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): **September 2022**
TO:	NATIONAL WEATHER SERVICE (W/OS31) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 13468 SILVER SPRING, MD 20910	DATE: October 15, 2022
		SIGNATURE: Bruce Smith, MIC Andrew Dixon, Service Hydrologist

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

September 2022 began with a summery feel, with warm temperatures and several rounds of thunderstorms. As typically happens, these thunderstorms led to some areas of locally heavy rains, but nothing that affected the river systems in significant ways. A pair of flood advisories were issued during the first week of the month in both Clare County and also down in Barry County as several inches of rain fell in a few hours, leading to street flooding and other nuisance flooding issues. The 2nd half of the month saw a shift to a chillier and more typical fall weather pattern, with several rounds of rain showers moving through Lower Michigan (but none of them impactfully heavy).

Flood Conditions

September is the month when average water levels on the larger river systems begin to rise for the year. However, this year saw the opposite trend. Water levels were elevated in August due to wetter than normal conditions, but with the return to below-average rainfall in September the river systems actually saw falling water levels compared to last month. Compared to long term average levels, though, water levels on all 3 of the main river systems in West Michigan were very close to normal for this time of year, spending almost the entire month between the 25th and 75th percentile values.

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 September percentage of normal flow for selected rivers is listed below:

Location	River	% of Normal
Scottville	Pere Marquette	111
Whitehall	White	107
Evart	Muskegon	99
Mt. Pleasant	Chippewa	100
Lansing	Grand	67
Grand Rapids	Grand	103
East Lansing	Red Cedar	102
Hastings	Thornapple	86
Battle Creek	Battle Creek	98
Battle Creek	Kalamazoo	99

General Hydrologic Information

September precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 1.30, 2.17, and 2.57 inches, respectively (Figure 1). Monthly departures were -2.13, -0.64, and -0.69 inches, respectively. Yearly departures were -0.89, +1.83 and -0.86 inches for Grand Rapids, Lansing and Muskegon, respectively. Percent of mean precipitation for September 2022 is shown in Figure 2.

Temperatures for the month of September at Grand Rapids, Lansing and Muskegon were generally warmer than normal. The monthly average temperature departures for these sites were +0.2, +1.7, and +1.8 degrees Fahrenheit, respectively.

