**NWS FORM E-5** **U.S. DEPARTMENT OF COMMERCE**
NOAA, NATIONAL WEATHER SERVICE

**HSA OFFICE:**
**Grand Rapids, MI**

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

**MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS**

DATE:
March 13, 2020

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

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).

**X** An **X** inside this box indicates that no significant flooding occurred within this Hydrologic Service Area.

## Summary

February 2020 started on a fairly dry note, continuing the general dry conditions from the end of January. A few typical winter systems came through the area during the month, but overall the weather was pretty benign, with generally warmer than normal temperatures. The month started with very little snowpack, briefly developed a decent snowpack by mid month, and then melted most of that snowpack by the end of the month. This kept streamflows above average, but did allow them to overall drop toward more typical values for this time of year.

Meanwhile, Lake Michigan remained much higher than long-term average values, but did drop slightly (less than an inch) during the month. This was the second consecutive month that new records were set on Lake Michigan-Huron. Of note, also, the lack of ice growth on the lakes meant continued vulnerability to enhanced lakeshore impacts from storms, including dune and bluff erosion.

## Flood Conditions

Most rivers started the month in the 75$^{th}$ to 90$^{th}$ percentile streamflow values for February, as they continued to recover from the heavy rain events in January. By the 2$^{nd}$ half of the month, dry weather allowed most streams to drop to the 50$^{th}$ to 75$^{th}$ percentile; closer to normal, but still above average. No significant flooding events occurred during 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 February percentage of normal flow for selected rivers is listed below:

| Location | River | % of Normal |
|---|---|---|
| Scottville | Pere Marquette | 126 |
| Whitehall | White | 105 |

| | | |
|---|---|---|
| Evart | Muskegon | 123 |
| Mt. Pleasant | Chippewa | 142 |
| Lansing | Grand | 139 |
| Grand Rapids | Grand | 134 |
| East Lansing | Red Cedar | 148 |
| Hastings | Thornapple | 165 |
| Battle Creek | Battle Creek | 173 |
| Battle Creek | Kalamazoo | 133 |

**General Hydrologic Information**

February precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 1.20, 1.22, and 1.02 inches, respectively (Figure 1). Monthly departures were -0.59, -0.25, and -0.81 inches, respectively. Yearly departures were +0.97, +2.15 and -0.23 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for February 2020 is shown in Figure 2.

Temperatures for the month of February were warmer than normal at Grand Rapids, Lansing and Muskegon. The monthly average temperature departures for these sites were +0.7, +0.8, and +1.6 degrees Fahrenheit, respectively.

