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

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

HSA OFFICE:
Grand Rapids, MI
REPORT FOR (MONTH &YEAR):
March 2020

DATE:
April 14, 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).

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

Summary

March 2020 was overall a warm and wet month across Southwest and West-Central Lower Michigan. More than half of the overall rainfall came in frequent small events, with two main larger rain events during the month. The first round of heavy rain moved through in the 2nd week, and dropped between 1 and 2 inches of rain, mainly across the Muskegon, White, and Pere Marquette River Basins. The second widespread heavy rain moved in near the end of the month, with the heaviest rain falling over the Kalamazoo and parts of the Grand River Basin. Multiple rivers rose to around bankfull, but no significant flooding was experienced, as the heavy rains were spread out enough in space and time for the water to be handled by the river systems.

Meanwhile, Lake Michigan fell about an inch from February to March (monthly average), but remained much higher than long-term average values. This was the third consecutive month that new monthly records were set on Lake Michigan-Huron.

Flood Conditions

Thanks to the fairly dry February, the larger rivers started the month near normal levels. The widespread rain events that hit the Kalamazoo River and Muskegon River basins caused each of those rivers to pop up to above the 90th percentile flows for a week or more. However, notably, because the Grand River was on the periphery of both of those rain events, water levels remain near long-term normals throughout the month. It's worth noting that March is the typical highest-flow during the course of the year for rivers in Southern Lower Michigan, with the typical spring melt usually occurring near the middle of the month. This year, the bulk of the snowpack was pretty much gone by the start of March. As a result, the typical spring snowmelt flood season was a non-event this year, with no significant flooding occurring.

Flood Stage Report

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

River Conditions

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

Location	River	% of Normal
Scottville	Pere Marquette	143
Whitehall	White	162
Evart	Muskegon	133
Mt. Pleasant	Chippewa	151
Lansing	Grand	214
Grand Rapids	Grand	163
East Lansing	Red Cedar	291
Hastings	Thornapple	236
Battle Creek	Battle Creek	340
Battle Creek	Kalamazoo	269

General Hydrologic Information

March precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 3.27, 2.94, and 3.79 inches, respectively (Figure 1). Monthly departures were +0.90, +0.88, and +1.54 inches, respectively. Yearly departures were +1.87, +3.03 and +1.31 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for March 2020 is shown in Figure 2.

Temperatures for the month of March were warmer than normal at Grand Rapids, Lansing and Muskegon. The monthly average temperature departures for these sites were +3.0, +3.9, and +3.3 degrees Fahrenheit, respectively.

