



Monthly Report of River and Flood Conditions

Report for October 2021

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): October 2021
	DATE: November 10th, 2021
	SIGNATURE: Jordan Wendt, Hydro 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

The above-normal temperature and below-normal precipitation trend continued in October 2021, finishing as the 2nd warmest October on record at WFO Marquette (2020 was actually the coldest on record). The seasonal increase in precipitation, which is usually tied to cooler air masses and a more active jet stream, did not occur this year. With the below-normal precipitation (Figure 4) continuing into October, the drought status did worsen for most of the UP; however, portions of western and eastern Upper Michigan actually saw some improvement due to isolated lake-effect (Figure 2).

Location	Precipitation	% of Normal	Snowfall
WFO Marquette	1.88	47%	T
Marquette City	2.30	67%	0.0
Quincy Hill	4.36	M	T
Ironwood	2.03	50%	T
Iron Mountain	1.45	44%	0.0
Manistique	2.96	74%	0.0
Munising	4.01	81%	T
Stambaugh	1.39	42%	0.0

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



Flooding Conditions

There were no flooding concerns during the month of October 2021.

River Conditions

Overall, rivers across Upper Michigan ran near- to below-normal for the month of October. This is primarily due to below-normal precipitation amounts.

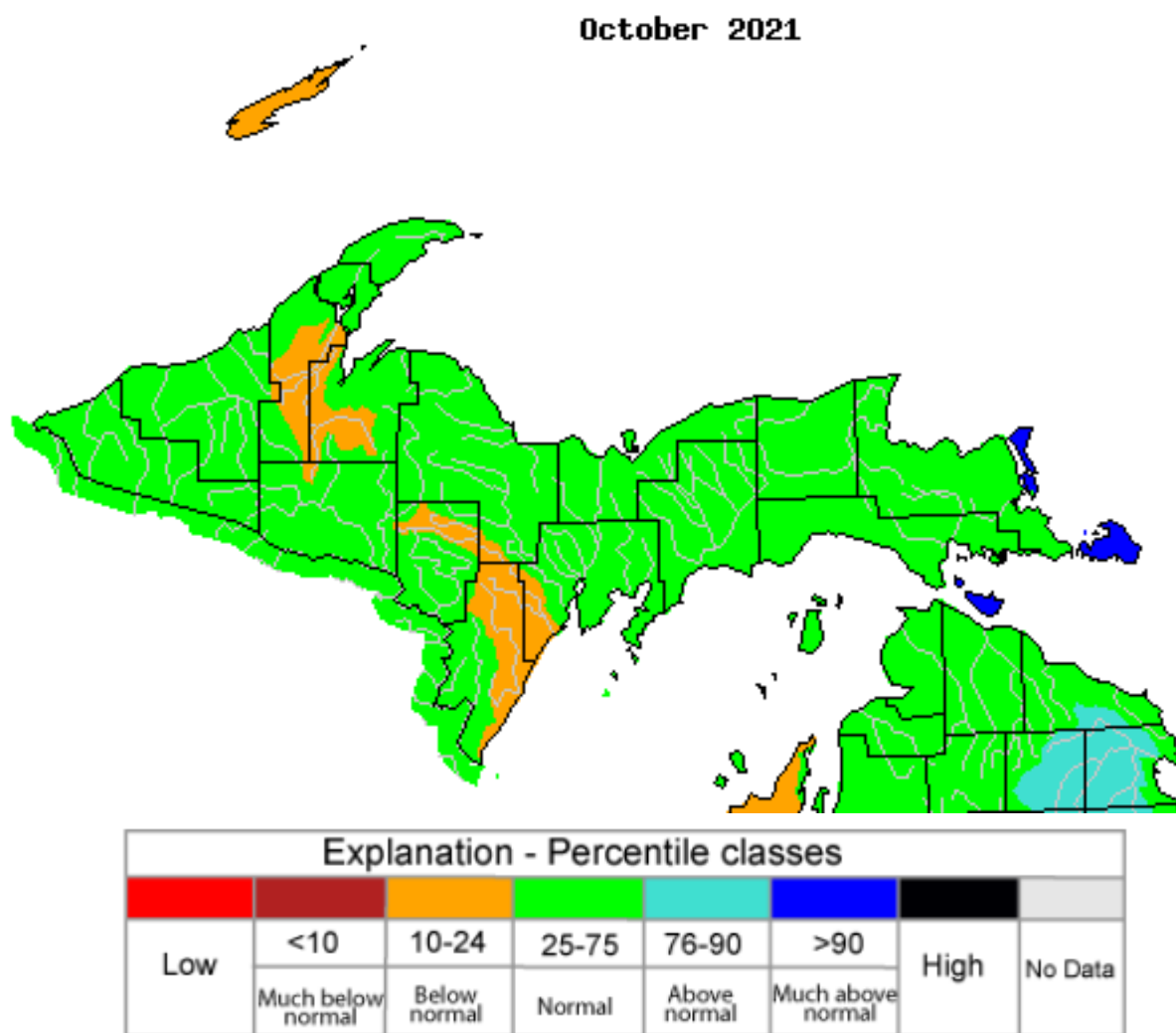


