NWS FORM E-5	**U.S. Department of Commerce** NOAA, NATIONAL WEATHER SERVICE	**HSA OFFICE:** **Grand Rapids, MI**
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS		REPORT FOR (MONTH & YEAR): **November 2023**
TO:	NATIONAL WEATHER SERVICE (W/OS31) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 13468 SILVER SPRING, MD 20910	DATE: December 10th, 2023
		SIGNATURE: Joe Ceru, Meteorologist

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 that no flooding occurred within this hydrologic service area.

Summary

There were several precipitation events throughout the month. However, precipitation was below normal. Snowfall was below normal. Drought conditions remain low across most of southern Lower with the exception of central Michigan, especially along the lakeshore between Cadillac and Ludington. (Figure 5)

Flood Conditions

The month began with flows on the Grand River above normal. Flows elsewhere began the month at, to slightly below, normal. Flow changes were similar to October. There were several large precipitation events that brought flows well above normal. Along the Pere Marquette River at Scottsville flows peaked at 700 CFS on the 11th. This however was the high point as flows declined with only mild rises later in November. The Pere Marquette at Scottville ended the month at 73% of normal with flows at 520 CFS.

All rivers and streams saw some rise around the 10th and the 11th and around the 22nd of November. This was due to precipitation on the 8th and the evening of the 20th into the 21st respectively. No flooding occurred.

The area received below normal precipitation overall with Grand Rapids receiving almost 1.5 inches below normal precipitation. There was enough precipitation that the Grand River at Grand Rapids remained above normal. Temperatures remained around normal overall with Muskegon and Kalamazoo actually with above normal temperatures.

Flood Stage Report

No forecast points exceeded flood stage during the month. Thus, the NWS Form E-3 “Flood Stage Report” was not issued.

River Conditions

The end of November percentage of normal flow for selected rivers is listed below:

Location	River	% of Normal
Scottville	Pere Marquette	73
Whitehall	White	81
Evart	Muskegon	71
Mt. Pleasant	Chippewa	86
Lansing	Grand	82
Grand Rapids	Grand	107
East Lansing	Red Cedar	144
Hastings	Thornapple	96
Battle Creek	Battle Creek	100
Battle Creek	Kalamazoo	81

General Hydrologic Information

November precipitation amounts for Grand Rapids, Lansing, and Muskegon Michigan were 1.67, 2.04 and 2.24 inches, respectively (Figure 1). Monthly departures were -1.43, -0.42 and -0.68 inches respectively. Yearly departures through November 30th 2023 are -2.07, 3.15 and -1.98 inches for Grand Rapids, Lansing and Muskegon, respectively. Percent of mean precipitation for November 2023 is shown in Figure 2. Temperatures for the month of November were near normal at Grand Rapids, Lansing and Muskegon. The monthly average temperature departures for these sites were -0.3, -0.4 and +0.8 Fahrenheit, respectively.

