

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):
October 2021

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

DATE:
November 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, the month of October was much warmer and wetter than normal. The first half of the month included several rounds of summer-like showers and thunderstorms that dropped several inches of rain on a handful of locations, primarily in the central portions of Lower Michigan. Most of these were handled with short-term flood advisories, but a particularly heavy bullseye of heavy rain during the first week of the month between Lansing and Jackson led to a flood warning in Ingham county and also brought the forecast point on the Grand River at Jackson briefly above its flood stage.

While no significant flooding occurred along the rivers from these showers and storms, the overall effect was to keep the rivers in the Grand and Kalamazoo river basins elevated heading into the latter portions of the month. In the final week (Oct 24-25), a more widespread regional rainstorm occurred, sending 1-3 inches of rain into the river systems across a much larger area (primarily the Grand and Kalamazoo River basins again). This brought many rivers to bankfull, but significant flooding was avoided. Nevertheless, the rivers ended the month well above normal in the Grand and Kalamazoo River basins.

Flood Conditions

While we avoided significant river flooding during the month, the river systems in Lower Michigan were passing much more water than typical for this time of year. The heaviest rains fell in the Grand and Kalamazoo river basins, which propelled them to above the 90th percentile flow for October. Meanwhile, the Muskegon River basin escaped the significant rains for the month, but still spent the month higher than average.

Flood Stage Report

The forecast point on the Grand River at Jackson briefly exceeded flood stage. Thus, the NWS Form E-3 “Flood Stage Report” was issued.

River Conditions

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

<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	102
Whitehall	White	85
Evart	Muskegon	125
Mt. Pleasant	Chippewa	164
Lansing	Grand	N/A
Grand Rapids	Grand	368
East Lansing	Red Cedar	1352
Hastings	Thornapple	523
Battle Creek	Battle Creek	600
Battle Creek	Kalamazoo	312

General Hydrologic Information

October precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 6.44, 5.15, and 3.50 inches, respectively (Figure 1). Monthly departures were +2.42, +1.99, and -0.30 inches, respectively. Yearly departures were -0.23, +2.00 and -2.97 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for October 2021 is shown in Figure 2.

Temperatures for the month of October at Grand Rapids, Lansing and Muskegon were above average. The monthly average temperature departures for these sites were +5.5, +7.1, and +6.3 degrees Fahrenheit, respectively.

