Monthly Report of River and Flood Conditions

Report for April 2022

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/OH12x1) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 7116 SILVER SPRING, MD 20910	HSA OFFICE: **Marquette, MI** REPORT FOR (MONTH / YEAR): **April 2022** DATE: **May 15th, 2022** SIGNATURE: **Jordan Wendt, Hydrology Program Manager** **Robin J. Turner, MIC**
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 no flooding occurred within this Hydrologic Service Area.

Summary

After a quiet spring snowmelt season in 2020 and 2021, Upper Michigan experienced a prolonged period of elevated river levels during the month of April. As is usually needed for spring flooding in the UP, Upper Michigan had multiple "rain on snow" events, which exacerbated runoff amounts. Without the additional rain amounts or unusually warm temperatures, rivers usually remain within their banks during a normal freeze/thaw cycle. This prolonged period of rivers at or above bankfull levels began on April 13th, when widespread 0.5 to 1.5 inches of rain fell on top of melting snow. Along a line from roughly Watersmeet to Marquette, rainfall amounts were even higher with amounts of 1.5 to locally 2.5 inches. The following day, April 14th, experienced another round of soaking rain to the tune of 0.5 to 1.0 inches with some locally higher amounts up to 1.25 inches. These two rain events led to the first flooding event. Another round of flooding was experienced from April 24th through the 28th as multiple days of rainfall on April 21st, 23rd (upwards of 1.0 to 1.5 inches of rain west and central), 26th, and 27th. More detail on the flooding can be found on the next page, within the media links sections, as well as on the April E3 (flood report) at www.weather.gov/mqt/hydro.

Location	Precipitation	% of Normal	Snowfall
WFO Marquette	5.77	172%	17.9
Marquette City	4.39	160%	6.0
Quincy Hill	4.77	M	15.8
Ironwood	3.51	118%	19.3
Iron Mountain	3.34	120%	4.0
Manistique	4.16	146%	T
Munising	4.73	161%	8.6
Stambaugh	4.04	158%	7.9

NOTE: Precipitation after 8 AM EST April 30th was counted in May stats for all but the WFO Marquette site due to the reporting structure of our cooperative observers.

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Flooding Conditions

Six river points across NWS Marquette's service area reached flood warning levels: Sturgeon River (Alston, Chassell, and Nahma…Delta Co), Middle Branch Escanaba Humboldt, Paint River in Crystal Falls, and Chocolay River Harvey. In addition to the river flooding, there was also a low-risk dam breach on the Net River in Baraga County. It was an active month, with over 100 Flood Statements issued and 12 total Flood Warnings issued…which is roughly a little more than half of what was issued in April 2019 (184 and 17 respectively). The snowpack in April 2019 (record values for many NOHRSC locations) had almost double the amount of SWE that April 2022 had. The last Hydrologic Outlook (ESF) issued before the flooding, on Mar 28th, forecast a 50% chance of reaching Minor Flood Stage based on the current hydrologic conditions at the time (the historical chance of flooding is 31% or roughly every 3rd year). At Humboldt, the historical chance of reaching Minor Flood Stage is around 13%, but the ESF suggested a 39% chance of reaching minor flood stage based on the current conditions on March 28th. Conversely at Paint River, the historical chances are 18%, with the conditional simulations at the time showing a 16% chance.

River Conditions

All rivers across Upper Michigan were flowing above normal during the month of April. Rivers within the snowbelts were much above normal during this time as runoff from rain on top of melting snow routed through the waterways. This shows up well on the Black, Presque Isle, Ontonagon, Michigamme, Manistique and other rivers within the snow belts on the image below.

