

**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**

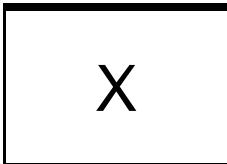
REPORT FOR (MONTH & YEAR):  
**September 2020**

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

DATE:  
October 9, 2020

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 significant flooding occurred within this Hydrologic Service Area.

**Summary**

September 2020 featured persistent northwesterly flow, which led to generally cool conditions across Lower Michigan, with the exception of right along the lakeshore where temperatures were slightly above normal due to the moderating influence of Lake Michigan. Most rain events were again driven by several rounds of convection across the area, leading to streaks and bullseyes of higher amounts, while the larger overall area gets much less. When all was said and done, most of the area was significantly drier than normal for the month, which allowed D1 drought conditions to remain virtually unchanged over the area (Figure 5). No significant areal flooding occurred, with areal flood advisories being used to cover some locally heavy rainfall and flooding of low spots/common areas on two separate occasions.

The relatively dry weather allowed Lake Michigan-Huron to continue establishing its seasonal decline. Water levels dropped nearly 4 inches over the course of the month, and September became the first year of 2020 so far that the Army Corps of Engineers did not declare a new monthly high water record set on Lake Michigan-Huron. Nevertheless, water levels remain much higher than the long term normal levels, and higher than last year at this time. Thus, as the fall and winter storm season becomes established, erosion and lakeshore flooding will again be a concern.

**Flood Conditions**

The larger rivers started and spent the first half of the month significantly above average (75th to 90th percentile), as several general rain events kept water moving through the river systems. As drier weather generally took over for the 2nd half of the month, the river systems dropped down to near normal levels, with the Kalamazoo River basin actually falling to below average, as several months of drier weather began to have an impact on long-term levels.

### **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 September percentage of normal flow for selected rivers is listed below:

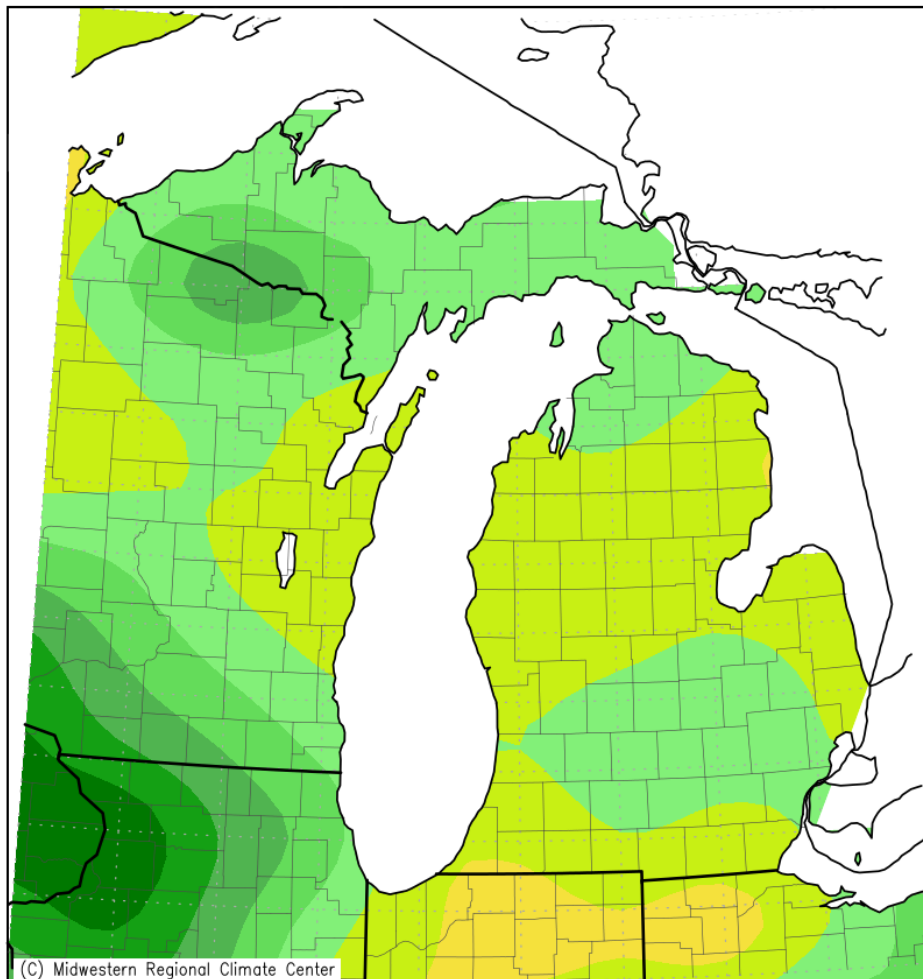
<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	115
Whitehall	White	109
Evart	Muskegon	96
Mt. Pleasant	Chippewa	128
Lansing	Grand	201
Grand Rapids	Grand	137
East Lansing	Red Cedar	156
Hastings	Thornapple	124
Battle Creek	Battle Creek	156
Battle Creek	Kalamazoo	128

### **General Hydrologic Information**

September precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 3.07, 4.33, and 2.34 inches, respectively (Figure 1). Monthly departures were -1.21, +0.83, and -1.55 inches, respectively. Yearly departures were +0.69, +4.89 and +3.37 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for September 2020 is shown in Figure 2.