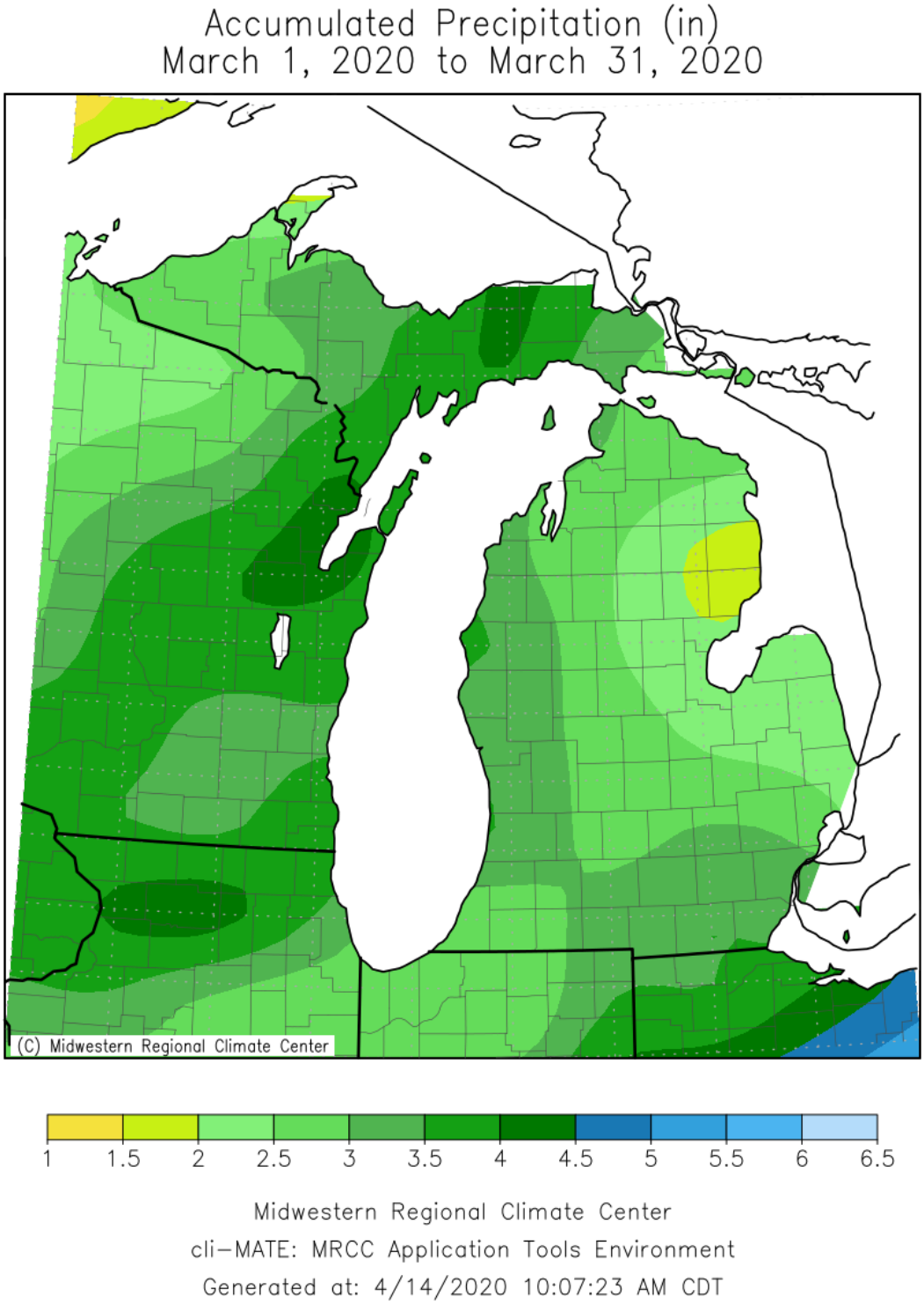


Figure 1. March 2020 Monthly Precipitation Totals

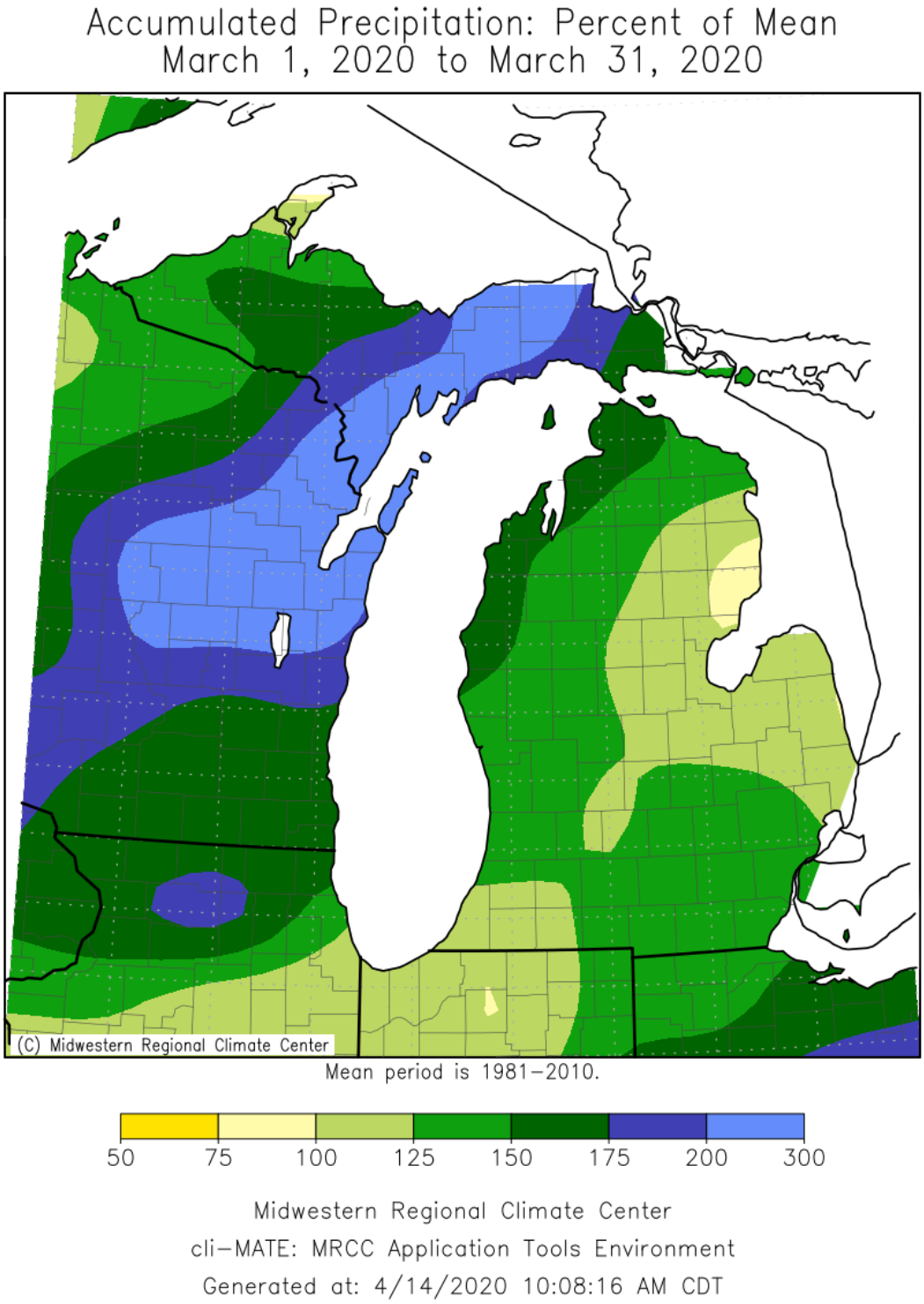
