

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):
September 2021

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

DATE:
October 15, 2021

SIGNATURE:
Richard Wagenmaker, 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, September was a warmer than average month, with above-average rainfall over Southeast portions of Lower Michigan, but drier than normal conditions over most of the rest of the state. Several rounds of convective rainstorms came through the area during the month, but the most active period was in the final 10 days, when several days in a row of heavy rain over portions of both the Grand and Kalamazoo River basins brought water levels to above-average levels for this time of year. With uncertainty in the exact path of the heaviest rain, a flood watch was issue for much of southcentral and southeast Lower Michigan ahead of this weather pattern, but the heaviest rain ended up missing both the Grand and Kalamazoo basins (instead hitting Southeast Lower Michigan). No flood advisories or warnings were issued during the month.

Flood Conditions

Coming on the heels of wet weather in August, the Muskegon and Grand River systems continued to pass more water than normal for this time of year. Both of these big rivers spent the bulk of the month between the 50th and 75th percentile flows for this time of year, and spiked up to near the 90th percentile near the end of the month after the aforementioned regional rainstorm moved through. It's worth noting, however, that despite 90th percentile flows, no flooding occurred as the typical water levels for this time of year remain quite low. The Kalamazoo River spent most of the month at below-average levels, but did jump up to near this same 90th percentile flow in the final week of the month before starting to fall.

Flood Stage Report

No forecast points exceeded flood stage. Thus, the NWS Form E-3 "Flood Stage Report" was not issued.

River Conditions

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

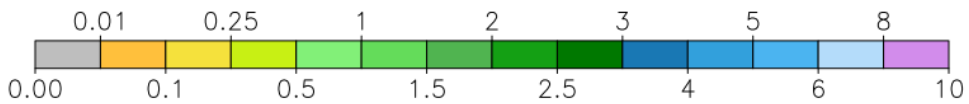
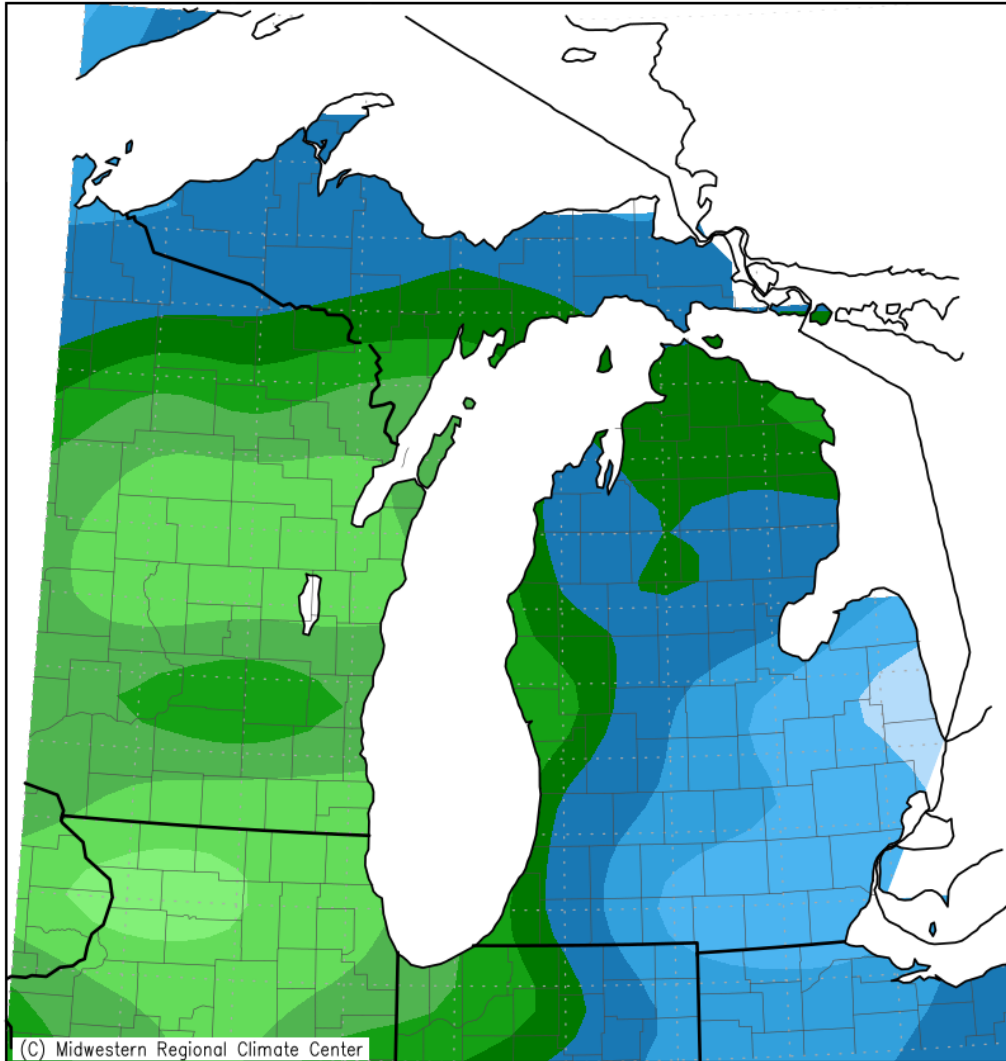
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	111
Whitehall	White	83
Ewart	Muskegon	129
Mt. Pleasant	Chippewa	92
Lansing	Grand	N/A
Grand Rapids	Grand	164
East Lansing	Red Cedar	542
Hastings	Thornapple	124
Battle Creek	Battle Creek	253
Battle Creek	Kalamazoo	151