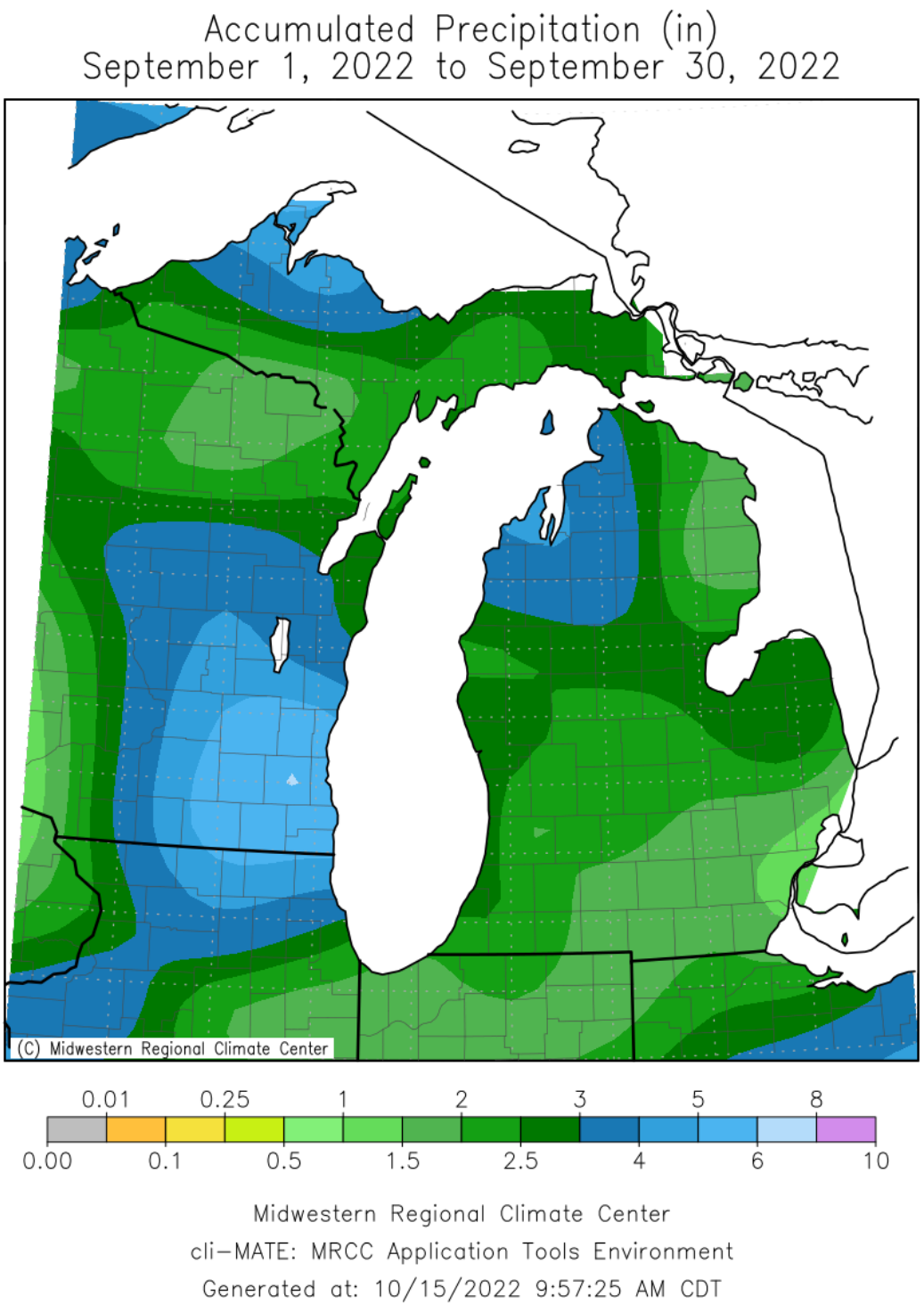

Figure 1. September 2022 Monthly Precipitation Totals.

