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): **December 2024**
TO:	NATIONAL WEATHER SERVICE (W/OS31) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 13468 SILVER SPRING, MD 20910	DATE: January 15th,, 2024
		SIGNATURE: Bruce Smith MIC Andrew Dixon, Service Hydrologist 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

December 2024 began with a thunder-snow squall event that brought 40 to 60 mph winds across southern lower Michigan. There were snowfall events that peppered the month overall, but the month would have ended with below normal precipitation if not for a rainfall event on the 29th that brought record rainfall to multiple locations. That brought river flows up to normal ranges. However, even with that rainfall the month ended with much of the state in a moderate drought.

Flood Conditions

The Grand, White, St. Joseph and Muskegon rivers began the month with below normal flows, in the 10-25% range. The Kalamazoo River was an anomaly as it began the month in the 25%-75% range. Many of the rivers broke in the 25-75% range for periods through the latter half of the month until the precipitation event on the 29th.

Record rainfall at Kalamazoo along with widespread rainfall throughout the surrounding areas on the 29th brought the Kalamazoo River Basin to normal flows overall. Flow at many river gauge sites, including the Kalamazoo River at Marshall brought Discharges into the 90% range ending the month at 617 CFS.

As had been the case in previous months, the Grand River basin mainstems overall ended the month below normal. There were several locations that due to the record rainfall were able to peak above normal. The Grand River at Grand Rapids ended the month near the top end of the normal flow range with 3,670 CFS.

The Muskegon River basin took advantage of the above normal precipitation. and ended the month above normal. The river response to the 29th event brought the

Muskegon into the 75-90% range with the Muskegon River near Croton, MI ending the month at 2,780 CFS.

While there were periods of snowfall and rainfall with some brief river responses, the bulk of the precipitation came from a record setting event on the 29th. Despite the rainfall, no flooding occurred. The flows by the end of the month ended well above normal flows, especially the Red Cedar Creek.

Overall, soils remain drier than normal (figure 4) for this time of year. The year ended with much of the lower peninsula in some form of drought condition.

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

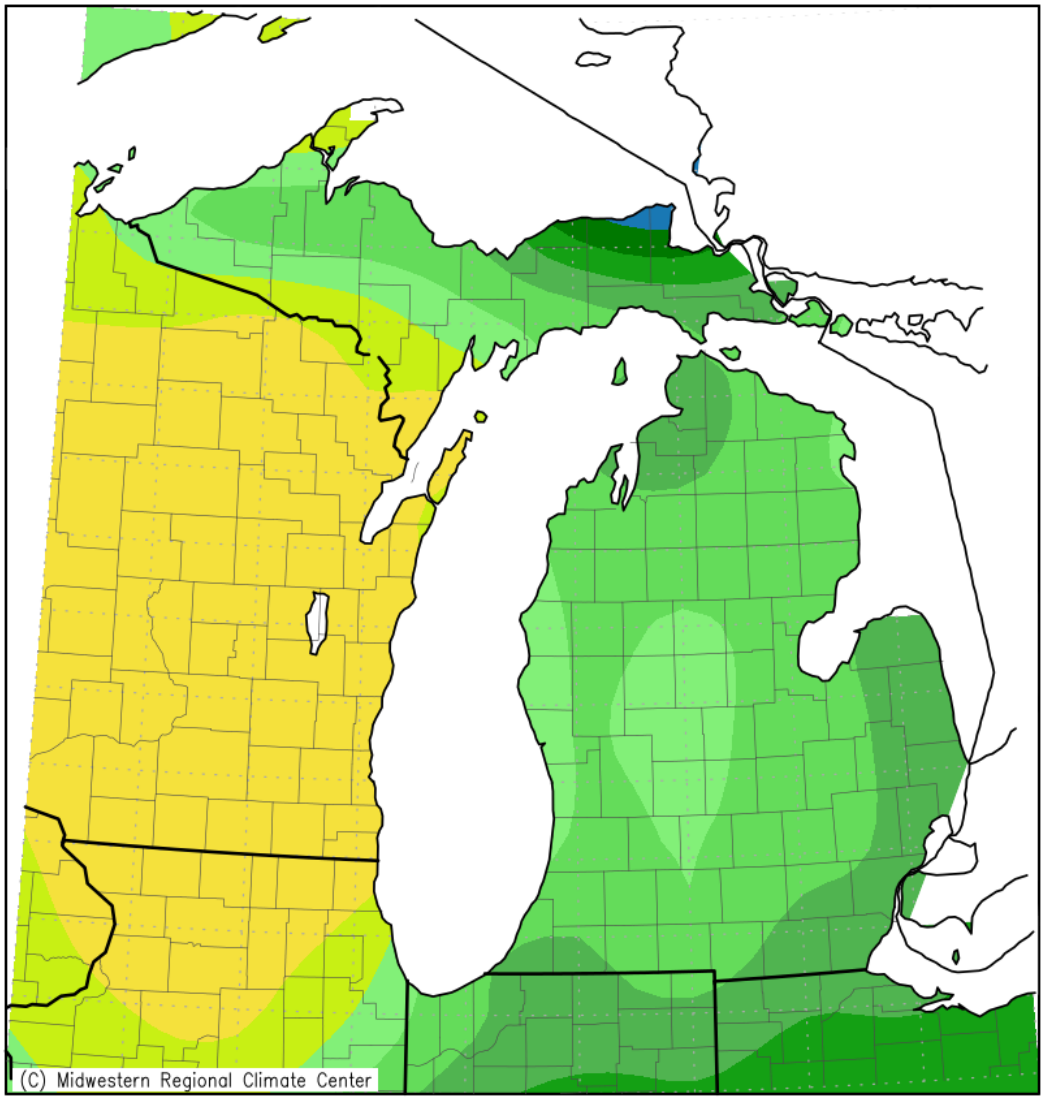
The end of December percentage of normal flow for selected rivers is listed below:

