

Great Lakes – St. Lawrence River Water Levels

Lake Superior experiences atypical July decline due to very dry water supply conditions

During the month of July, the Great Lakes Basin experienced the following:

- The mean monthly water level of Lake Superior was at its average level, while Lake Michigan-Huron was above average. Lake Erie remained well above average, while Lake Ontario was very close to average.
- Lake Superior experienced extremely dry water supply conditions, while Lake Michigan-Huron experienced wet water supply conditions (a combination of the precipitation, evaporation, and runoff). Lake Erie experienced very dry conditions, while Lake Ontario received extremely wet water supply conditions.
- In July, Lake Superior received much lower than average precipitation, while Lake Michigan-Huron received close to average precipitation amounts. Lake Erie received close to half of its average July precipitation, while Lake Ontario received much higher than average precipitation.
- Lake Superior experienced its sixth largest July water level decline on record. Lake Michigan-Huron experienced a greater than average rise, while Lake Erie experienced a higher-than-average monthly decline. Lake Ontario rose when it typically declines at this point in the year.

Great Lakes water level information:					
July 2024 monthly mean levels					
Lake	Level ¹	Compared to July monthly average (1918–2023)	Compared to July 2023	Compared to record high (1918–2023)	Notes
Superior	183.52 m	same	16 cm below	34 cm below	-
Michigan–Huron	176.60 m	13 cm above	3 cm above	72 cm below	-
St. Clair	175.23 m	30 cm above	3 cm above	51 cm below	-
Erie	174.35 m	28 cm above	3 cm above	50 cm below	-
Ontario	75.01 m	3 cm below	16 cm below	82 cm below	-

¹Water levels are referenced to International Great Lakes (Vertical) Datum 1985 (IGLD85). For more information, please visit International Great Lakes Datum Update – Great Lakes Coordinating Committee at <https://www.greatlakescc.org/en/international-great-lakes-datum-update/>

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This is the time of year where all the lakes except for Lake Superior have typically peaked and have started their seasonal decline.

With water levels remaining above average on some lakes and the possibility of large storms and winds, low-lying areas are at risk for accelerated coastline erosion and flooding. For current information and forecasts, please refer to the sources listed at the end of this newsletter.

Great Lakes water level information:				
July 2024 lake level changes¹				
Lake	July lake level change	July monthly average change (1918-2023)	Compared to average July change (1918-2023)	Notes
Superior	2 cm decline	4 cm rise	decline instead of rise	sixth largest decline on record
Michigan–Huron	2 cm rise	no change	greater than average rise	-
St. Clair	6 cm decline	1 cm decline	greater than average decline	-
Erie	6 cm decline	4 cm decline	greater than average decline	-
Ontario	2 cm rise	9 cm decline	rise instead of decline	-

¹Lake level changes are based on the differences in levels at the beginning of the months and not the monthly average levels.

Great Lakes water level information: Beginning-of-August 2024 level ¹					
Lake	Level ^{1,2}	Compared to August beginning-of-month average (1918–2023)	Compared to August 2023	Compared to record high (1918-2023)	Notes
Superior	183.54 m	4 cm below	18 cm below	38 cm below	-
Michigan–Huron	176.59 m	13 cm above	2 cm above	72 cm below	-
St. Clair	175.20 m	28 cm above	4 cm below	55 cm below	-
Erie	174.33 m	26 cm above	2 cm below	51 cm below	-
Ontario	74.97 m	same	15 cm below	73 cm below	-

¹ At the beginning of August, all of the Great Lakes were at least 30 cm above their chart datum level. Chart datum is a reference elevation for each lake that provides more information on the depth of water for safe boat navigation on the lakes. For more information, please visit Low Water Datum – Great Lakes Coordinating Committee at <https://www.greatlakescc.org/en/international-great-lakes-datum-update/low-water-datum/>

² Water levels are referenced to International Great Lakes (Vertical) Datum 1985 (IGLD85). For more information, please visit International Great Lakes Datum Update – Great Lakes Coordinating Committee at <https://www.greatlakescc.org/en/international-great-lakes-datum-update/>

Water levels forecast

Lake Superior ended the month very close to its average level and is expected to remain just below average under typical water supply conditions. If there are very wet water supply conditions, lake levels could move above average, while very dry conditions would result in lake levels moving further below average.

