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

HSA OFFICE:
Grand Rapids, MI

REPORT FOR (MONTH &YEAR):
January 2019

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:
May 6, 2019

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

SIGNATURE:
Daniel K. Cobb, MIC
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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 significant flooding occurred within this Hydrologic Service Area.

Summary

The first two-thirds of January 2019 continued the trend of warmer and drier than normal conditions that had prevailed for much of December. On January 21, season-to-date snowfall at Grand Rapids was only around 21 inches, which was less than half of normal for that date. The switch flipped during the latter one-third of the month, with significantly colder air and a very active storm track moving into the Great Lakes. Only 10 days later, as the month ended, Grand Rapids had 48 inches season-to-date snowfall (near normal), with a multi-day round of bitter arctic air affecting the state with one of the coldest airmasses in more than 20 years. While some ice was growing on the rivers during the first few weeks of January, most parts of the mainstem rivers were still ice-free. This all changed as the bitter cold air arrived. Aided by frequently snowfall, ice production went into overdrive on the rivers. So much ice was being produced that several freeze-up ice jams occurred, primarily on the Muskegon River. Freeze-up ice jams formed at Bridgeton and also at Newaygo, resulting in minor flooding. By the end of the month, the vast majority of the rivers in West Michigan had a solid cover of ice.

Flood Conditions

Most rivers and streams in West Michigan started the month in the 75th to 90th percentile (no flooding, though, as the "normals" are still quite low this time of year). This was largely due to the fact that the relatively benign amounts of precipitation that were falling for much of the first few weeks of the month were running off into the rivers either as rainfall or snowmelt. As the more substantial cold air moved in for the end of the month, river flows steadily dropped as runoff ended and upper soil moisture froze solid. By the end of the month, overall river discharge values were near (and in some cases below) normal at many locations. As the rivers froze up, several freeze-up ice jams occurred. The most substantial of these were along the Muskegon River at Bridgeton and a few days later at Newaygo (as the freezeup front progressed upstream). Both locations exceeded minor flood stage for multiple days. Bridgeton was at or above flood stage from January 27 through February 6. Newaygo was at or above flood stage from January 30 through February 2, and even briefly exceeded moderate flood stage on January 31. It is important to note, however, that due to the hyper-localized flood impacts due to the nature of ice jams, not all locations upstream/downstream that would be affected at these levels were impacted. However,

several homes and properties were surrounded by water in Newaygo, and a bridge in Newaygo was closed due to the threat of ice pushing on the bridge structure itself.

Flood Stage Report

The forecast points on the Muskegon River at Bridgeton and Newaygo exceeded flood stage during the month. Thus, the NWS Form E-3 "Flood Stage Report" was issued.

River Conditions

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

Location	River	% of Normal
Scottville	Pere Marquette	88
Whitehall	White	*
Evart	Muskegon	79
Mt. Pleasant	Chippewa	128
Lansing	Grand	138
Grand Rapids	Grand	195
East Lansing	Red Cedar	84
Hastings	Thornapple	94
Battle Creek	Battle Creek	103
Battle Creek	Kalamazoo	261

* Ice affected gauge – no discharge values available

General Hydrologic Information

The month of January featured above-average precipitation across the area, especially over the Muskegon River basin.

January precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 2.90, 1.72, and 2.57 inches, respectively (Figure 1). Monthly departures were +0.81, +0.07 and +0.54 inches, respectively. Yearly departures were +0.81, +0.07 and +0.54 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for January 2019 is shown in Figure 2.

Temperatures for the month of January were below average at Grand Rapids, Lansing and Muskegon. The average monthly temperature departures for these sites were -2.6, -2.5 and -2.7 degrees Fahrenheit, respectively.