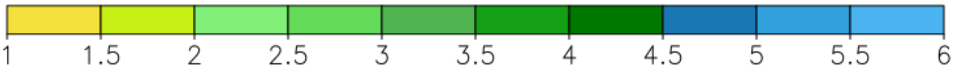
Location	River	% of Normal
Scottville	Pere Marquette	124
Whitehall	White	148
Evart	Muskegon	165
Mt. Pleasant	Chippewa	143
Lansing	Grand	263
Grand Rapids	Grand	144
East Lansing	Red Cedar	438
Hastings	Thornapple	179
Battle Creek	Battle Creek	156
Battle Creek	Kalamazoo	152

General Hydrologic Information

December precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 3.08, 2.78, and 2.63 inches, respectively (Figure 1). Monthly departures were +0.60, +0.88, and +0.21 inches, respectively. Yearly departures were -2.50, +0.96, and +0.49 inches for Grand Rapids, Lansing and Muskegon, respectively. Percent of mean precipitation for December 2024 is shown in Figure 2. Temperatures for the month of December at Grand Rapids, Lansing and Muskegon were warmer than average. The monthly average temperature departures for these sites were +0.9, +1.0, and +2.0 degrees Fahrenheit, respectively.

Accumulated Precipitation (in)
December 1, 2024 to December 31, 2024





Midwestern Regional Climate Center

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Figure 1. December 2024 Monthly Precipitation Totals. Widespread precipitation across Lower Michigan.