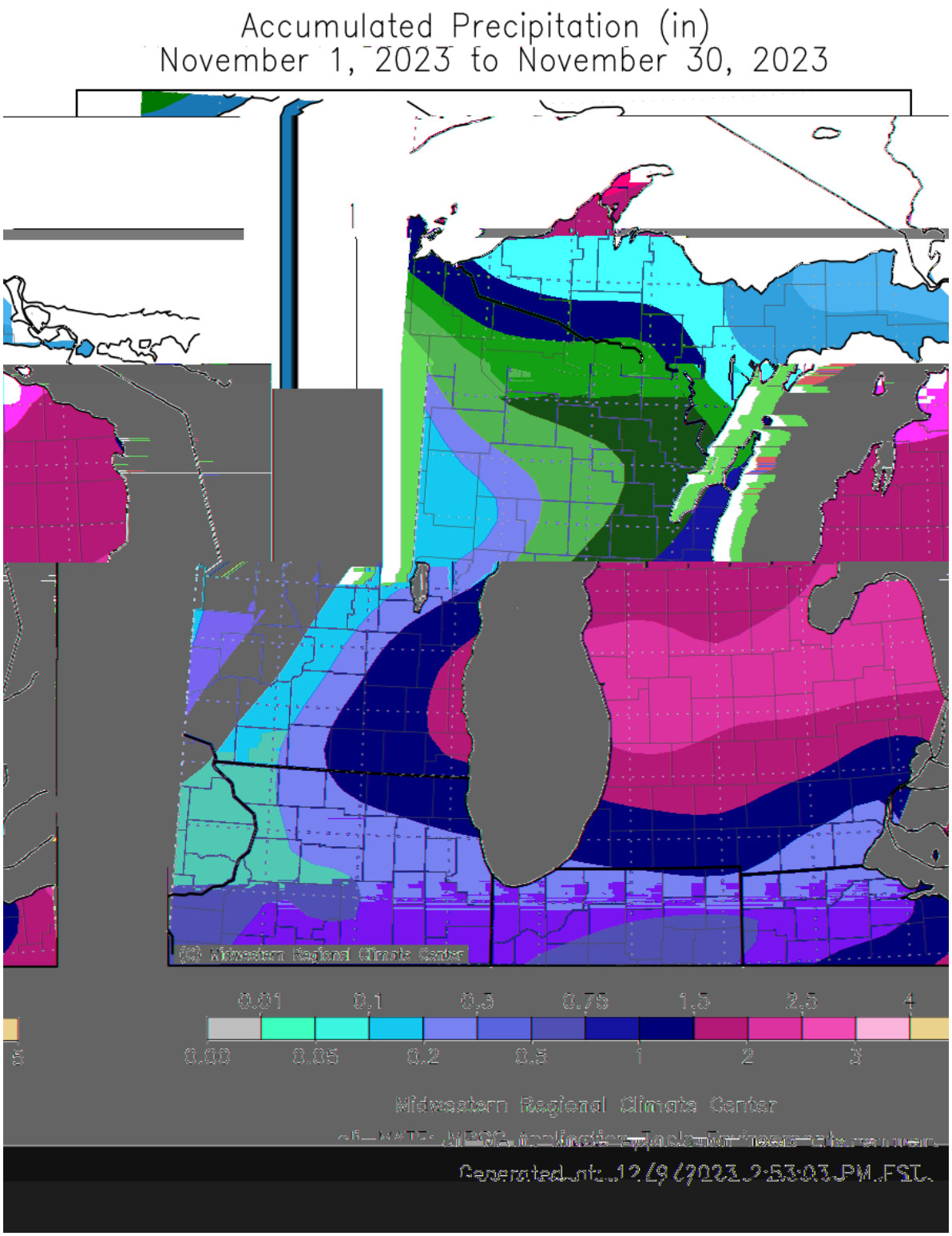

Figure 1 November 2023 Monthly Precipitation Totals.