Figure 1: USGS monthly average streamflow in October 2021 across Upper Michigan

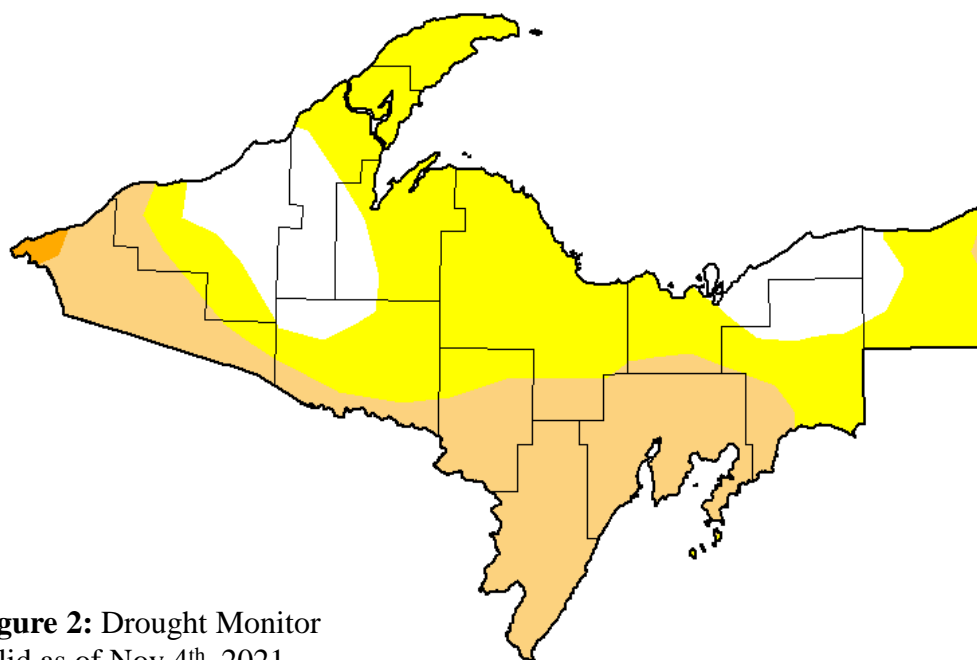


Snowpack Conditions

With below-normal precipitation and snowfall and above-normal temperatures, there was no snowpack established for the month of October.

Drought Discussion

Below-normal precipitation in October has allowed for the expansion of moderate drought across southern Upper Michigan. Early November lake-effect has removed portions of Upper Michigan from drought status. For the latest drought status, please visit <http://www.drought.gov>.



November 2, 2021
 (Released Thursday, Nov. 4, 2021)
 Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	18.11	81.89	35.49	0.51	0.00	0.00
Last Week 10-26-2021	30.82	69.18	10.36	0.51	0.00	0.00
3 Months Ago 08-02-2021	64.18	35.82	1.56	0.00	0.00	0.00
Start of Calendar Year 12-29-2020	100.00	0.00	0.00	0.00	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 11-03-2020	100.00	0.00	0.00	0.00	0.00	0.00

Intensity:
 None (White) D2 Severe Drought (Orange)
 D0 Abnormally Dry (Yellow) D3 Extreme Drought (Red)
 D1 Moderate Drought (Light Orange) D4 Exceptional Drought (Dark Red)

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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 NOAA/NWS/NCEP/CPC



Figure 2: Drought Monitor valid as of Nov 4th, 2021.



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Media Links

None.

