

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):
April 2021

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

DATE:
May 14, 2021

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 flooding occurred within this hydrologic service area.

Summary

To some degree April was a tale of two months. The first half of the month was much warmer than normal, and the 2nd half of the month was much cooler than normal. What was consistent, though, was the continued dry conditions, with most areas seeing only about 50% of the usual rainfall for April. Soils continue to dry out, and are threatening to impact agricultural activities in a significant way if the dry pattern continues. By the end of the month, the entire area was depicted in Moderate Drought (D1) by the U.S. Drought Monitor. The only significant rainfall event happened around the 10th of the month, with around an inch of rain, but did not result in any flooding.

The continued dry conditions allowed Lake Michigan water levels to remain essentially unchanged from March, defying the typical increasing water levels this time of year as snowmelt and spring rains work their way through the Great Lakes waterways. Water levels are now nearly 18 inches lower than this time last year, but still well above the long-term average levels.

Flood Conditions

The major river systems continued to slip into lower and lower percentile categories with the ongoing drought. Despite a brief improvement midmonth after that lone widespread rainstorm, water levels spent most of the month near or below the 10th percentile for this time of year. The Lower Muskegon River and Kalamazoo River spent portions of the month at the lowest water levels ever recorded for this time of year.

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 April percentage of normal flow for selected rivers is listed below:

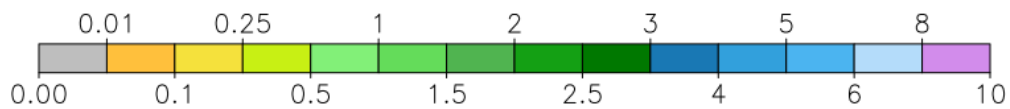
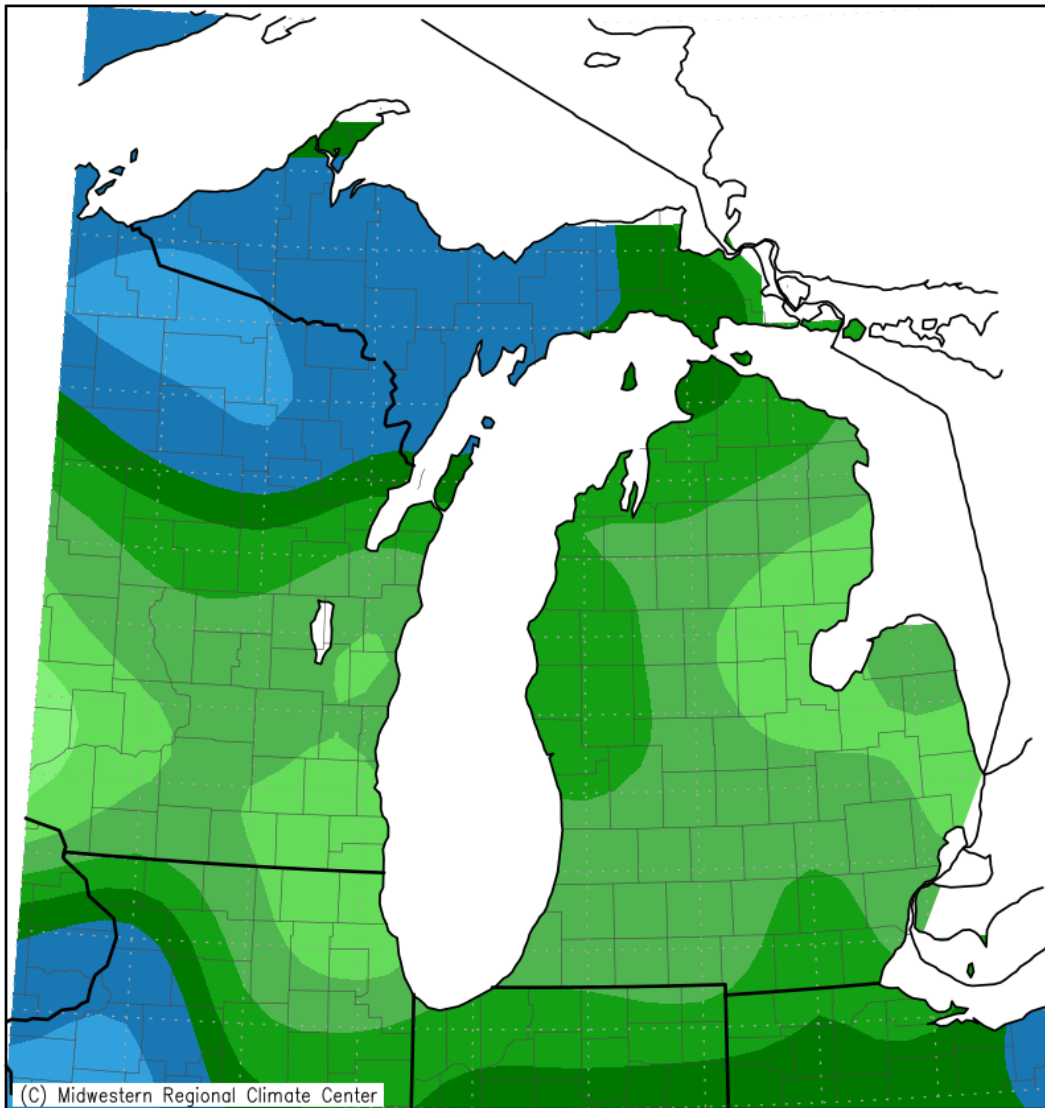
| <u>Location</u> | <u>River</u> | <u>% of Normal</u> |
|-----------------|----------------|--------------------|
| Scottville | Pere Marquette | 71 |
| Whitehall | White | 63 |
| Evert | Muskegon | 40 |
| Mt. Pleasant | Chippewa | 56 |
| Lansing | Grand | N/A |
| Grand Rapids | Grand | 57 |
| East Lansing | Red Cedar | 62 |
| Hastings | Thornapple | 56 |
| Battle Creek | Battle Creek | 62 |
| Battle Creek | Kalamazoo | 55 |