Accumulated Precipitation (inches) from October 1, 2021 to October 31, 2021

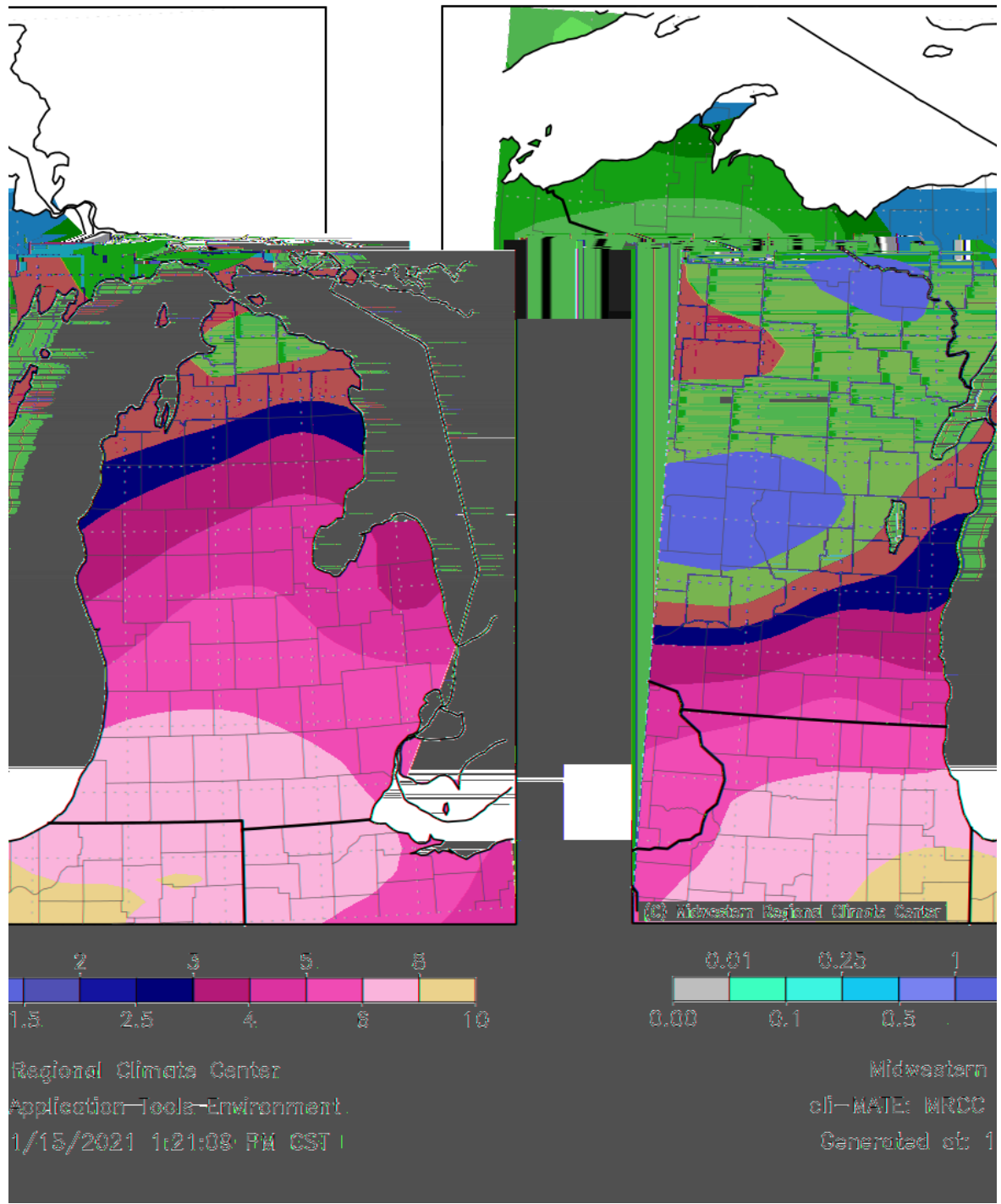
