

## MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

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

DATE:

November 15, 2018

SIGNATURE:

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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**

October 2018 began with a bang, with more hot and humid weather and rounds of heavy convective rainfall across much of the area during the first 2 days of the month. This caused water levels to rise across the entire area. A particularly heavy “bullseye” of rain on the first day of the month occurred in the vicinity of Holland, MI, where between 2 and 3 inches of rain in a 6 to 12 hour period led to significant rises on the smaller streams in the area and lots of standing water. An areal flood advisory was issued, and reports were received that a section of US-31 (between M40 and 32<sup>nd</sup> street) was closed in both directions due to water on the road for about 5 hours. Within a few hours of the heavy rainfall coming to an end, water had begun to recede and all roads were again opened and the areal flood advisory allowed to expire.

A few more rounds of moderate rainfall over the first 10 days of the month kept water levels rising on the larger rivers, but avoided any known flooding issues across the HSA. The area then went into a quieter period for the middle two weeks of the month as temperatures dropped to near or even slightly below normal with only minor rainfall events during this period. The weather turned a bit more active for the last few days of the month, with a few regional rainstorms of between 0.5” and 1.0”. This caused a renewed rise in the rivers toward the 90<sup>th</sup> percentile for this time of year, but no flooding occurred. However, the ground remained very saturated by the end of October as early-season cold air moved into the region and threatened to freeze this high soil-moisture content in place heading into the winter.

**Flood Conditions**

Streams of all sizes started the month rising significantly in response to the heavy rainfall that was renewed across the region at the end of September. What started out as near-average flows for this time of year quickly rose to the point where most gauges across the HSA were above the 90<sup>th</sup> percentile by the 2<sup>nd</sup> week of the month, with the White River and Kalamazoo River both setting new max water levels for this time of year. It’s important to note that while the average water levels around West Michigan have risen since the seasonal minimum values in August and September, the “normal” values for this time of year are still fairly low compared to springtime snowmelt values. This is how 90<sup>th</sup> or greater streamflow percentile values are possible without significant flooding.

By the beginning of the final week of October, many streams had recovered to the 50<sup>th</sup> to 75<sup>th</sup> percentile, thanks to a few weeks of relatively dry weather. Rises again occurred to finish the month, with many streams once again approaching the 90<sup>th</sup> percentile, though the rises were not as widespread or significant as those experienced earlier in the month.

### **Flood Stage Report**

No forecast points exceeded flood stage during the month. Thus, no 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	129
Whitehall	White	148
Evert	Muskegon	105
Mt. Pleasant	Chippewa	169
Lansing	Grand	116
Grand Rapids	Grand	229
East Lansing	Red Cedar	151
Hastings	Thornapple	148
Battle Creek	Battle Creek	97
Battle Creek	Kalamazoo	105

### **General Hydrologic Information**

The month of October featured above normal precipitation (100-150% of normal) across most of the HSA. Areas along the Lake Michigan shoreline were even wetter, receiving more on the order of 150-200% of normal for the month.

October precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 5.69, 5.29, and 5.96 inches, respectively (Figure 1). Monthly departures were +2.43, +2.76 and +2.85 inches, respectively. Yearly departures were +7.47, +6.13, and +9.72 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for October 2018 is shown in Figure 2.

For the 3 month period (August through October), Grand Rapids experienced the 3<sup>rd</sup> wettest span on record, with 18.23” of rain falling, compared to normal rainfall of 9.58” during this time period. Similarly, Lansing experienced the 2<sup>nd</sup> wettest 3-month period (August through October) on record, with 14.53” of rain falling compared to normal rainfall of 8.38”. Meanwhile, Muskegon also had their 2<sup>nd</sup> wettest 3-month period (August through October) on record, with 17.78” of rain falling, compared to a normal value of 9.06” during this period.

Temperatures for the month of October were near to slightly below average at Grand Rapids, Lansing and Muskegon. The average monthly temperature departures for these sites were -0.6, -0.7 and 0.0 degrees Fahrenheit, respectively.