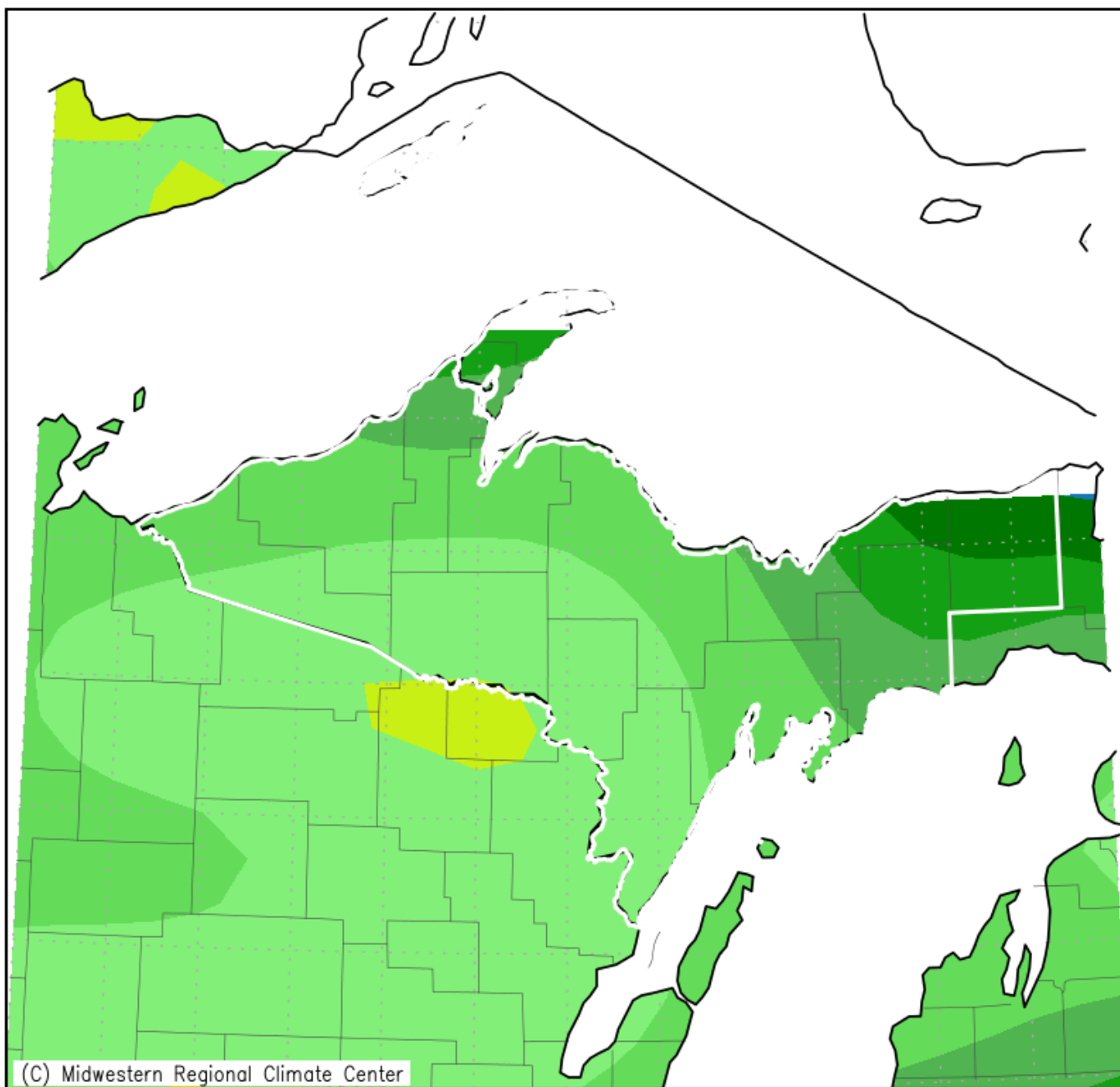
Hydro Products Issued

Product	Number
Hydrologic Outlook (ESF)	1
Flood Watch (FFA)	0
Flood Warning (FLW)	0
Flood Advisories and Statements (FLS)	0
Flash Flood Warning (FFW)	0
Flash Flood Statement (FFS)	0
Hydrologic Summary (RVA)	31
Daily River Forecasts (RVD)	31



Precipitation Summary

Accumulated Precipitation (in)
October 1, 2021 to October 31, 2021



(C) Midwestern Regional Climate Center



Figure 3: October 2021 Monthly Precipitation Totals.



