

**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):
June 2023

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

DATE:
July 14th, 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

June 2023 was in the top 10 driest for multiple climate sites. It was 3rd driest for Muskegon and 4th for Lansing. The drought continued to worsen. Precipitation continued to be well below normal with Muskegon, Lansing and Grand Rapids over 2 inches below normal in precipitation. However, for the year, those sites are still above normal. It was the 11th warmest June at Muskegon. Overall temperatures were near normal.

Flood Conditions

The month began with below normal flow and flows continued to drop through most of the month as precipitation events through two thirds of the month were fairly light. The heaviest precipitation events came towards the end of the month. One event was from the 25th, to the 26th. The heaviest rain event occurred on the 29th. There was no river flooding. There were several advisories and one flood warning issued due to heavy rainfall. The Muskegon River was brought to just below action stage at multiple sites but no forecast points exceeded flood stage. The flows along the Kalamazoo, the Grand River and the Muskegon were well below the median flow for most of the month. With the rainfall events towards the end of the month, it brought flows higher but still ended the month in or slightly below the 25th percentile at most rivers. The exceptions were the northern rivers and streams which in some cases came close or reached normal and in the case of the White river exceeded normal. The hot and dry conditions continued through June and continued to worsen the drought.

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:

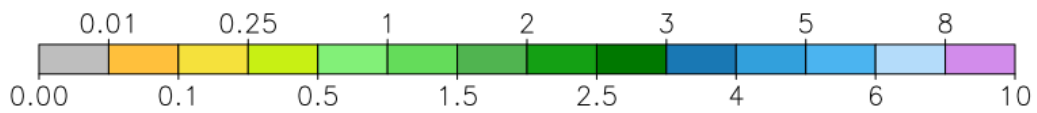
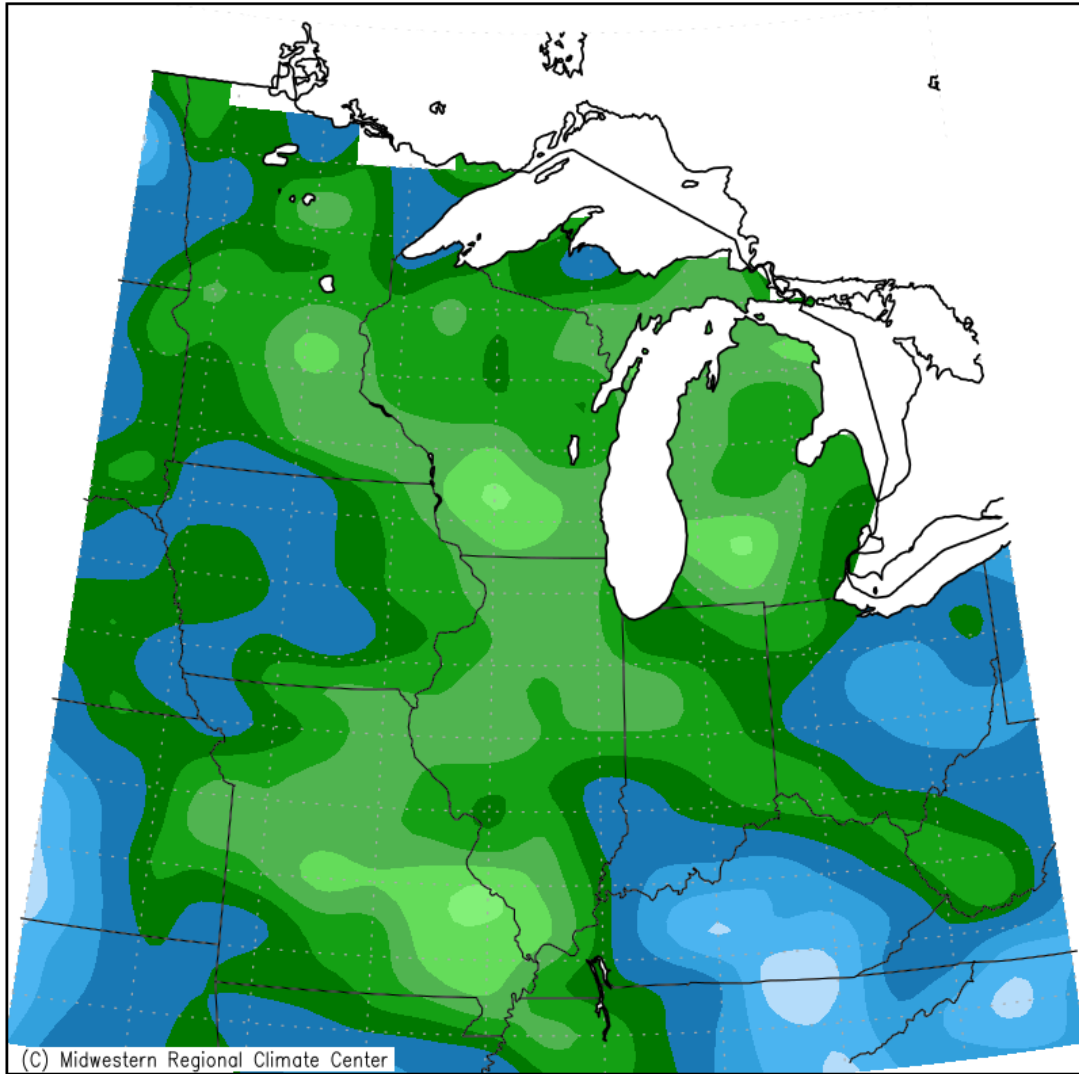
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	91
Whitehall	White	144
Ewart	Muskegon	70
Mt. Pleasant	Chippewa	100
Lansing	Grand	34
Grand Rapids	Grand	73
East Lansing	Red Cedar	75
Hastings	Thornapple	63
Battle Creek	Battle Creek	62
Battle Creek	Kalamazoo	64