Accumulated Precipitation (in)  
October 1, 2018 to October 31, 2018

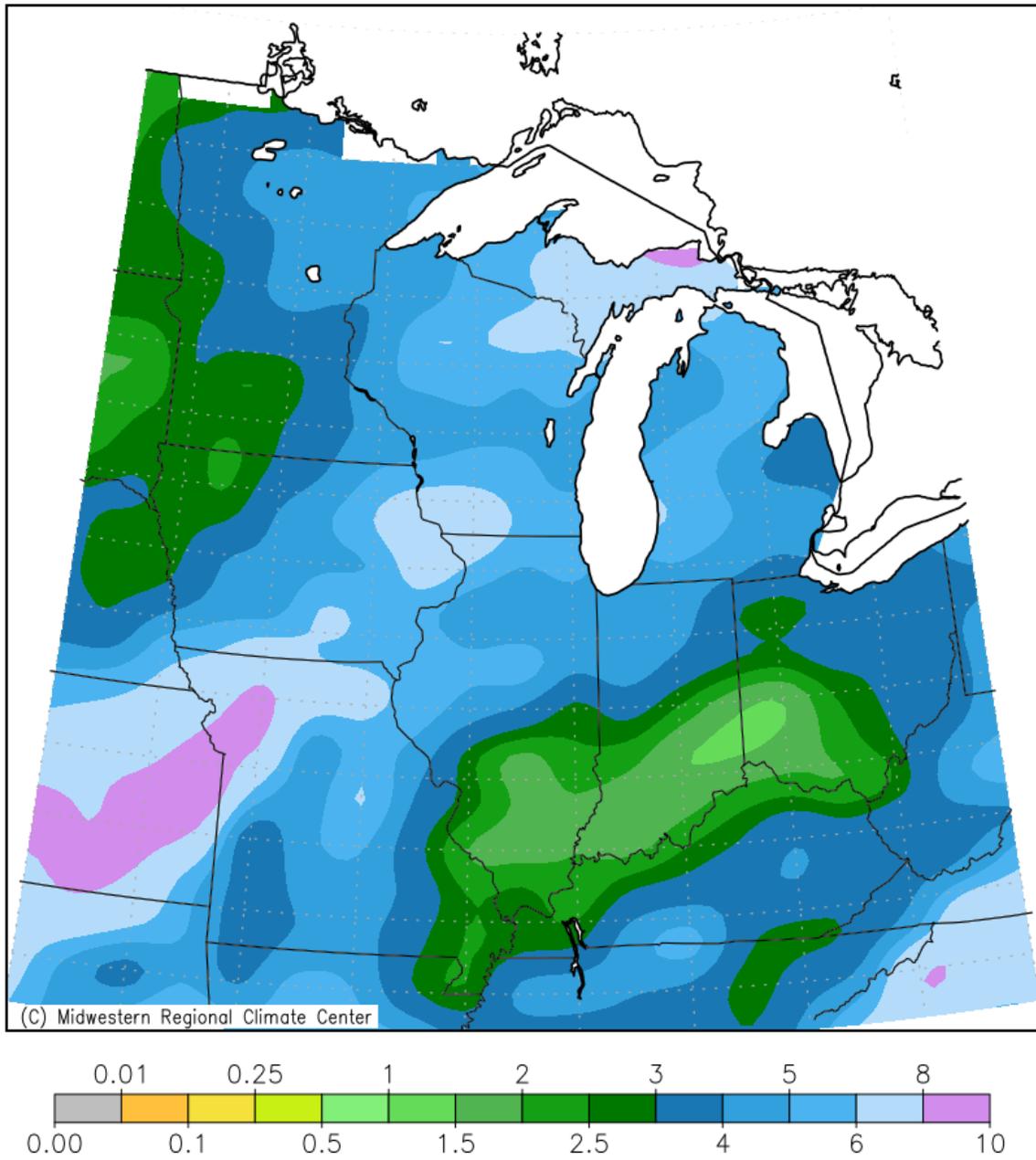
