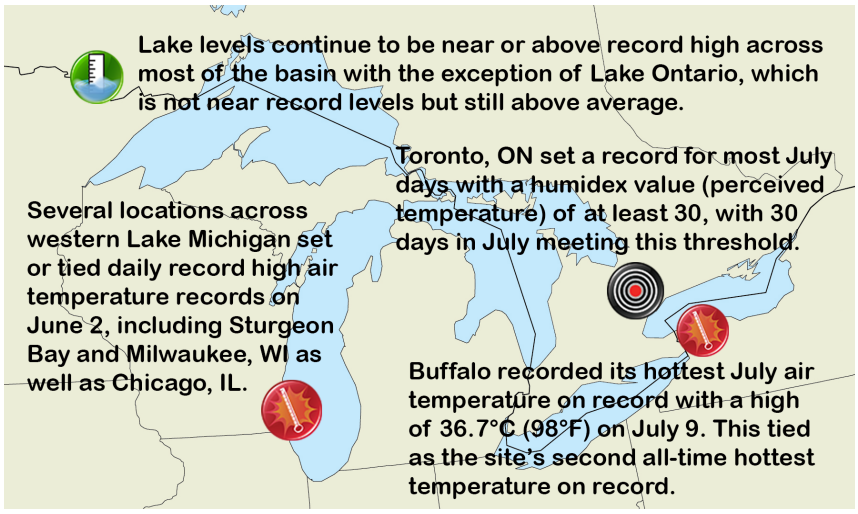
Quarterly Climate Impacts and Outlook

Great Lakes Region

September 2020

Great Lakes Significant Events – *for June - August 2020*



Early July was extremely warm for much of the basin. Buffalo, NY recorded its all-time longest streak of days with a high air temperature of at least 32°C (90°F) (at eight days from July 3-10). Syracuse, NY, tied its second longest stretch of 32°C (90°F) days with seven days from July 4-10. Green Bay, WI recorded its 10th longest streak of days with air temperatures of at least 26.7°C (80°F) (17 days from June 25 - July 11).

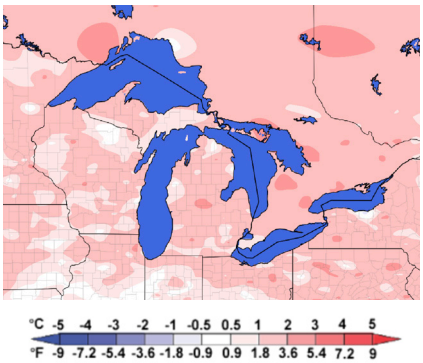
July was the all-time hottest month on record for Syracuse and Buffalo, NY. July ranked among the five all-time hottest months for Erie, PA, and Rochester and Watertown, NY.

Heavy rains on August 3 set a daily rainfall record of 12 cm (4.79 in.) in Milwaukee. From August 2-4, the record for most consecutive days in August with at least 10mm (3.9 in.) of rain was tied in Toronto.

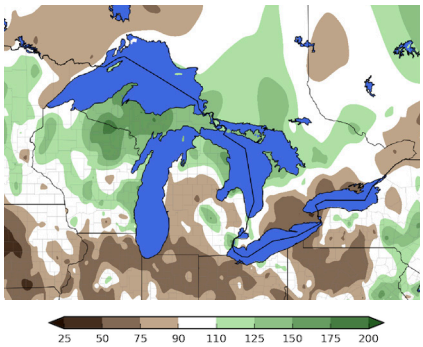
Summer was overall very warm across the basin. Several areas of the basin, stretching from Minnesota to Michigan and New York, had one of their top 10 warmest summers for minimum air temperature. In eastern and southern Ontario, temperatures remained above normal almost continuously from mid-June to mid-August, for 60 days.

Regional Climate Overview – *for June - August 2020*

Summer 2020 Temperature Departure from Normal



Summer 2020 Precipitation Percent of Normal



U.S. normals based on 1981-2010.
Canadian normals based on 2002-2019.

Temperature and Precipitation

June was up to 3°C (5°F) warmer than normal and warmest in the western Superior and northern Huron basins. July was as much as 4°C (7°F) warmer than normal, with the warmest areas in the northern Huron and northern/eastern Ontario basins. August was up to 2°C (4°F) warmer than normal. Summer was up to 3°C (5°F) warmer than normal.

June precipitation was below or near average, with the overall basin seeing 92% of average. July precipitation was near or above average except in the Erie basin, with the overall basin seeing 112% of average. August precipitation was near or above average, with the overall basin seeing 110% of average. Summer precipitation was near or above average except in the Erie basin, with the overall basin seeing 105% of average.

