

NWS **U.S. Department of Commerce**
FORM NOAA, NATIONAL WEATHER SERVICE
E-5

HSA OFFICE:
Grand Rapids, MI

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

REPORT FOR
(MONTH & YEAR):
March 2024

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

DATE:
April 15th, 2024

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

March 2024 began the month with below normal flows. There were several precipitation events throughout the month. The biggest event brought some points to above action stage though no points reached flood stage. Precipitation was above normal for the month at the major climate sites yet all points ended the month with below normal flows. This is due to the lack of snowpack due to the mild winter.

Flood Conditions

Flows began the month around normal at most forecast points. There were several precipitation events through the month that caused rises along the rivers and streams through the month. The first was on the 5th to the 6th which brought over an inch of precipitation along the lakeshore and around three quarters of an inch elsewhere. That event brought rises to the rivers around a day later. The rivers had mostly recovered when the biggest rainfall event for the month occurred. That was on March 8th, 2024. That brought rises across the region. One of the biggest rises was at the forecast point at State Road near Zeeland on the Macatawa River. That gauge rose 6.75 ft between the 8th at 6:15 PM to 10.46 at 11:15 AM on the 9th. This took the point to above action stage. Several other small rivers rose to action stage, such as Rabbit River. Otherwise, there were slower, gradual rises along the Grand. None were close to flood stage.

Flows slowly fell through the second half of the month with several small rain events occurring through the middle of the month. Winter returned with 6.5 inches of snow at Grand Rapids, 5 inches at Lansing and 4.3 inches at Muskegon on the 22nd. The eventual melt that occurred over the next week caused minor rises along most rivers towards the end of the month. Flows ended around, to slightly above, where they began for the month. Overall The percentage of flow is below normal.

The major factor to lower flows to end the month, especially in regard to the percent of normal, is due to the lack of the winter snowpack and the lack of snowmelt. At Grand Rapids, through March, Snowfall totals were 28.1 inches below normal from October 2023 through March 2024. Spring flood risks will continue to be almost completely tied to future heavy rain events. Overall the flood risk is much lower than normal. Much of the eastern region of the state and portions of northern lower Michigan are in a D0 status and are abnormally dry.