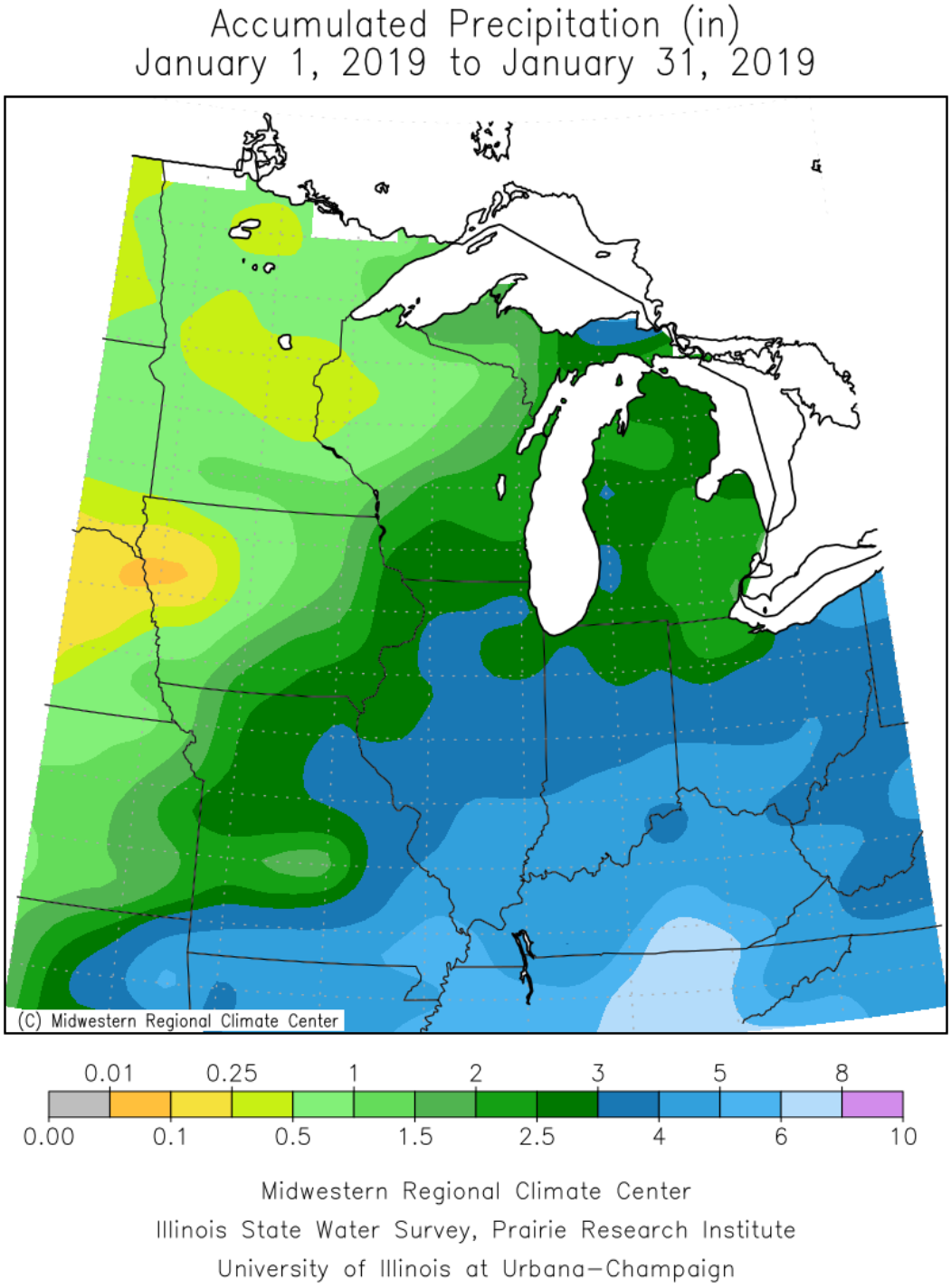


Figure 1. January 2019 Monthly Precipitation Totals

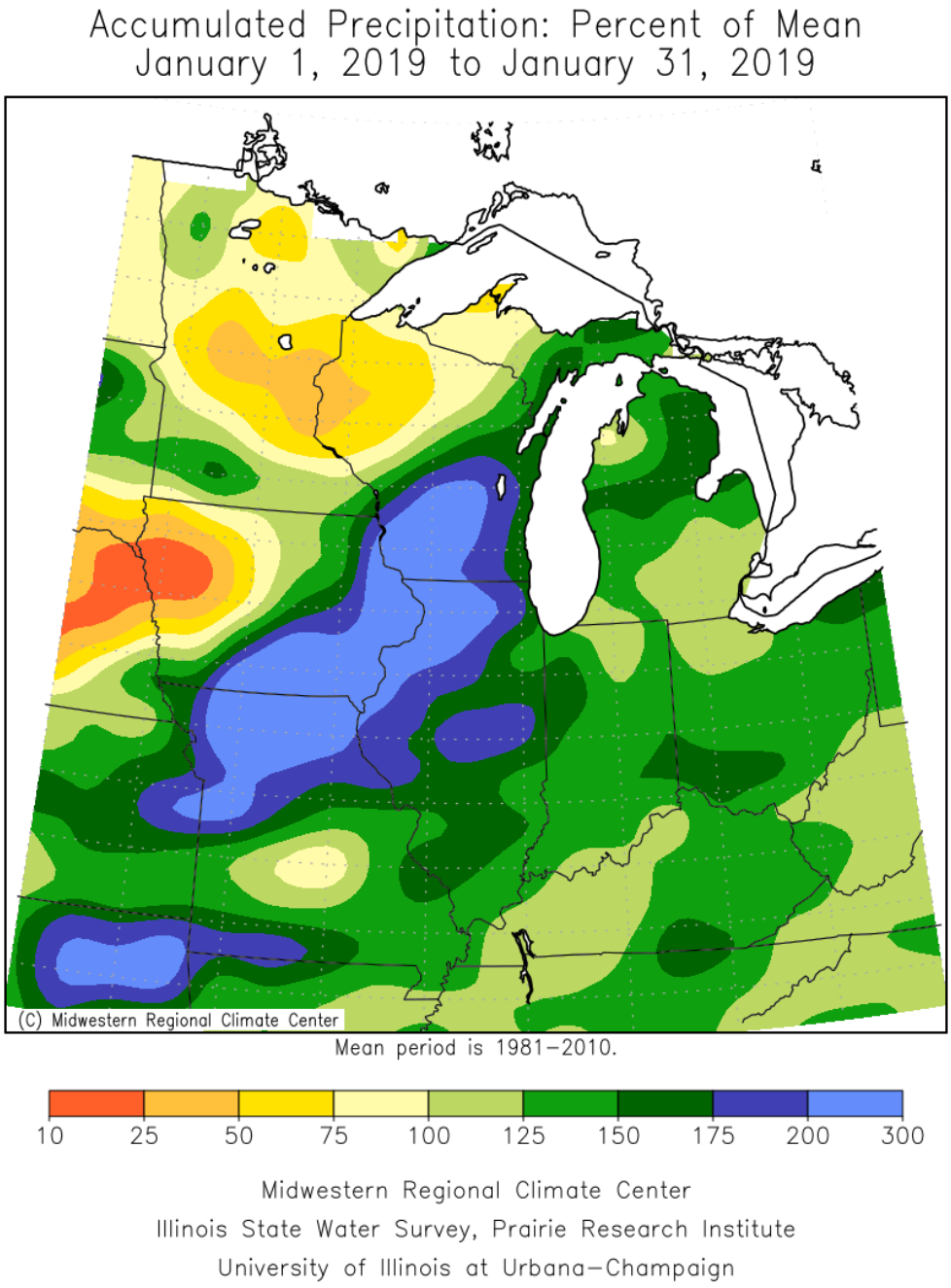
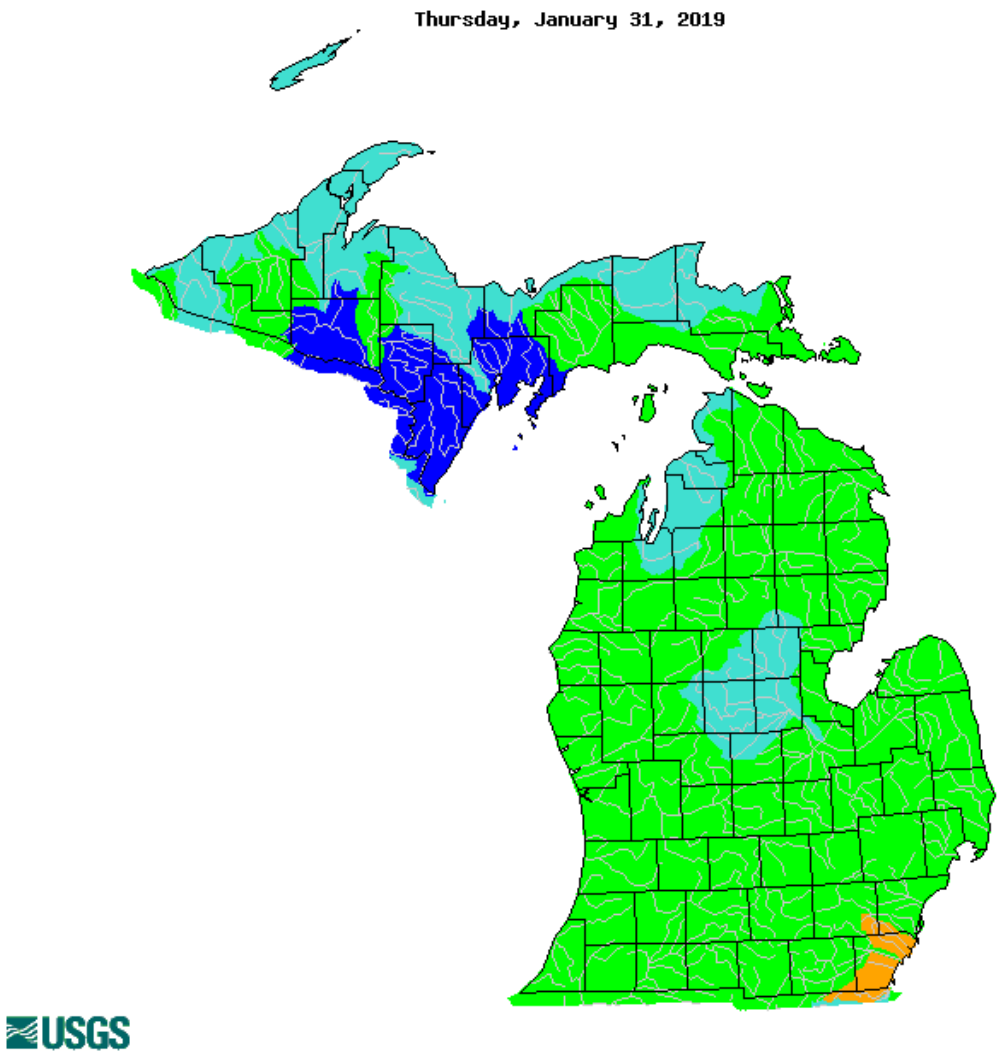


Figure 2. January 2019 Percent of Mean of Accumulated Precipitation



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 28-day average streamflow by significant hydrologic units. Note generally near-average flows across most of Lower Michigan.

Hydrologic Products issued this month:

28 Hydrologic Summaries (ARBRVAGRR)
1 Probabilistic Hydrologic Outlook (ARBESFGRR)
0 Daily River Forecasts (ARBRVDGRR)

0 Areal Flood Advisory Statements (ARBFLSGRR)
2 Flood Warning Statements (ARBFLWGRR)
0 Flood Watch Statements (ARBFFAGRR)
40 River Statements (ARBRVSGRR)

News Articles and Related Documentation

https://fox17online.com/2019/01/30/ice-jam-dangers-rise-on-muskegon-river/

https://www.woodtv.com/weather/bill-s-blog/muskegon-river-ice-jam/1730713696

https://www.mlive.com/news/grand-rapids/2019/01/17-mile-ice-jam-threatens-flooding-on-muskegon-river.html

https://www.freep.com/story/news/local/michigan/2019/01/31/bridge-newago-michigan-ice-jam/2732392002/