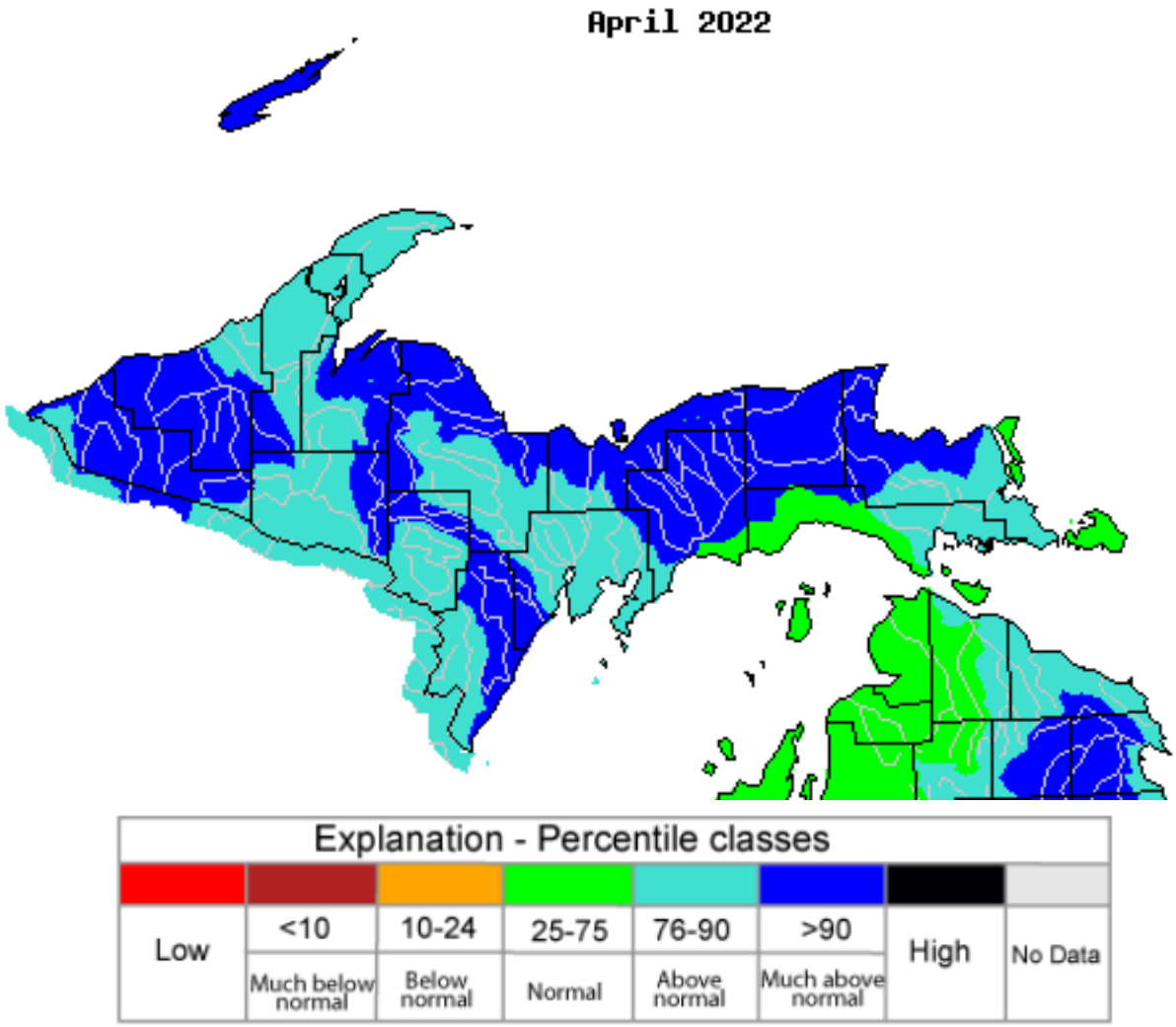

Figure 1: USGS monthly average streamflow in April 2022 across Upper Michigan

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Snowpack SWE (Snow Water Equivalent) Conditions

By the end of April, snowpack was mostly confined to the Keweenaw, with the other snowbelt regions holding on to an inch or two of liquid equivalent.