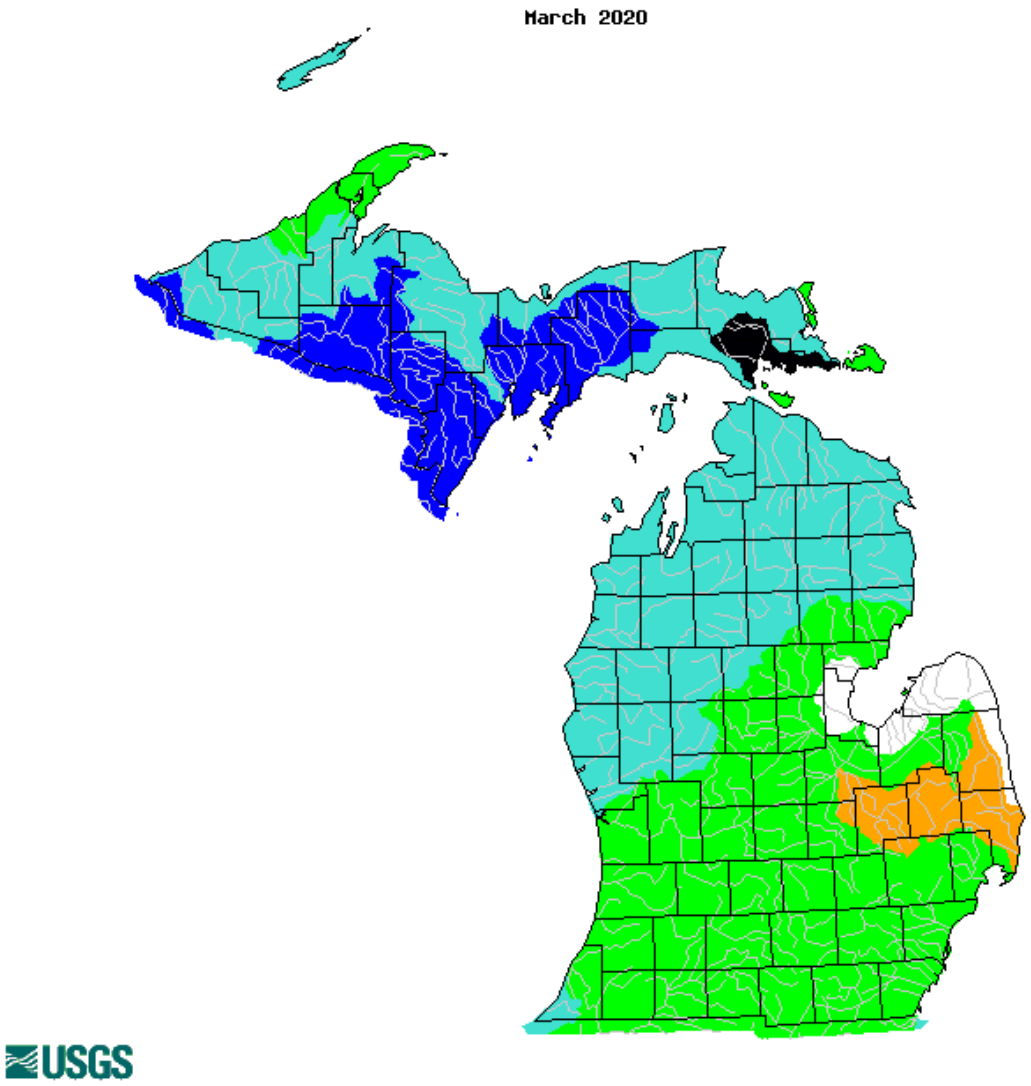


Figure 2. March 2020 Percent of Mean of Accumulated Precipitation.