Temperatures for the month of September at Grand Rapids, Lansing and Muskegon were generally below normal. The monthly average temperature departures for these sites were -1.3, -0.7, and +0.7 degrees Fahrenheit, respectively.

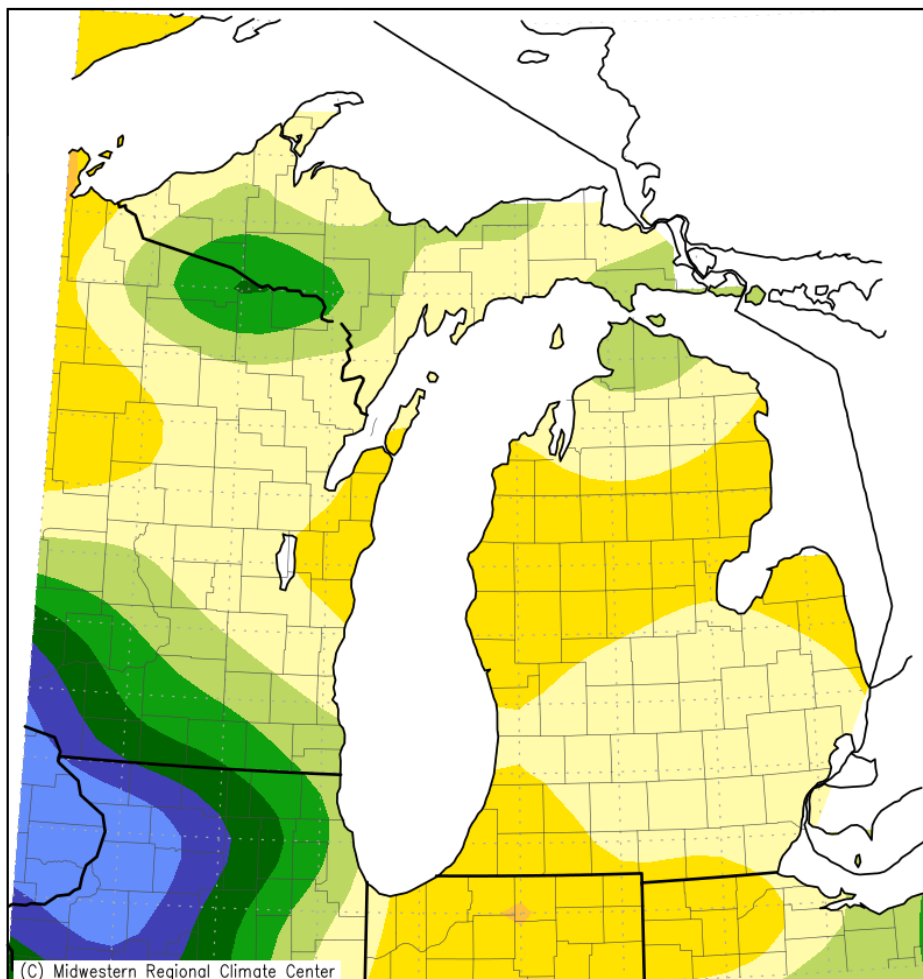
Accumulated Precipitation (in)  
September 1, 2020 to September 30, 2020



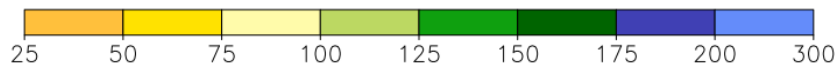
Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 10/8/2020 11:39:42 AM CDT

Figure 1. September 2020 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean  
September 1, 2020 to September 30, 2020