General Hydrologic Information

April precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 1.91, 1.67, and 1.62 inches, respectively (Figure 1). Monthly departures were -1.44, -1.36, and -1.29 inches, respectively. Yearly departures were -2.97, -2.07 and -3.57 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for April 2021 is shown in Figure 2.

Temperatures for the month of April at Grand Rapids, Lansing and Muskegon were slightly above average, though as noted earlier, the first half of the month was very warm and the second half of the month was much cooler than normal, which all nearly balanced out when looking at the numbers for the entire month. The monthly average temperature departures for these sites were +0.5, +1.5, and +1.8 degrees Fahrenheit, respectively.

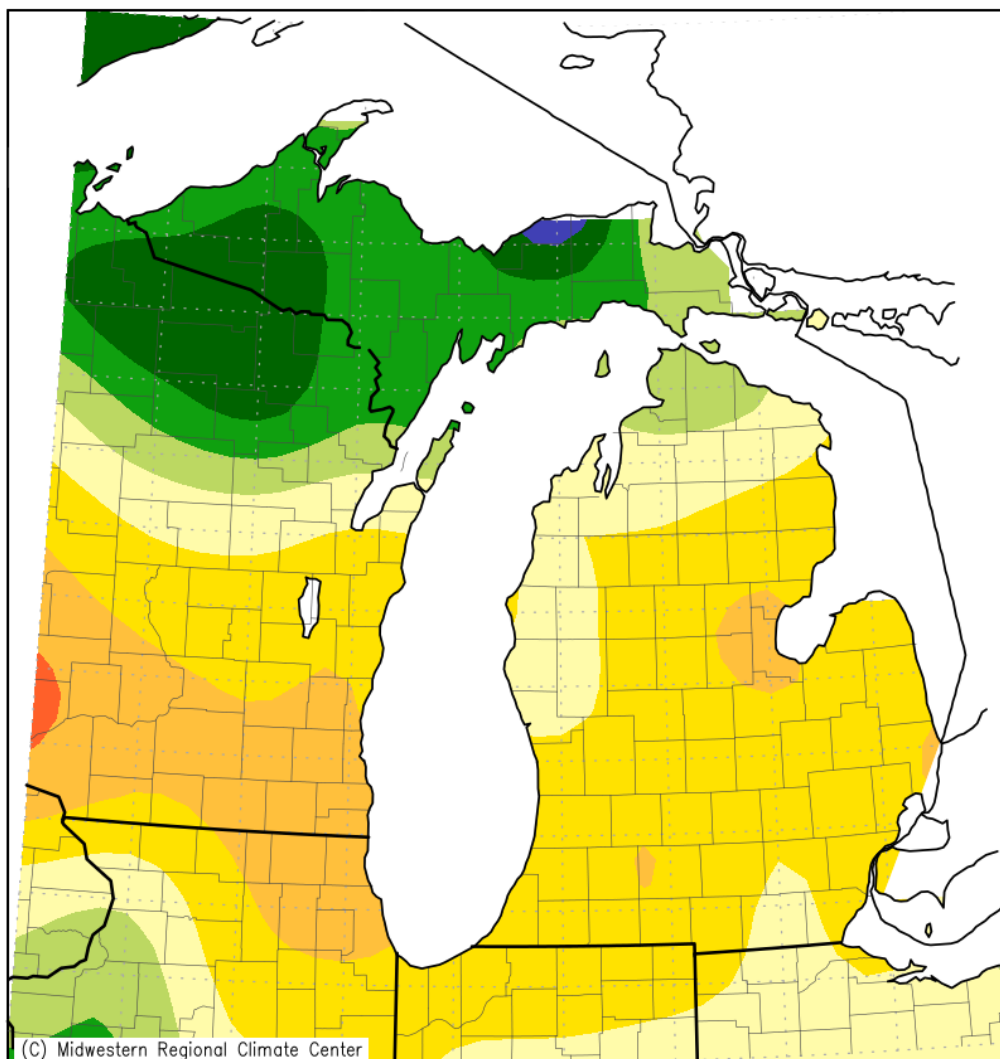
Accumulated Precipitation (in)
April 1, 2021 to April 30, 2021