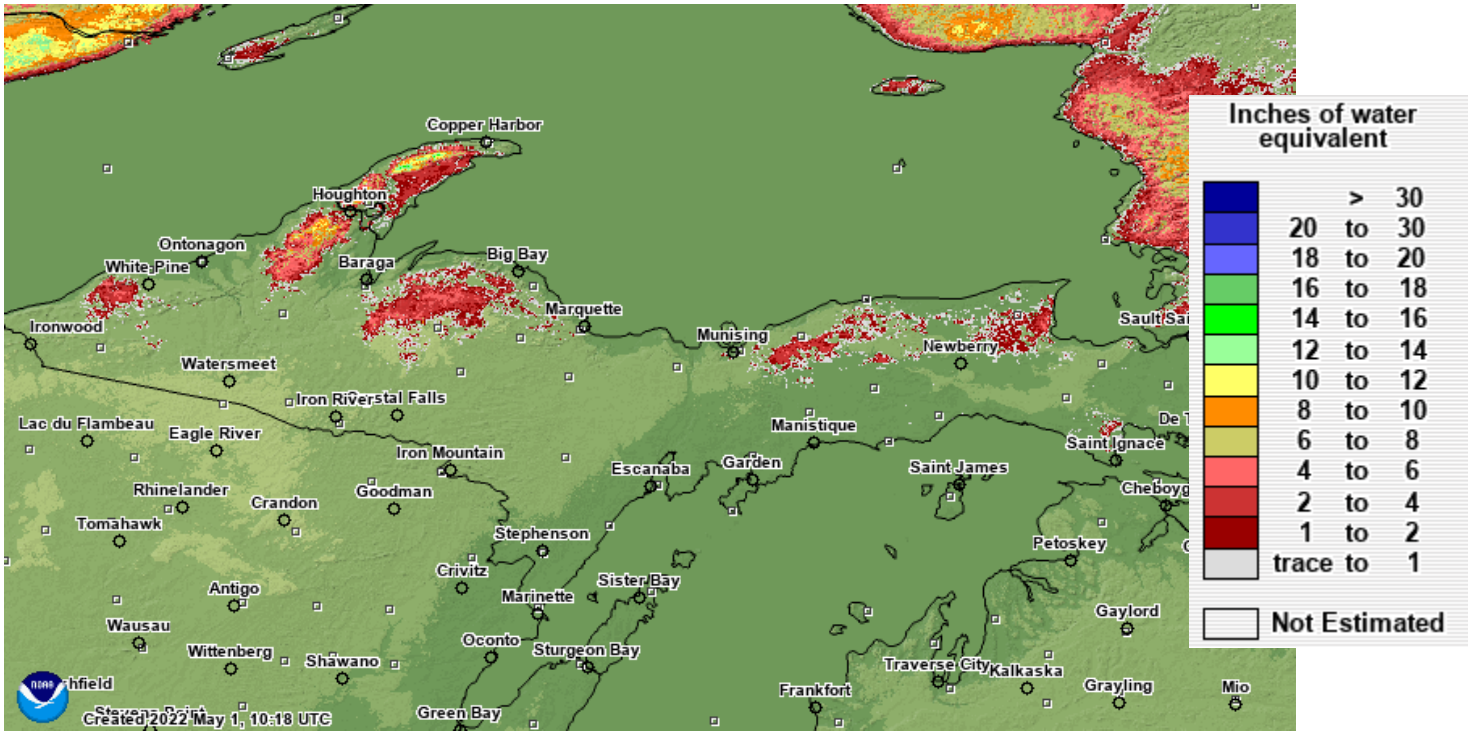
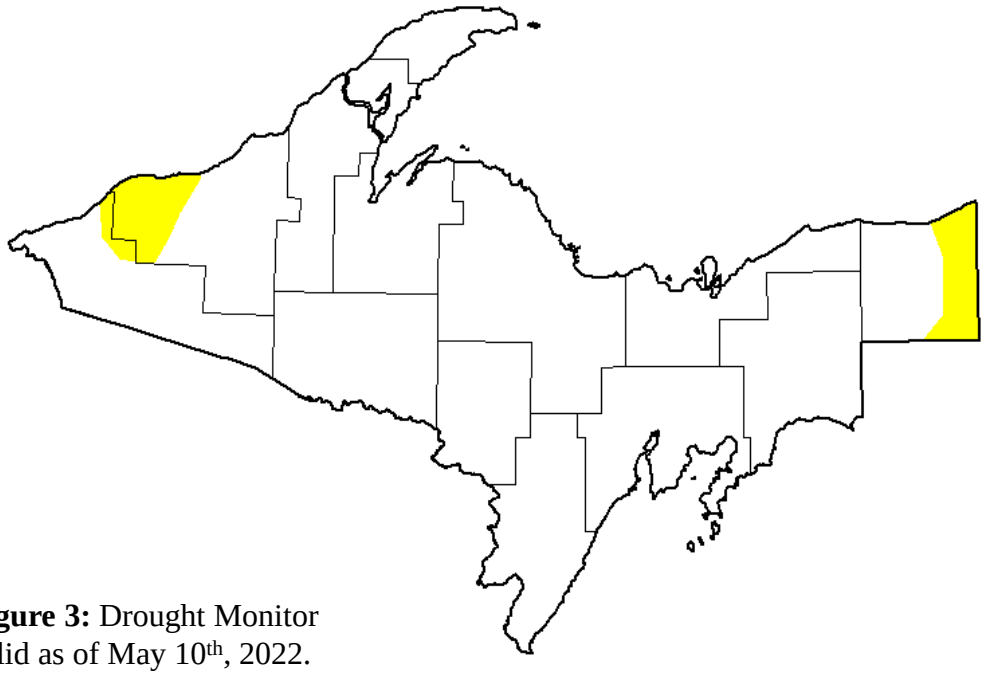