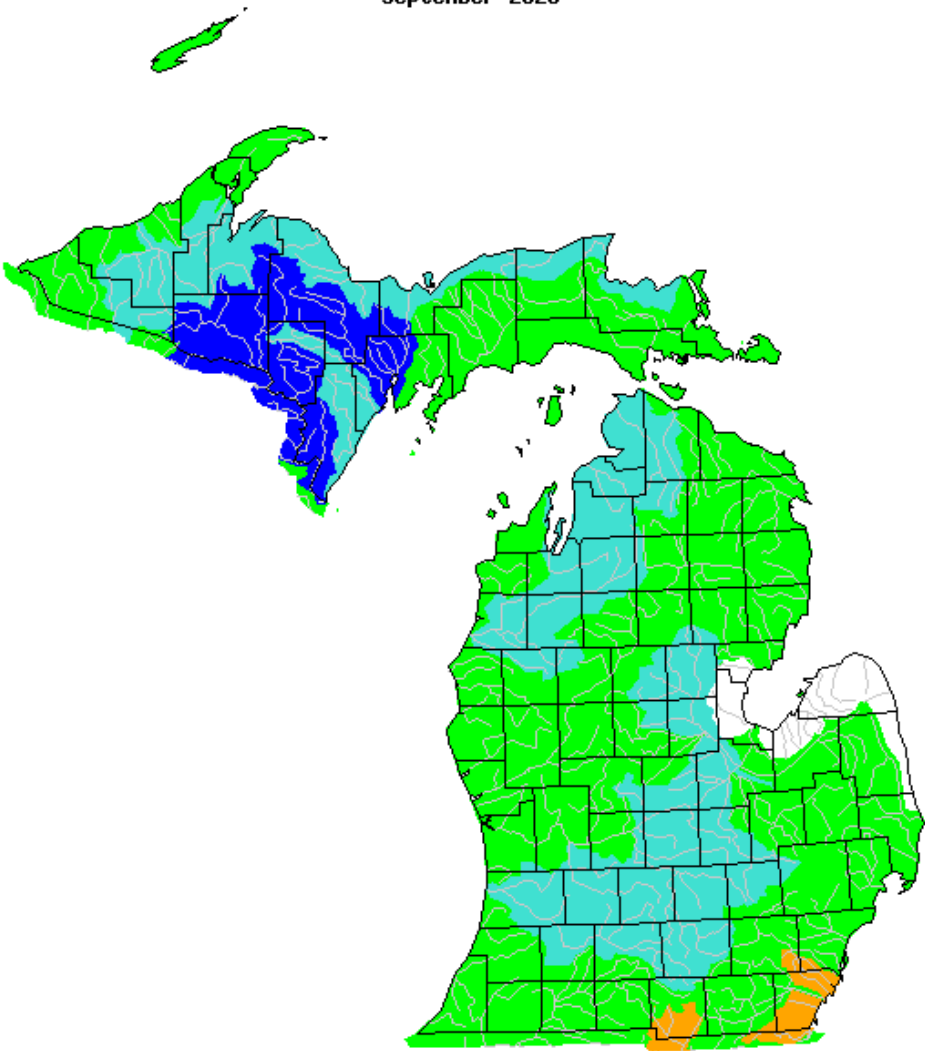
Mean period is 1981–2010.



Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 10/8/2020 11:40:12 AM CDT

Figure 2. September 2020 Percent of Mean of Accumulated Precipitation. September was a continuation of below-average monthly precipitation across most of Lower Michigan.

September 2020



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 widespread near to slightly above normal for the month, despite less rainfall than normal. This is due to elevated water tables resulting in elevated base flow in the rivers.

