

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):
August 2021

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

DATE:
September 3, 2021

SIGNATURE:
Daniel K. Cobb, 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

Overall, August was significantly warmer than normal, with lots of heat and humidity spread throughout the month. This weather pattern also set the stage for several events with impressive rain totals across parts of Lower Michigan. While none of these ended up being terribly significant, the cumulative effect was to keep river levels above-average pretty much all month long. Two of the most impressive events featured 4+ inches of rain in parts of the Lansing and Jackson areas on the 11th, and then near the end of the month when 4-6 inches of rain fell during a 3 day period in Mason and Lake counties near the end of the month. In fact, local reports of more than 8 inches of rain were received from around the Lansing area. The Lansing storm caused flooding that closed numerous roads, including US Highway 127 in both directions, and significantly flooded parking lots of some residential buildings. It also brought the Red Cedar river as well as the Grand River at Jackson briefly to minor flood stage. Meanwhile, the rounds of heavy rain near Baldwin and Ludington saturated soils, caused numerous tributaries to flood - including the Little Manistee and Baldwin Rivers - and even briefly resulted in some evacuations of homes as the water was rising. By the time this water found its way into the larger rivers (Pere Marquette and Manistee), the resulting water level rise was not significant enough to result in any additional flooding.

As for Lake Michigan, fairly active and wet weather kept water levels fairly steady throughout the month. Similar to recent months, this means that water levels are about 16 inches lower than last year at this time, but still about 18 inches higher than the long-term average levels for August.

Flood Conditions

All major river systems in West-Central and Southwest Michigan were passing more water than normal for this time of year, and spent most of the month above the 75th percentile flow for August. It's worth noting that we are now very close to our yearly low point in terms of typical water levels, so even though we were above average, no significant flooding resulted from being above-average pretty much all month. As mentioned previously, the Red Cedar River at East Lansing did briefly eclipse minor flood stage after the heavy rain event, but was quickly falling once the water flowed downstream into the Grand River.

Flood Stage Report

The forecast points on the Red Cedar River at East Lansing and the Grand River at Jackson exceeded flood stage. Thus, the NWS Form E-3 "Flood Stage Report" was issued.

River Conditions

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

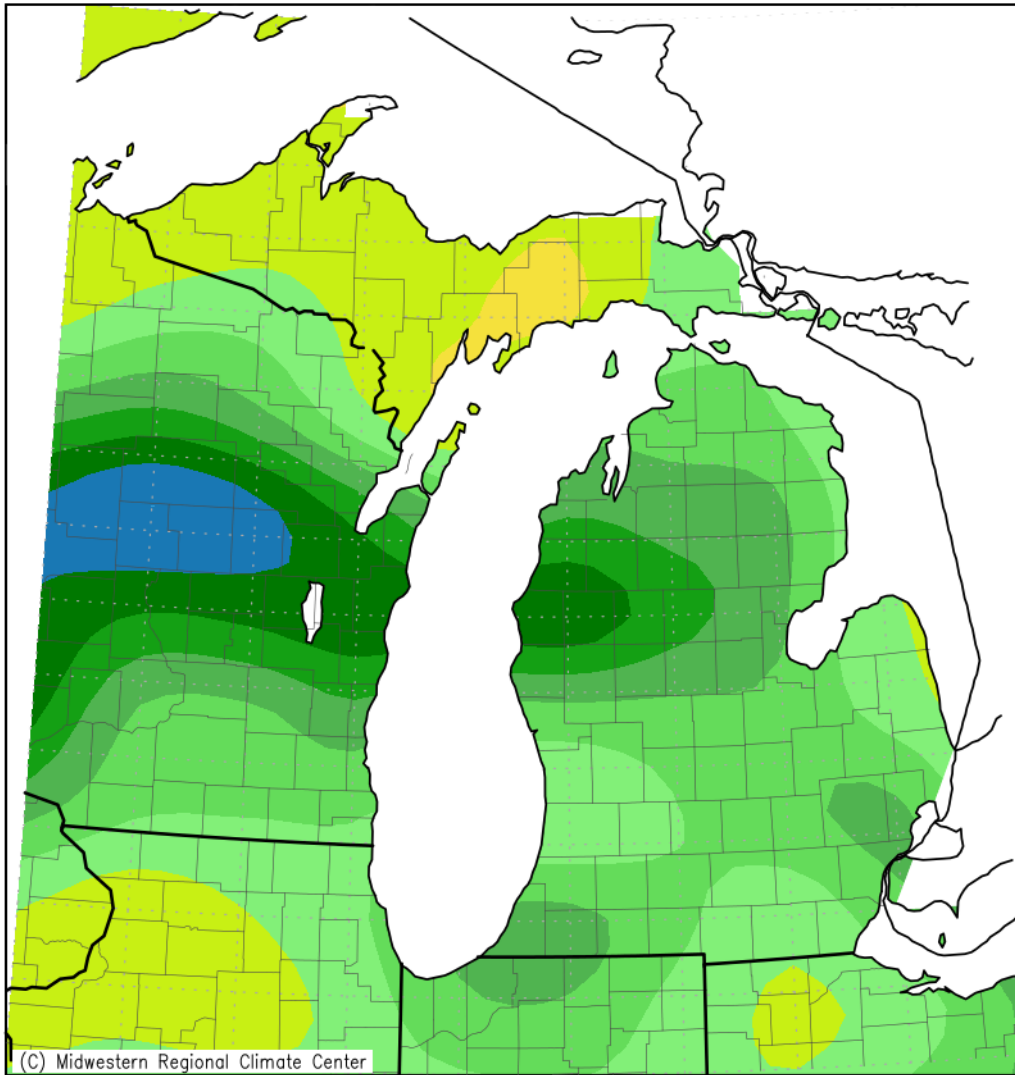
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	207
Whitehall	White	102
Evart	Muskegon	210
Mt. Pleasant	Chippewa	150
Lansing	Grand	N/A
Grand Rapids	Grand	142
East Lansing	Red Cedar	298
Hastings	Thornapple	150
Battle Creek	Battle Creek	146
Battle Creek	Kalamazoo	98

