

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 2022

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

DATE:
August 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).

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

Summary

July 2022 began with drought conditions developing across much of Lower Michigan. Thankfully, rains throughout the month were enough to prevent drought conditions from worsening, but not enough to significantly improve things in most areas. Driest conditions remain up near the Pine and Chippewa River basins of mid-Michigan, with impacts confined largely to the agricultural industry, but farmers everywhere were generally hoping for some beneficial rains. There were 2 main regional rain events during the month, the first occurring during the first week and impacted primarily the Kalamazoo River basin. The 2nd occurred in the final week of the month, and dropped 1-2 inches of rain in the Grand and Kalamazoo River basins. No flood advisories or warnings were needed, as soils remain dry and able to absorb much of the water.

Flood Conditions

The further north you go in Lower Michigan, the drier conditions become, and this is reflected in water levels on the rivers. The Muskegon, Pine, and Chippewa River basins all spent the month near the 25th percentile level for this time of year, which is already near the low-point for the year anyway. Some relief occurred during the final week of July, but water levels dropped below normal again for the very end of the month. Meanwhile, the Grand basin started below average - but still in a fairly typical range - and improved to near-normal conditions for most of the month. Finally, the Kalamazoo River basin popped to above-average levels during that initial rain at the start of July, and remained above-normal (but still in a fairly typical range) for the rest of the month. Unsurprisingly, no river flooding was experienced in July.

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

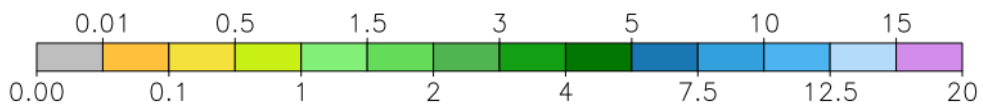
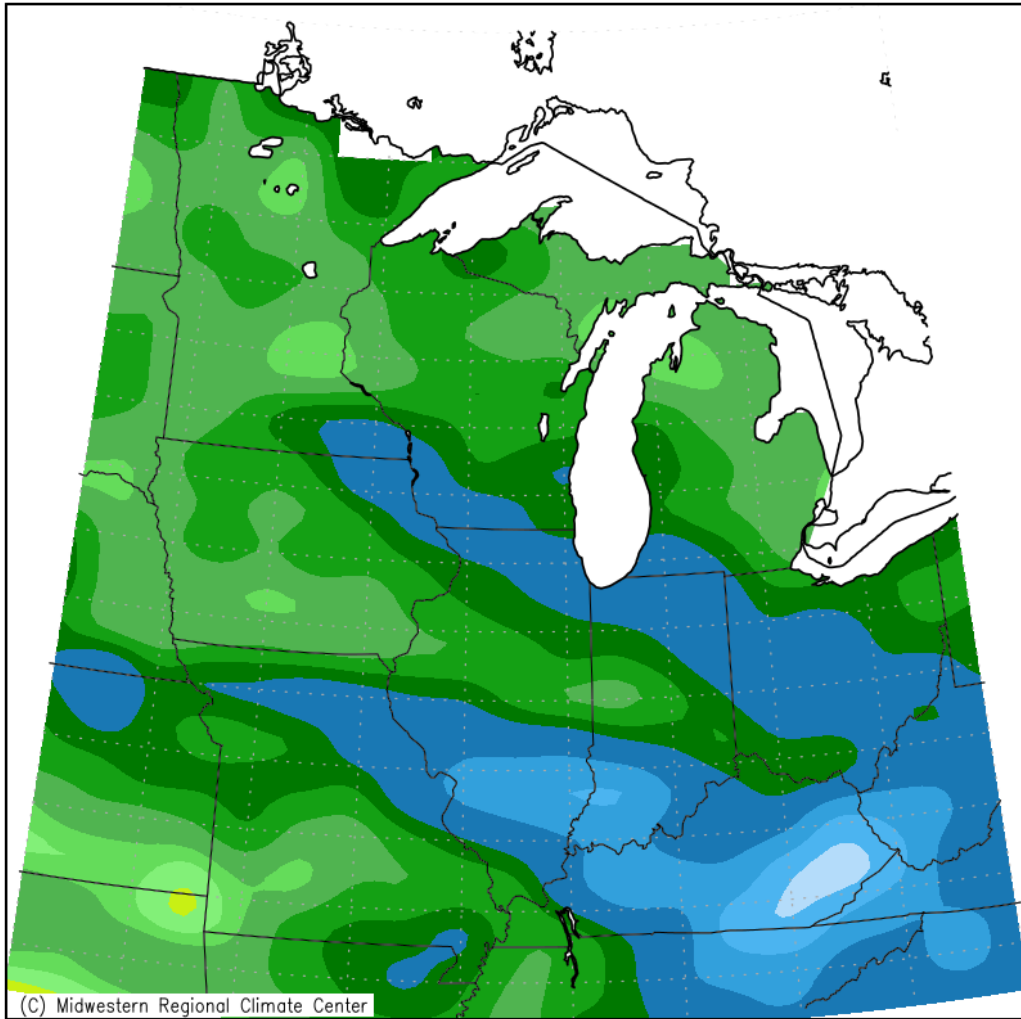
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	107
Whitehall	White	106
Ewart	Muskegon	86
Mt. Pleasant	Chippewa	86
Lansing	Grand	138
Grand Rapids	Grand	90
East Lansing	Red Cedar	84
Hastings	Thornapple	98
Battle Creek	Battle Creek	119
Battle Creek	Kalamazoo	98