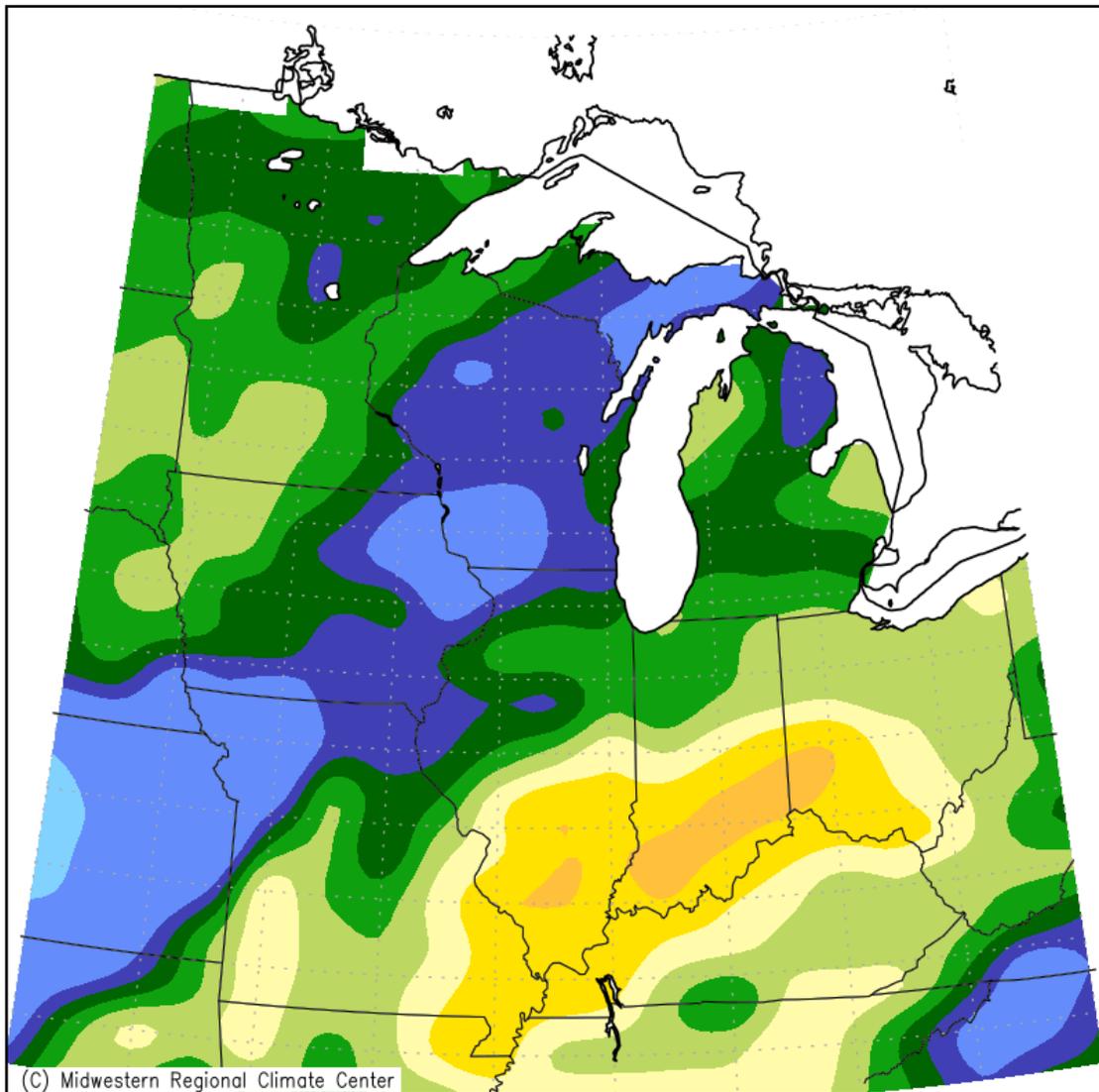
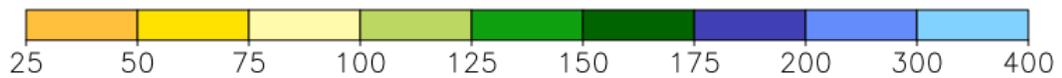