Lake surface temperatures were above average across all of the Great Lakes. The increase in temperature peaked during the month of July with the highest rise in temperature of 6-7°C (10-12°F) above average during the first week in July.

Lake	End of Aug. 2020 Level Compared to:		Change in Level from Beg. of June to End of Aug.:	
	Average for Aug.	Aug. 2019	2020 Change in Level	Average Change in Level
Sup.	+26 cm	-4 cm	+13 cm	+13 cm
Mich.-Huron	+86 cm	+14 cm	-4 cm	+2 cm
Erie	+66 cm	-5 cm	-24 cm	-11 cm
Ont.	+15 cm	-38 cm	-36 cm	-24 cm

Current Water Levels

From the beginning of June to the end of August, water levels declined on all lakes except Lake Superior where water levels rose 13 cm. Water levels continue to be well above average across all the Great Lakes, while some lakes continue to set record high levels. Lake Michigan-Huron set new monthly mean record high water levels in June, July, and August (Period of Record: 1918-2019), while Lake St. Clair also set record high monthly mean water levels in both June and August.

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Regional Impacts – *for June - August 2020*

A strong derecho swept through the Lower Great Lakes states of southeastern Wisconsin and northern Illinois and Indiana on August 10. An EF-1 tornado occurred on the north side of Chicago in Rogers Park, eventually moving out over Lake Michigan and becoming a waterspout. Heavy rainfall, flooding and significant wind damage was recorded throughout the area. More than 200 severe wind reports were recorded throughout northern Indiana and Illinois as well as power outages throughout Chicago. As the storms moved across Lake Michigan, a rise in water level of at least 0.46 m (1.5 ft) was measured at South Haven and St. Joseph, MI in association with an observed meteotsunami.

Abnormally hot and dry conditions throughout some areas of New York resulted in curled corn and slow growth of corn and soybeans as well as reduced hay yields. Abnormally dry conditions have also spread through the lower peninsula of Michigan this summer, creating some stress on row crops and pastureland. Peaches in Michigan have also been smaller this year due to the dry conditions, but will be sweeter as the sugars are more concentrated. The negative impacts from early summer dryness in southern Ontario were alleviated from precipitation throughout August.

Impacts from high lake levels remain a concern across the basin. Flooding, erosion and infrastructure damage continue, closing trails and other recreation areas across the Upper Peninsula of Michigan. Outflows on Lake Ontario remain high and are expected to continue throughout the fall.

Damage in Chicago (credit: A. Forgue)

Fields in New York (credit: S. Tulis)

Beaver Island, MI (credit: P. Grassmick)

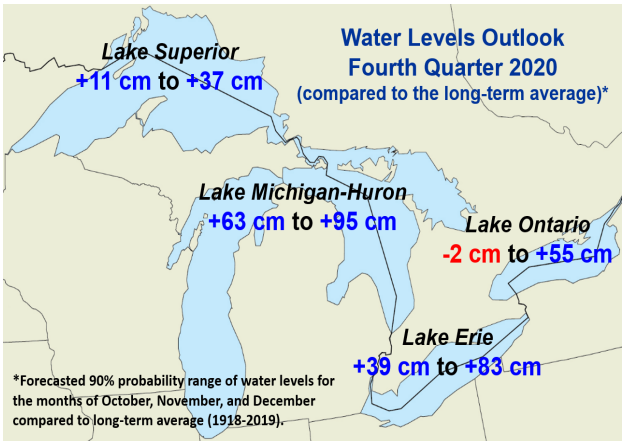
Regional Outlook – *for October - December 2020*

Temperature and Precipitation

The outlook from American and Canadian forecasters shows an enhanced chance for above-normal temperatures. The precipitation outlook from American and Canadian forecasters shows equal chances for above-, below- and near-normal precipitation. Forecasters issued a La Niña Advisory due to an increased likelihood (75% chance) that these conditions will remain through the winter.

Great Lakes Water Levels

The September monthly forecast indicates that during the fourth quarter of 2020, water levels will remain above average on all lakes and near record high levels on all lakes except Lake Ontario. All of the lakes will be in their period of seasonal decline through the fall and into the early winter, except for Lake Ontario, which could start its seasonal rise in December. During the fall, water levels typically decline as a result of increased evaporation, which occurs as colder air moves over the relatively warm lake surfaces. Despite water level declines, even under dry water supply scenarios, water levels are expected to remain high. The risk still exists for shoreline erosion and flooding, especially as strong fall storms move through the region.



Harmful Algal Blooms (HAB)

On July 9, NOAA and its research partners forecast a moderate bloom with a severity index range of 4 - 5.5, which is among the smaller blooms since 2011. This compares to a 7.3 in 2019. Through August, the bloom has been consistent with a moderate forecast size, and it has also had relatively low toxin concentrations.

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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