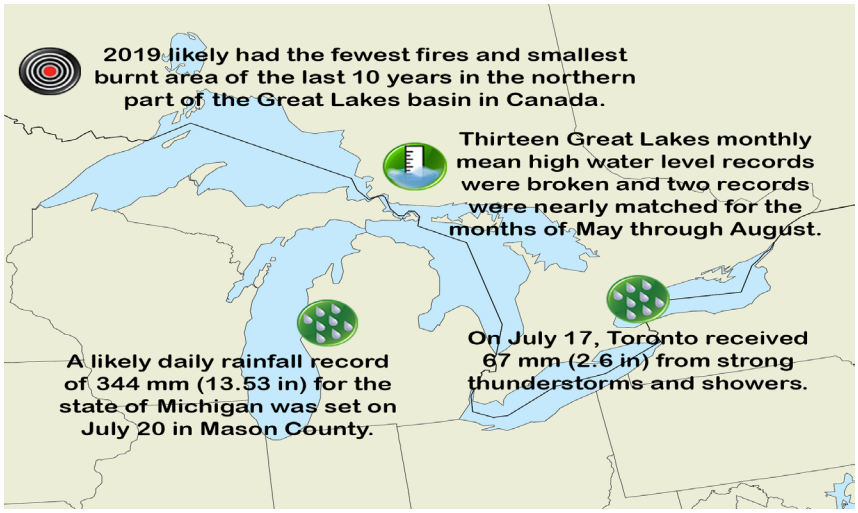
Quarterly Climate Impacts and Outlook

Great Lakes Region

September 2019

Great Lakes Significant Events – *for June - August 2019*



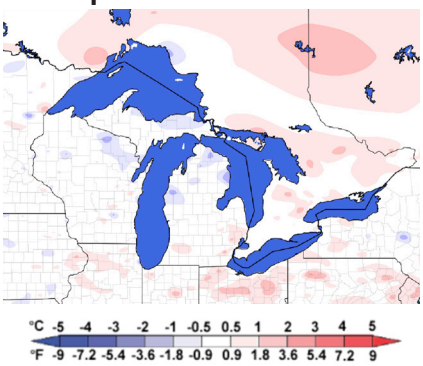
Concerns about high lake levels continued into the summer as more records were set across the region. All of the lakes remain at or near record-high levels and the sustained wetness across the region continues to have wide-ranging impacts.

A region-wide heat wave from July 16-21 set many new temperature records, including high minimums. On July 19, Chicago set a record high minimum temperature of 27°C (81°F) while on July 19 and 20, maximum temperature records of 35°C (95°F) were set at Alpena, MI. Two deaths in Chicago were linked to the heat wave. On July 20, the humidex reached extremely high values of 44 in Toronto and 46 in Windsor, ON.

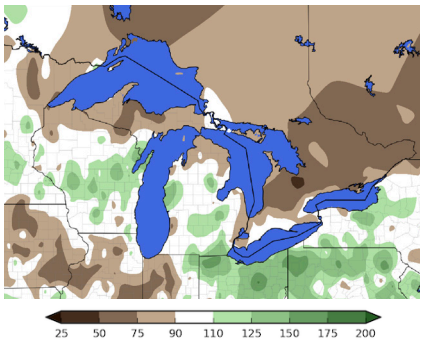
Also from July 19-20, two derecho events occurred across the upper Midwest and Great Lakes, leaving thousands without power. A macroburst near Lily, WI had wind speeds up to 160 km/h (100 mph). Near Jenison, MI wind gusts peaked at 125 km/h (80mph) from a microburst that lifted a roof from a home. Thunderstorms produced 15-25+ cm (6-10+ in) of rain in ten hours throughout areas of Michigan.

Regional Climate Overview – *for June - August 2019*

Summer 2019 Temperature Departure from Normal



Summer 2019 Precipitation Percent of Normal



U.S. normals based on 1981-2010. Canadian normals based on 2002-2018.

Temperature and Precipitation

June temperatures ranged from 3°C (5°F) below normal to near normal. July was warm, with temperatures up to 3°C (5°F) above normal. Temperatures during August and for summer were within 1°C (2°F) of normal for most of the basin. The basin experienced a wet period from the fall of 2018 through the spring. This extended into June, with all basins but Superior being wetter than average and the overall basin seeing 109% of average in June. However, July and August were drier at 83% of average and 76% of average, respectively, and summer precipitation was 89% of average for the basin. For July, August, and summer season, Erie was the only basin wetter than normal.