Figure 2: Modeled snowpack snow water equivalent on May 1st.

Drought Discussion

Outside of some abnormally dry conditions across the Porkies and eastern Hiawatha, Upper Michigan remains drought free. For the latest drought status, please visit http://www.drought.gov.



May 10, 2022

(Released Thursday, May. 12, 2022)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	94.90	5.10	0.00	0.00	0.00	0.00
Last Week 05-03-2022	94.90	5.10	0.00	0.00	0.00	0.00
3 Months Ago 02-08-2022	45.20	54.80	27.69	0.00	0.00	0.00
Start of Calendar Year 01-04-2022	26.00	74.00	35.44	0.51	0.00	0.00
Start of Water Year 09-28-2021	51.73	48.27	6.70	0.49	0.00	0.00
One Year Ago 05-11-2021	87.01	12.99	8.41	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

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droughtmonitor.unl.edu

Figure 3: Drought Monitor valid as of May 10th, 2022.

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Media Links

https://www.mlive.com/news/2022/04/up-dam-partial-failure-results-in-sink-hole-washed-out-road.html
https://www.uppermichiganssource.com/2022/04/14/spring-flooding-chocolay-river/
https://www.michigan.gov/dnr/about/newsroom/releases/2022/04/28/partial-failure-of-low-hazard-dam-on-net-river-in-baraga-county
https://www.9and10news.com/2022/04/28/dnr-reports-partial-failure-of-net-river-dam-in-baraga-county/
https://www.miningjournal.net/news/2022/05/net-river-dam-fails-in-western-u-p/

Hydro Products Issued

Product	Number
Hydrologic Outlook (ESF)	0
Flood Watch (FFA)	0
Flood Warning (FLW)	12
Flood Advisories and Statements (FLS)	113
Flash Flood Warning (FFW)	0
Flash Flood Statement (FFS)	0
Hydrologic Summary (RVA)	30
Daily River Forecasts (RVD)	28

