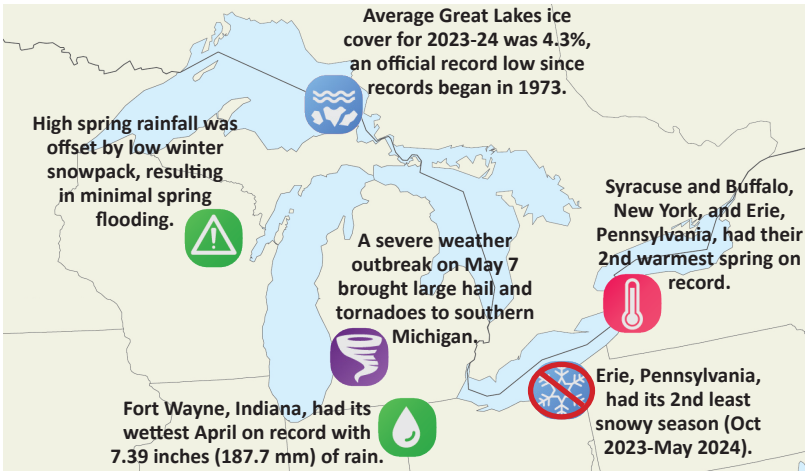
# Quarterly Climate Impacts and Outlook

# Great Lakes Region

*June 2024*

## Great Lakes Significant Events – *March - May 2024*




Moderate to severe drought was widespread around Lake Superior at the start of spring, but persistent and ample spring rainfall across the basin nearly eradicated drought by late May.

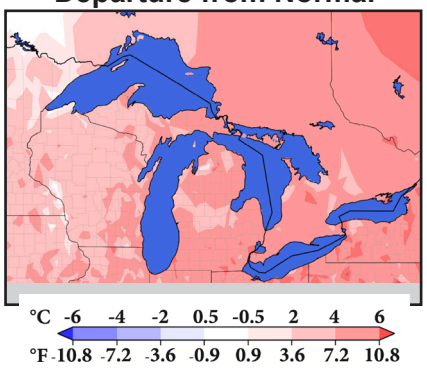
While precipitation was above normal across the region, warm temperatures helped keep snowfall well below average in the central and eastern portions of the basin. A few waves of late March snowstorms kept spring snow totals near to slightly below normal in the western area of the basin.

Temperatures were very warm in early March, especially around Toronto. After a very brief cool down, warmth returned and persisted basin-wide for spring, with temperature departures greatest in the east. The Kitchener/Waterloo area in southern Ontario had one of the earliest last spring freezes on record. The Great Lakes ice season ended April 20, well ahead of normal.

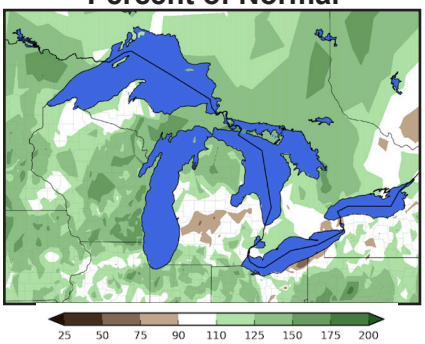
An active weather pattern brought multiple waves of severe weather to the southern and eastern portions of the basin in May. Large hail and tornadoes affected southern Lake Michigan on May 7. Storms battered Canadian communities with large hail around Georgian Bay on May 22.

## Regional Climate Overview – *March - May 2024*

### Spring Temperature Departure from Normal




### Spring Precipitation Percent of Normal




Precipitation and temperature normals based on 1991-2020.

### Air Temperature and Precipitation

Spring and March were up to 4°C (7°F) warmer than normal. April and May were up to 3°C (5°F) warmer than normal. Most US cities around and east of Lake Michigan had a top 5 warmest spring.

Spring precipitation was near average in the Superior and Ontario basins and above average for the other basins. The overall basin saw 112% of average. March precipitation was near average in all basins except Ontario which was drier. The overall basin saw 99% of average. April was wet for all basins, with the overall basin seeing 139% of average. May precipitation was below average in the Ontario basin, above average in the Superior basin, and near average for the others. The overall basin saw 98% of average.

Milwaukee, Wisconsin, and Toledo, Ohio, both had their 3rd wettest spring in the last 152 years.