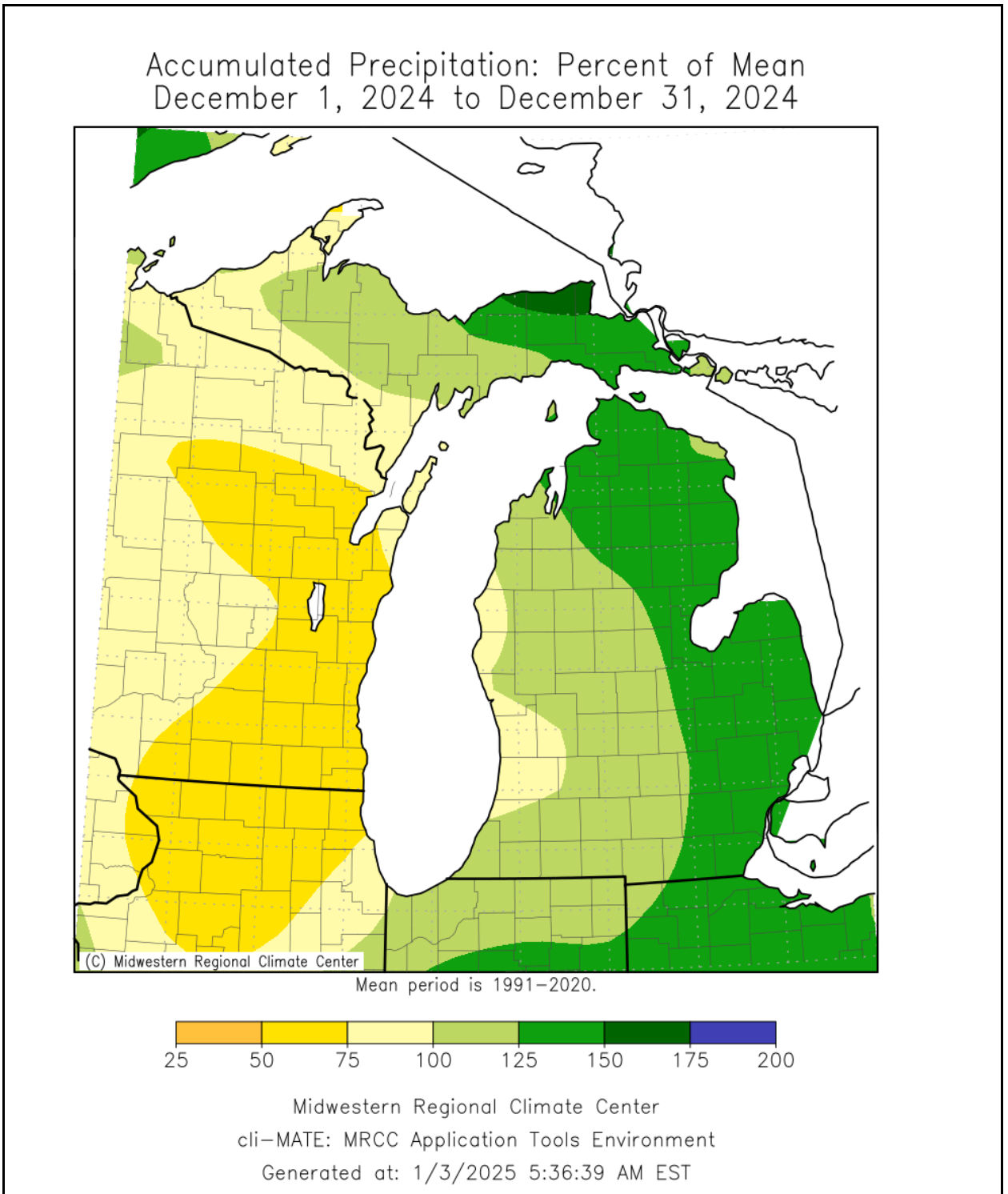

Figure 2.December 2024 Percent of Mean of Accumulated Precipitation.