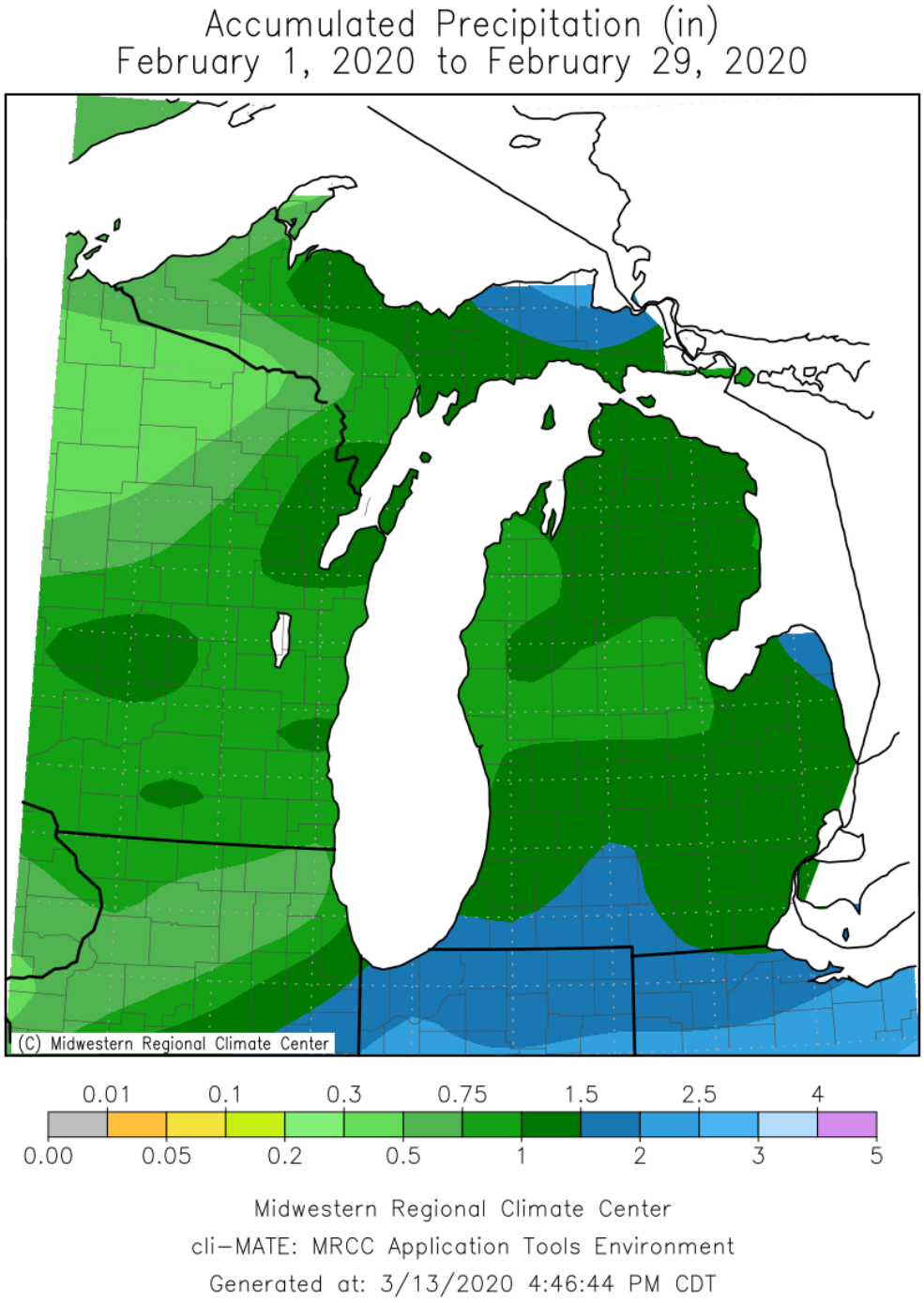



Figure 1. February 2020 Monthly Precipitation Totals

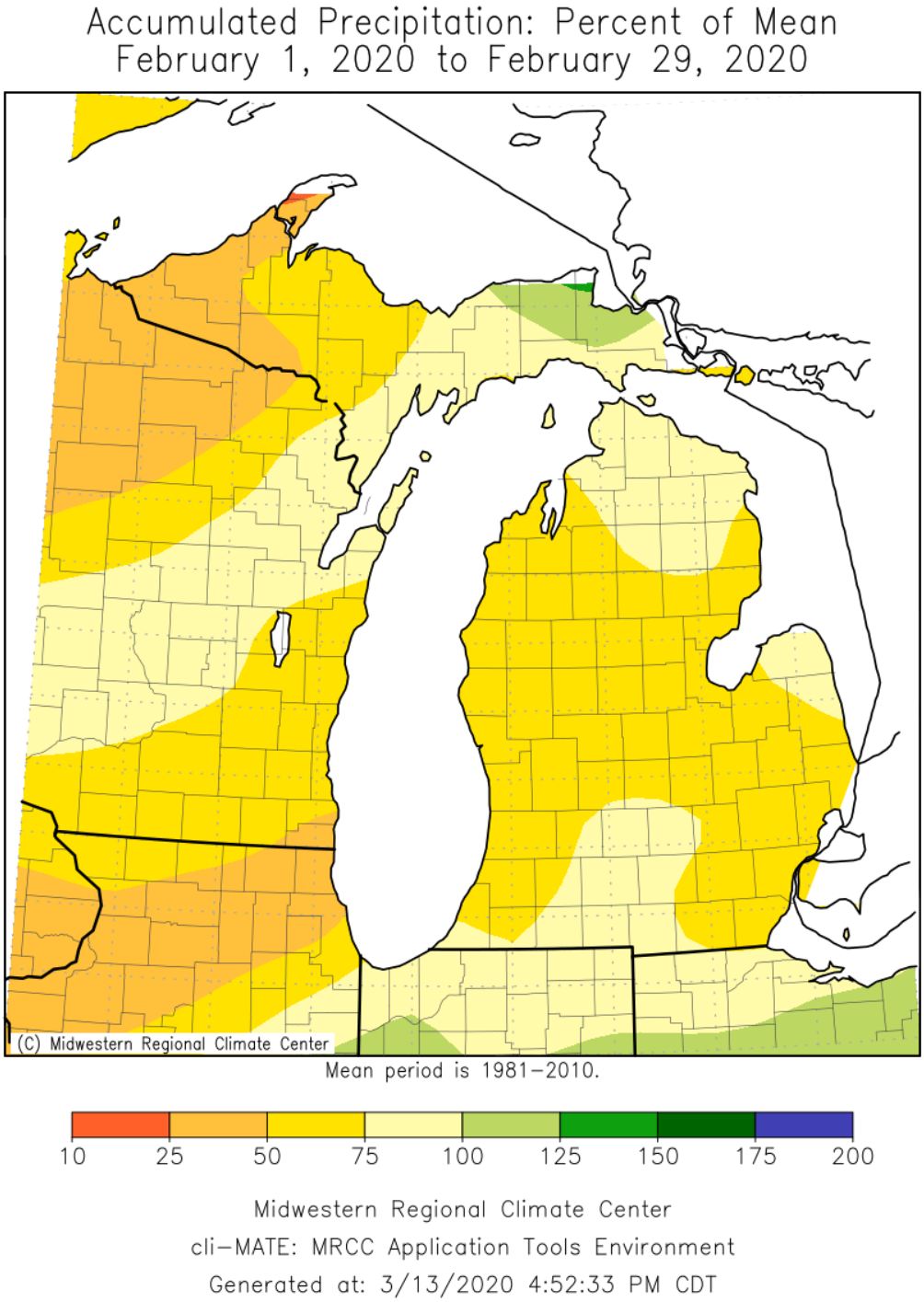
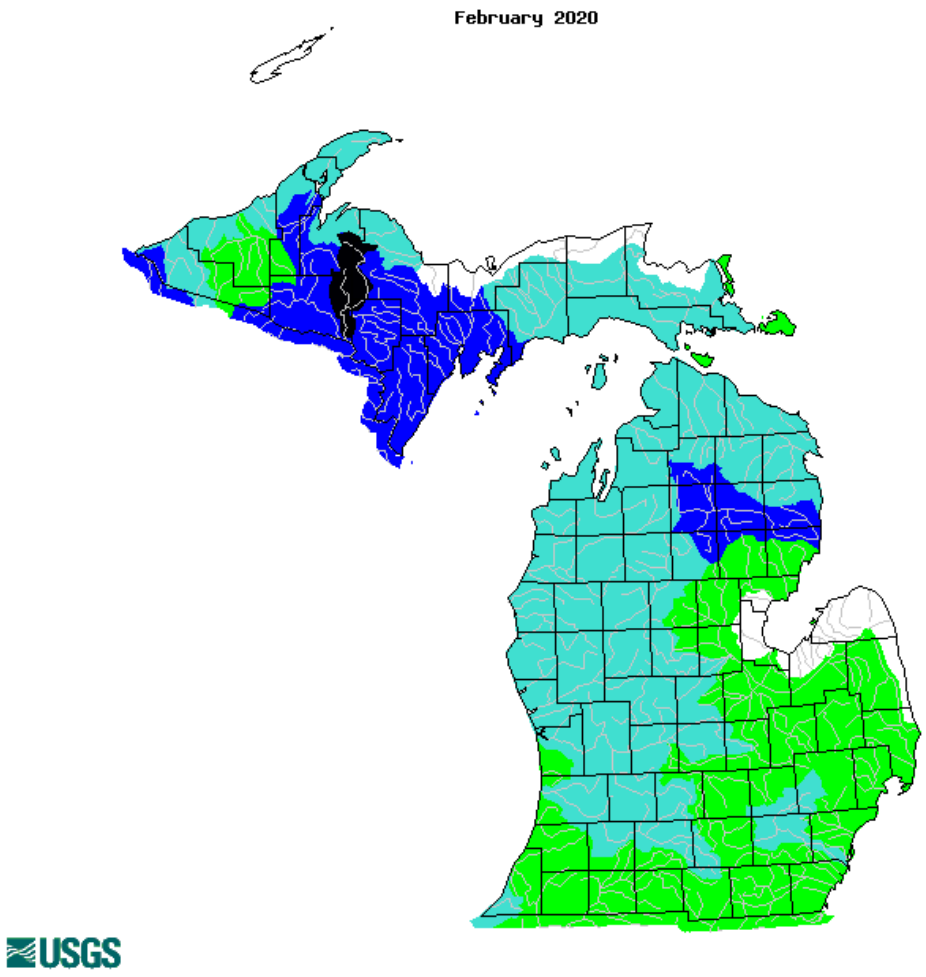



Figure 2. February 2020 Percent of Mean of Accumulated Precipitation.




| 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 February, grouped by significant hydrologic units. Note streamflows across Lower Michigan continue general above median for this time of year.