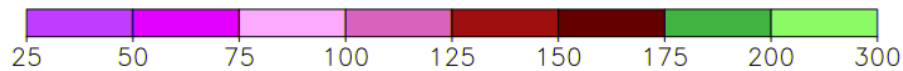
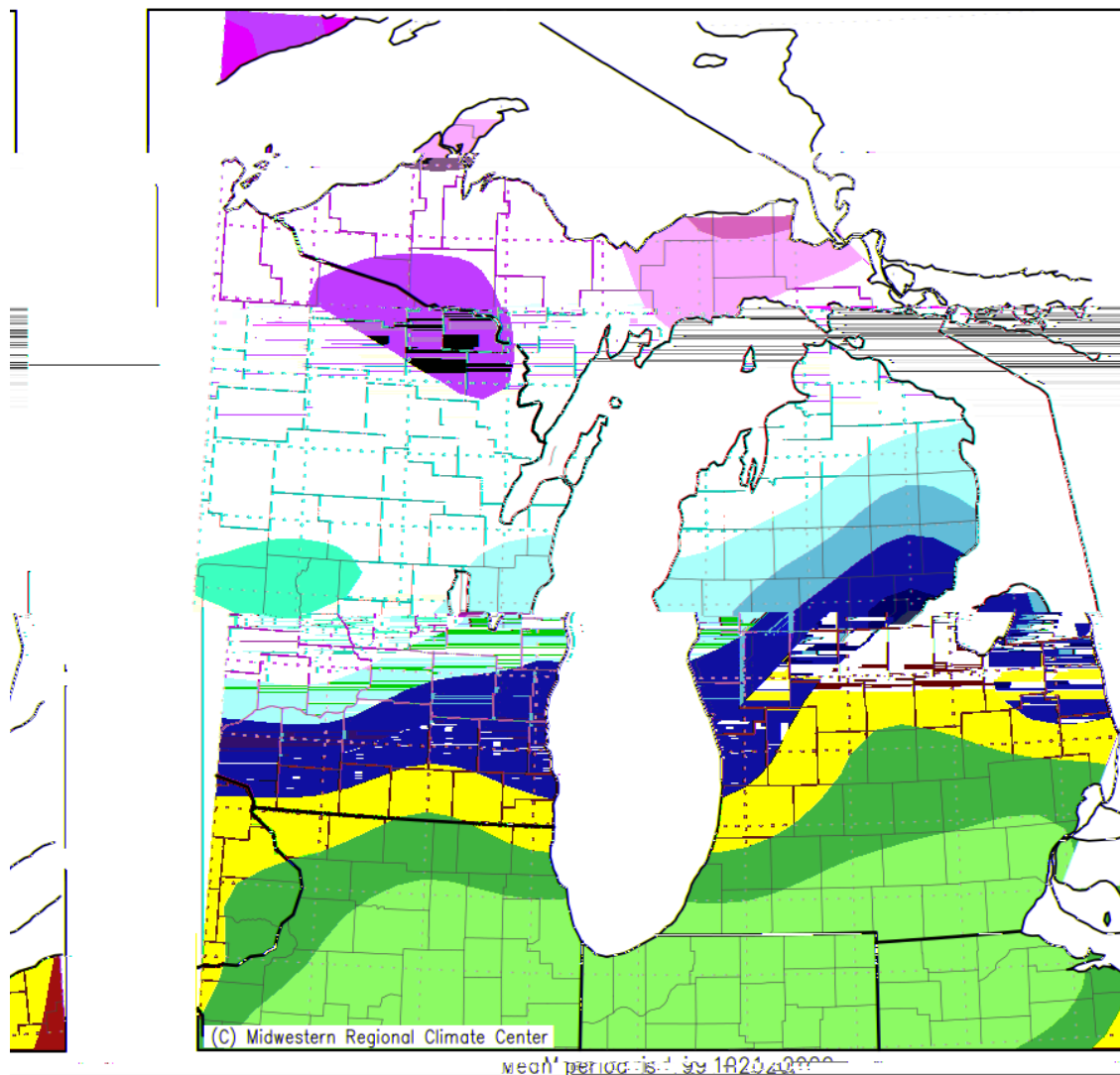