General Hydrologic Information

June precipitation amounts for Grand Rapids, Lansing, and Muskegon Michigan were 1.69, 0.89, and 0.58 inches, respectively (Figure 1). Monthly departures were -2.25, -2.87, and -2.47 inches respectively. Yearly departures were +1.03, +0.31 and +0.99 inches for Grand Rapids, Lansing and Muskegon, respectively. Percent of mean precipitation for May 2023 is shown in Figure 2.

Temperatures for the month of June at Grand Rapids, Lansing and Muskegon were near or slightly warmer than average. The monthly average temperature departures for these sites were -0.1, +0.8, and +1.5 degrees Fahrenheit, respectively.

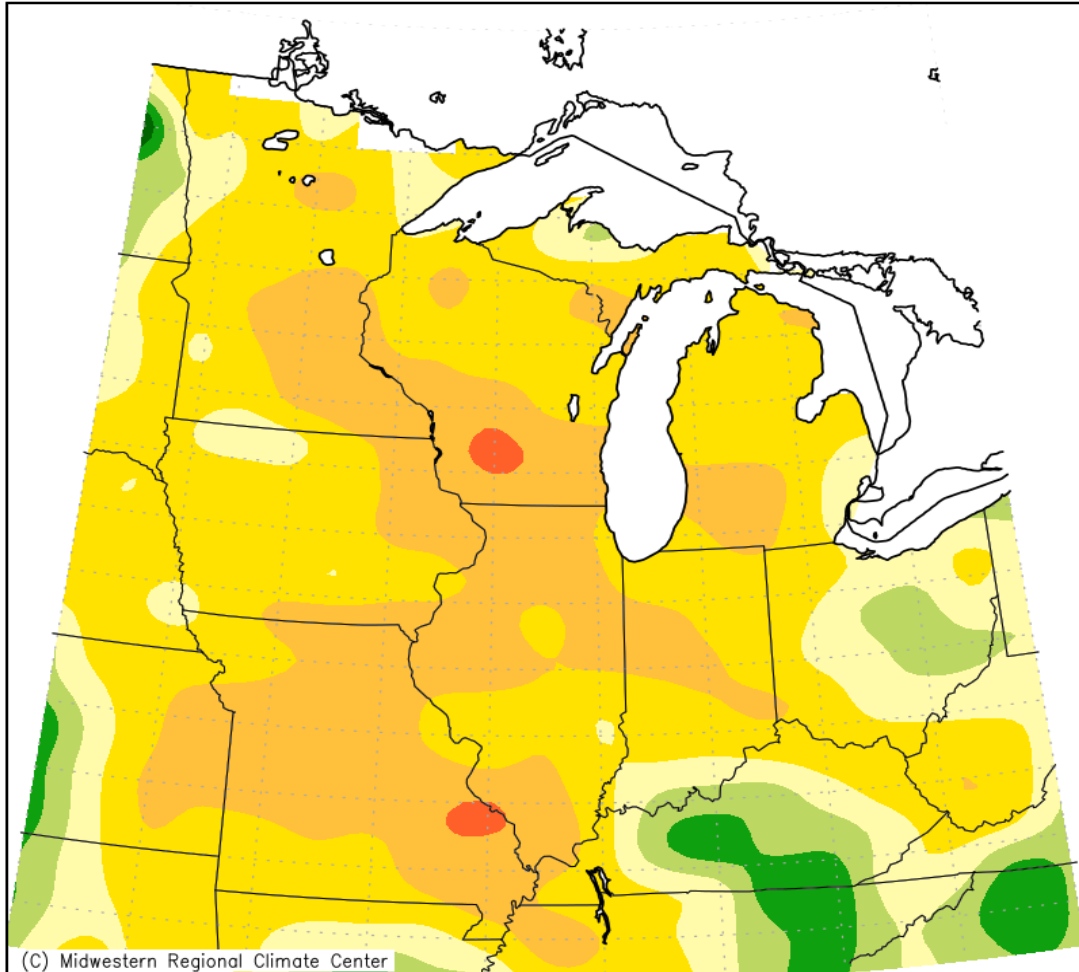
Accumulated Precipitation (in)
June 1, 2023 to June 30, 2023



