

Great Lakes – St. Lawrence River Water Levels

Water levels on all lakes start May at or above average

During April, the Great Lakes Basin experienced the following:

- The mean monthly water level of Lake Superior was near average, while Lakes Michigan-Huron, Erie, and Ontario were all above or well above average.
- Lake Superior received well above average precipitation and Lake Michigan-Huron received above average precipitation. Lakes Erie and Ontario experienced below average precipitation.
- Lakes Superior and Michigan-Huron experienced very wet water supply conditions. This is in contrast to Lake Erie, which experienced dry water supply conditions and Lake Ontario saw very dry water supply conditions.
- Lakes Superior and Michigan-Huron saw higher than average water level rise, while Lake Erie and Ontario had only close to half their typical rise. Lake Superior experienced its 10th largest April rise on record.

Typically, all of the lakes continue their seasonal rise at this time of year as we head into the summer. Lake Superior water levels are expected to remain near average under typical water supply conditions. Wetter than average conditions could result in Lake Superior levels increasing above average. Drier than typical conditions may cause levels to drop below average. The water levels of Lakes Michigan-Huron and Erie are expected to remain above or close to average under any water supply scenario. Lake Ontario levels are above average and are expected to remain so under wetter than average conditions. In the event of average conditions, Lake Ontario could fall below average by mid summer, whereas drier than

Great Lakes Water Level Information				
Lake	April 2022 Monthly Mean Level		Beginning-of-May 2022 Level	
	Compared to Monthly Average (1918–2020)	Compared to April 2021	Compared to Beginning-of-Month Average (1918–2020)	Compared to May 2021
Superior	3 cm below	24 cm below	Same	18 cm below
Michigan–Huron	26 cm above	28 cm below	27 cm above	22 cm below
St. Clair	33 cm above	14 cm below	35 cm above	9 cm below
Erie	34 cm above	4 cm below	32 cm above	2 cm below
Ontario	24 cm above	51 cm above	21 cm above	51 cm above

LEVELnews User Survey

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<https://eccc.sondage-survey.ca/f/s.aspx?s=17a3b6e7-b9f4-4853-b154-97ec89ce7060&ds=jLJFWXVAYa>

Completing this short survey will help us tailor future editions to our reader's preferences. We appreciate all input!

average conditions could result in lower than average levels within the next few months.

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

Later in this issue, we summarize the seasonal Great Lakes level declines since their highs last summer or fall.

April monthly levels

Lake Superior's monthly mean level was 183.24 m (IGLD85¹), 3 cm below the long-term average (1918-2021) and 24 cm lower than this time last year.

Lake Michigan-Huron's monthly mean level was 176.67 m (IGLD85). This was 26 cm above its April monthly mean water level and 28 cm lower than last year.

Lake Erie had an average monthly water level of 174.59 m (IGLD85), 34 cm above average and 4 cm below the level last year.

Lake Ontario's April monthly mean level was 75.13 m (IGLD85), 24 cm above average and 51 cm higher than a year ago.

Lake level changes

Lake Superior rose by 14 cm in April, close to double its average monthly rise of 8 cm. This is the 10th largest April rise on record.

Lake Michigan-Huron rose by 13 cm, just above its monthly average increase of 11 cm.

Lake Erie rose by 6 cm, almost half its typical rise of 13 cm.

Lake Ontario rose by 11 cm, close to half its average rise of 21 cm.

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

Beginning-of-May lake levels

Lake Superior was at its average level at the beginning of May, 18 cm lower than last year.

Lake Michigan-Huron's level was 27 cm above average at the beginning of May and 22 cm lower than this time last year.

Lake Erie was 32 cm above average at the beginning of May and 2 cm lower than at this time last year.

Lake Ontario's level at the start of May was 21 cm above average and 51 cm higher than this time last year.

At the beginning of May, all of the Great Lakes except for Lake Superior were at least 12 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

<http://www.greatlakescc.org/wp36/home-2/international-great-lakes-datum-update/low-water-datum/>.

Water levels forecast

Typically, all of the lakes continue their seasonal rise at this time of year as we head into the summer.

Lake Superior is currently close to its average level and is expected to remain so under average conditions. Drier than average conditions could result in lake levels dropping below average in the coming months, while

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

April Basin Statistics			
Lake	Precipitation (percentage of LTA) ^{a,b}	Net Basin Supply (Probability of Exceedance) ^c	Outflows (Percentage of LTA) ^a
Great Lakes Basin	122%	-	-
Superior	193%	>13% (very wet)	79%
Michigan-Huron	116%	16% (very wet)	116%
Erie (including Lake St. Clair)	67%	73% (dry)	117%
Ontario	93%	77% (very dry)	116%

^a As a percentage of the long-term average (LTA) period of record (1918-2020) for the month of January.

^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.

wetter than average conditions may result in lake levels moving above average within the next few months.

Lake Michigan-Huron is currently at an above average level and expected to remain so under all water supply conditions. In the event of drier than average conditions, lake levels could approach average in the next six months.

Lake Erie levels are currently well above average and are expected to remain high under average and wetter than average water supply conditions. In the event of dry conditions, lake levels could approach average in the next six months.

Lake Ontario levels are above average and are expected to remain so under above average water supply conditions. Typical water supply conditions could result in lake levels falling below average during the summer. Drier than average conditions could cause Lake Ontario levels to fall below average in the coming months.

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>.

Summary of the 2021/22 seasonal decline

This is the time of year when all the lakes have typically completed their seasonal declines since last summer or fall. So we can now compare these to their averages.

Lake	Average seasonal decline (1918 – 2021)	2021-22 seasonal decline
Superior	34 cm	40 cm
Michigan-Huron	32 cm	49 cm
Erie	47 cm	39 cm
Ontario	66 cm	7 cm

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Lake Superior's seasonal decline was a little more than average with a decline of 40 cm. Lake Superior's record seasonal decline occurred in 1939, when it decreased 59 cm. With two years of back-to-back higher than average seasonal declines, Lake Superior finished its most recent seasonal decline at its lowest level since 2013.

Lake Michigan-Huron experienced a decline that was approximately two thirds more than its average. The record seasonal decline for Lake Michigan-Huron was 77 cm, which occurred in 1976. Lake levels currently remain well above average even after this greater than typical decline, but are still at its lowest level since 2017.

Lake Erie saw a seasonal decline about a third less than average and finished the season with lake levels at its lowest level since 2018 but still well above average. Lake Erie experienced its record decline in 1998, when lake levels decreased by 88 cm.

Lake Ontario experienced a unique lake level pattern over the past year. In general, the level has been rising since the spring of 2021. The only significant decline occurred between August and October of last year when the lake level went down by 7 cm. This unique pattern was a result of very wet water supply conditions in the Lake Ontario basin during the end of 2021. The previous record low seasonal decline was 22 cm back in 1920.

Even with larger than average declines in some of the lakes, all of them remain above average, except for Lake Superior. It is important to note that lake levels are always fluctuating and very often just pass through average levels on their way up or down, rather than staying at average levels for long periods of time.

LEVELnews User Survey

We are looking at modifying how we present the information contained in LEVELnews. Tell us what you think about how we present the information now and how we might be able to make it better in the future.

Completing the survey should only take a few minutes of your time. To participate please visit the <https://eccc.sondage-survey.ca/f/s.aspx?s=17a3b6e7-b9f4-4853-b154-97ec89ce7060&ds=2wKfYsG4dn>.

Information on flooding

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/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://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data.html> by clicking on “Daily water levels for the current month”. 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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