General Hydrologic Information

July precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 2.82, 2.30, and 3.12 inches, respectively (Figure 1). Monthly departures were -1.04, -0.64, and +0.37 inches, respectively. Yearly departures were -0.19, -0.02 and -0.81 inches for Grand Rapids, Lansing and Muskegon, respectively. Percent of mean precipitation for July 2022 is shown in Figure 2.

Temperatures for the month of July at Grand Rapids, Lansing and Muskegon were slightly warmer than normal. The monthly average temperature departures for these sites were 0.0, +1.7, and +1.5 degrees Fahrenheit, respectively.

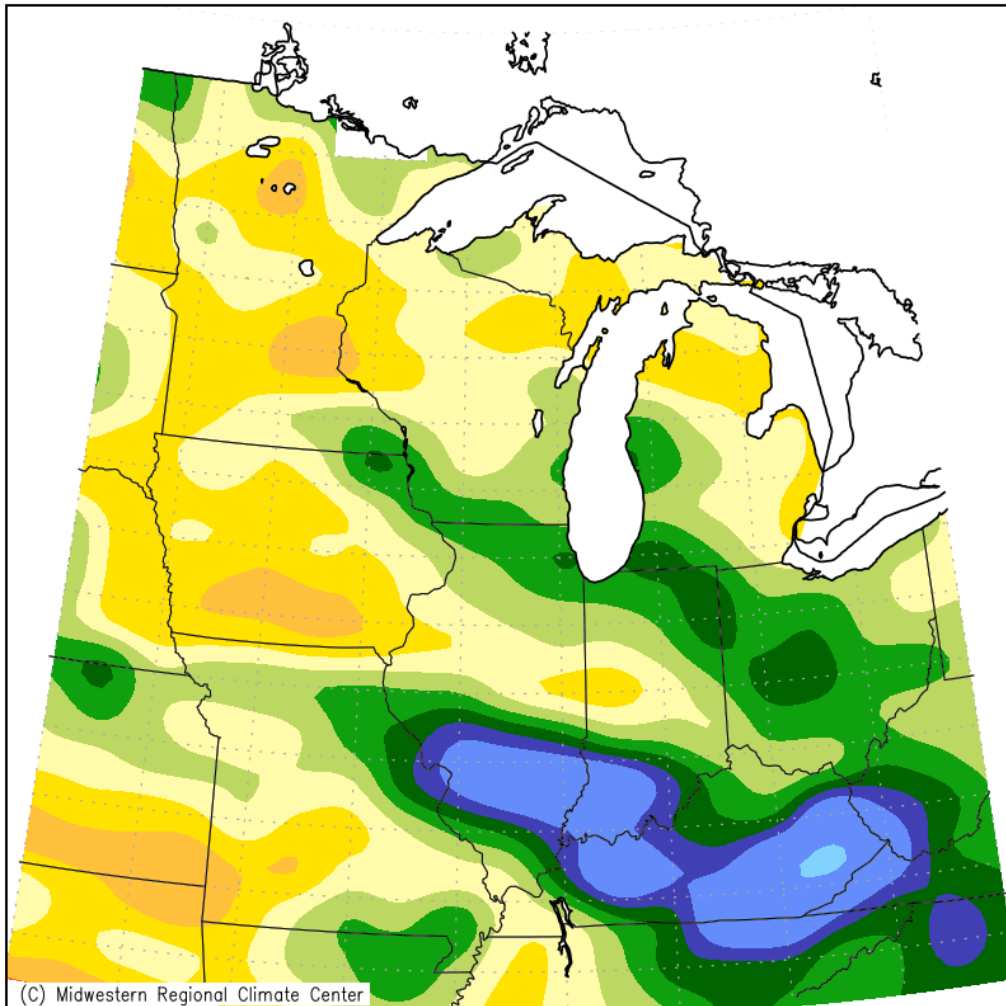
Accumulated Precipitation (in)
July 1, 2022 to July 31, 2022



