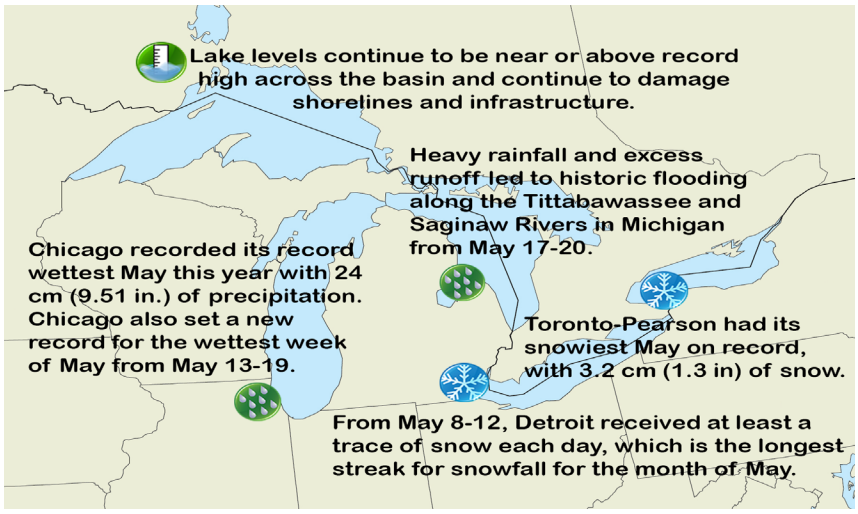
Quarterly Climate Impacts and Outlook

Great Lakes Region

June 2020

Great Lakes Significant Events – *for March - May 2020*



High lake levels continued and many flash flooding events occurred within the basin.

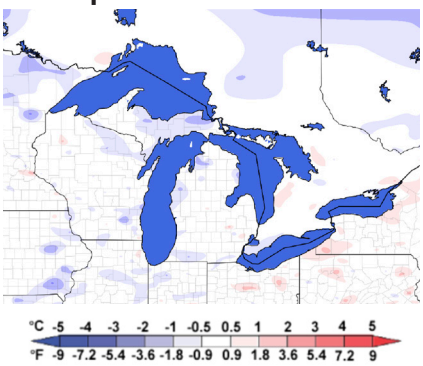
In March, Erie, PA and Watertown, NY set or tied their record for least snowy March with only a trace of snow. Snowfall was also below average for Toronto in March, with the city receiving only 7 cm (2.8 in) in the month.

Heavy rain led to significant flash flooding in Chicago on May 17. This system progressed eastward, stalling over Michigan from May 17-19 and contributing to significant river and shoreline flooding as well as dam failures.

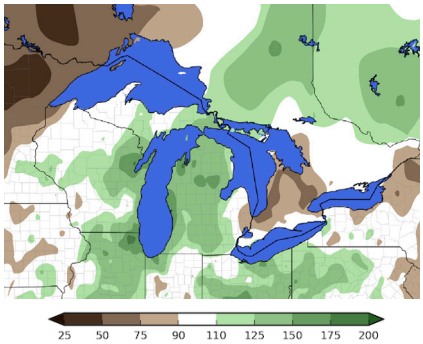
Early May was colder than normal, with near-record or record low temperatures set in Green Bay, WI; Flint, MI; South Bend, IN; Erie, PA; Ithaca, NY; and southern Ontario from May 9-13, resulting in a late-season damaging freeze event. In contrast, late May was extremely warm, especially in the Lake Erie and Ontario basins, with near-record or record high temperatures, as well as record warm minimum temperatures, set at Erie, PA; Rochester and Watertown, NY; and Toronto-Pearson and Toronto Island, ON from May 26-29.

Regional Climate Overview – *for March - May 2020*

Spring 2020 Temperature Departure from Normal



Spring 2020 Precipitation Percent of Normal



U.S. normals based on 1981-2010.
Canadian normals based on 1981-2010.

Temperature and Precipitation

March was up to 4°C (7°F) warmer than normal. April was as much as 3°C (5°F) colder than normal. May featured both abnormally cold and unusually hot days, with temperatures for the month ranging from 2°C (4°F) below normal to near normal. Spring averaged out to be within 1°C (2°F) of normal in most areas.

March precipitation was near or above average, with the overall basin seeing 117% of average. April precipitation was below or near average, with the overall basin seeing 88% of average. May was drier in the Superior and Ontario basins but wetter in the Michigan-Huron basin and slilghtly above average in the Erie basin, with the overall basin seeing 92% of average. Spring precipitation ranged from 70% to 112% of average, with the overall basin seeing 98% of average.

Current Water Levels

High water levels continued across the Great Lakes in the second quarter of 2020. In March, April, and May, monthly mean water level records were set on Lakes Michigan-Huron, St. Clair, and Erie. During the spring, water levels will typically rise as a result of increased runoff from snowmelt and increased precipitation. However, generally drier conditions throughout this past spring has kept the spring rise below average. As seen in the table above in the last two columns reflecting the change in water levels since the beginning of March, where all of the lakes have seen a smaller than average rise in lake level for the period of March to June.