Precipitation Summary Continued

Accumulated Precipitation: Percent of Mean
October 1, 2021 to October 31, 2021

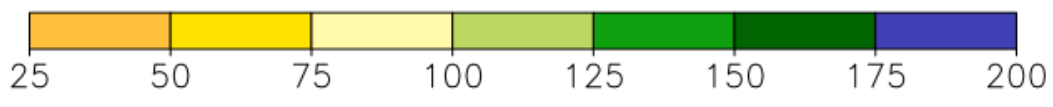
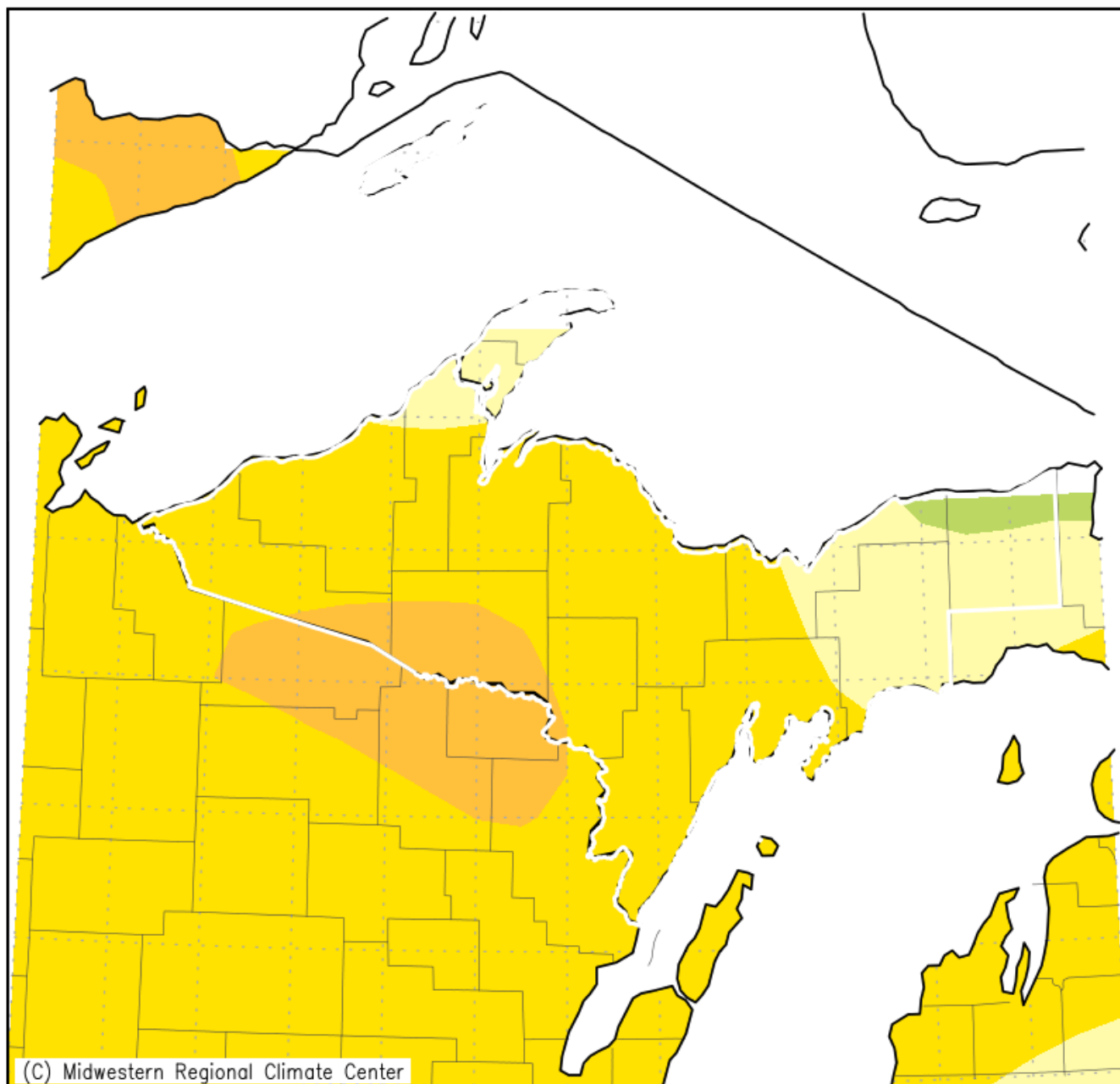


Figure 4: October 2021 Percent of Normal of Accumulated Precipitation.