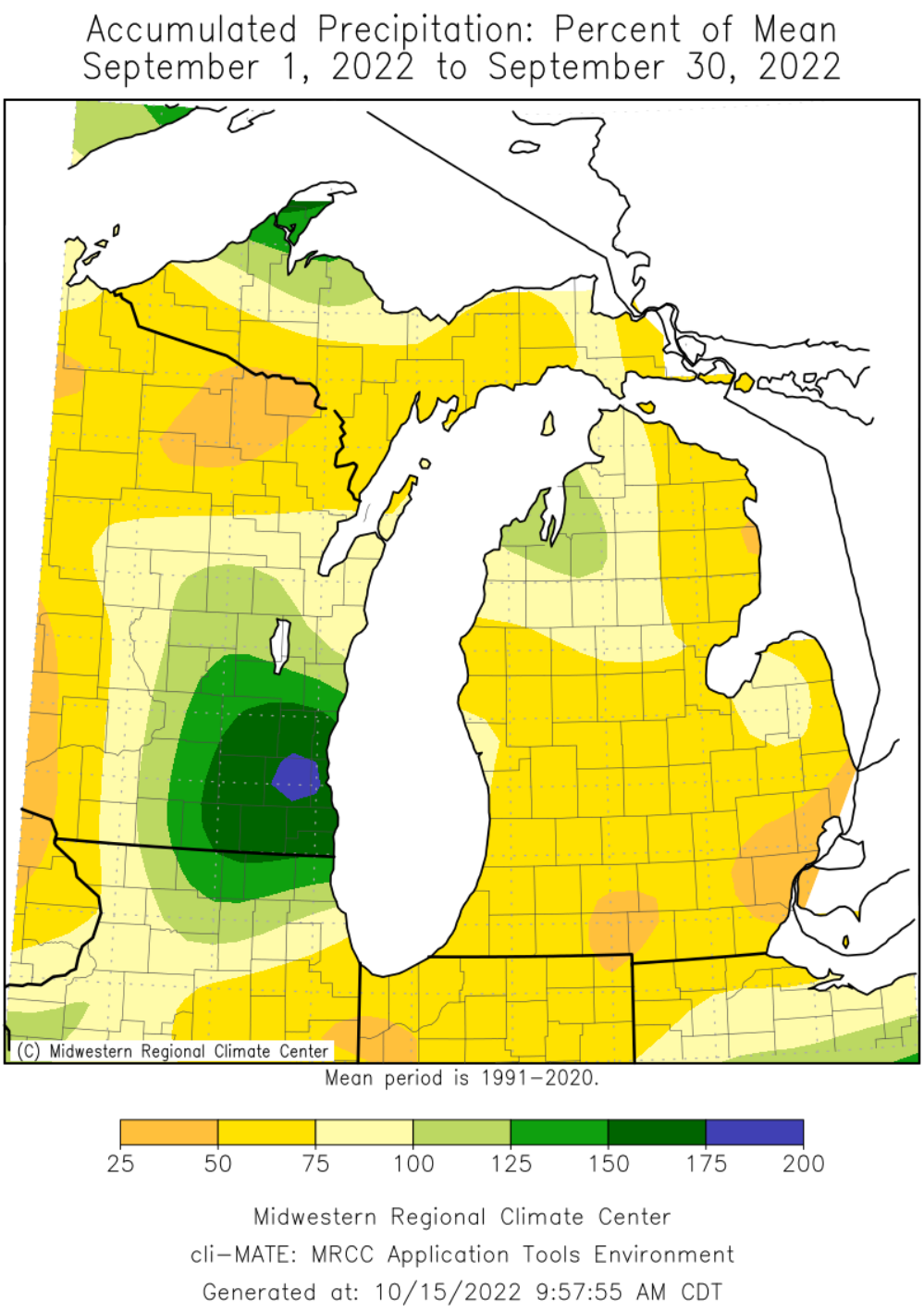

Figure 2. September 2022 Percent of Mean of Accumulated Precipitation.