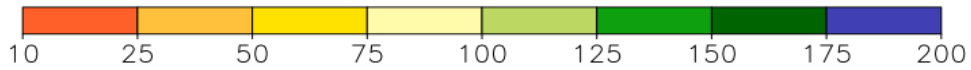
Midwestern Regional Climate Center
Purdue University

Figure 1. June 2023 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
June 1, 2023 to June 30, 2023



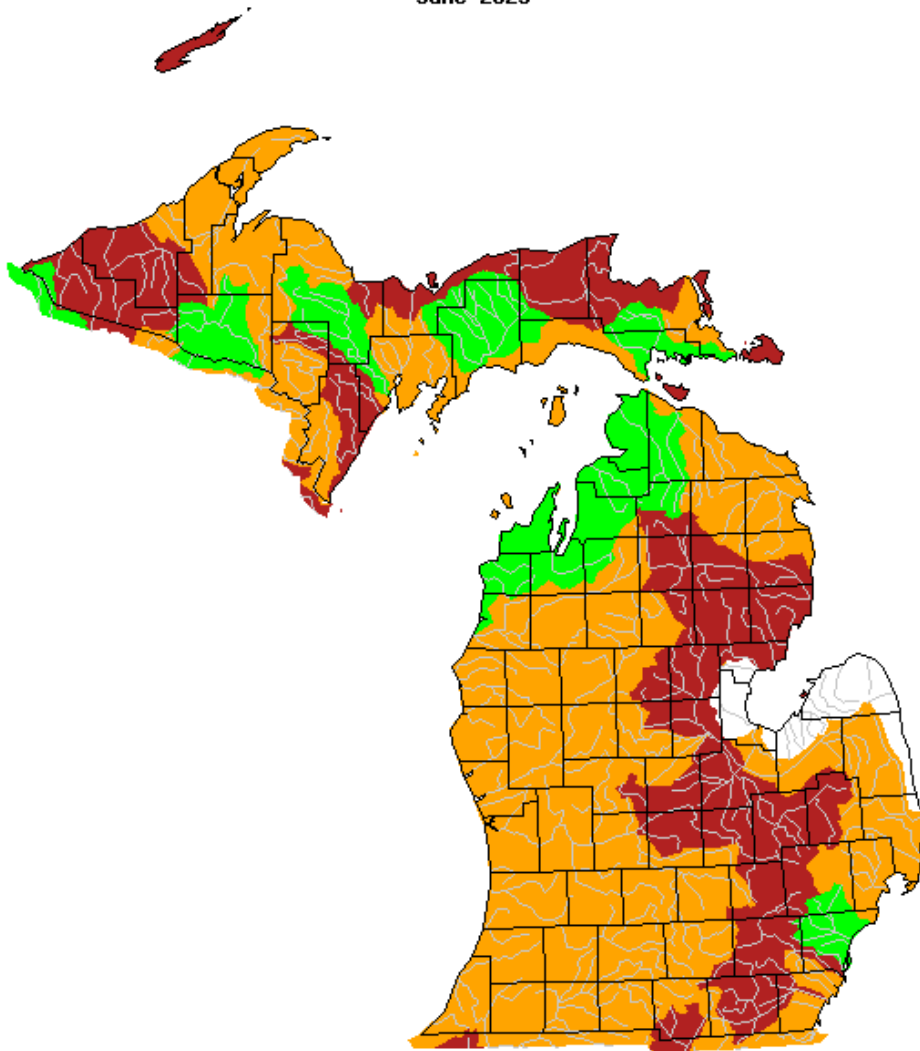
Mean period is 1991–2020.



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Purdue University

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

June 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 June, 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.