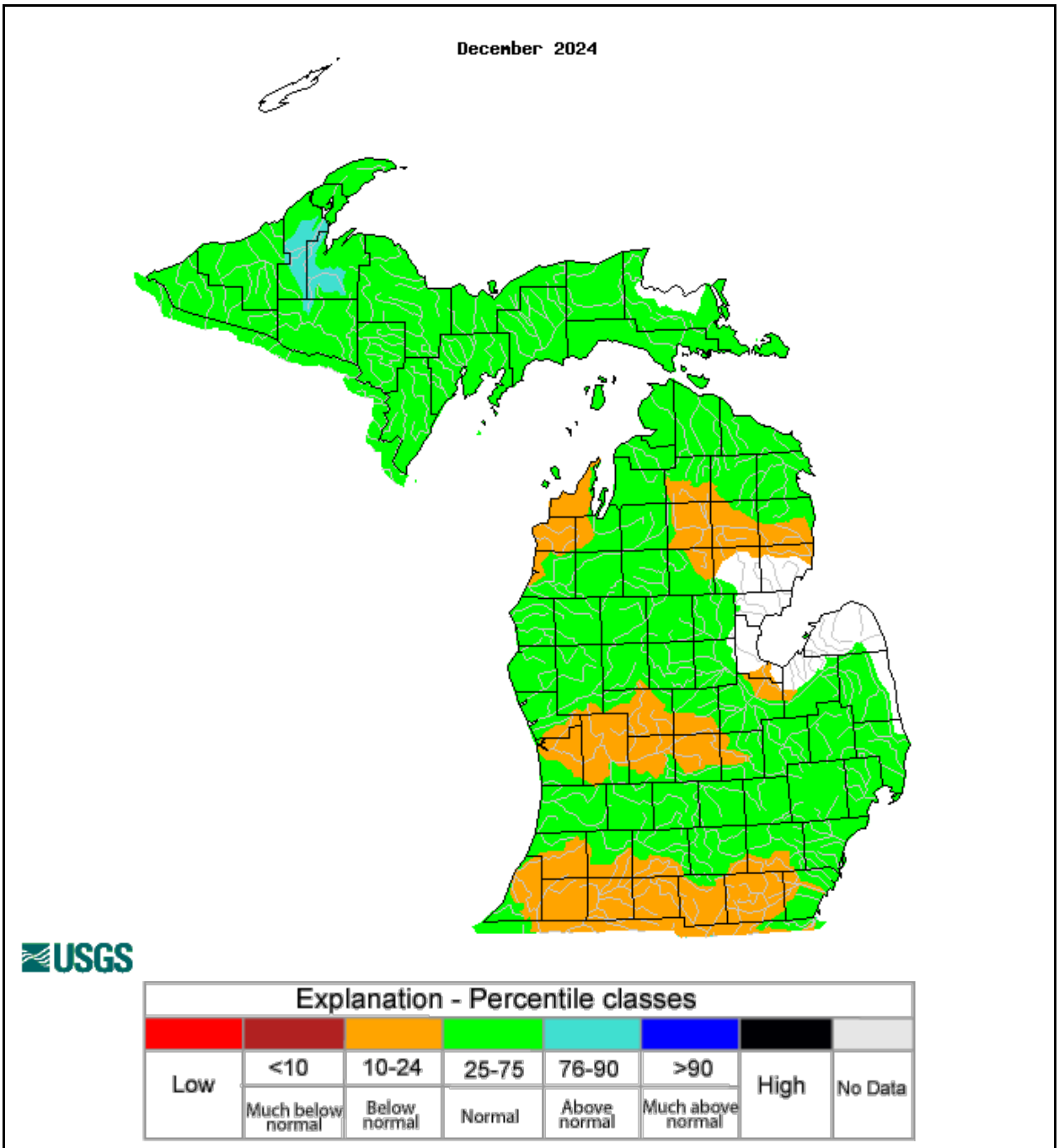

Figure 3. USGS monthly streamflow for December grouped by significant hydrologic units. River basins are at and below normal.

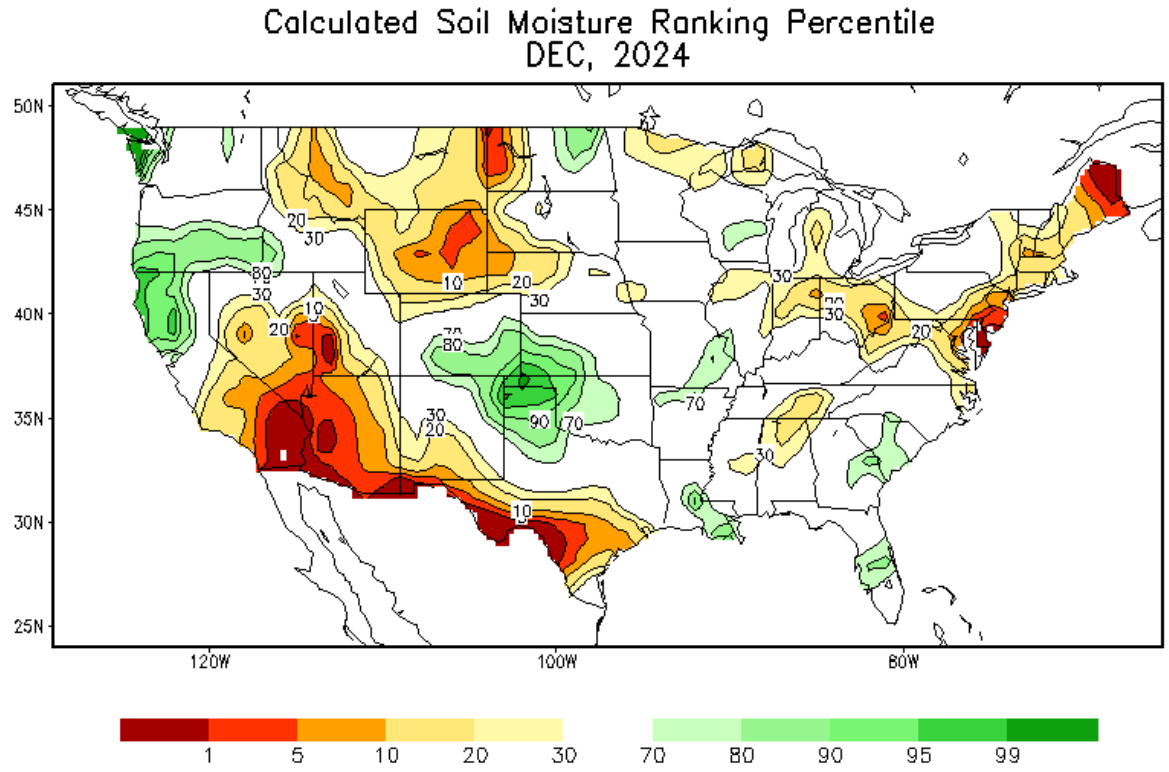

Figure 4.Calculated Soil Moisture Percentile for December, 2024. Soil moisture is at, to below, normal across southern lower Michigan.