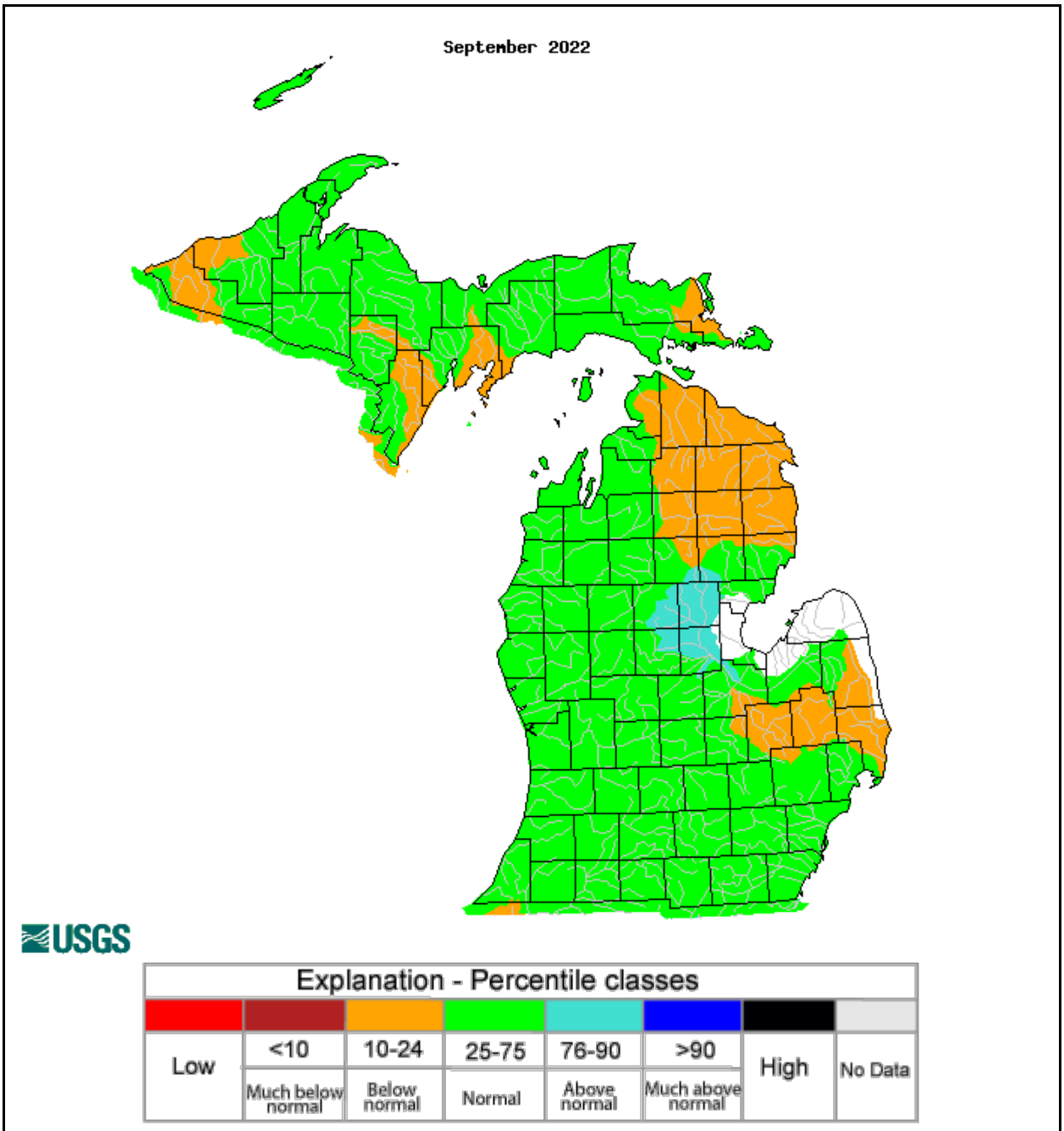

Figure 3. USGS monthly average streamflow for September, grouped by significant hydrologic units. Note streamflows within a typical range across most of Lower Michigan for this time of year.