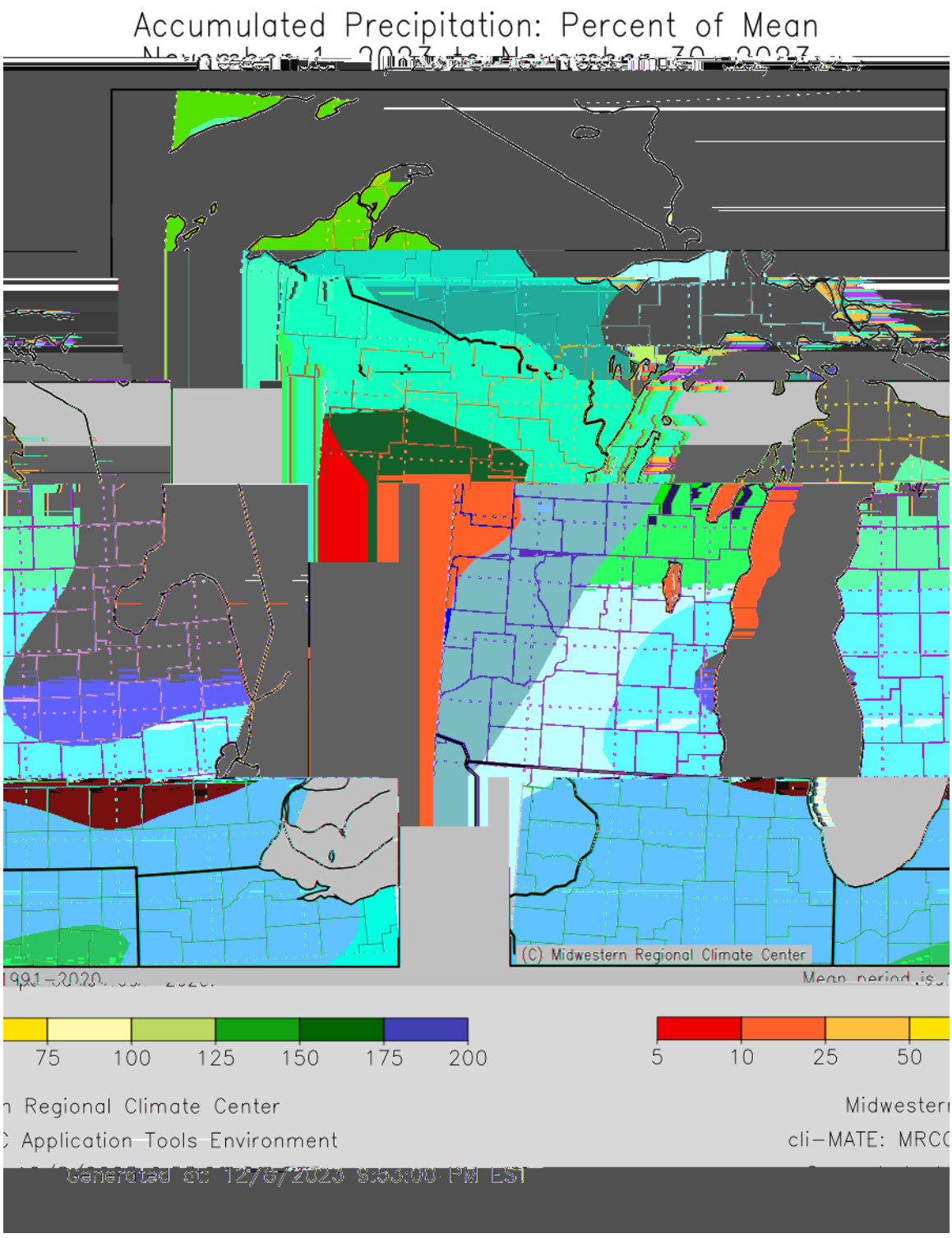

Figure 2. November 2023 Percent of Mean of Accumulated Precipitation.