General Hydrologic Information

August precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 2.33, 5.12, and 4.51 inches, respectively (Figure 1). Monthly departures were -1.22, +1.64, and +1.41 inches, respectively. Yearly departures were -2.56, -0.69 and -1.06 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for August 2021 is shown in Figure 2.

Temperatures for the month of August at Grand Rapids, Lansing and Muskegon were above average. The monthly average temperature departures for these sites were +3.2, +5.4, and +3.5 degrees Fahrenheit, respectively.

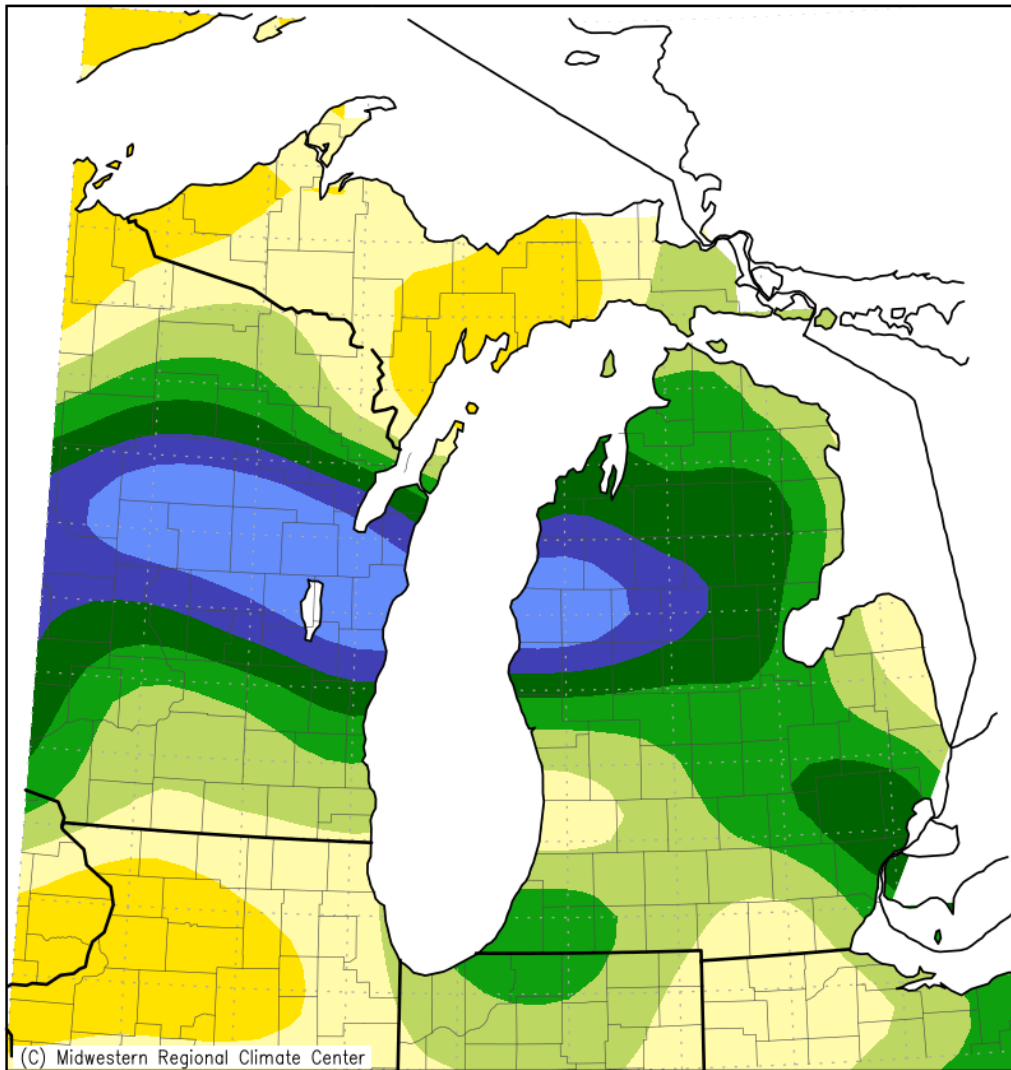
Accumulated Precipitation (in)
August 1, 2021 to August 31, 2021



