

**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):
July 2023

TO: NATIONAL WEATHER SERVICE (W/OS31)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 13468
SILVER SPRING, MD 20910

DATE:
August 5th, 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).

An **X** inside this box indicates that no flooding occurred within this hydrologic service area.

Summary

July 2023 was in stark contrast to June. Grand Rapids was the 14th wettest July on record, Lansing was 8th wettest July on record and Muskegon had the 16th wettest July on record. These were an inch or more than normal. River flows were above normal and while the drought continues through northern lower, the drought status was improved through most of southern lower Michigan.

Flood Conditions

The month began with below normal flow and quickly rose to above normal flow and continued to be well above normal flow for the month. There were several peaks throughout the month which corresponded with the several major precipitation events. The month started off with several wet days. The next event was showers and storms that caused some minor urban and small stream flooding on the 12th with a stripe of 2 to almost 5 inches of rainfall across Lower central Michigan. That event, along with rainfall of almost an inch in subsequent days, led to the highest return values along the Grand River for the month. With peak flow at Grand Rapids of 5500 cfs it was 276% above normal. However, no river flooding occurred. River levels then fell over the next 10 days.

The next major event occurred on the 26th with urban and small stream flooding occurring in Muskegon. Rivers responded but none reached flood stage. Rivers almost across the board had well above normal returns except the Muskegon river.

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

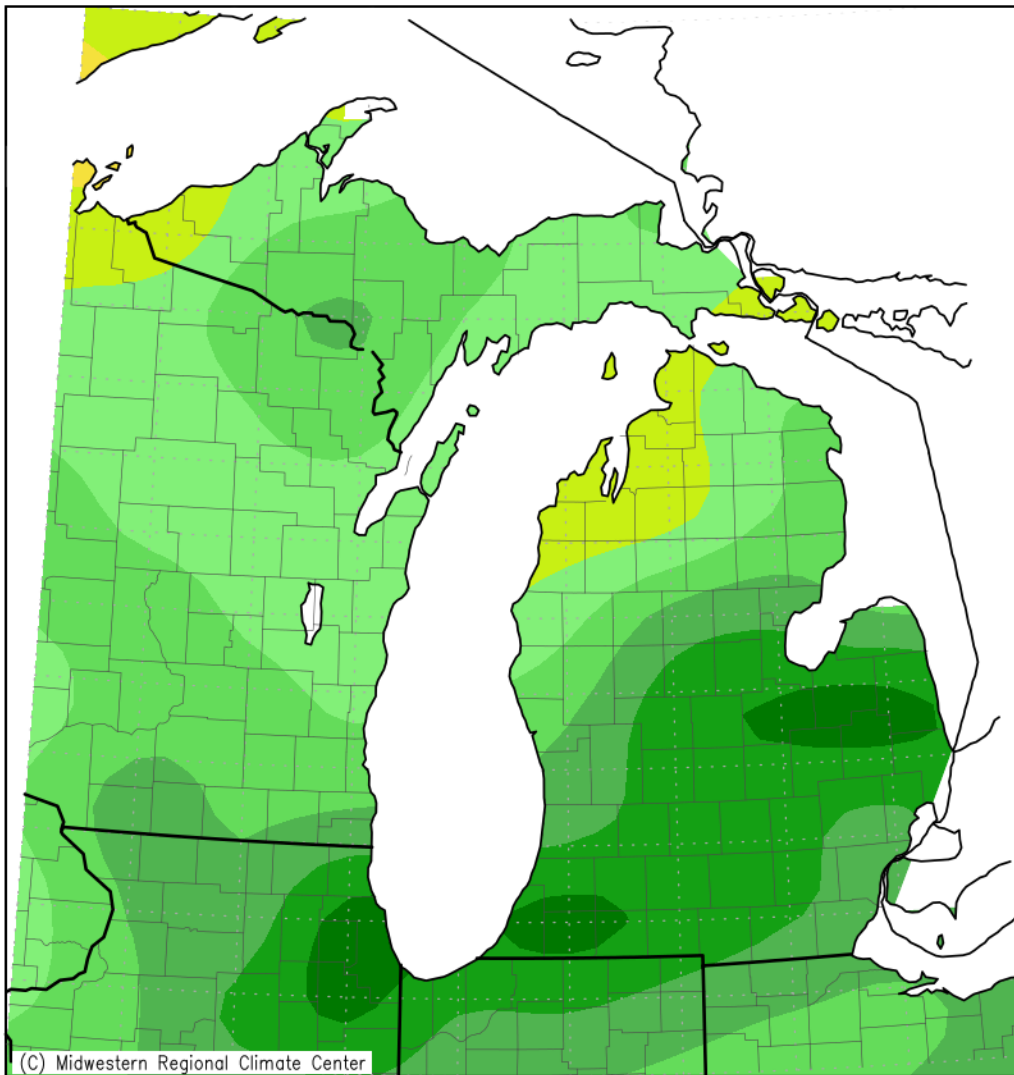
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	128
Whitehall	White	138
Ewart	Muskegon	84
Mt. Pleasant	Chippewa	156
Lansing	Grand	135
Grand Rapids	Grand	183
East Lansing	Red Cedar	340
Hastings	Thornapple	175
Battle Creek	Battle Creek	128
Battle Creek	Kalamazoo	176