Calculated Soil Moisture Ranking Percentile
JUN, 2023

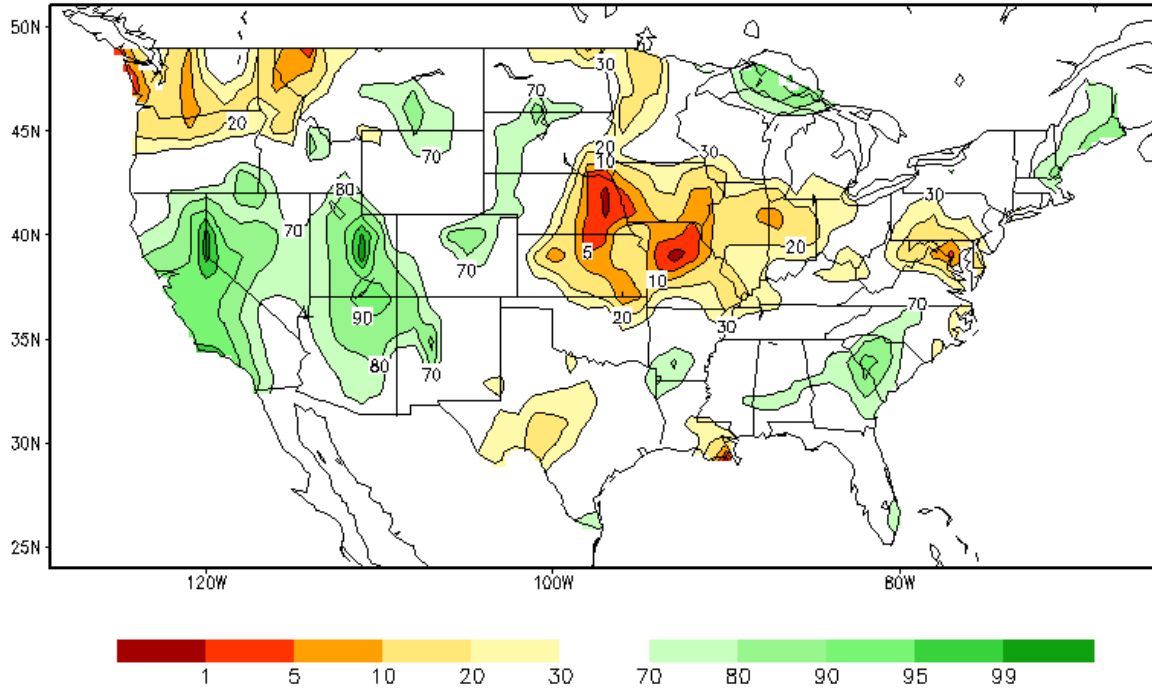


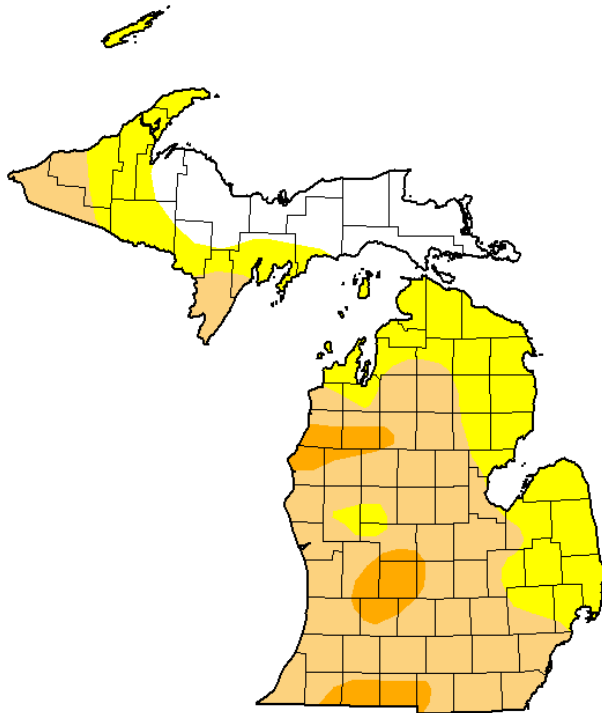
Figure 4. Calculated Soil Moisture Percentile for June, 2023. This supports the drying conditions beginning to occur through the southern half of the Lower peninsula of Michigan.

U.S. Drought Monitor Michigan

July 11, 2023

(Released Thursday, Jul. 13, 2023)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	14.64	85.36	52.69	6.92	0.00	0.00
Last Week 07-04-2023	14.71	85.29	50.79	6.92	0.00	0.00
3 Months Ago 04-11-2023	97.44	2.56	0.00	0.00	0.00	0.00
Start of Calendar Year 01-03-2023	48.07	51.93	30.62	9.67	0.00	0.00
Start of Water Year 09-27-2022	59.10	40.90	5.76	0.00	0.00	0.00
One Year Ago 07-12-2022	60.12	39.88	2.37	0.00	0.00	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate 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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CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu

Figure 5. U.S. Drought Monitor showing widespread moderate drought with several areas of severe drought

Hydrologic Products issued this month

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

News Articles and Related Documentation

[Drought conditions worsen](#)

[Drought Conditions will worsen in June](#)

[Drought Conditions rapidly expand](#)