Lake Michigan-Huron is expected to remain above average under typical water supply conditions, although wetter than average conditions could result in sustained higher than average levels. Drier than average conditions could result in lake levels falling below average within the next few months.

Lake Erie is expected to stay above average under most water supply scenarios. It would take very dry water supply conditions for lake levels to fall below average by the end of the year.

Lake Ontario water levels are expected to remain near average under typical water supply conditions. However, wetter than average water supply conditions may result in above average lake levels, while drier than average water supply conditions would result in the level moving below average.

For more information on the probable range of water levels, consult <https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data/levelnews-great-lakes-st-lawrence.html#projection>.

For a graphical representation of recent and forecasted water levels on the Great Lakes, refer to <https://www.tides.gc.ca/en/monthly-water-level-bulletin-great-lakes-and-montreal-harbour>.

July 2024 basin statistics			
Lake	Precipitation- percentage of LTA (1981 – 2010) ^{1,2}	Net basin supply (probability of exceedance) ^{3,4}	Outflows (percentage of LTA) ¹
Superior	37%	97% (extremely dry)	107%
Michigan-Huron	88%	31% (wet)	105%
Erie	51%	82% (very dry)	107%
Ontario	150%	4% (extremely wet)	107%

¹ As a percentage of the long-term average (LTA).
² Environment and Climate Change Canada – Canadian Precipitation Analysis System. For more information, please visit: <https://www.canada.ca/en/environment-climate-change/services/climate-change/canadian-centre-climate-services/display-download/technical-documentation-regional-precipitation-analysis.html>
³ <5% extremely wet; <25% very wet; <45% wet; 45-55% average; >55% dry; >75% very dry; >95% extremely dry.
⁴ Please refer to the LEVELnews “What is net basin supply” (<https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data/levelnews-great-lakes-st-lawrence.html#projection>) for a description of net basin supply.
Note: The data contained in this report are provisional and are subject to change. Data are calculated from the best available observations at the time of posting.

Flood Information

With water levels remaining high on some lakes, there is a high risk of flooding. Great Lakes water levels are difficult to predict weeks in advance due to natural variations in weather. To stay informed about Great Lakes water levels and flooding, visit the Ontario flood forecasting and warning program website at <https://www.ontario.ca/flooding>.

Additional information can also be found at <https://www.ijc.org/en/lbcb>, and <https://ijc.org/en/loslrb>.

Information on current water levels and marine forecasts

Monthly levels: A monthly water level bulletin, produced by Fisheries and Oceans Canada, is available at <https://www.tides.gc.ca/en/monthly-water-level-bulletin-great-lakes-and-montreal-harbour> and click on the link “Full Monthly Water Level Bulletin for the Great Lakes and Montréal Harbour (PDF)”. This publication is intended to complement the information provided by LEVELnews on a monthly basis.

Daily levels: Current daily lake-wide average levels of all the Great Lakes are available at <https://lre-wm.usace.army.mil/reports/greatLakes/greatLakesLevelsThisMonth/greatLakesLevelsThisMonth.html>. The daily average water level is an average taken from a number of gauges across each lake and is a good indicator of the overall lake level when it is changing relatively rapidly due to recent high precipitation.

Hourly levels: Hourly lake levels from individual gauge sites can be found at the Government of Canada Great Lakes Water Level Gauging Stations website at <https://canada-preview.adobecqms.net/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data.html>. These levels are useful for determining real-time water levels at a given

site, however, it should be noted that they are subject to local, temporary effects on water levels such as wind and waves.

Marine forecasts: A link to current Government of Canada marine forecasts for wave heights for each of the Great Lakes can be found at <https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data.html> under the “Wave and wind data heading”. Current marine forecasts for Lakes Superior, Huron, Erie and Ontario are available by clicking on the link of the lake in which you are interested. To view a text bulletin of recent wave height forecasts for all of the Great Lakes, click on the “Text bulletin wave height forecasts for the Great Lakes and St. Lawrence River” link.

FOR MORE INFORMATION:

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En162-1E-PDF

ISSN 1925-5713

EC23052

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