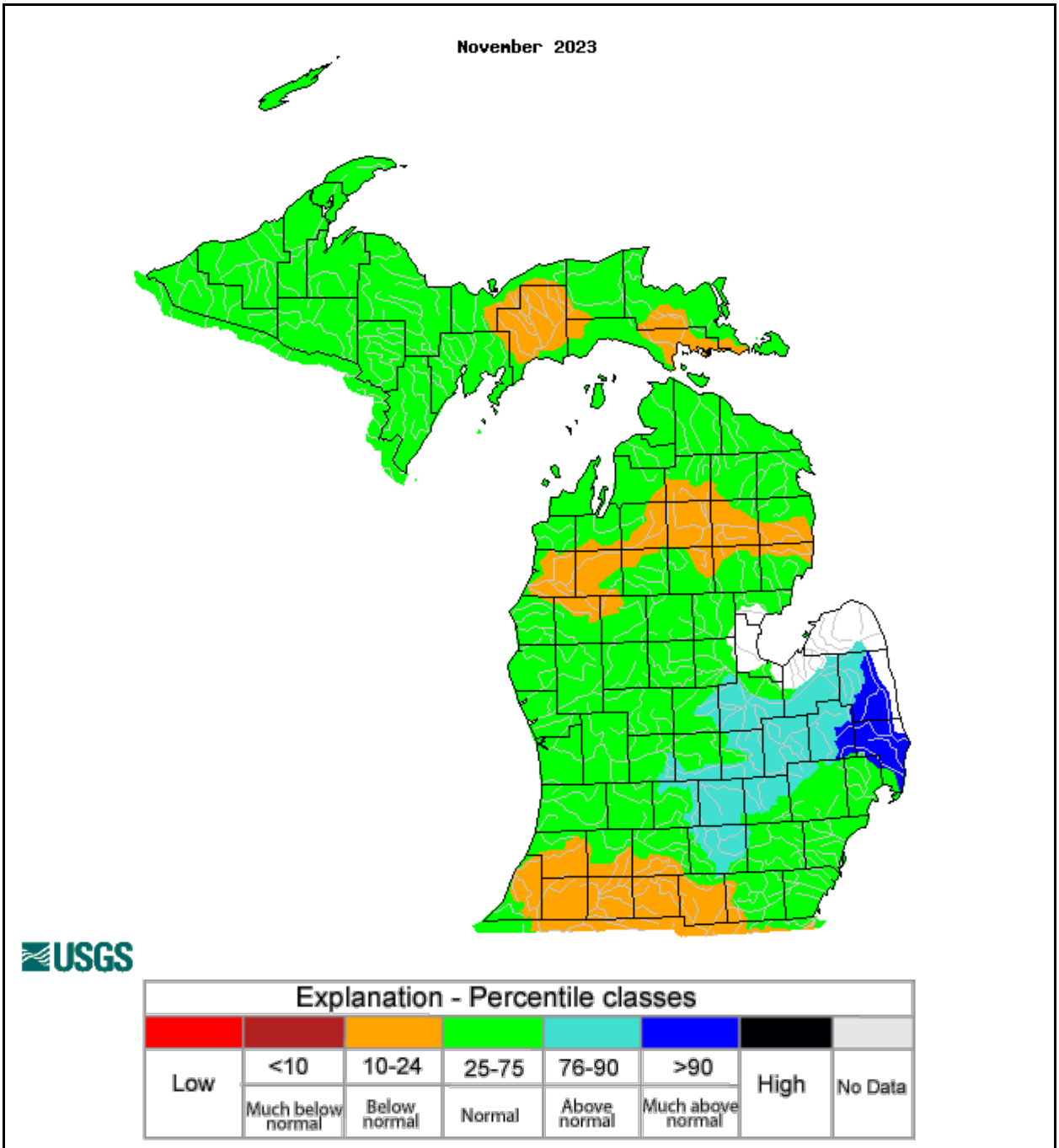

Figure 3. USGS monthly streamflow for November, grouped by significant hydrologic units Much of northern lower Michigan remains below normal. Several basins through central and eastern Michigan are much above normal to high.

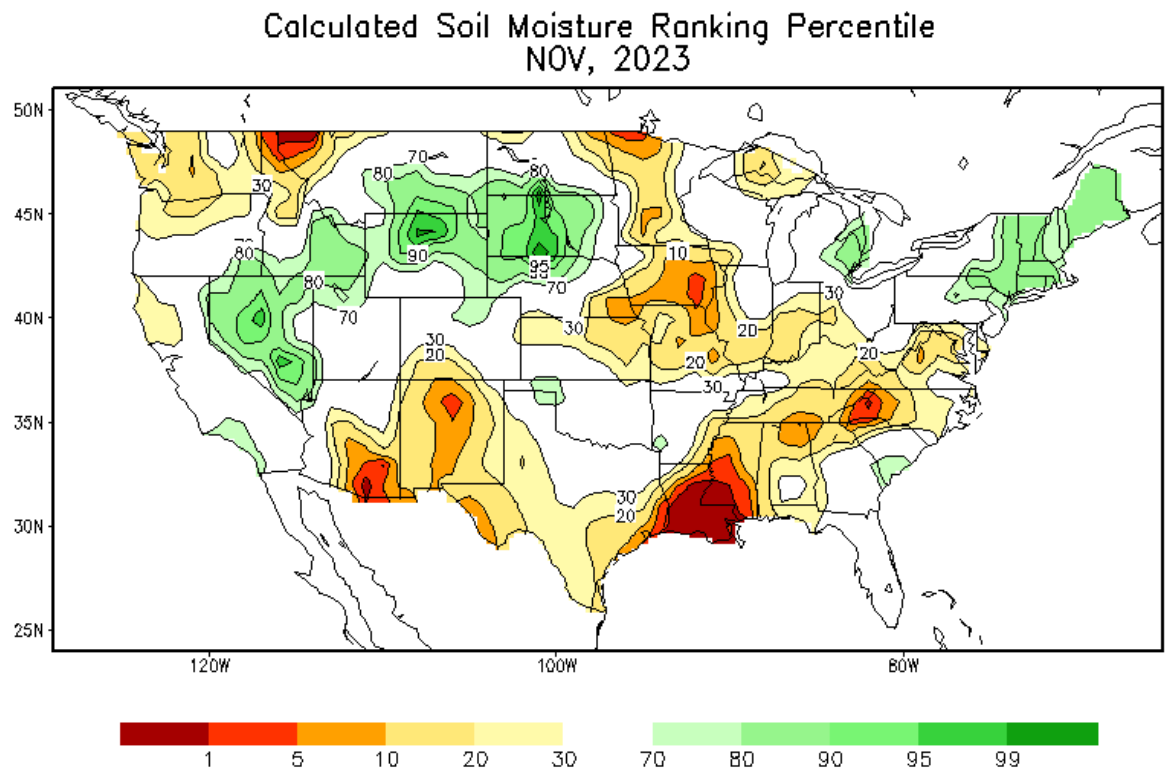

Figure 4.Calculated Soil Moisture Percentile for November, 2023. This supports conditions becoming more normal through much of lower Michigan.