General Hydrologic Information

September precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 3.34, 3.51, and 1.65 inches, respectively (Figure 1). Monthly departures were -0.09, +0.70, and -1.61 inches, respectively. Yearly departures were -2.65, +0.01 and -2.67 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for September 2021 is shown in Figure 2.

Temperatures for the month of September at Grand Rapids, Lansing and Muskegon were above average. The monthly average temperature departures for these sites were +2.1, +3.1, and +2.1 degrees Fahrenheit, respectively.

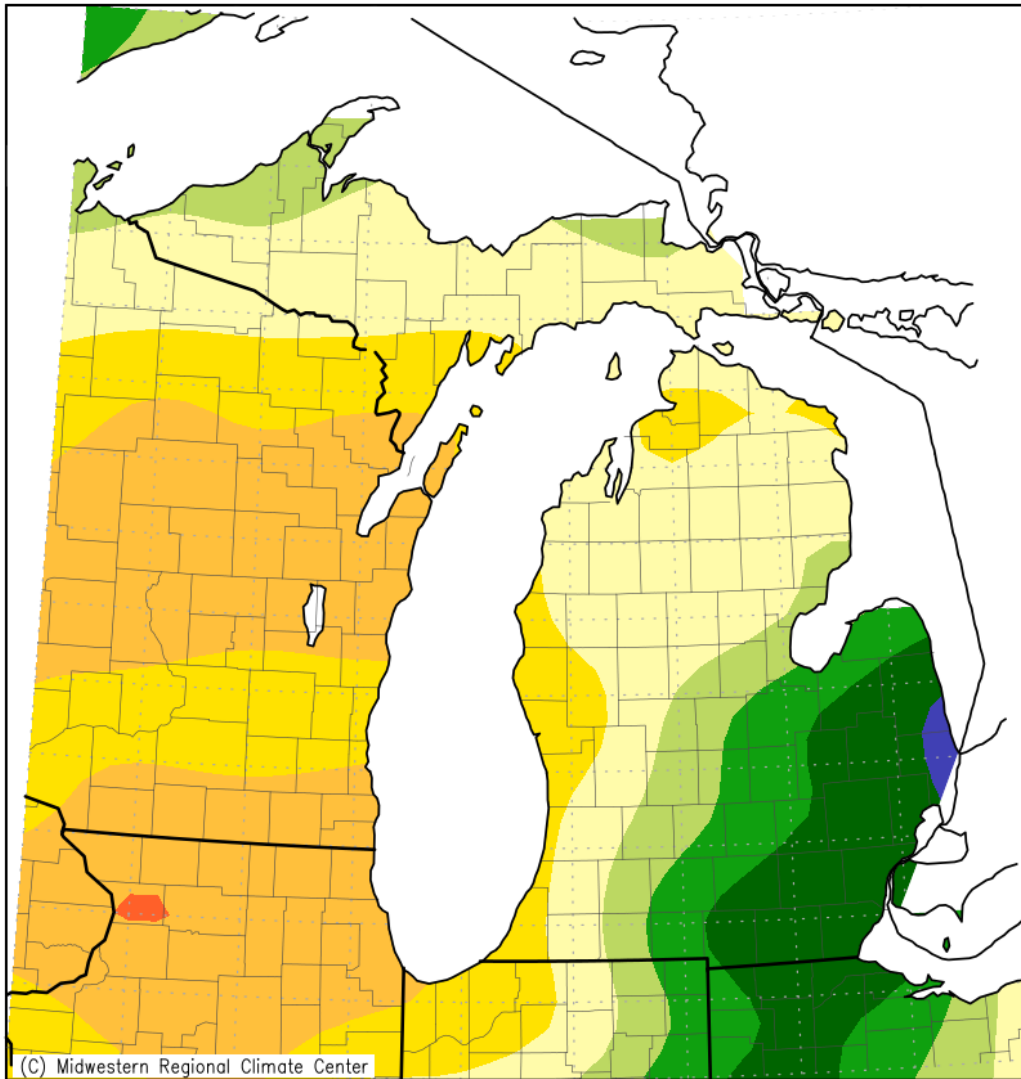
Accumulated Precipitation (in)
September 1, 2021 to September 30, 2021