General Hydrologic Information

July precipitation amounts for Grand Rapids, Lansing, and Muskegon Michigan were 5.77, 6.24, and 4.07 inches, respectively (Figure 1). Monthly departures were 1.91, 3.3, and 1.32 inches respectively. Yearly departures were 3.65, 3.08, 0.62 inches for Grand Rapids, Lansing and Muskegon, respectively. Percent of mean precipitation for July 2023 is shown in Figure 2.

Temperatures for the month of July at Grand Rapids, Lansing and Muskegon were right around normal with Grand Rapids just below normal and Lansing and Muskegon being just above normal. The monthly average temperature departures for these sites were -0.9, +1.0, and +0.6 degrees Fahrenheit, respectively.

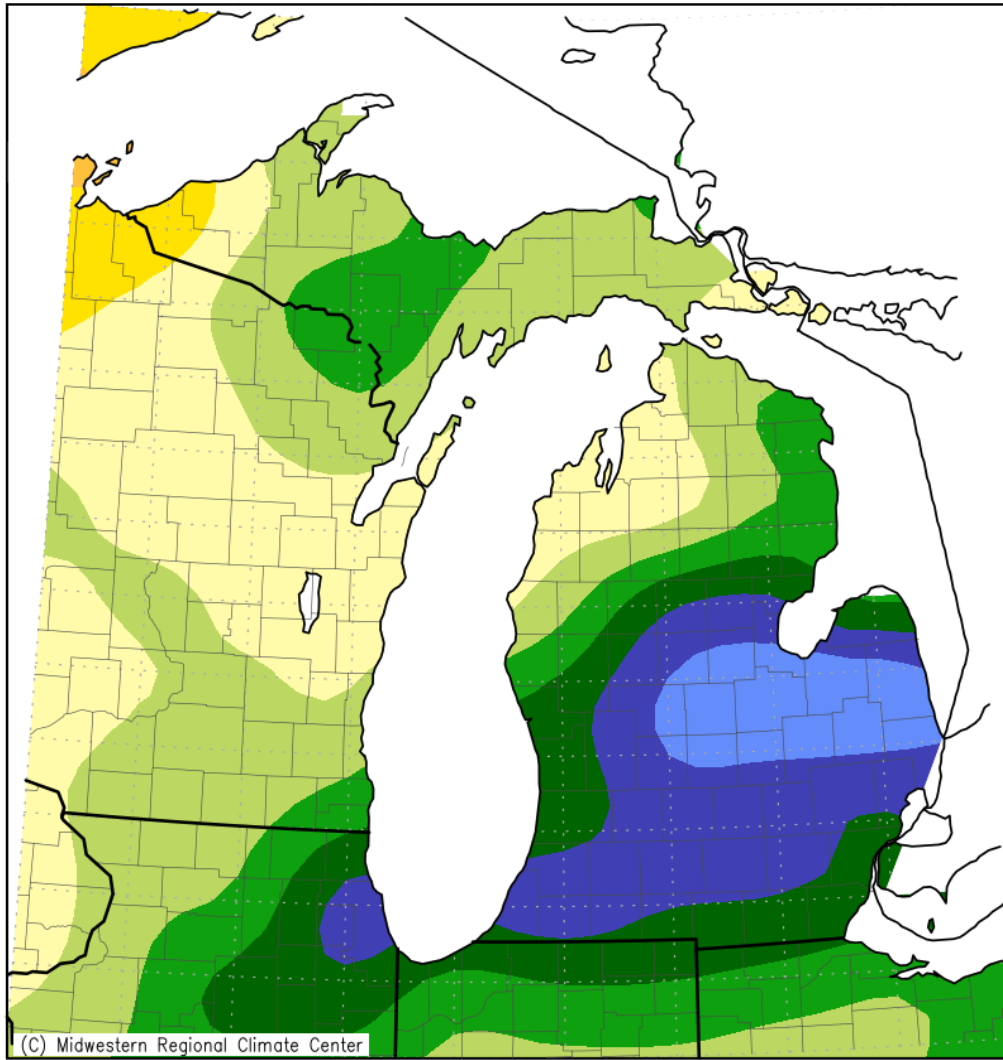
Accumulated Precipitation (in)
July 1, 2023 to July 31, 2023