Flood Stage Report

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

River Conditions

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

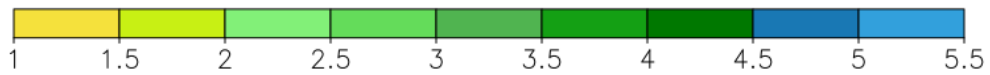
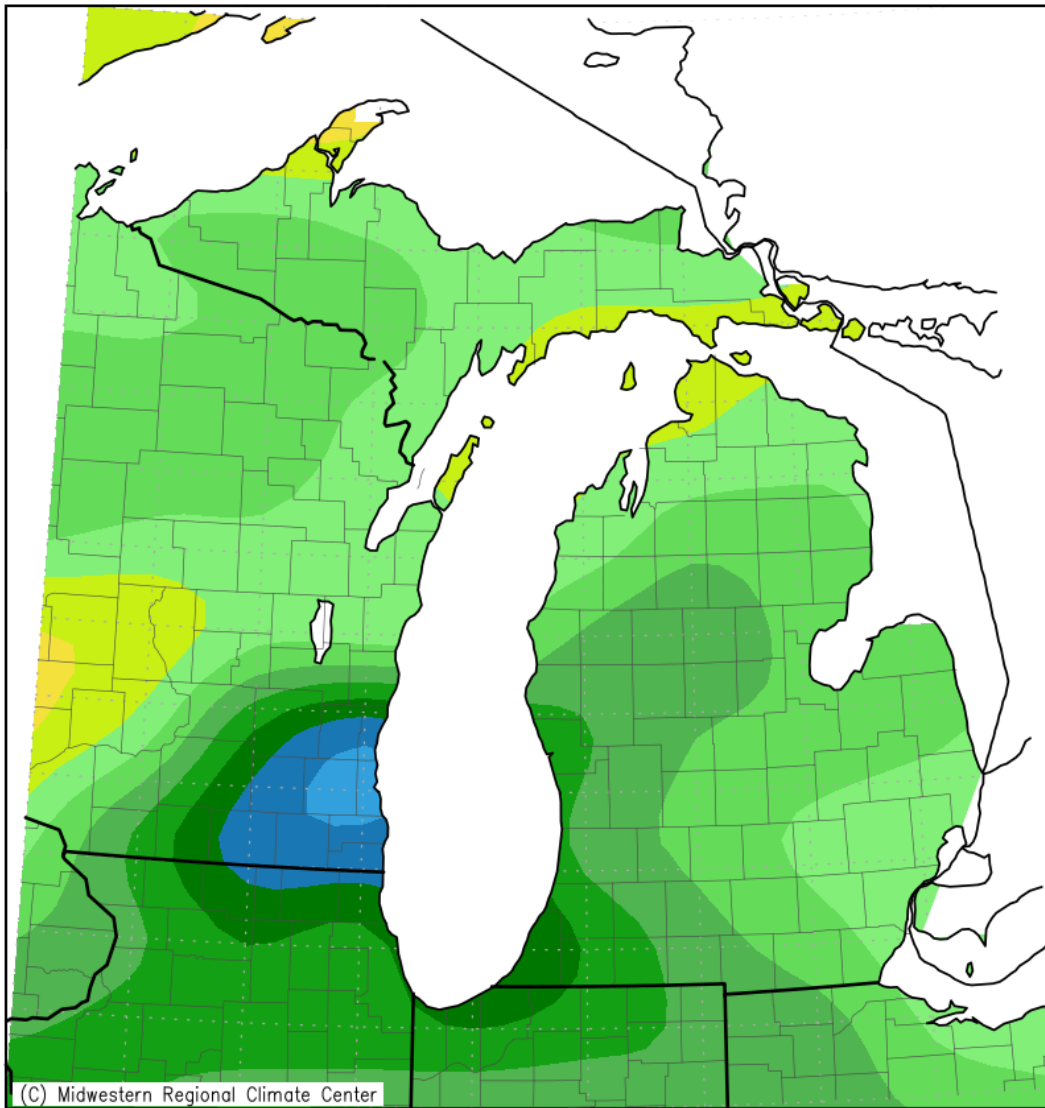
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	71
Whitehall	White	67
Evart	Muskegon	72
Mt. Pleasant	Chippewa	69
Lansing	Grand	55
Grand Rapids	Grand	68
East Lansing	Red Cedar	64
Hastings	Thornapple	65
Battle Creek	Battle Creek	85
Battle Creek	Kalamazoo	81

General Hydrologic Information

March precipitation amounts for Grand Rapids, Lansing, and Muskegon Michigan were 3.74, 2.45 and 4.04 inches, respectively (Figure 1). Monthly departures were +1.35, +0.32 and +1.64 inches respectively. Percent of mean precipitation for March 2024 is shown in Figure 2. Grand Rapids had 7.2 inches of snowfall total for the month, which is -0.4" below normal. Lansing had 5.9 inches of snowfall which is normal. Muskegon had 5.8 inches of snowfall which is 1.7 inches below normal

Temperatures for the month of March were above normal at Grand Rapids, Lansing and Muskegon. The monthly average temperature departures for these sites were +5.2, +5.3 and +6.0 Fahrenheit, respectively.