Soil Moisture Anomaly

Calculated Soil Moisture Anomaly (mm)
OCT, 2021

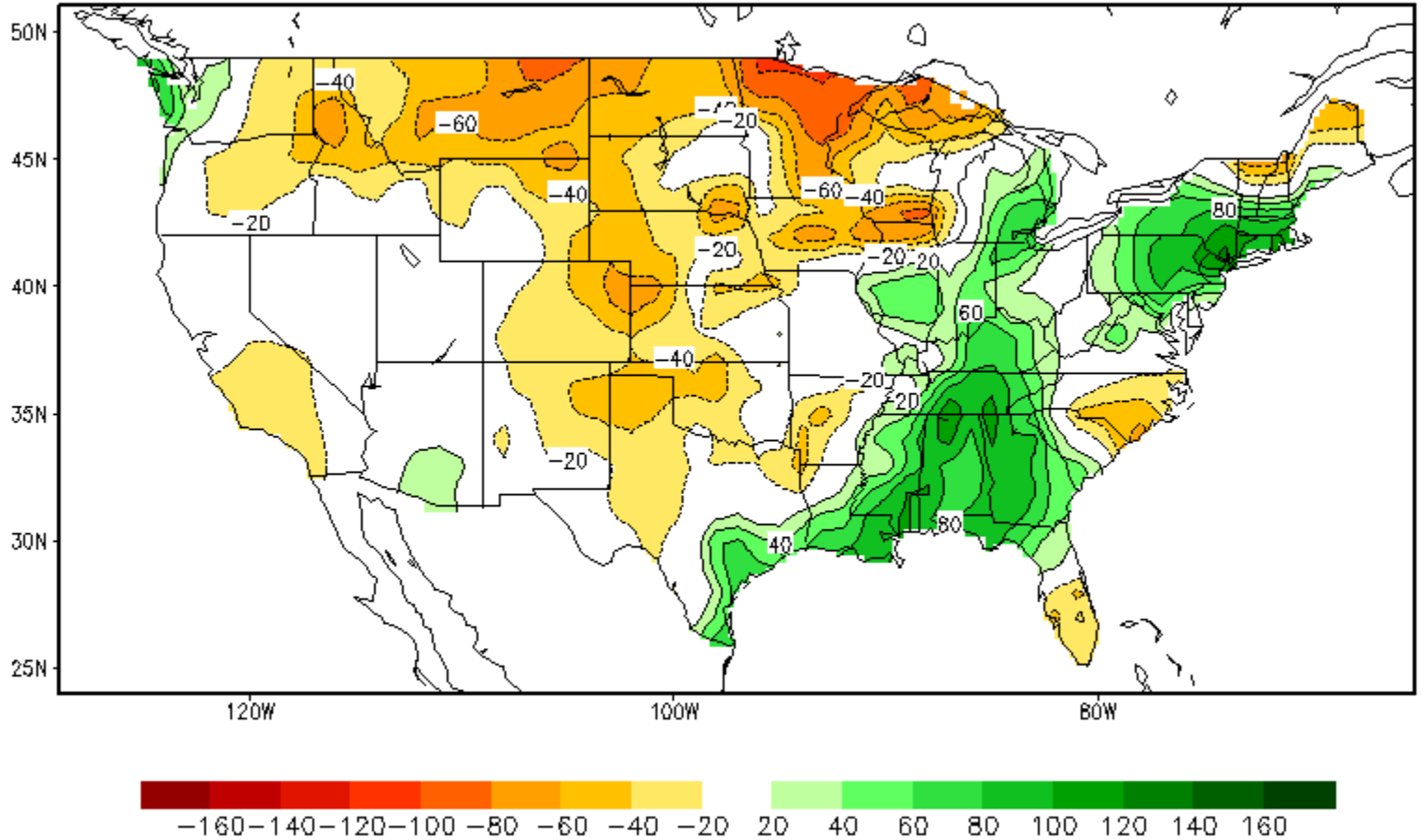


Figure 5: Climate Prediction Center's monthly average soil moisture anomaly for October 2021.