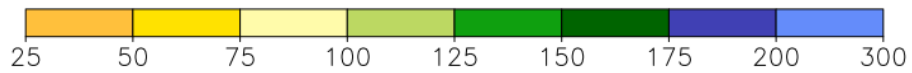
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 8/2/2023 10:16:52 PM CDT

Figure 1. July 2023 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
July 1, 2023 to July 31, 2023



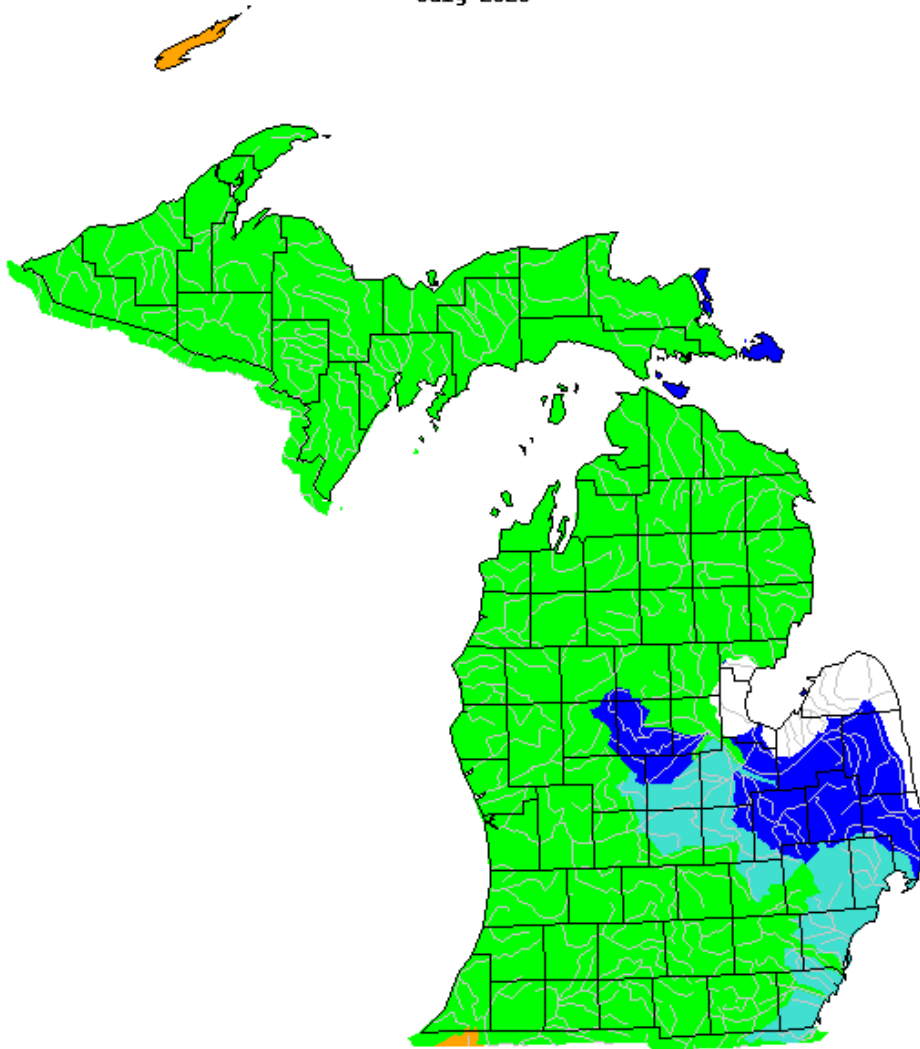
Mean period is 1991–2020.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 8/2/2023 10:11:23 PM CDT

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

July 2023



Explanation - Percentile classes								
Low	<10	10-24	25-75	76-90	>90	High	No Data	
	Much below normal	Below normal	Normal	Above normal	Much above normal			

Figure 3. USGS monthly streamflow for July, grouped by significant hydrologic units. Note streamflows for the Grand River watershed are around normal for this time of year. Much of northern lower Michigan remains around normal. Several basins through central and eastern Michigan are much above normal.