Precipitation Summary

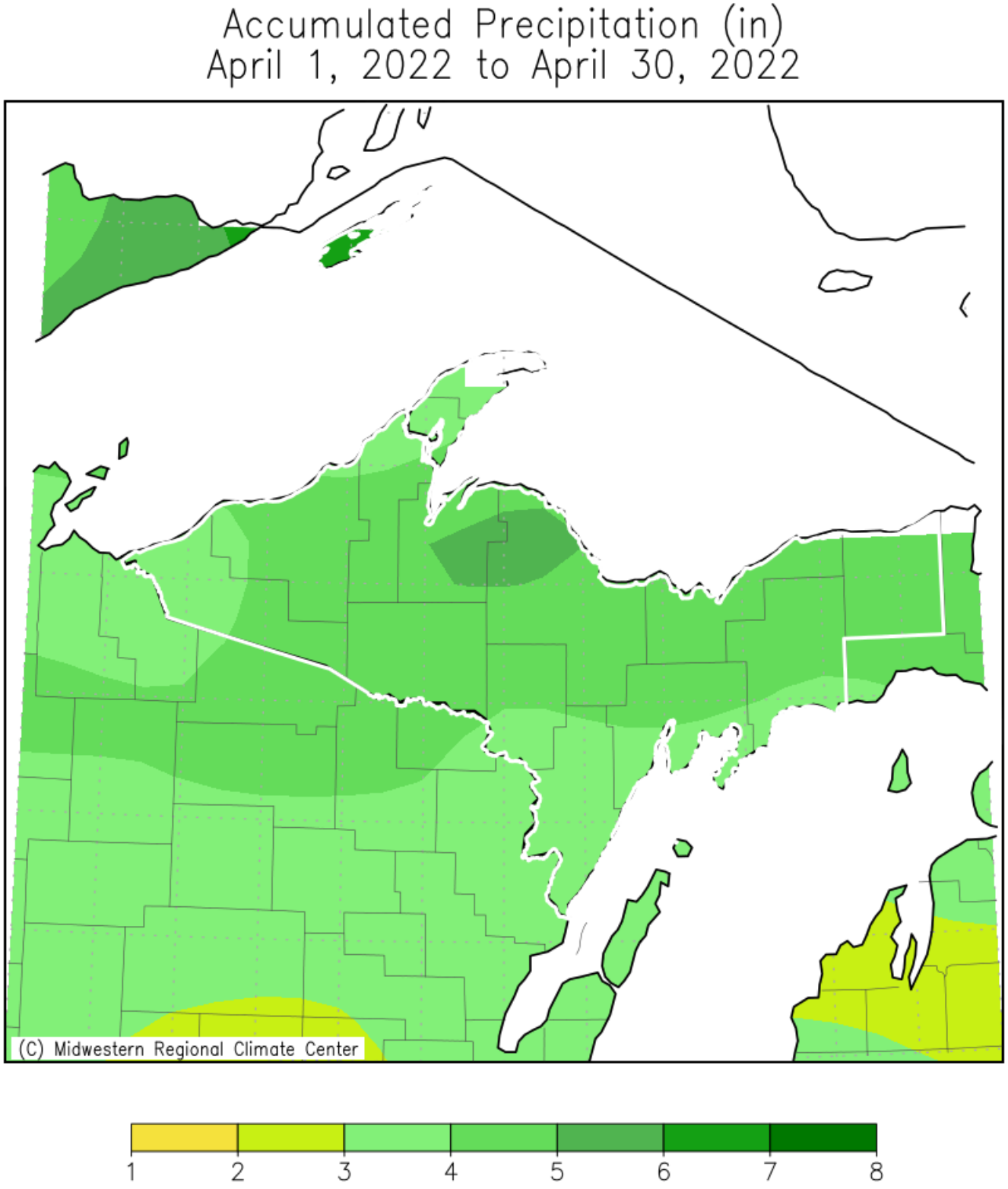

Figure 4: April 2022 Monthly Precipitation Totals.