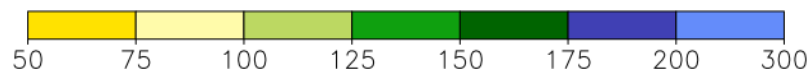
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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Figure 1. August 2021 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
August 1, 2021 to August 31, 2021



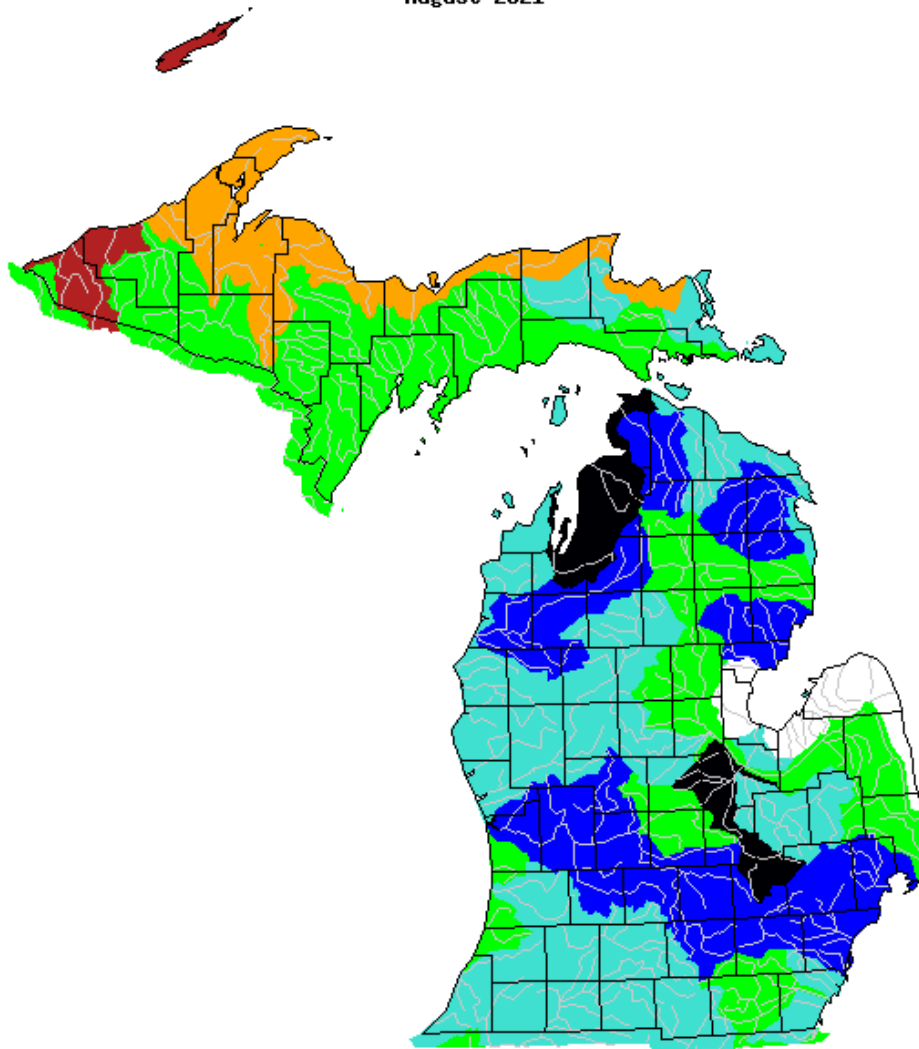
Mean period is 1991–2020.