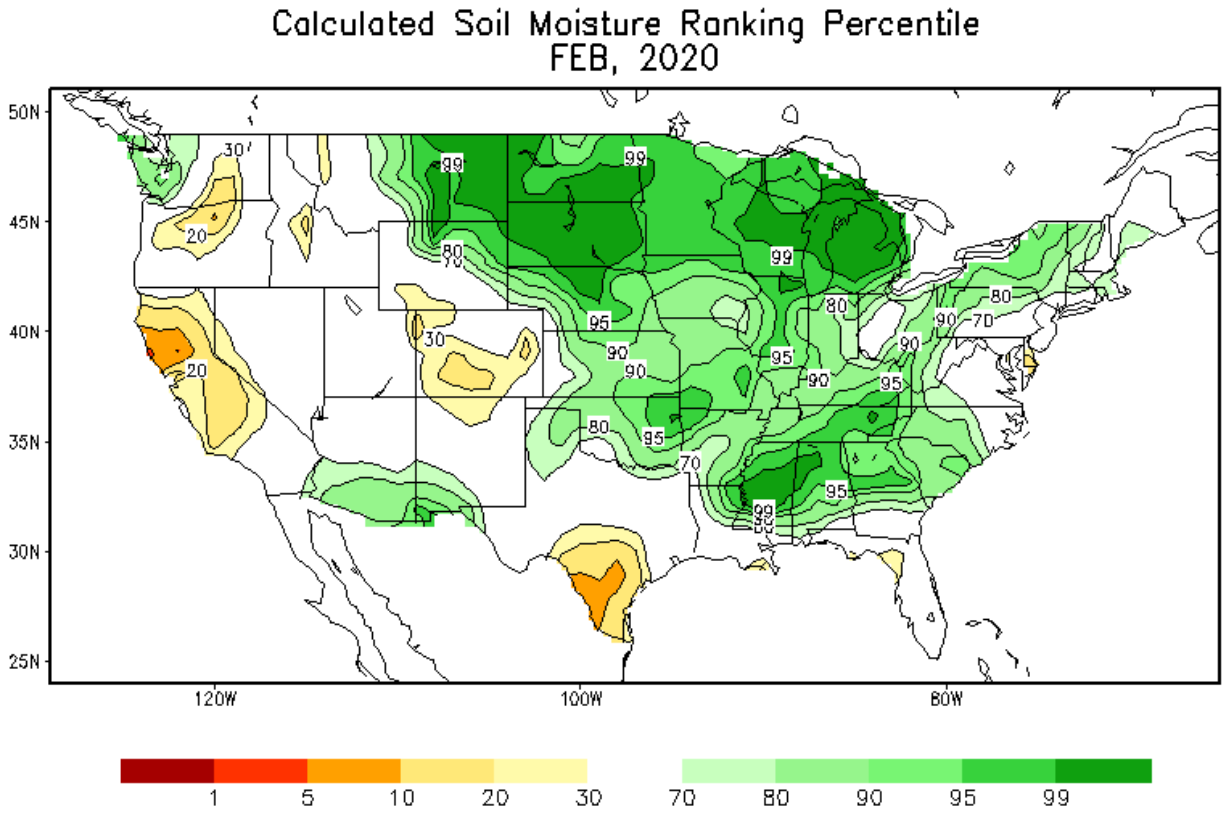



Figure 4. Chart of monthly values of soil moisture, by percentile ranking. This is the 17th consecutive month West Michigan has been at or above the 80th percentile. This saturated ground leads to increased runoff efficiency of rainfall into rivers and streams.

## Hydrologic Products issued this month:

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

## News Articles and Related Documentation

https://www.mlive.com/news/kalamazoo/2020/02/we-have-to-respond-to-lake-michigan-erosion-us-senator-says.html

https://www.mlive.com/news/grand-rapids/2020/02/michmash-how-houses-falling-into-the-great-lakes-impacts-all-of-michigan.html

https://www.woodtv.com/weather/rising-waters/boulders-and-sea-walls-fighting-lake-michigan-erosion/

http://wwmt.com/news/local/record-high-water-levels-for-lake-michigan-higher-levels-likely-in-2020