Lake	End of May 2020 Compared to:		Change since March 1st	
	Average	2019	2020	Average
Sup.	+26 cm	-15 cm	+9 cm	+16 cm
Mich.-Huron	+92 cm	+18 cm	+22 cm	+24 cm
Erie	+79 cm	+5 cm	+24 cm	+31 cm
Ont.	+27 cm	-55 cm	+24 cm	+44 cm

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Regional Impacts – *for March - May 2020*

Impacts from high lake levels, including coastal erosion, shipping and recreation remain a concern across the basin.

Historic flooding and dam failure occurred around Midland County, MI from May 17-20. The Edenville Dam, which already had noted structural issues, failed while the Sanford Dam overflowed and the National Weather Service issued a flash flood warning for the Tittabawassee River. At least 10,000 people evacuated their homes. Following the floods, 138 sections of roads and bridges in Midland County were damaged or destroyed, leading to $27 million in damages.

Flash flooding around the Chicago area occurred on May 17 when 7.9 cm (3.11 in) of rain fell, making this the fifth wettest May day ever for the city. Flood warnings were issued for the wider Chicagoland area, where agricultural fields were under water and residents were evacuated and rescued from their homes. The Metropolitan Water Reclamation District reversed the flow of the Chicago River to send floodwater into Lake Michigan and prevent overbank flooding.

The growing season was delayed this spring. Drier conditions in April allowed for corn and soybean planting to progress faster than average. Cool temperatures and freezing events in early and mid-May were more damaging since the growing season had progressed. Many specialty crops, including fruit trees, juice grapes, cherries, peaches, apricots and some apples were damaged. Small areas of drought are beginning to develop from below average precipitation.

Flooded Midland road (credit: WNEM)

Chicagoland flooding (credit: B. Snyder)

Damaged apples in MI (credit: M. Reinke)

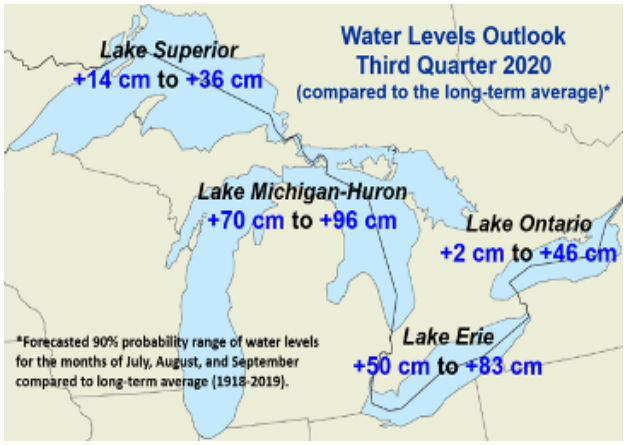
Regional Outlook – *for July - August 2020*

Temperature and Precipitation

The outlook from American and Canadian forecasters shows an enhanced chance for above-normal temperatures. The precipitation outlook from American forecasters has an enhanced chance for above-normal precipitation in the far southern area of the basin while the outlook from Canadian forecasters shows equal chances for above-, below- and near-normal precipitation except for an enhanced chance for above-normal precipitation over Lake Superior.

Great Lakes Water Levels

The forecast from the beginning of June indicates that during the third quarter of 2020 water levels are forecast to remain near or above record high on all lakes, except Lake Ontario, which is still forecast to be above average. Lakes Superior and Michigan-Huron will continue their seasonal rise in summer, while Lakes St. Clair, Erie, and Ontario have reached or will likely reach peak level in June and begin seasonal declines later this summer. Even under dry conditions, high water levels will likely continue and will remain above average. The risk of shoreline erosion and coastal flooding will remain as the lakes reach their seasonal peak water levels and begin to decline.



Harmful Algal Blooms (HAB)

The HAB season in the Great Lakes typically peaks in the late summer. The Western Lake Erie HAB Early Season Projection is updated weekly until the Seasonal Lake Erie HAB Forecast forecast is issued on July 9. Because conditions can change quickly, the HAB Forecast is updated twice weekly from July to October.

Partners

- *Midwestern Regional Climate Center*
- *Environment and Climate Change Canada*
- *Agriculture and Agri-Food Canada*
- *Northeast Regional Climate Center*
- *Great Lakes Region State Climatologists*
- *NOAA*
  - *NCEI*
  - *GLERL*
  - *CoastWatch Great Lakes Node*
  - *Great Lakes Sea Grant Network*
  - *North Central River Forecast Center*
  - *Ohio River Forecast Center*
  - *Climate Prediction Center*
  - *Office for Coastal Management*
- *GLISA*
- *US Army Corps of Engineers, Detroit District*
- *NIDIS*
- *USDA Midwest Climate Hub*

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