Figure 1. October 2021 Monthly Precipitation Totals.

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



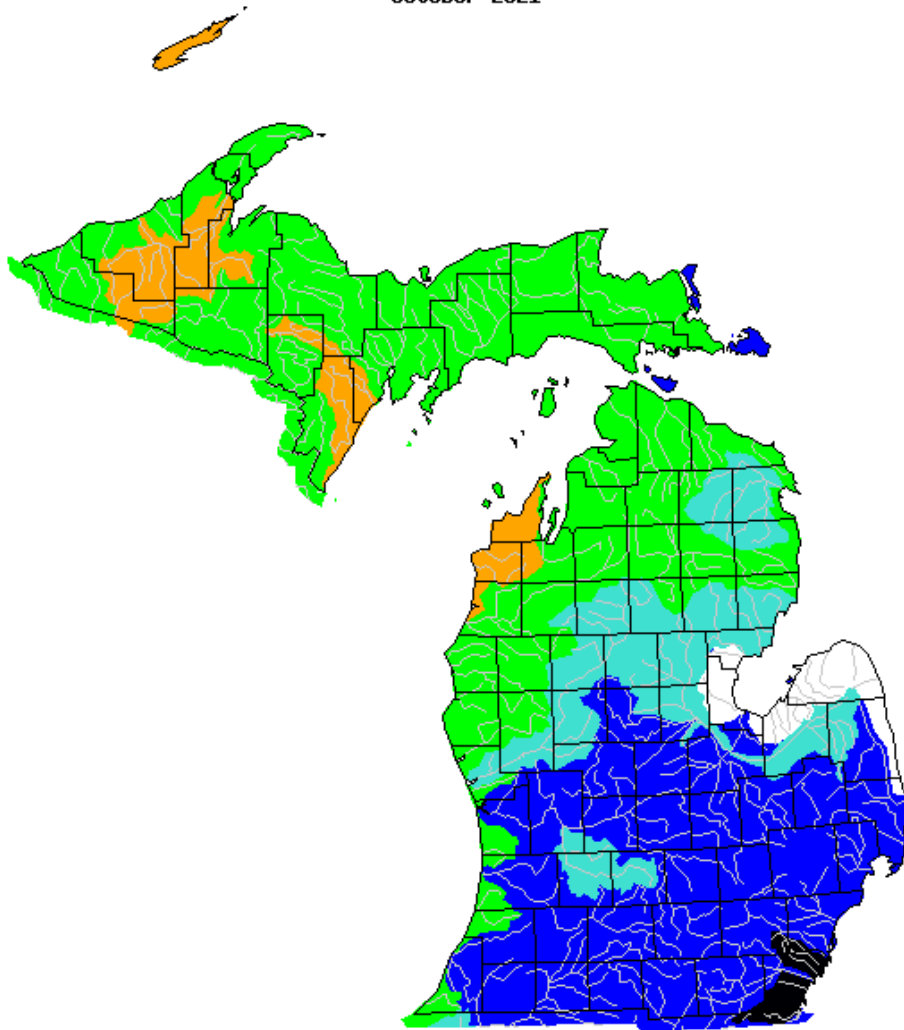
Midwestern Regional Climate Center

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

October 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 October, grouped by significant hydrologic units. Note streamflows across Lower Michigan generally above average for this time of year.

Calculated Soil Moisture Ranking Percentile
OCT, 2021

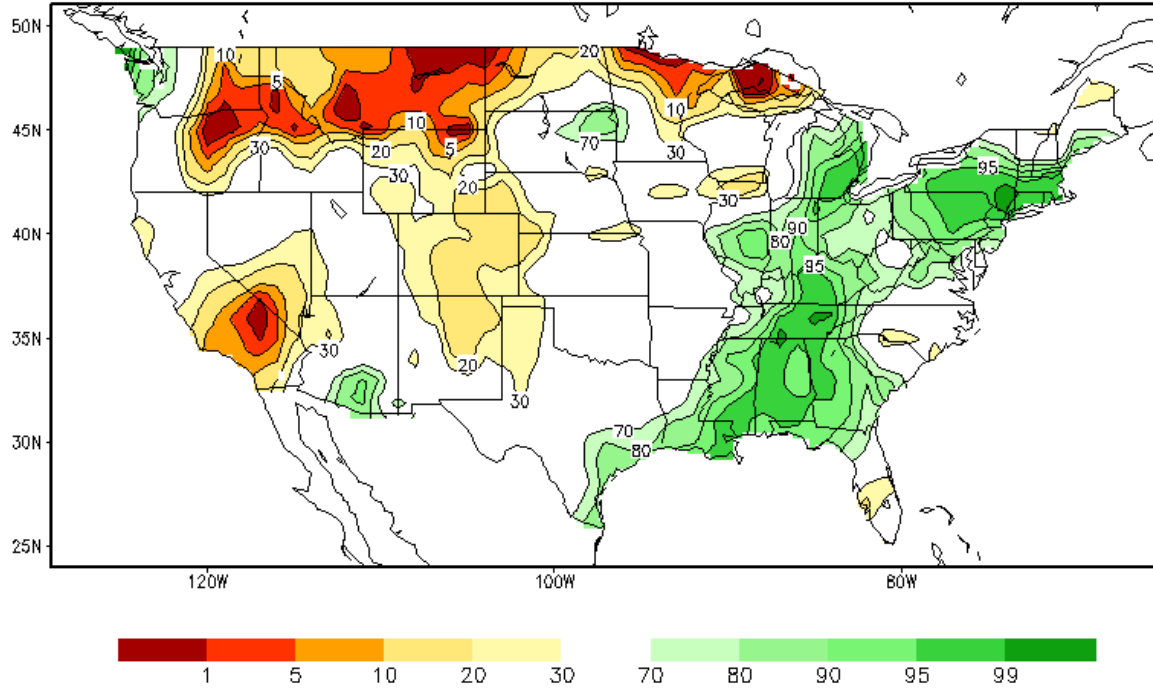


Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

Hydrologic Products issued this month

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

News Articles and Related Documentation

None