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 5/14/2021 12:13:38 PM CDT

Figure 1. April 2021 Monthly Precipitation Totals.

Accumulated Precipitation: Percent of Mean
April 1, 2021 to April 30, 2021



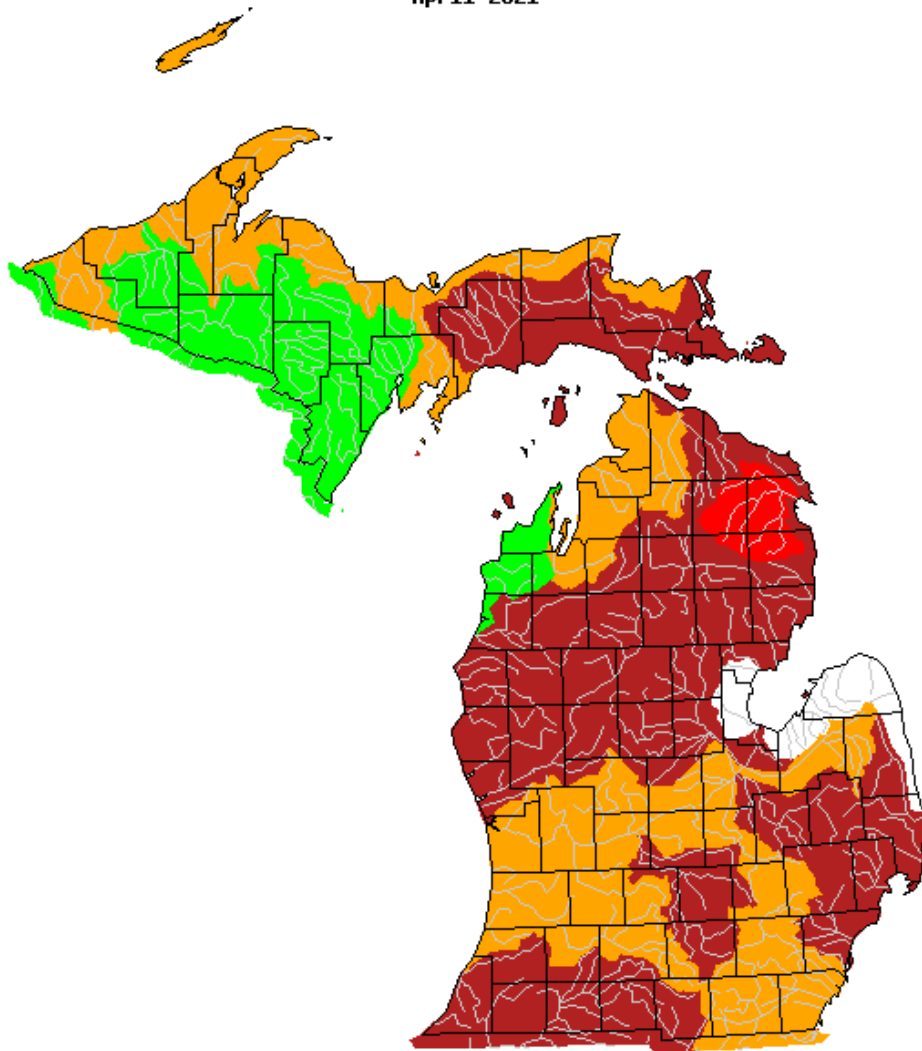
Mean period is 1991-2020.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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Figure 2. April 2021 Percent of Mean of Accumulated Precipitation.

April 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 April, grouped by significant hydrologic units. Note streamflows across Lower Michigan significantly below-average, owing to several months of relatively dry conditions.