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 March, grouped by significant hydrologic units. Note streamflows near normal across southern Lower Michigan, trending to more

significant above average to the north and over the Upper Peninsula.

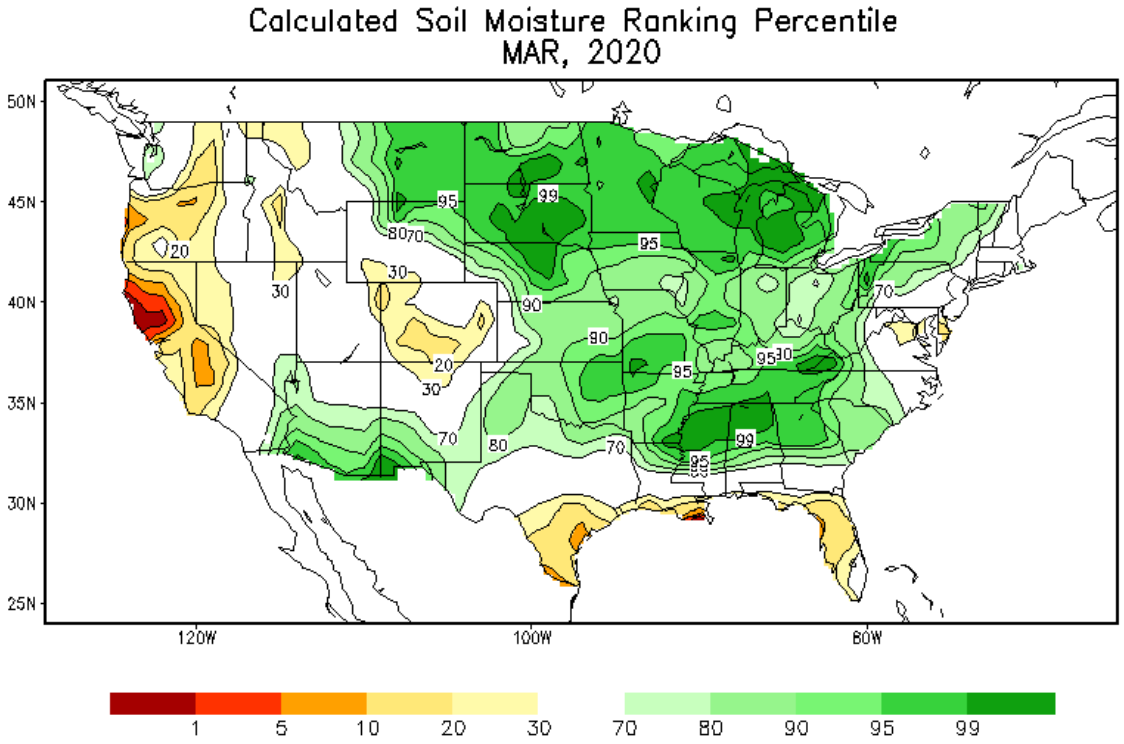


Figure 4. Chart of monthly values of soil moisture, by percentile ranking. This is the 18th consecutive month West Michigan has been at or above the 80th percentile. This saturated ground leads to increased runoff efficiency of rainfall into rivers and streams.

Hydrologic Products issued this month:

31 Hydrologic Summaries (ARBRVAGRR)
2 Probabilistic Hydrologic Outlook (ARBESFGRR)
4 Event-driven Hydrologic Outlook (ARBESFGRR)
0 Daily River Forecasts (ARBRVDGRR)
0 Areal Flood Advisory Statements (ARBFLSGRR)
3Flood Warning Statements (ARBFLWGRR)
3 Flood Watch Statements (ARBFFAGRR)
20 River Statements (ARBRVSGRR)

News Articles and Related Documentation

https://www.mlive.com/news/2020/03/numbers-show-impact-of-michigan-coastline-flooding-and-erosion-

from-high-water.html

https://wwmt.com/weather/severe-weather-center/spring-flood-risk-for-west-michigan-remains-higher-than-normal-heading-into-wetter-months