Precipitation Summary Continued

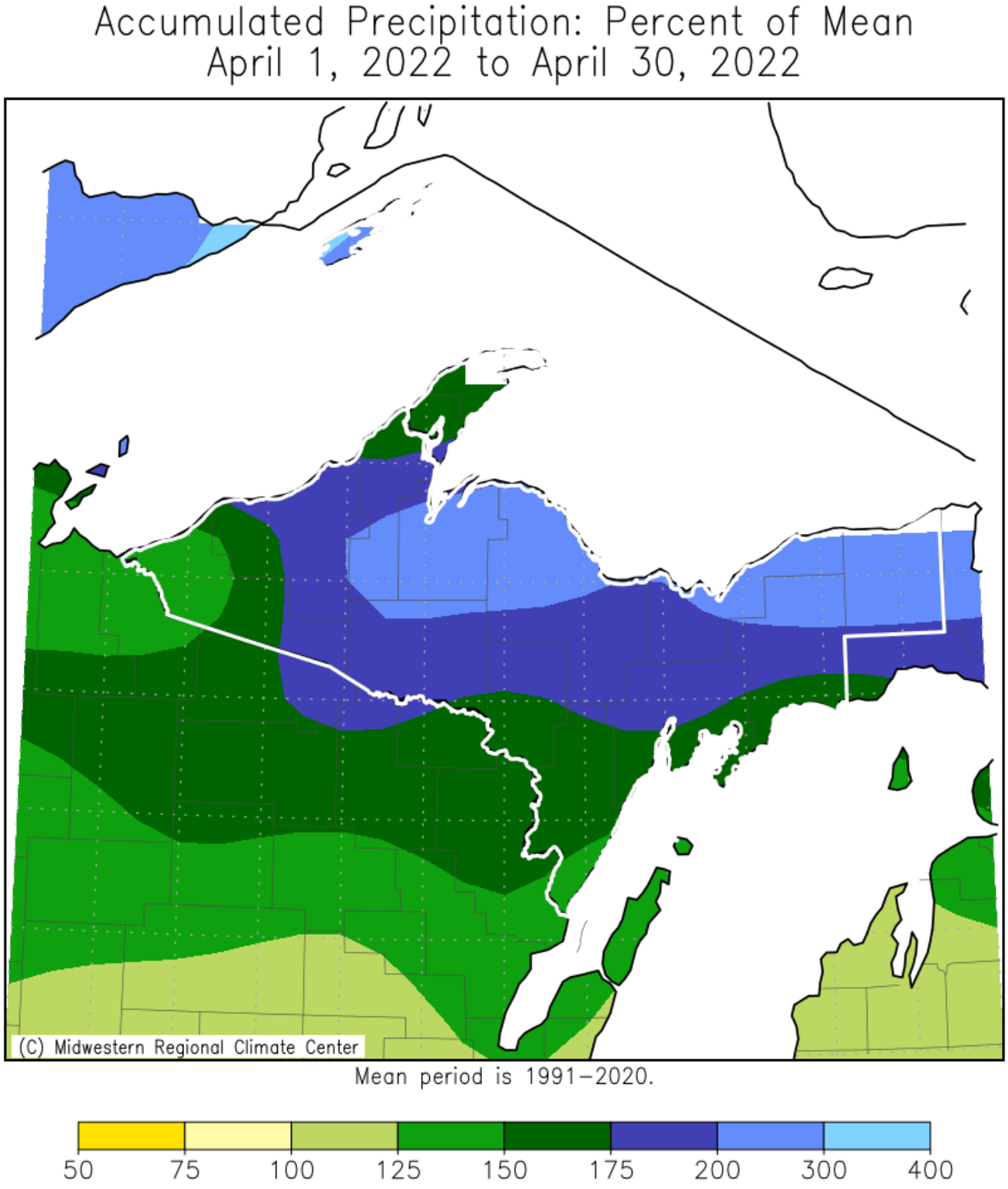

Figure 5: April 2022 Percent of Normal of Accumulated Precipitation.