Calculated Soil Moisture Ranking Percentile
APR, 2021

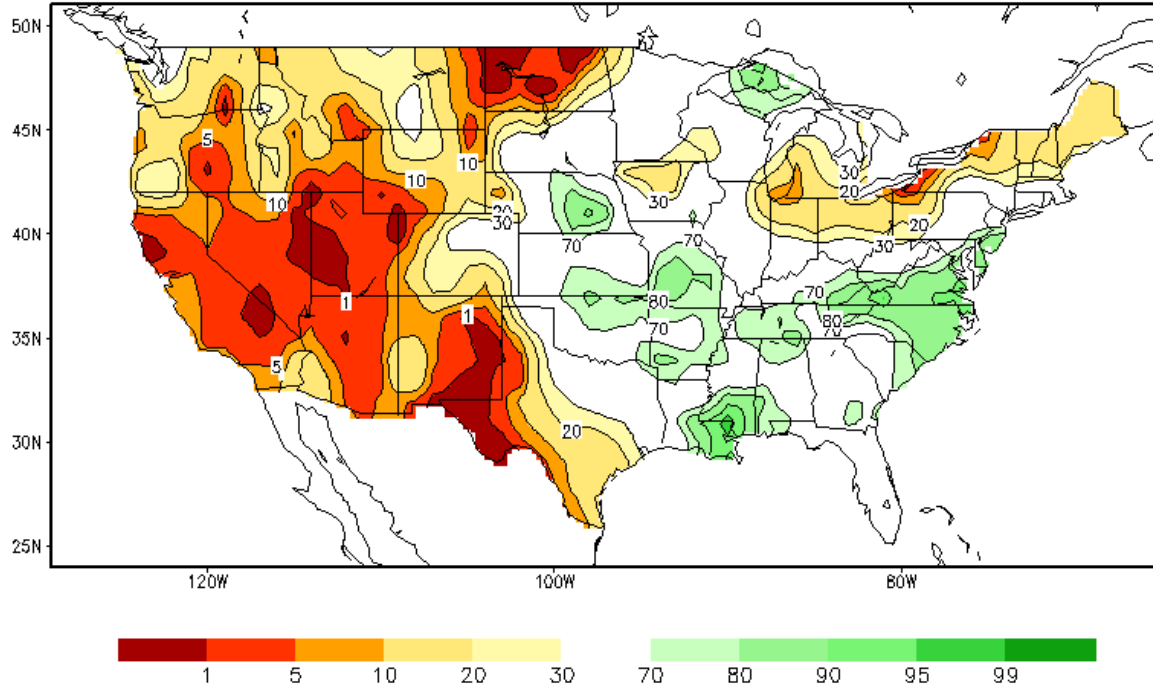
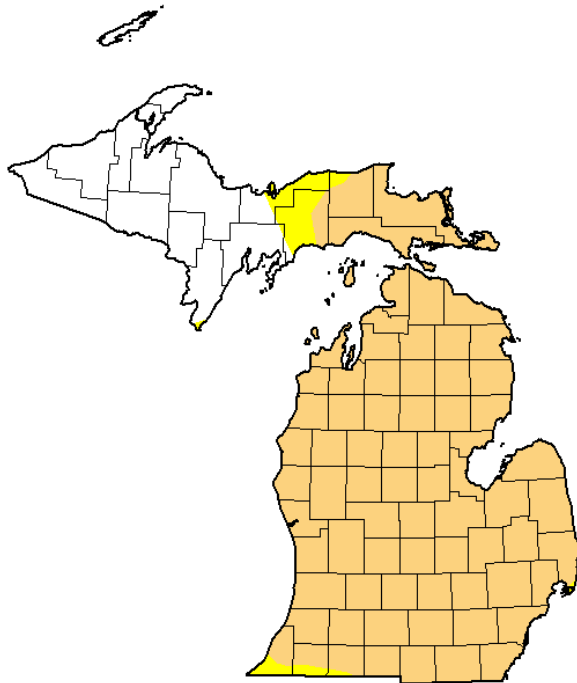


Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

U.S. Drought Monitor
Michigan

April 27, 2021
(Released Thursday, Apr. 29, 2021)
Valid 8 a.m. EDT



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:

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NCEI/NOAA



droughtmonitor.unl.edu

Figure 5. U.S. Drought Monitor analysis valid at the end of April, 2021

Hydrologic Products issued this month

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

News Articles and Related Documentation

<https://www.mlive.com/weather/2021/04/moderate-drought-has-just-overtaken-all-of-lower-michigan.html>

<https://www.mlive.com/weather/2021/04/its-really-dry-in-michigan-here-are-the-skimpy-numbers.html>

<https://www.wzzm13.com/article/weather/drought-conditions-are-ongoing-in-michigan/69-5ff87b9f-08e4-4e77-a543-13be166446cf>