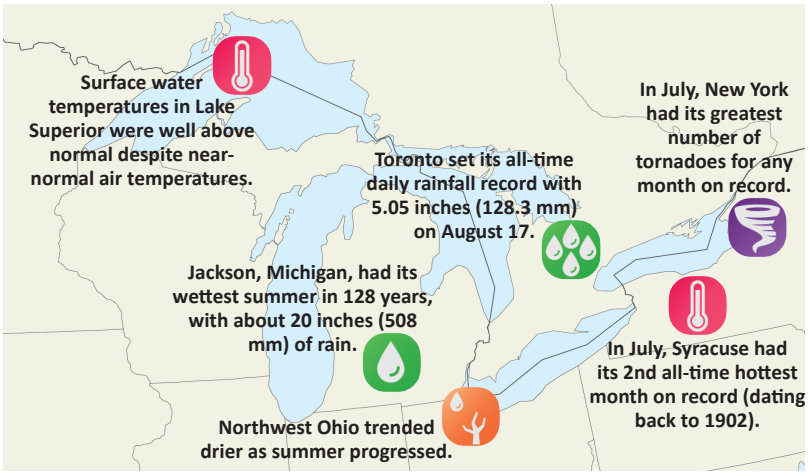
Quarterly Climate Impacts and Outlook

Great Lakes Region

September 2024

Great Lakes Significant Events – *June - August 2024*



Slow-moving storms with torrential rainfall blanketed the western Lake Superior basin with 5-8 inches (127-203.2 mm) of rainfall on June 18.

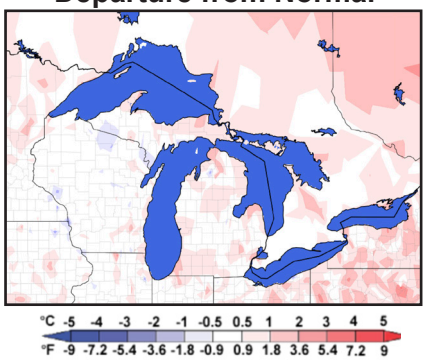
The remnants of Hurricane Beryl moved across the southern and eastern portions of the basin July 9-11, bringing 2-6 inches (50.8-152.4 mm) of flooding rain from southern Lake Michigan to eastern Lake Ontario and tornadoes to western New York.

A severe weather outbreak July 15-16 brought damaging winds, tornadoes, and heavy rainfall to the southern stretch of the basin. More torrential rainfall affected southern Ontario and western New York August 17-19, including record rainfall in Toronto. Watertown and Lowville, New York, and Toronto, Canada, had their wettest summer on record.

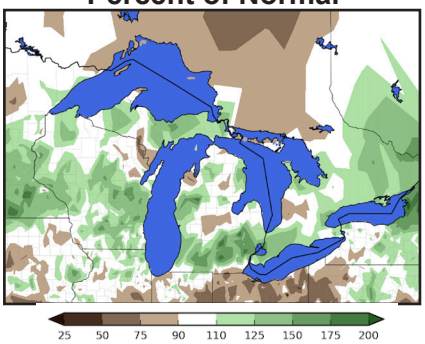
Summer temperatures were generally moderate with a notable lack of extreme heat for the majority of summer. An intense burst of warm, humid air moved across the region June 16-19. Then temperatures became seasonable for the central and western portions of the basin, lingering through late August. Conditions were warmer toward the east.

Regional Climate Overview – *June - August 2024*

Summer Temperature Departure from Normal



Summer Precipitation Percent of Normal



Precipitation and temperature normals based on 1991-2020.

Air Temperature and Precipitation

Summer temperatures ranged from near normal to 2°C (4°F) above normal, particularly in the southern Ontario basin. Temperatures for each month of summer also ranged from near normal to 2°C (4°F) above normal for most basins, with the cooler exceptions being the western Superior basin in June and the southern Michigan basin in July.

Summer featured near or above-average rainfall for all basins, with the overall basin seeing 113% of average. All basins were wet in June, with the overall basin seeing 136% of average. July and August rainfall was near or above average for most basins, with the drier exceptions being Superior in July and Huron in August. The overall basin was close to average in July and August.