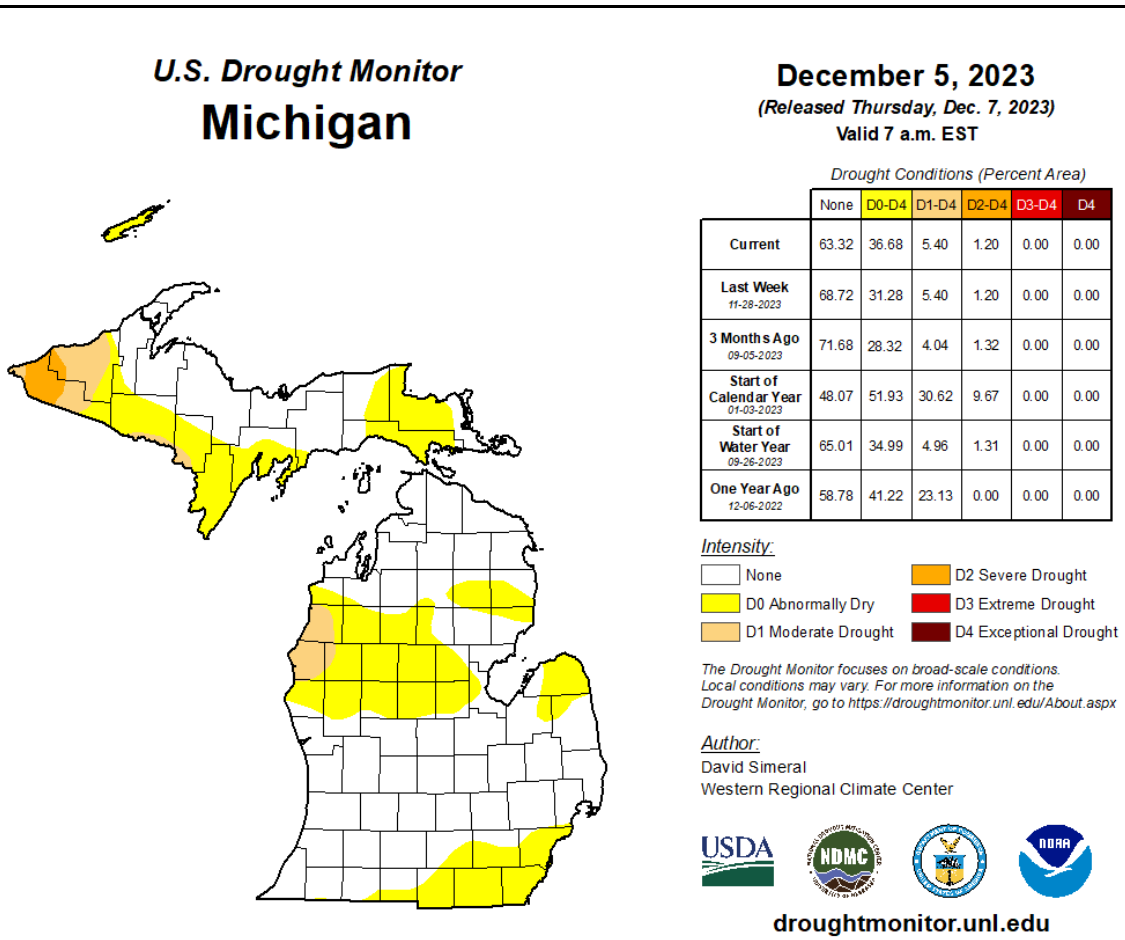

Figure 5.U.S. Drought Monitor showing moderate drought through west central Michigan and a reduction in the drought through the rest of lower Michigan.

Hydrologic Products issued this month

31 Hydrologic Summaries (ARBRVAGRR)
0 Probabilistic Hydrologic Outlook (ARBESFGRR)
0 Event-driven Hydrologic Outlook (ARBESFGRR1)
0 Areal Flood Advisory Statements (ARBFLSGRR)
0 Flood Warning Statements (ARBFLWGRR)
0 Flood Watch Statements (ARBFFAGRR)
0 River Statements (ARBRVSGRR)

News Articles and Related Documentation