Soil Moisture Anomaly

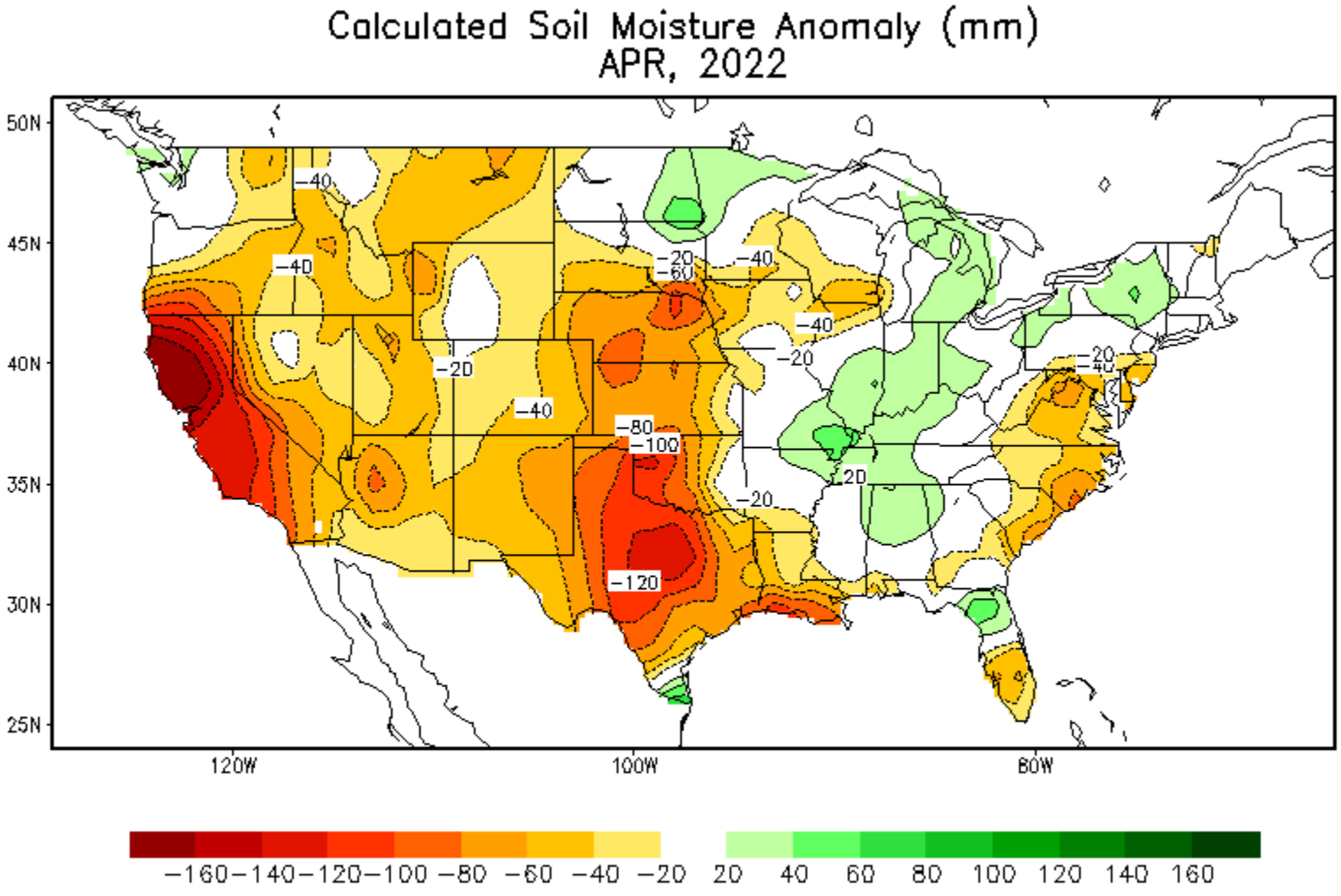

Figure 6: Climate Prediction Center's monthly average soil moisture anomaly for April 2022.