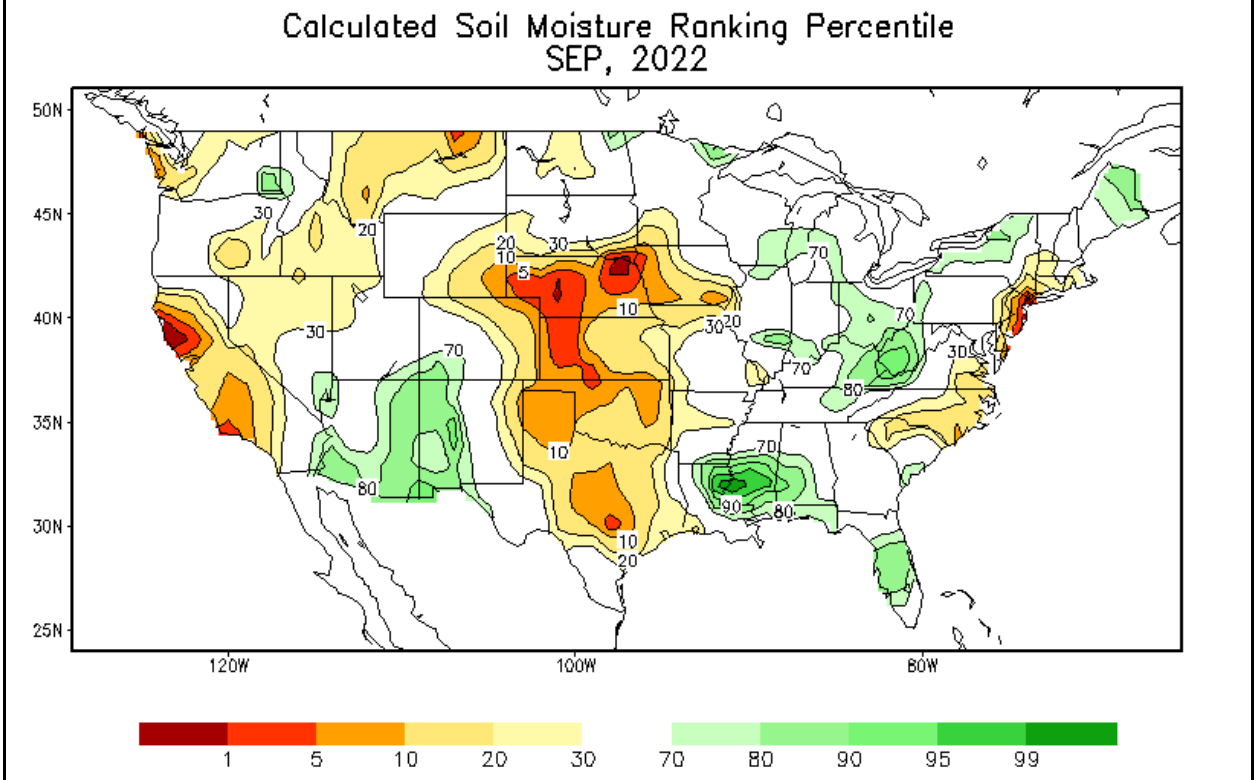

Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

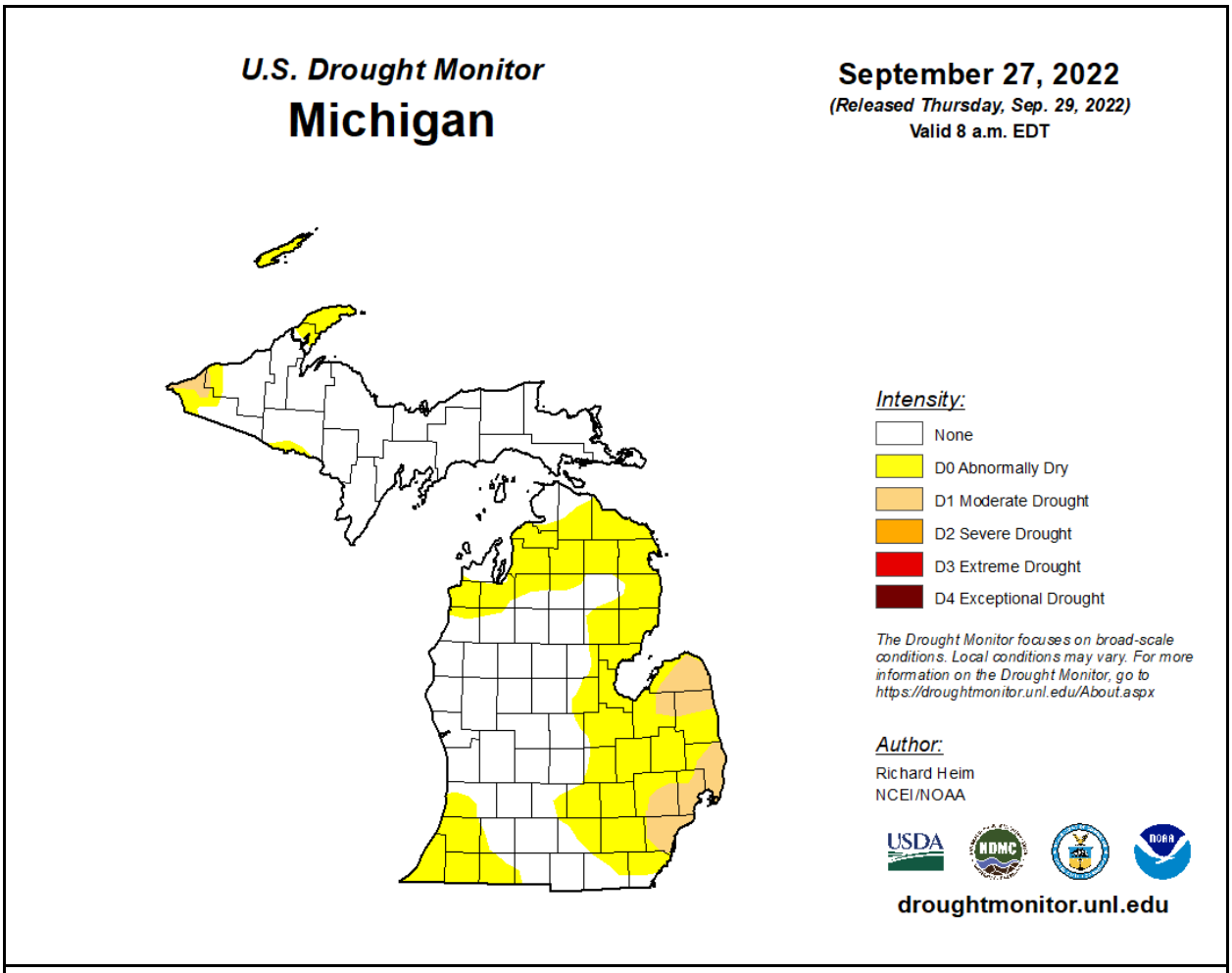

Figure 5. U.S. Drought Monitor showing fairly typical fall conditions across Lower Michigan, with some drier-than-normal areas primarily over eastern Lower Michigan as of the end of September.

Hydrologic Products issued this month

30 Hydrologic Summaries (ARBRVAGRR)
1 Probabilistic Hydrologic Outlook (ARBESFGRR)
0 Event-driven Hydrologic Outlook (ARBESFGRR)
30 Daily River Forecasts (ARBRVDGRR)
2 Areal Flood Advisory Statements (ARBFLSGRR)
0 Flood Warning Statements (ARBFLWGRR)
0 Flood Watch Statements (ARBFFAGRR)
0 River Statements (ARBRVSGRR)

News Articles and Related Documentation

None