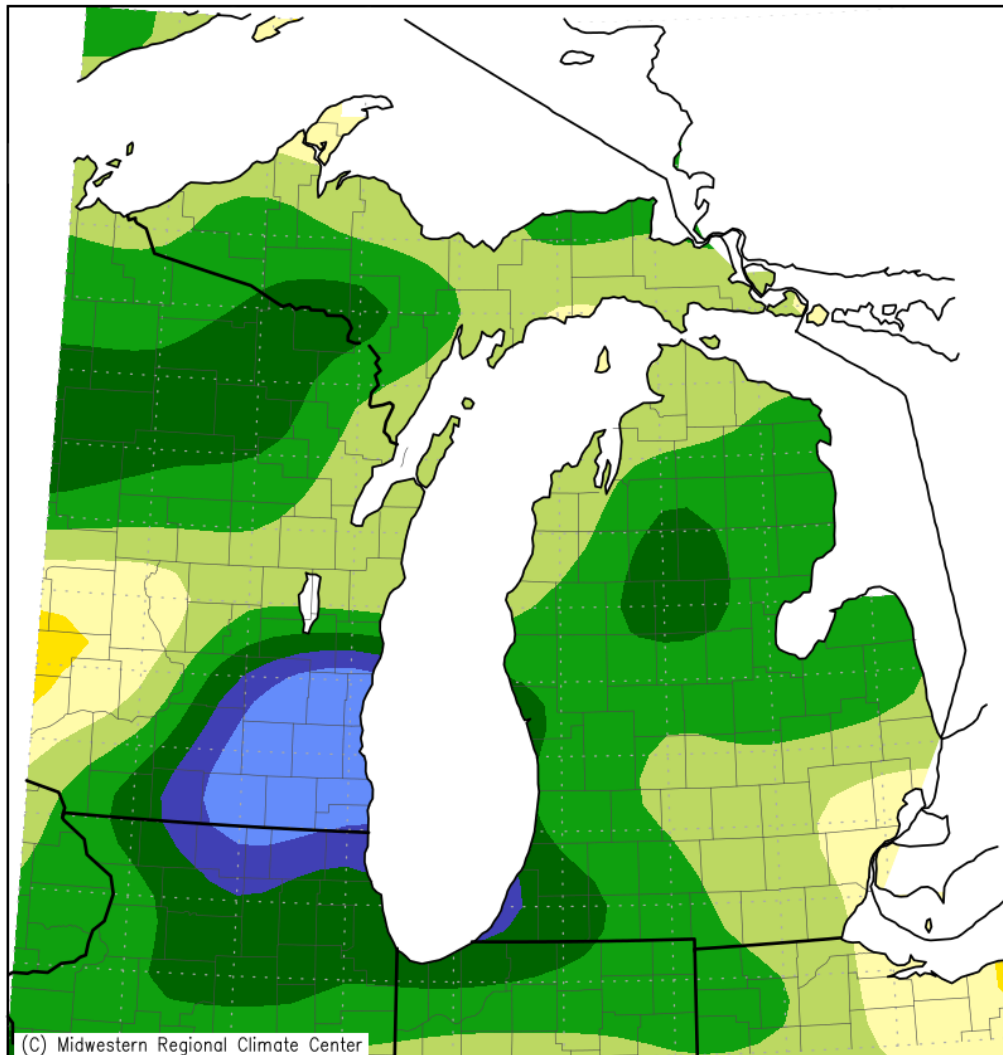
Accumulated Precipitation (in)
March 1, 2024 to March 31, 2024



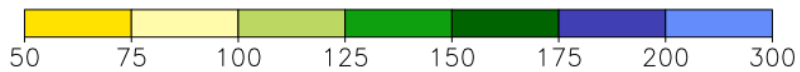
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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Figure 1. March 2024 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
March 1, 2024 to March 31, 2024