Current Water Levels

Lake	End of Aug 2024 Level Compared to:		Change in Level from beg. of Jun. to end of Aug	
	Average for Aug	Aug 2023	2024 Change in Level	Average Change in Level
Sup.	-7cm	-17 cm	+11 cm	+13 cm
Mich.-Huron	+9 cm	-4 cm	+2 cm	+1 cm
Erie	+27 cm	-10 cm	-11 cm	-11 cm
Ont.	+4 cm	-12 cm	-7 cm	-24 cm

End of August water levels were above average on Lakes Michigan-Huron, Erie, and Ontario. Levels were below average on Lake Superior. All lakes were below water levels from last August. Lakes Superior, Michigan-Huron, and Erie experienced near-average changes from the beginning of June to the end of August. Lake Ontario declined less than average over the summer due to wetter conditions in this region. Dry conditions in the north resulted in a July seasonal maximum in Lake Superior, whereas the maximum usually occurs in September.

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Regional Impacts – *June - August 2024*

Mid-June Flooding: Torrential downpours dumped excessive rain within about 8 hours in the western Lake Superior basin on June 18, causing flash flooding, river flooding, and widespread damage. Water inundated and washed out county, state, and federal roadways. Tunnels for Interstate-35 in Duluth filled with several feet of water.

July and August Flooding: On July 11, Lowville, New York, had its wettest day on record with 6.02 inches (152.9 mm) of rain (a 1 in 200 year event). The surrounding area saw significant flooding, forcing evacuations and resulting in an estimated $50 million in damage. On July 15, severe storms rapidly dropped nearly 4 inches (101.4 mm) of rain in Toronto, leading to severe flash flooding and over $940 million (Canadian dollars) in damages. The flooding resulted in widespread power outages, closed major roadways and railways, damaged homes, and required many water rescues. Record rainfall in Toronto on August 17 caused an estimated $80 million (Canadian dollars) in damages.

Agriculture: Cherry growers in Door County, Wisconsin, had a very rough season. Mild winter conditions failed to kill pests, and then the warm, wet spring led to outbreaks of fungi and disease. Frequent June and early July rain events made it difficult to protect crops from pests, disease, and rotting. Many growers were unable to harvest fields.

Harmful Algal Bloom (HAB): Lake Erie's annual HAB established on June 24, which is the earliest bloom since monitoring began in 2002.

Minnesota State Highway 1 near Isabella, MN on June 19, 2024 (Credit: NWS)

Tornado damage in Rome, New York on July 16, 2024 (Credit: NWS)

The onset of fall colors started early in northwest Ohio (Credit: CMOR/NDMC)

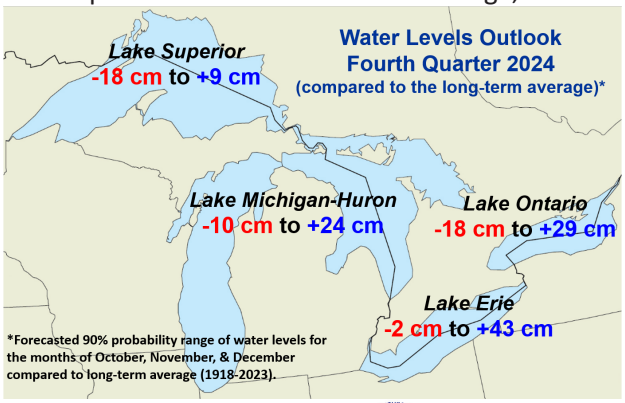
Regional Outlook – *October - December 2024*

Temperature and Precipitation

Canadian forecasts indicate above-normal temperatures basin-wide and no clear precipitation tendency basin-wide. American forecasts show slight chances of above-normal temperatures in the central and eastern basin and equal chances of below-, above, and near-normal temperatures in the west, with a slight chance of above-normal precipitation basin-wide.

Great Lakes Water Level Outlook

The September forecast indicates that in the fourth quarter (Oct., Nov., Dec.) all lakes will be in their period of seasonal decline. This is typical for this time of year as colder air comes into the Great Lakes region and moves over the relatively warm water surfaces, increasing lake evaporation. Under drier conditions, water levels on Lake Superior would remain below average, while the other lakes could push below average by the end of the quarter. If wetter conditions occur, water levels would continue to be above average on Lakes Michigan-Huron, Erie, and Ontario, while Lake Superior could rise above average by the end of the fourth quarter.



Potential La Niña Impacts

A La Niña watch is in effect, and NOAA forecasters predict a 71 percent chance that La Niña conditions will emerge by November and persist through winter.

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 and IL-IN Sea Grant Networks
  - 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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