### Current Water Levels

| Lake | End of May 2024 Level Compared to: | | Change in Level from beg. of Mar. to end of May | |
|---|---|---|---|---|
| | Average for May | May 2023 | 2024 Change in Level | Average Change in Level |
| Sup. | -5 cm | -31 cm | +15 cm | +16 cm |
| Mich.-Huron | +8 cm | -7 cm | +23 cm | +24 cm |
| Erie | +27 cm | +1 cm | +23 cm | +31 cm |
| Ont. | -13 cm | -36 cm | +24 cm | +43 cm |

End of May water levels were above average on Lakes Michigan-Huron and Erie and below average on Lakes Superior and Ontario. All the lakes, besides Lake Erie, were below water levels from last May. Lakes Superior and Michigan-Huron had near-average water rises from the beginning of March to the end of May. Water levels on lakes Erie and Ontario rose, but less than average, during this period likely from drier conditions in the eastern portions of the basin.

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## Regional Impacts – *March - May 2024*

**Agriculture and Natural Resources:** Warm winter and spring conditions led some plants to blossom earlier than usual, especially in the eastern half of the basin. Several nights of below freezing temperature in late April caused frost damage to apples across southeast Michigan and southern Ontario, and frost damage to grapes in northern Ohio, although the full impact of the damage on fruit yields is unknown at this time. Favorable weather in Michigan, Indiana, and Ohio accelerated winter wheat development well ahead of the 5-year average by late May. Ontario's winter cereal crops and winter wheat were 1-2 weeks ahead of schedule.

**Great Lakes Shipping:** Annually scheduled repairs on Great Lakes locks were completed ahead of schedule due to mild weather and extended work schedules, which allowed an early start to the shipping season.

**Water Temperatures:** Near-record water temperatures occurred in the Great Lakes in late April and early May. Warm tributary waters negatively affected fish spawning at some local hatcheries.

Early blooming cherry blossom in western New York (credit: Natalie Umphlett)

True color image of Lake Erie on May 31, 2024 derived from the Copernicus Sentinel-3a satellite (credit: NOAA)

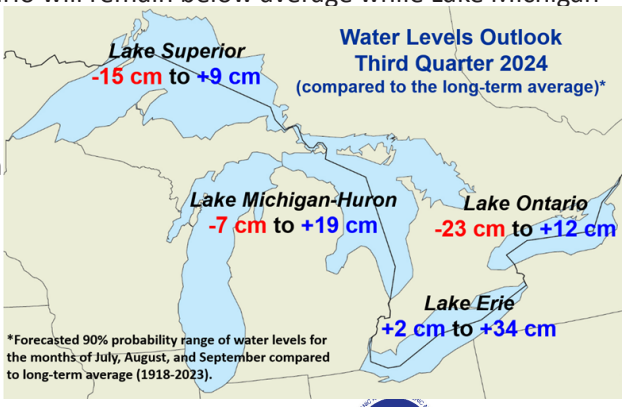
## Regional Outlook – *July - September 2024*

### Temperature and Precipitation

American and Canadian forecasts indicate above-normal temperatures and equal chances of below-, above, and near-normal precipitation basin-wide. The strong El Niño that developed last year has ended. ENSO-neutral conditions are now present in the equatorial Pacific Ocean, with La Niña conditions likely by late summer.

### Great Lakes Water Level Outlook

The June forecast indicates that during third quarter (July, August, September), Lake Superior will likely reach its seasonal peak, Lake Michigan-Huron will reach its peak and begin its seasonal decline, and Lakes Erie and Ontario will be in a period of seasonal decline. Under drier water supply conditions, water levels on Lakes Superior and Ontario will remain below average while Lake Michigan-Huron could transition from above average to below average. Lake Erie is the only lake that will likely remain above average even with drier conditions. If wetter conditions occur, water levels would likely be above average on all lakes at the end of the 3rd quarter.




### Harmful Algal Blooms (HABs)

A moderate to larger-than-moderate western Lake Erie HAB is projected. Severity depends on total bioavailable phosphorus (TBP) from the Maumee River from March 1-July 31. April TBP loads were second highest since 2000.

## Partners

- Midwestern Regional Climate Center
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- Agriculture and Agri-Food Canada
- Northeast Regional Climate Center
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  - North Central River Forecast Center
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- GLISA
- US Army Corps of Engineers, Detroit District
- NIDIS
- USDA Midwest Climate Hub

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