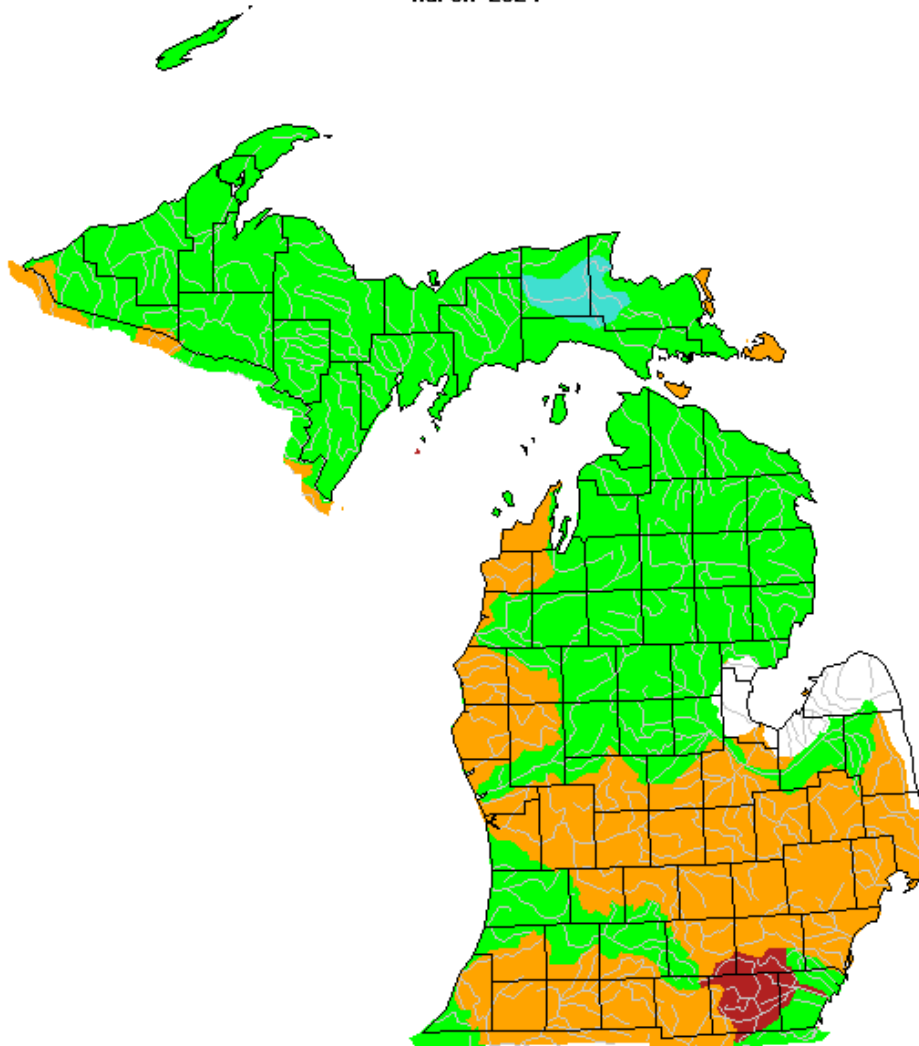
Mean period is 1991–2020.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 4/4/2024 3:29:07 PM EDT

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

March 2024



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 March, grouped by significant hydrologic units. The Grand River and Pere Marquette Basins are below normal with the Kalamazoo and Muskegon River basins normal.