Calculated Soil Moisture Ranking Percentile
JUL, 2023

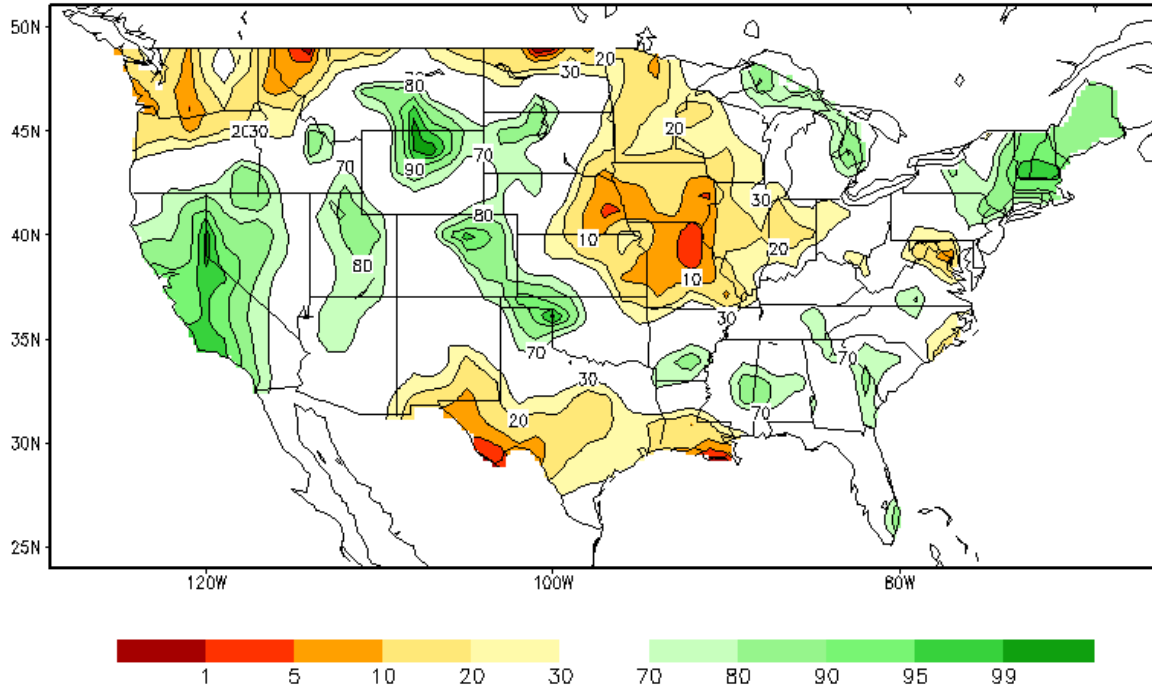
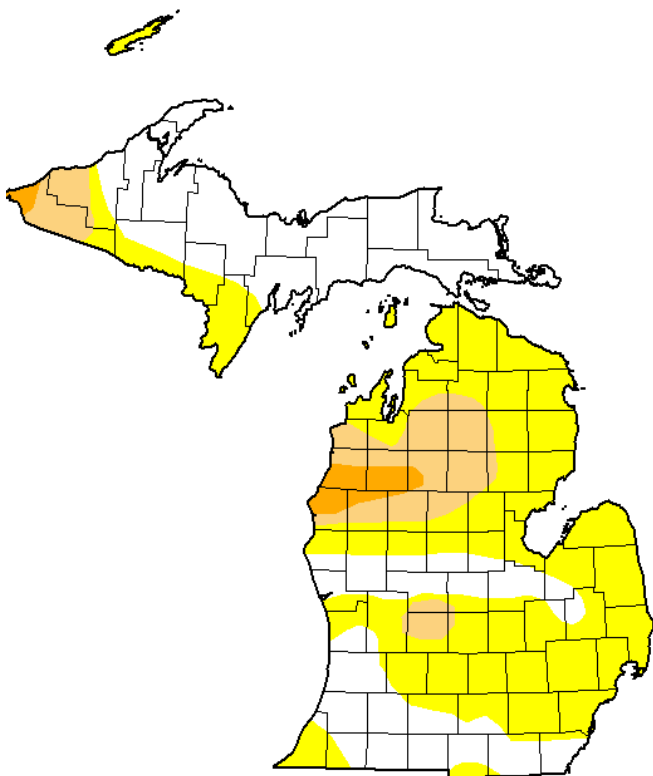


Figure 4. Calculated Soil Moisture Percentile for July, 2023. This supports conditions becoming more normal through much of lower Michigan.

U.S. Drought Monitor Michigan

August 1, 2023
(Released Thursday, Aug. 3, 2023)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.18	61.82	13.95	2.58	0.00	0.00
Last Week <i>07-25-2023</i>	16.92	83.08	19.37	2.59	0.00	0.00
3 Months Ago <i>05-02-2023</i>	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year <i>01-03-2023</i>	48.07	51.93	30.62	9.67	0.00	0.00
Start of Water Year <i>09-27-2022</i>	59.10	40.90	5.76	0.00	0.00	0.00
One Year Ago <i>08-02-2022</i>	51.57	48.43	13.05	0.00	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>

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droughtmonitor.unl.edu

Figure 5. U.S. Drought Monitor showing severe drought through northern lower Michigan and a reduction in the drought through southern lower Michigan.

Hydrologic Products issued this month

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

News Articles and Related Documentation

[Flooding in Muskegon July 26th, 2023](#)