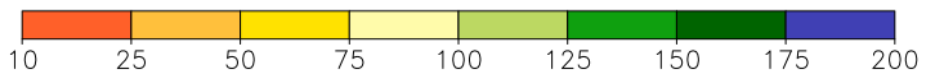
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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Figure 1. September 2021 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
September 1, 2021 to September 30, 2021



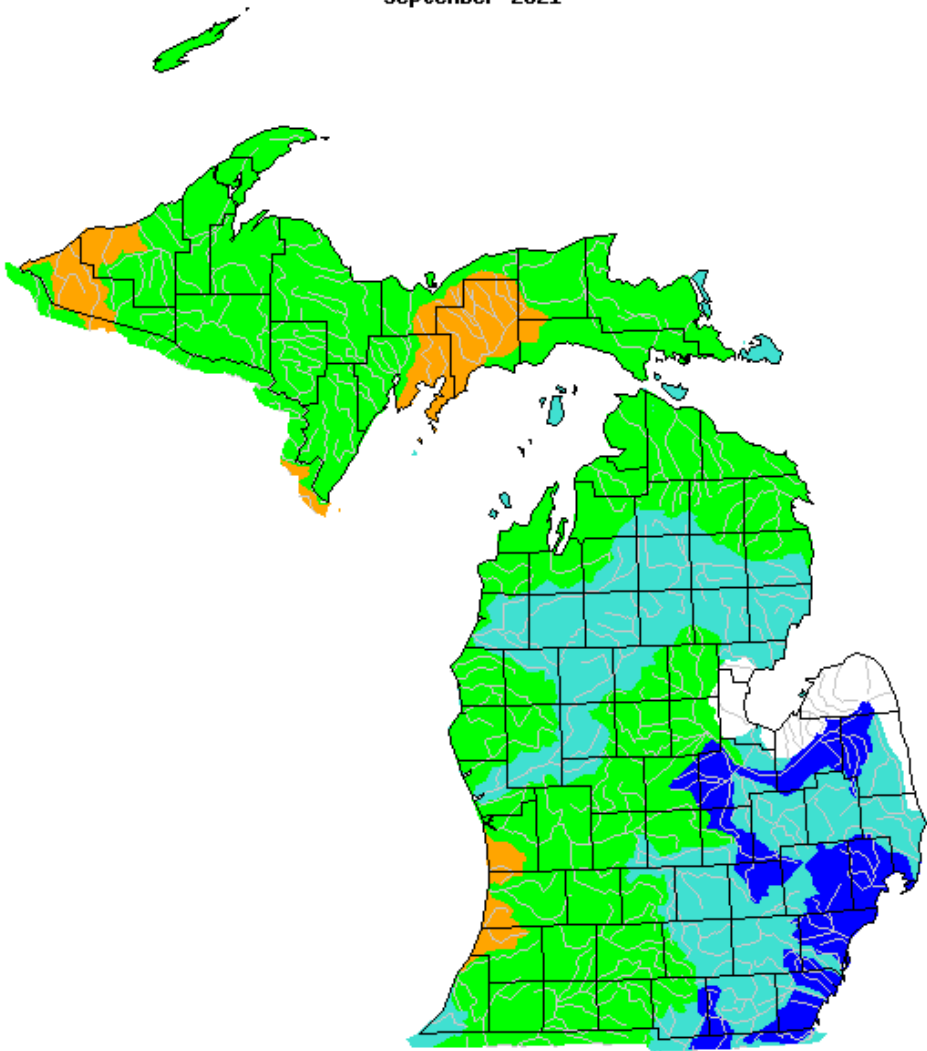
Mean period is 1991–2020.



