

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): May 2013
	DATE: June 17, 2013
	SIGNATURE: Robin J. Turner, MIC Justin Titus, Meteorologist
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.

May Flooding

Flooding commenced during the last few days of April and, in most cases, continued into May (see April flood report for more data and meteorological review) in our Hydrologic Service Area (HSA). The flooding was the result of melting the anomalously high snow pack for the period of mid to late April, and lasted into May due to delay as the water moved downstream. Primary flooding concerns were over western Upper Michigan where snowfall amounts were greater and terrain favored flooding more than over the east. In the Marquette HSA, 7 out of 13 river forecast points exceeded flood stage in May. Of the 7 river forecast points that exceeded flood stage in May, only the Black River near Bessemer went above moderate flood stage. An areal flood warning was issued for Gogebic County where non river specific flooding was likely the worst. Due to the combination of April and May flooding, Michigan's Governor Rick Snyder declared a state of disaster for 19 counties and two cities. 6 of the 19 counties declared in the disaster are within our HSA, including Baraga, Gogebic, Houghton, Keweenaw, Marquette and Ontonagon. Flood damage estimates were in excess of 6.5 million dollars. Thankfully, no lives were lost during the flooding.

Decision support services included providing daily briefings to several Emergency Managers regarding flooding, and potential impacts. A webinars and information packet on weather and flooding was provided to Emergency Management and County/City officials a few days before the event started.

May Precipitation

May precipitation continued to be near normal to well above normal in most locations. The Ironwood area saw the most rain and snow, both of which were in the top 5 record highest amounts. Thanks to warm temperatures in April and continued warmth in May (but still below normal in most locations), very little snow (relatively) was on the ground at the beginning of the month. Most of the snow that fell melted within a couple days of falling.

Below is a chart of some of the larger cities in the Upper Peninsula, with monthly precipitation in inches, the amount of inches above or below normal for the month and any applicable record high or low rank.

Location	Precipitation	Above/Below	Rank	Snowfall	Above/Below	Rank
WFO Marquette	3.74	0.69		4.5	3.0	6 th
Marquette City	2.49	-0.04		M	M	
Houghton Airport	3.61	1.11		M	M	
Ironwood	7.14	4.01	2 nd	15.1	13.2	3 rd
Iron Mountain	3.63	0.59		T	-0.7	
Manistique	3.10	0.37		M	M	
Munising	2.78	-0.20		1.2	0.9	
Newberry	2.47	M		0.0	M	
Ontonagon 6SE	4.09	1.12	7 th	8.5	7.5	2 nd

Other monthly precipitation totals from coop observers:

Location	Precipitation (inches)	Snowfall (inches)
Alberta (Baraga County)	M	M
Amasa (Iron County)	2.50	3.9
Atlantic Mine (Houghton County)	3.39	5.0
Baraga 7NW (Baraga County)	3.62	1.5
Big Bay (Marquette County)	3.93	0.7
Chatham (Alger County)	1.88	2.0
Clarksburg (Marquette County)	3.32	2.2
Cooks (Schoolcraft County)	3.10	M
Copper Harbor (Keweenaw County)	1.82	M
Garden Corners (Delta County)	3.10	Trace
Gladstone (Delta County)	1.75	Trace
Greenland 6N (Ontonagon County)	4.60	3.4
Gwinn (Marquette County)	2.64	1.7
Harvey (Marquette County)	2.11	M
Herman (Baraga County)	4.68	8.7
Jacobsville (Houghton County)	3.06	0.6
Mohawk (Keweenaw County)	3.20	2.3
Menominee (Menominee County)	2.20	M
Norway (Dickinson County)	3.01	0.4
Stambaugh (Iron County)	3.03	0.8
Twin Lakes (Houghton County)	4.04	5.5
Watersmeet (Gogebic County)	M	M
Watton (Baraga County)	3.78	3.0

Drought Discussion

The May 28th, 2013 release of the U.S. Drought Monitor indicated no drought conditions across Upper Michigan. For the latest drought status, please go to <http://www.crh.noaa.gov/mqt/?n=drought>.

May Temperatures

Below is a table of some of the larger cities in the Upper Peninsula, with average monthly temperature and number of degrees above or below normal for the month, and the rank of an all-time warmest or coldest month, where applicable.

Location	Temperature (degrees)	Above/Below	Rank
WFO Marquette	48.6	-2.3	
Marquette City	46.5	-4.5	
Houghton Airport	47.3	-2.9	
Ironwood	50.1	-1.8	
Iron Mountain	53.5	-0.2	
Manistique	49.1	-0.2	
Munising	47.3	-2.7	
Newberry	52.0	1.7	
Ontonagon 6SE	52.8	-0.7	

May River Levels

According to the United States Geological Survey, May streamflow was generally much above normal (>90 percentile) in most Lake Superior Basins of Upper Michigan and above normal (76-90 percentile) in Lake Michigan Basins of Upper Michigan.

May Products Issued

(New warning, watches and advisories, continued or extended products counted in statements)

1 Areal Flash Flood Watch (ARBFFAMQT)
0 Areal Flood Watches (ARBFFAMQT)
1 Areal Flood Warnings (ARBFLWMQT)
1 Areal Flood Advisories (ARBFLSMQT)
1 Areal Flood Statements (ARBFLSMQT)
1 River Flood Watches (ARBFFAMQT)
3 River Flood Warnings (ARBFLWMQT)
8 River Flood Advisories (ARBFLSMQT)
101 River Flood Statements (ARBFLSMQT)
2 Hydrologic Statements (ARBRVSMQT)
0 Hydrologic Outlook (ARBESFMQT)

CC:

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