Current Water Levels

Record high water levels continued this summer after a very wet spring led to large rises in water levels across the Great Lakes. Provisional data indicate that new monthly mean water level records (relative to 1918-2018) were set in June and July on Lakes Superior, St. Clair, Erie, and Ontario. In August, monthly records were set or tied on Lakes Superior, St. Clair, and Erie. Although Lake Michigan-Huron did not set a monthly mean record during the summer, water levels were still near some of the highest levels in its recorded history. Following the wet spring, June was also wetter than average across the basin, which kept the lake levels rising. Throughout July and August, conditions in the basin were drier and with continued high outflows the water levels on Lakes Erie and Ontario declined more than average since June 1st.

Lake	End of Aug 2019 Compared to:		Change since June 1st	
	Average	2018	2019	Average
Sup.	+30 cm	+18 cm	+2 cm	+13 cm
Mich.-Huron	+73 cm	+30 cm	0 cm	+2 cm
Erie	+72 cm	+27 cm	-14 cm	-11 cm
Ont.	+54 cm	+52 cm	-53 cm	-24 cm

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Environment and Climate Change Canada / Environnement et Changement climatique Canada

Regional Impacts – *for June - August 2019*

Crop development remains a concern across the region since planting occurred much later than normal due to an exceptionally wet spring. The growing season began under extremely wet conditions which delayed planting into July. Excess moisture and cool temperatures for the first half of summer contributed to variable emergence, poor crop development, and compacted soils. Late planting into wet soils resulted in plants with shallow and smaller-than-normal root systems making crops vulnerable to heat stress and dryness which emerged in August.

Lakeshore flooding from high water levels and wind events have led to continued shoreline erosion across the region that will likely continue throughout the year. Neighborhoods around Detroit have had to install several rounds of sandbags to deal with continued rising waters. High lake levels have caused trail damage and closures along Lake Huron in Rogers City, MI while a bridge in Pentwater, MI that connects the two sides of the town has flooded, requiring residents to take a ferry ride to the other side of town. Dangerous wave activity coupled with the high lake levels has also led to a record pace of drownings on the lakes this year.

Shipping and transportation have increased across the basin as freighters can carry more weight when the water levels are high. Year-to-date, U.S.-Flag cargo has transported 13.9 percent more goods across the lakes when compared to 2018. In July, there was an increase of 16.4 percent when compared to the amount of cargo transported in July 2018.

A flooded field of corn in Illinois.

Collapsed break wall (credit: J.T. Greilick).

High waters at South Bass Island (June 12).

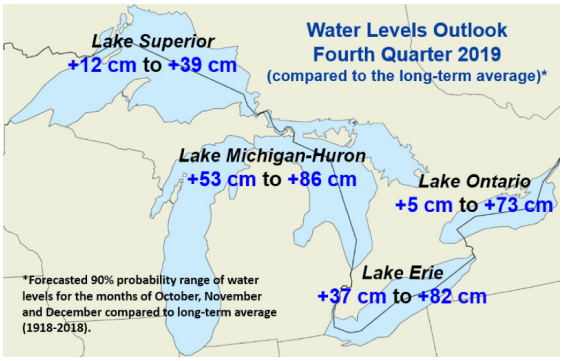
Regional Outlook – *for October - December 2019*

Temperature and Precipitation

According to American and Canadian forecasters, the temperature outlook shows an enhanced chance of above-normal temperatures for the basin. There is an equal chance for above-, near- and below-normal precipitation for the basin in the fall. The late and uneven crop development is a challenge for harvesting, which has been delayed by several weeks. Early frosts and freezes are a significant risk to unharvested crops. Crops will need to continue to develop well into October to reach maturity before the first freeze occurs.

Great Lakes Water Levels

As of the beginning of September, all of the lakes have begun their seasonal declines and the lakes are forecasted to continue their declines throughout the next quarter with average water supplies. During the next quarter, forecasted water levels will continue to be above average even if recent dry conditions persist. There is still potential for water levels to be near record high levels if wetter than average water supplies are experienced in the basin. Even though lake levels will be declining, levels will likely remain high throughout the next quarter, which could lead to additional significant coastal flooding and shoreline erosion, especially during periods of active weather and increased wave action.



Harmful Algal Bloom

The 2019 bloom forecast, which was released on June 20, forecasted a severity of greater than 7 for Lake Erie. This was smaller than the 2017 bloom forecast with a severity of 8. Currently, the size of the bloom and its concentration are continuing to decline throughout the western basin of Lake Erie.

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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