### Calculated Soil Moisture Ranking Percentile SEP, 2020

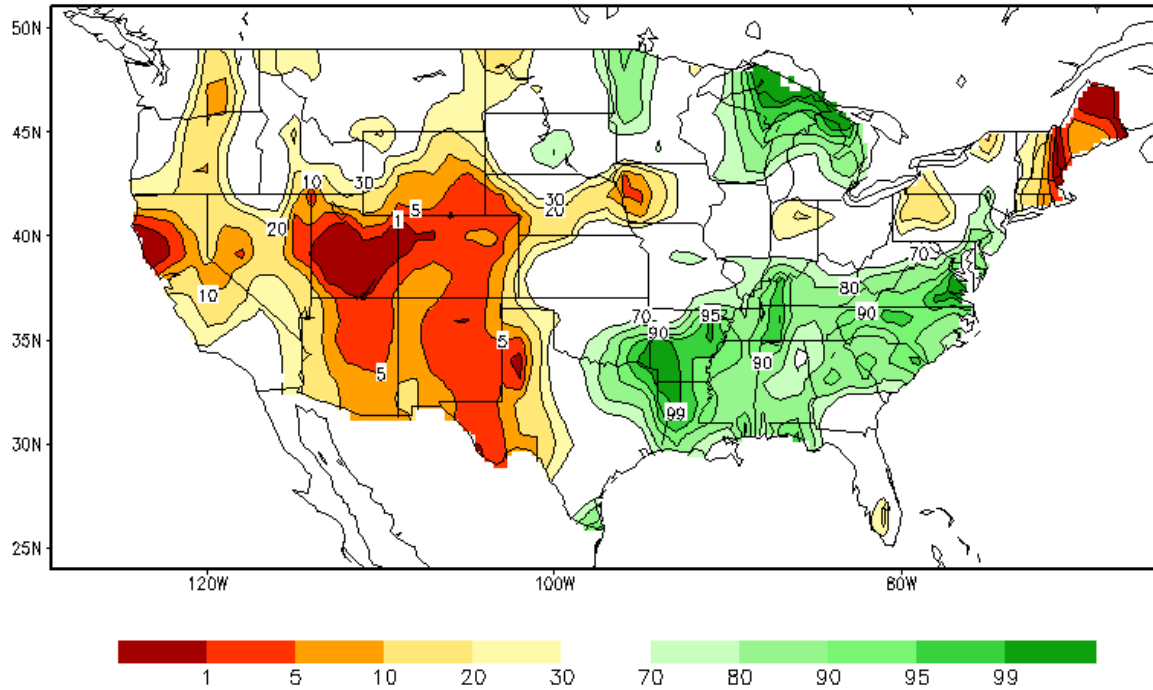
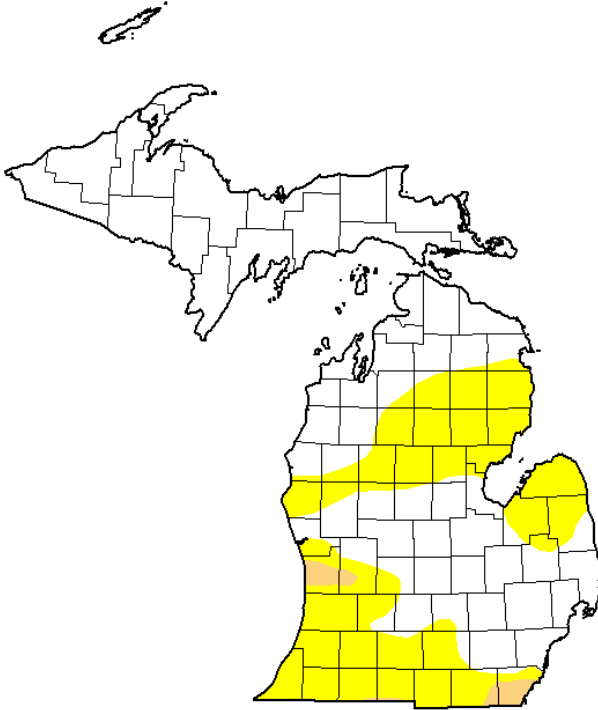


Figure 4. Chart of monthly values of soil moisture, by percentile ranking. This is the first time in 24 months that Western Lower Michigan is below the 80th percentile. This persistently saturated ground leads to increased runoff efficiency of rainfall into rivers and streams.

**U.S. Drought Monitor**  
**Michigan**

**September 29, 2020**  
*(Released Thursday, Oct. 1, 2020)*  
Valid 8 a.m. EDT



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	67.03	32.97	1.55	0.00	0.00	0.00
<b>Last Week</b> <i>09-22-2020</i>	82.48	17.52	0.83	0.00	0.00	0.00
<b>3 Months Ago</b> <i>06-30-2020</i>	94.89	5.11	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> <i>12-31-2019</i>	100.00	0.00	0.00	0.00	0.00	0.00
<b>Start of Water Year</b> <i>10-01-2019</i>	88.46	11.54	1.50	0.00	0.00	0.00
<b>One Year Ago</b> <i>10-01-2019</i>	88.46	11.54	1.50	0.00	0.00	0.00

*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 <https://droughtmonitor.unl.edu/About.aspx>*

*Author:*

Brad Rippey  
U.S. Department of Agriculture



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Figure 5. Drought depiction from U.S. Drought Monitor at the end of the month, largely unchanged from 30 days prior.

**Hydrologic Products issued this month**

- 30 Hydrologic Summaries (ARBRVAGRR)
- 1 Probabilistic Hydrologic Outlook (ARBESFGRR)

- 0 Event-driven Hydrologic Outlook (ARBESFGRR)
- 28 Daily River Forecasts (ARBRVDGRR)
- 5 Areal Flood Advisory Statements (ARBFLSGRR)
- 0 Flood Warning Statements (ARBFLWGRR)
- 0 Flood Watch Statements (ARBFFAGRR)
- 0 River Statements (ARBRVSGRR)

**News Articles and Related Documentation**