Calculated Soil Moisture Ranking Percentile
MAR, 2024

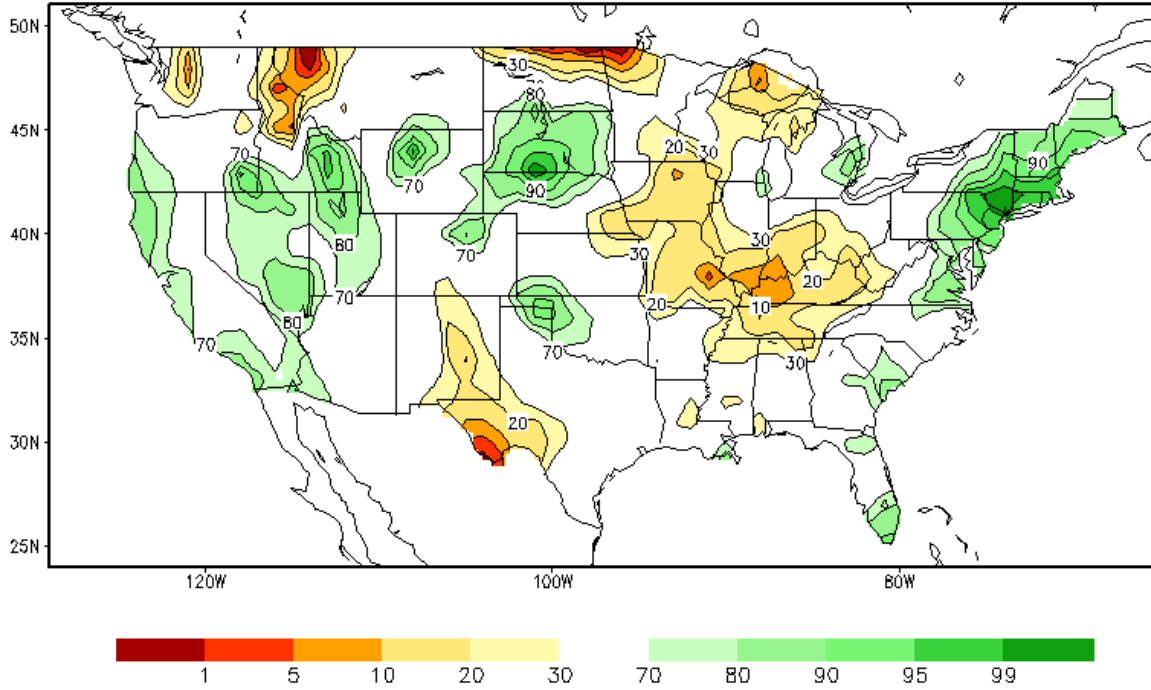


Figure 4. Calculated Soil Moisture Percentile for March, 2024. This supports conditions becoming more normal through much of lower Michigan.

U.S. Drought Monitor Michigan

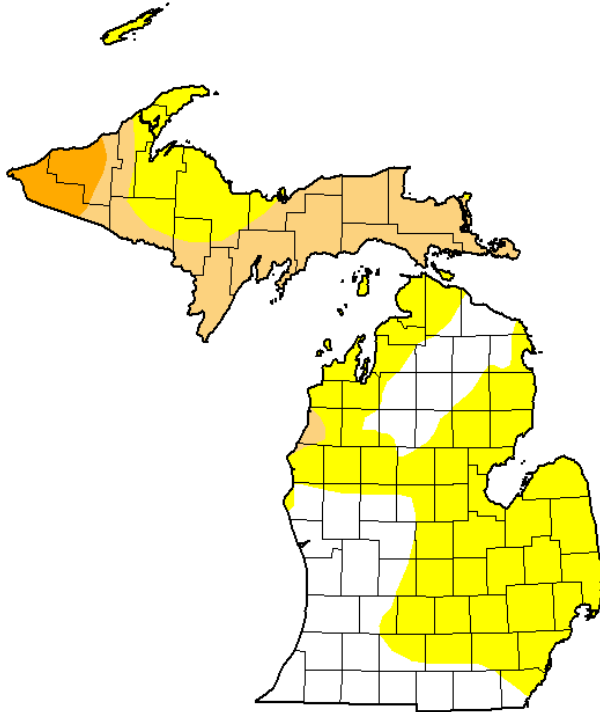
April 2, 2024

(Released Thursday, Apr. 4, 2024)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.44	72.56	21.00	3.16	0.00	0.00
Last Week 03-26-2024	26.32	73.68	21.00	3.16	0.00	0.00
3 Months Ago 01-02-2024	41.22	58.78	6.70	1.20	0.00	0.00
Start of Calendar Year 01-02-2024	41.22	58.78	6.70	1.20	0.00	0.00
Start of Water Year 09-26-2023	65.01	34.99	4.96	1.31	0.00	0.00
One Year Ago 04-04-2023	97.44	2.56	0.00	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



droughtmonitor.unl.edu

Figure 5. U.S. Drought Monitor showing abnormal dry area across Lower Michigan with a small D1 Moderate Drought in and around the Cadillac region.

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)
- 2 Flood Warning Statements (ARBFLWGRR)
- 0 Flood Watch Statements (ARBFFAGRR)
- 0 River Statements (ARBRVSGRR)

News Articles and Related Documentation