Figure 1. October 2018 Monthly Precipitation Totals

Accumulated Precipitation: Percent of Mean  
October 1, 2018 to October 31, 2018



Mean period is 1981–2010.



Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana–Champaign

Figure 2. October 2018 Percent of Mean of Accumulated Precipitation

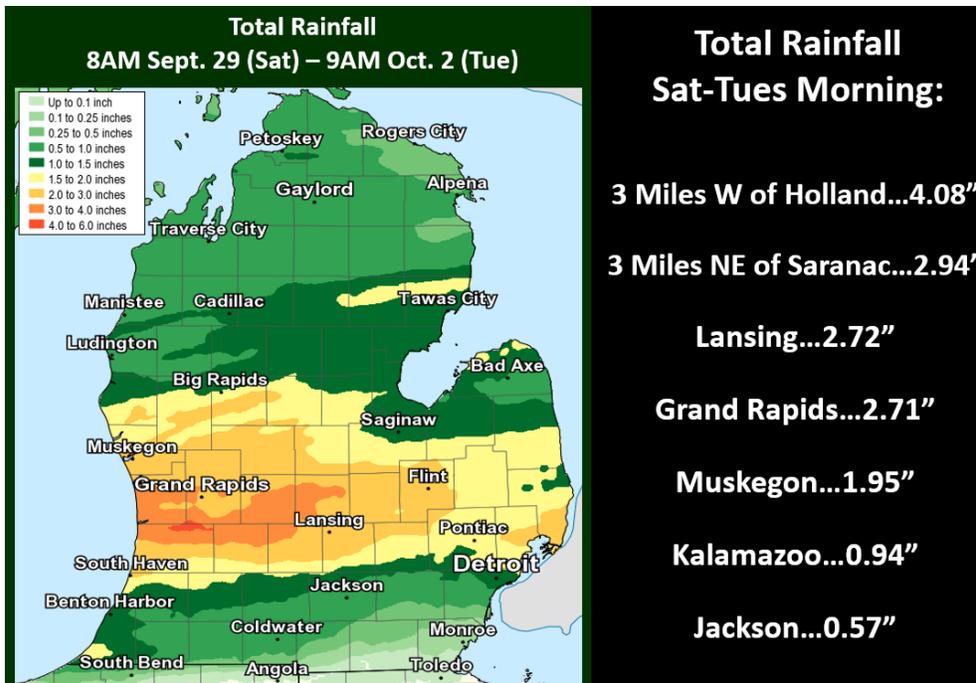


Figure 3. Multi-day rainfall totals spanning the end of September and beginning of October

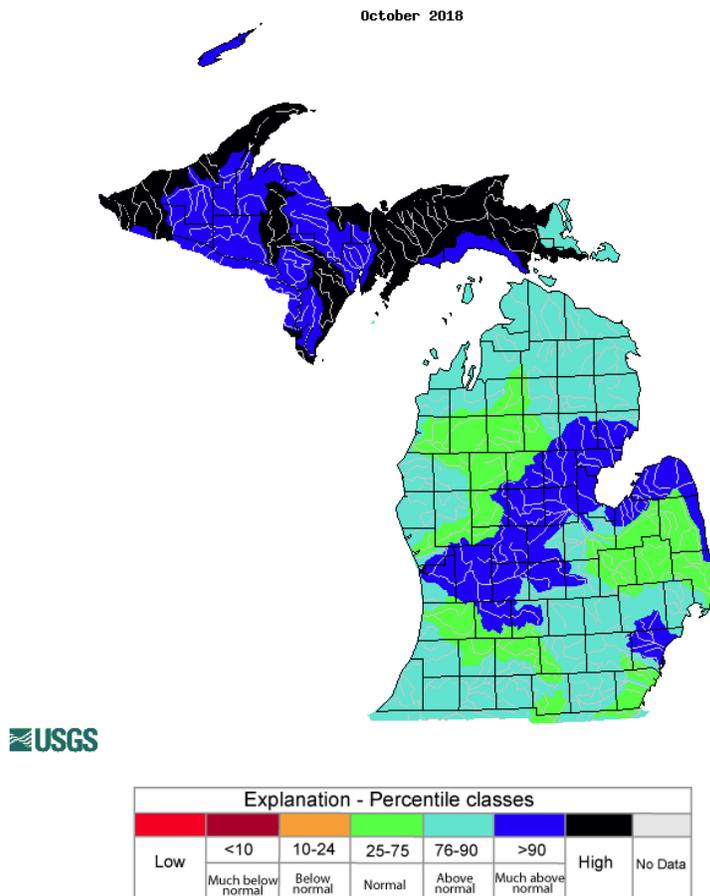


Figure 4. Monthly average streamflow by significant hydrologic units. Note above-normal flows across virtually all of the state, especially over the Upper Peninsula.

### **Hydrologic Products issued this month:**

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

### **News Articles and Related Documentation**

- [https://www.mlive.com/news/grand-rapids/index.ssf/2018/10/flood\\_closes\\_us\\_31\\_in\\_holland.html](https://www.mlive.com/news/grand-rapids/index.ssf/2018/10/flood_closes_us_31_in_holland.html)
- <https://www.hollandsentinel.com/news/20181001/more-rain-coming-as-ottawa-county-experiences-flooding>