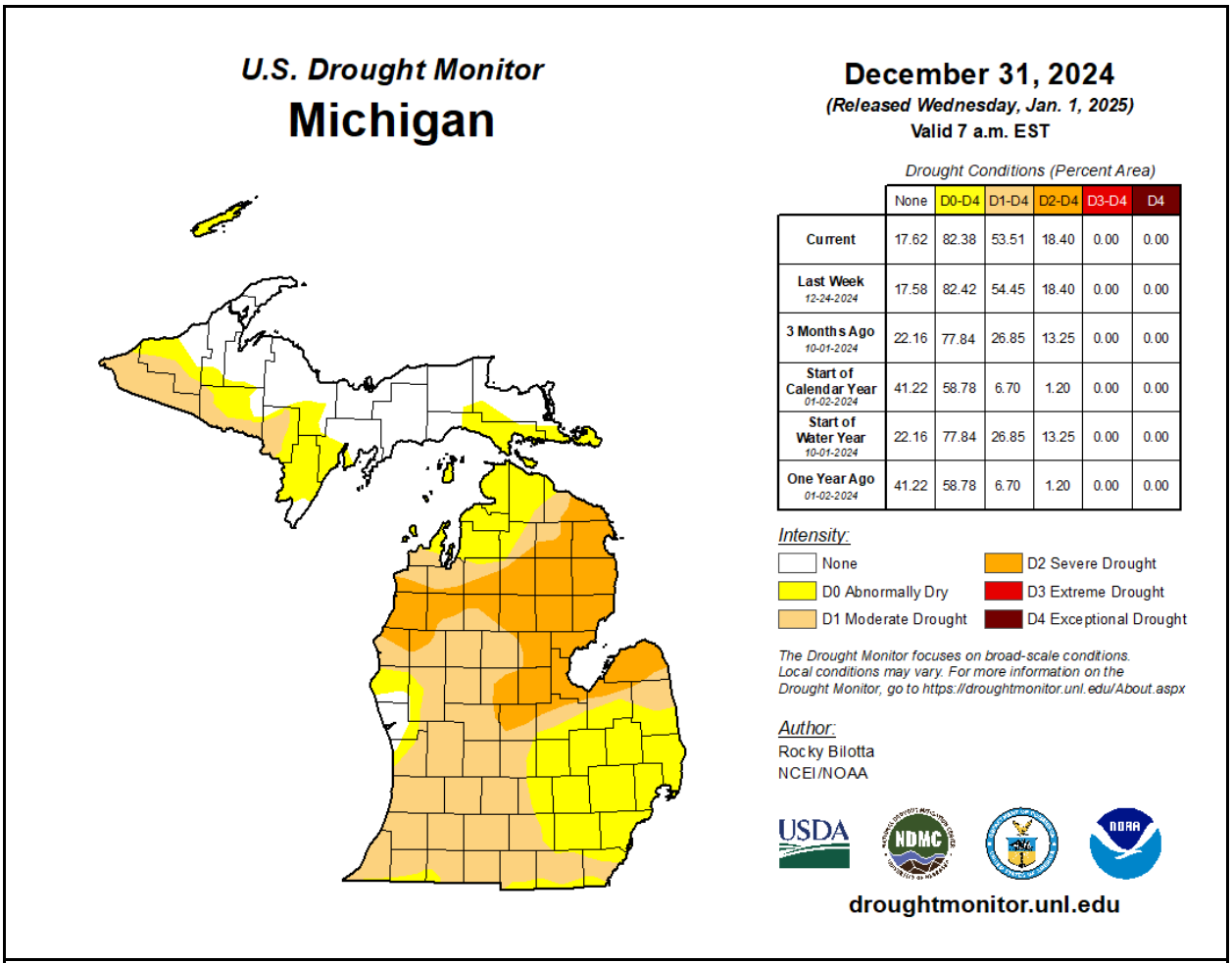

Figure 5.U.S. Drought Monitor effectively shows the moderate drought across Michigan.

Hydrologic Products issued this month

31 Hydrologic Summaries (ARBRVAGRR)
1 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