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

September 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 September, grouped by significant hydrologic units. Note streamflows across Lower Michigan generally near normal, except above normal over Southeast Lower Michigan for this time of year.

Calculated Soil Moisture Ranking Percentile
SEP, 2021

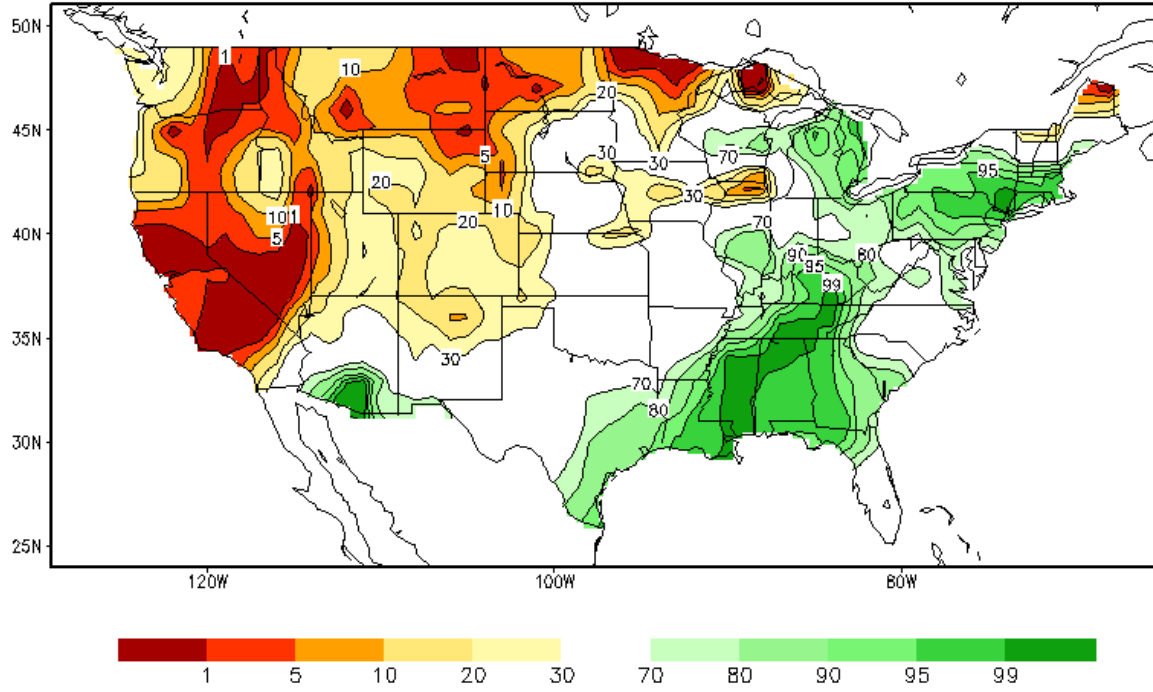


Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

Hydrologic Products issued this month

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

News Articles and Related Documentation

None