

Great Lakes – St. Lawrence River Water Levels

Lakes Superior, Michigan-Huron, and Erie continue to experience above average levels

During July, the Great Lakes Basin experienced the following:

- The mean monthly water levels of all of the Great Lakes except Lake Ontario were above average. The level of Lake Ontario was slightly below average.
- Lakes Superior and Erie received close to average precipitation, while Lakes Michigan-Huron and Ontario had below average precipitation.
- Lake Superior experienced near average water supply conditions, while Lakes Michigan-Huron, Erie, and Ontario experienced drier than average water supply conditions.
- Lake Superior experienced a close to average June rise as it nears seasonal peak water levels. Lake Michigan-Huron appears to have peaked and had a slight decline in levels throughout July. The level of Lake Erie declined more than average. Lake Ontario experience its tenth largest decline for the month of July, tied with 1960 and 2018.

At this time of year, all the lakes except for Lake Superior have typically peaked and have started their seasonal decline. Lake Superior water levels are expected to remain above average under typical and wetter than average water supply conditions, while drier than typical conditions may cause levels to drop to below average by late fall or early winter. The water levels of Lakes Michigan-Huron and Erie are expected to remain above or close to average under most water supply scenarios. Lake Ontario levels are below average but would move to above average levels under wetter than average conditions. However, average or drier than average conditions could result in continued lower than average levels within the

Great Lakes water level information				
Lake	July 2022 monthly mean level		Beginning-of-August 2022 level	
	Compared to monthly average (1918–2020)	Compared to July 2021	Compared to beginning-of-month average (1918–2020)	Compared to August 2021
Superior	10 cm above	6 cm above	10 cm above	7 cm above
Michigan–Huron	21 cm above	19 cm below	21 cm above	22 cm below
St. Clair	31 cm above	20 cm below	30 cm above	25 cm below
Erie	26 cm above	20 cm below	24 cm above	28 cm below
Ontario	6 cm below	14 cm above	11 cm below	1 cm below

next few months.

With water levels remaining above average in 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 below.

Rip currents can be dangerous hazards while swimming anywhere in the Great Lakes, find out more information about them below.

July monthly levels

Lake Superior's monthly mean level was 183.62 m (IGLD85¹), 10 cm above the long-term average (1918-2021) and 6 cm higher than this time last year.

Lake Michigan-Huron's monthly mean level was 176.81 m (IGLD85). This was 21 cm above its July monthly mean water level and 19 cm lower than last year.

Lake Erie had an average monthly water level of 174.61 m (IGLD85), 26 cm above average and 20 cm below last year's level.

Lake Ontario's July monthly mean level was 74.95 m (IGLD85), 6 cm below average and 14 cm higher than last year.

Lake level changes

Lake Superior rose by 4 cm in July, close to its average monthly rise of 5 cm.

Lake Michigan-Huron declined by 2 cm, during a month when it typically does not change.

Lake Erie declined by 8 cm, more than its typical decline of 5 cm.

Lake Ontario declined by 18 cm, double its typical decline of 9 cm. This is the tenth largest decline on record for July.

(Note: lake level changes are based on the differences in levels at the beginning of the months and not the monthly average levels.)

Beginning-of-August lake levels

Lake Superior was 10 cm above average at the beginning of August, which is 7 cm higher than last year.

Lake Michigan-Huron's level was 21 cm above average at the beginning of August and 22 cm lower than this time last year.

Lake Erie was 24 cm above average at the beginning of August and 28 cm lower than at this time last year.

Lake Ontario's level at the start of August was 11 cm below average and 1 cm lower than at this time last year.

At the beginning of August, all of the Great Lakes were at least 44 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 <https://www.greatlakescc.org/en/international-great-lakes-datum-update/low-water-datum/>.

Water levels forecast

At this time of year, all the lakes except for Lake Superior have typically peaked and have started their seasonal decline.

Lake Superior is currently above its average level and is expected to remain so under average water supply conditions. Drier than average conditions could result in lake levels dropping below the long-term seasonal average, while wetter than average conditions would result in lake levels continuing to be above or well above average.

Lake Michigan-Huron is expected to remain above average under all water supply conditions.

Lake Erie levels are expected to stay above average under most water supply scenarios.

Lake Ontario levels are below average and are expected to remain below average under typical or drier than average water supply conditions

July basin statistics			
Lake	Precipitation (percentage of LTA) ^{a,b}	Net basin supply (probability of exceedance) ^c	Outflows (percentage of LTA) ^a
Great Lakes Basin	89%	-	-
Superior	97%	45% (average)	115%
Michigan-Huron	82%	74% (dry)	109%
Erie (including Lake St. Clair)	96%	68% (dry)	109%
Ontario	81%	61% (dry)	115%

^a As a percentage of the long-term average (LTA).
^b United States Army Corps of Engineers (<https://lre-wm.usace.army.mil/reports/greatLakes/greatLakesPrecipitationLastMonth/greatLakesPrecipitationLastMonth.html>)
^c <5% extremely wet; <25% very wet; <45% wet; 45-55% average; >55% dry; >75% very dry; >95% extremely dry.
Note: The figures contained in this report are provisional and are subject to change. Data are calculated from the best available observations at the time of posting. Please refer to the February 2022 edition of LEVELnews (<https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data/levelnews-great-lakes-st-lawrence/february-2022.html>) for a description of net basin supply.

within the next few months. Water levels could move above average if wetter than average water supply conditions are experienced.

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>.

Be aware of rip currents when swimming on the lakes

Rip currents can occur in the Great Lakes whenever waves push water toward the shore. Breaking waves create a buildup of water along the shoreline that at some point needs to flow back toward the lake. Rip currents can develop where there is a low point in the lake bottom just off shore, such as a sand bar or rock reef,

which funnels the water back toward the lake. Rip currents can be dangerous as they can pull even strong swimmers out into deep water; however, contrary to common belief, rip currents do not have an undertow and will not pull swimmers underwater.

Understanding rip currents and the conditions that cause them to form can help make it possible to avoid them altogether or for strong swimmers to safely exit them. To help make your summer activities around the Great Lakes safe and enjoyable please look for further information on Great Lakes rip currents here: <https://www.canada.ca/en/environment-climate-change/services/hurricane-forecasts-facts/learn/hazards-impacts.html#curr>

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>.

Get notified when a new edition of LEVELNews is available!

Did you know that you can opt in to be notified whenever a new edition of LEVELNews is available?

Visit the LEVELnews subscription page to sign up for email notifications

(<https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data/levelnews-great-lakes-st-lawrence/subscribe.html>)

You can unsubscribe at any time.

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

Information on current water levels and marine forecasts

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:

Frank Seglenieks and Nicole O'Brien

Boundary Water Issues

Meteorological Service Canada

Environment and Climate Change Canada

Burlington ON L7S 1A1

Email: LEVELnews-infoNIVEAU@ec.gc.ca

En162-1E-PDF

ISBN 1925-5713

EC22024

For information regarding reproduction rights, please contact Environment and Climate Change Canada's Public Inquiries Centre at 1-800-668-6767 (in Canada only) or 819-938-3860 or email to enviroinfo@ec.gc.ca.

Photos: © Environment and Climate Change Canada

© Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change, 2022

Aussi disponible en français