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Figure 2. August 2021 Percent of Mean of Accumulated Precipitation.

August 2021



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 August, grouped by significant hydrologic units. Note streamflows across Lower Michigan generally above (or even much above) normal for this time of year.

Calculated Soil Moisture Ranking Percentile
AUG, 2021

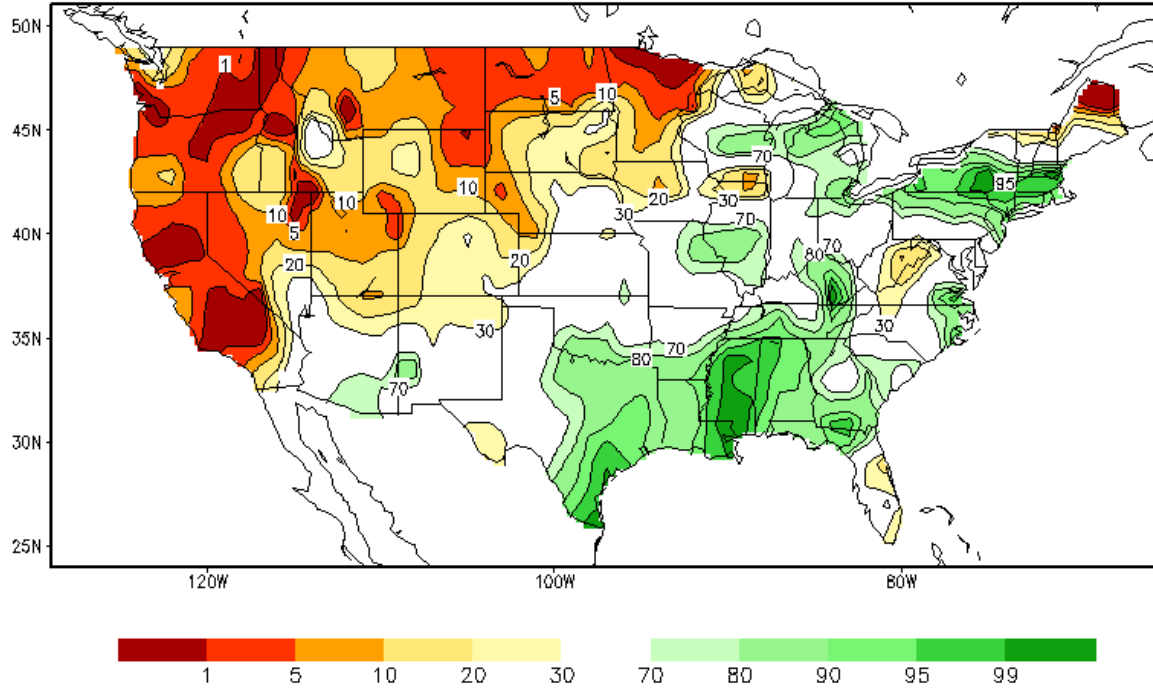


Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

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)
- 5 Areal Flood Advisory Statements (ARBFLSGRR)
- 4 Flood Warning Statements (ARBFLWGRR)
- 0 Flood Watch Statements (ARBFFAGRR)
- 0 River Statements (ARBRVSGRR)

News Articles and Related Documentation

<https://www.wlns.com/news/michigan/photos-michigan-wakes-up-to-flooding-damage-and-no-power/>

<https://www.wilx.com/2021/08/12/residents-frustrated-with-major-flooding-east-lansing-apartment-complex/>

<https://statenews.com/article/2021/08/heavy-rainfall-causes-severe-flooding-and-power-outages-in-east-lansing>