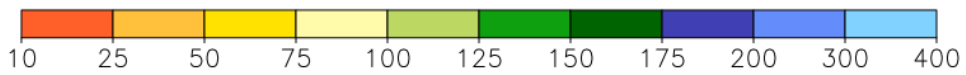
Midwestern Regional Climate Center
Purdue University

Figure 1. July 2022 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
July 1, 2022 to July 31, 2022



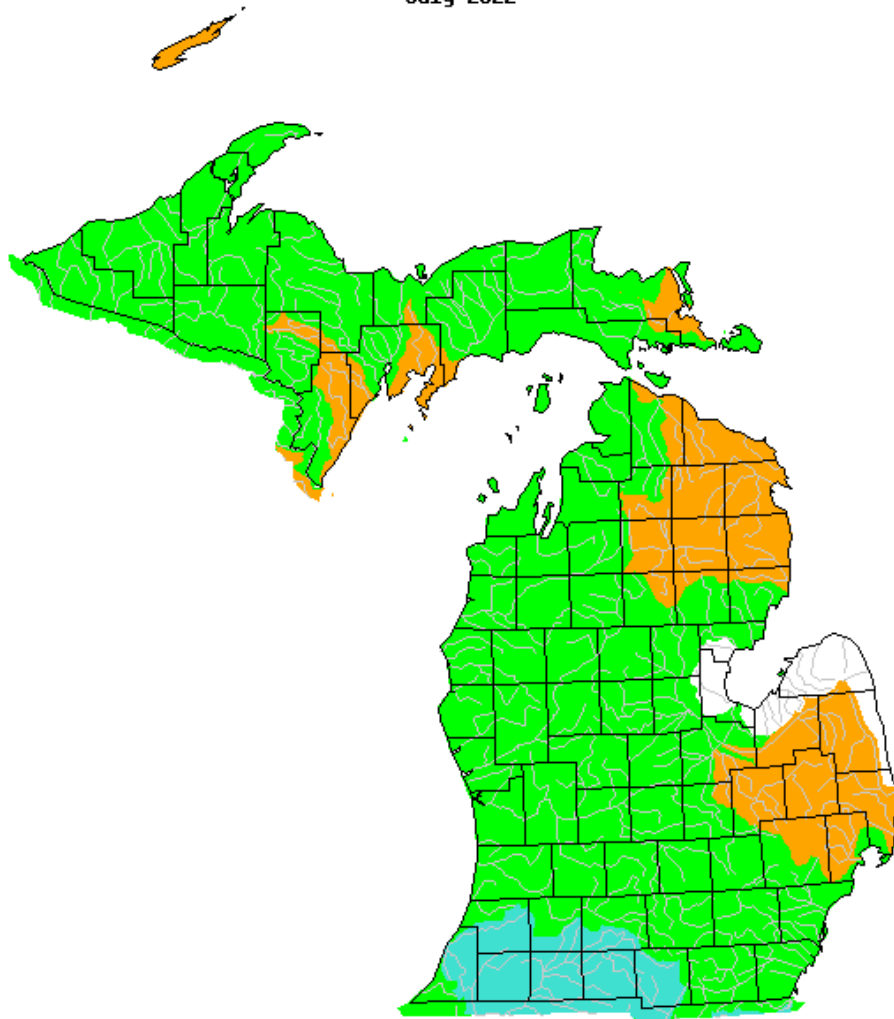
Mean period is 1991–2020.



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

July 2022



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 average streamflow for July, grouped by significant hydrologic units. Note streamflows within a typical range across most of Lower Michigan for this time of year, with the exception of the Muskegon Basin, where streamflows are lower than typical.

