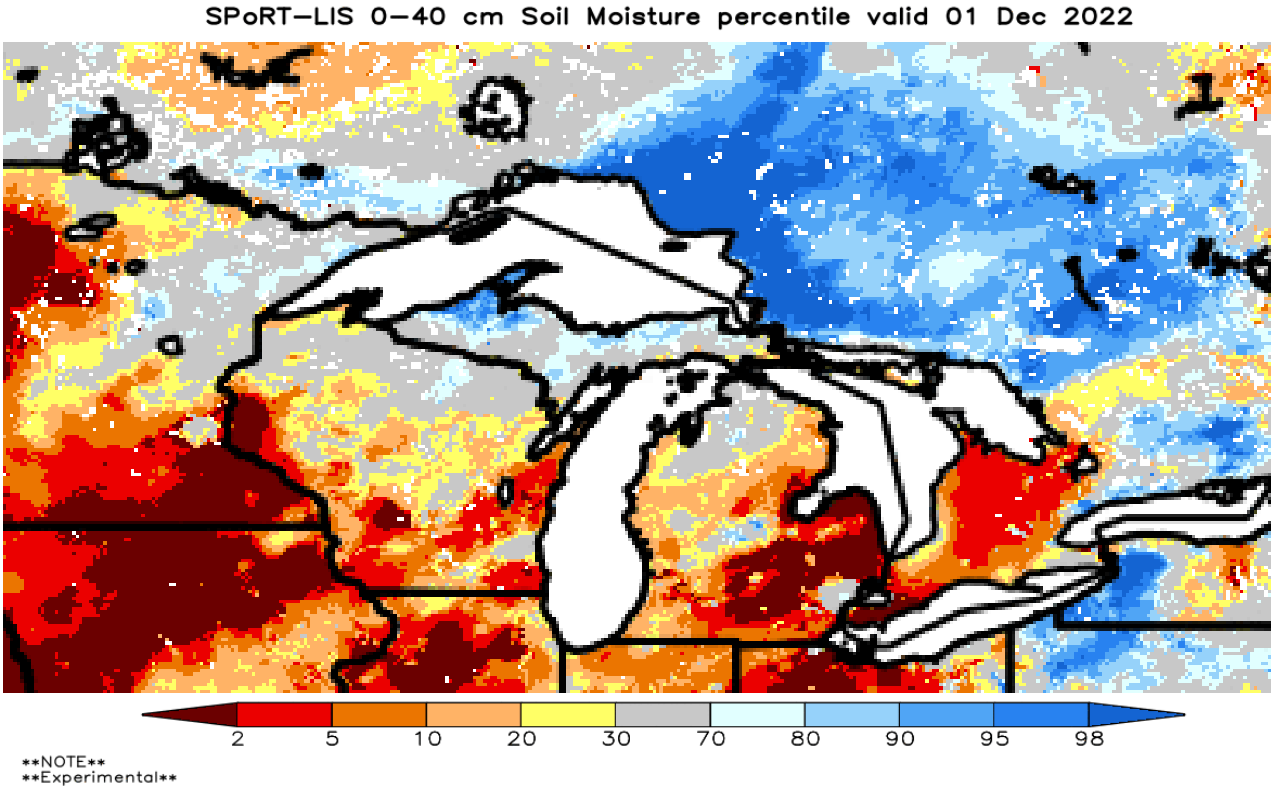

Figure 7: NASA Short-term Prediction Research and Transition (SPoRT) Center's shallow (0-40 cm) soil moisture percentile valid December 1, 2022.

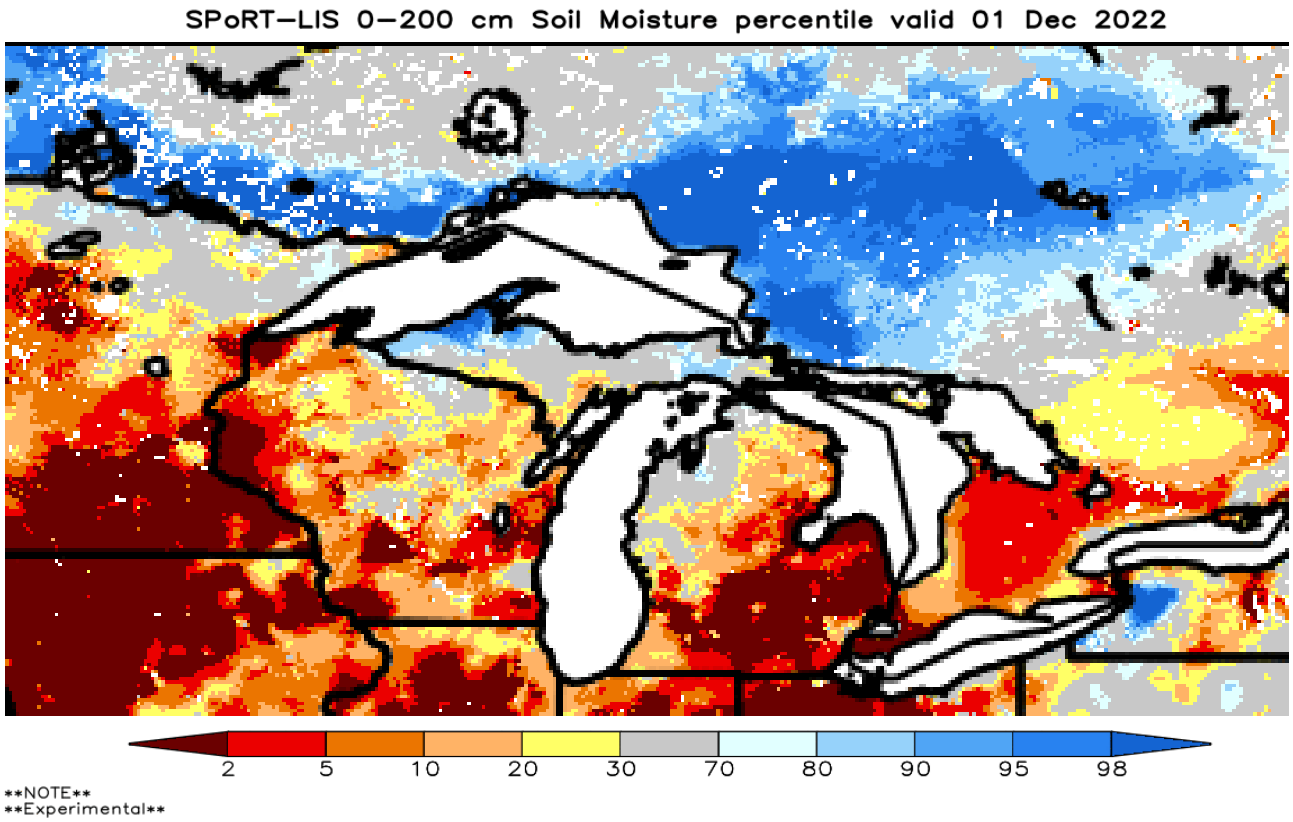

Figure 8: NASA Short-term Prediction Research and Transition (SPoRT) Center's deep (0-200 cm) soil moisture percentile valid December 1, 2022.