Calculated Soil Moisture Ranking Percentile
JUL, 2022

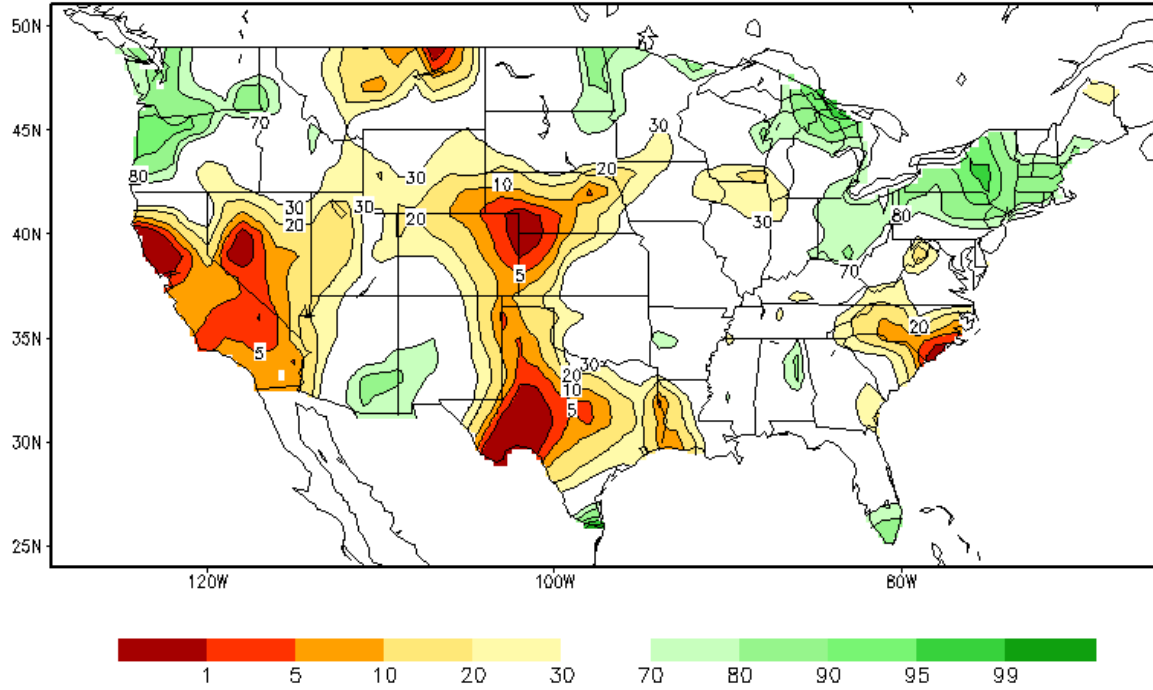
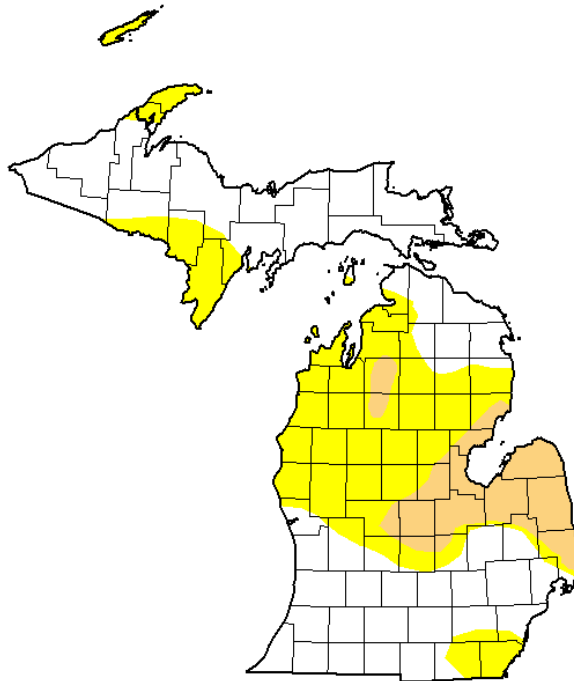


Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

U.S. Drought Monitor
Michigan

July 26, 2022
(Released Thursday, Jul. 28, 2022)
Valid 8 a.m. EDT



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 <http://droughtmonitor.unl.edu/About.aspx>

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National Drought Mitigation Center



droughtmonitor.unl.edu

Figure 5. U.S. Drought Monitor showing some moderate drought conditions developing over parts of mid-Michigan by the end of July.

Hydrologic Products issued this month

- 31 Hydrologic Summaries (ARBRVAGRR)
- 1 Probabilistic Hydrologic Outlook (ARBESFGRR)
- 0 Event-driven Hydrologic Outlook (ARBESFGRR)
- 31 Daily River Forecasts (ARBRVDGRR)
- 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

None