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LEVELnews

Great Lakes — St. Lawrence River Water Levels

Record Seasonal Declines Observed Throughout the Great Lakes Basin

Since reaching peak levels last summer or fall, all the Great Lakes have experienced greater than average seasonal declines. Even with these declines, all the lakes, apart from Lake Ontario, remain above average. Except for Lake Superior, the basin received less than average precipitation. This resulted in Lake Superior seeing its typical rise in levels for the month while the other lakes rose much less than their averages.

During April, Lake Superior's average level was 21 cm above average but 14 cm below last year's level. Lake Michigan-Huron experienced water levels 55 cm above average and 35 cm lower than last year's record high. Lake Erie's levels were 39 cm above average but 42 cm lower than this time last year when the lake was at record high levels. Lake Ontario water levels were below average throughout the month and 70 cm lower than last year.

We are now at a time of year when all lakes typically continue or begin their seasonal rise. Lakes Superior, Michigan-Huron, and Erie are expected to remain at above average levels under typical or dry water supply conditions. Lake Ontario levels are expected to remain below average even in the event of wetter than average conditions.

Great Lakes Water Level Information

Lake	April 2021 Monthly Mean Level		Beginning-of-May 2021 Level	
	Compared to Monthly Average (1918–2018)	Compared to One Year Ago	Compared to Beginning-of-Month Average (1918–2018)	Compared to One Year Ago
Superior	21 cm above	14 cm below	20 cm above	10 cm below
Michigan–Huron	55 cm above	35 cm below	49 cm above	40 cm below
St. Clair	48 cm above	37 cm below	45 cm above	38 cm below
Erie	39 cm above	42 cm below	35 cm above	42 cm below
Ontario	27 cm below	70 cm below	30 cm below	69 cm below

Canada

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

April monthly levels

Lake Superior had a monthly average of 183.48 m (IGLD85[1]). This was 21 cm above its April monthly-mean water level and 14 cm lower than its level last year.

Lake Michigan-Huron's monthly-mean level in April was 176.95 m (IGLD85), 55 cm above average and 35 cm below last April, during which time the lake was experiencing a record high.

Lake Erie's monthly-mean level was 174.63 m (IGLD85), 39 cm above average and 42 cm below its record high April level this time last year.

Lake Ontario's April monthly-mean level was 74.62 m (IGLD85), 27 cm below average and 70 cm lower than the level from a year ago. This is the lowest April level since 2015.

Lake level changes

The level of Lake Superior increased by 8 cm during the month of April, which is a typical seasonal rise.

Lake Michigan-Huron's level did not change over the month of April, whereas it typically rises by 11 cm. This is only the third time since 1918 when record keeping began, that the level has not changed between April and May. The level declined only once, by 1 cm, in April 2012.

The level of Lake Erie increased by 3 cm during the month, a quarter of its average increase of 12 cm.

Lake Ontario increased by 12 cm in April, in a month when it generally rises by 21 cm.

(Note that 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's beginning-of-May level was 20 cm above average, which is 10 cm lower than last year.

Lake Michigan–Huron's beginning-of-May level was 49 cm above average and 40 cm lower than it was during its record beginning-of-May level this time last year.

Lake Erie was 35 cm above average at the beginning of May and 42 cm lower than the record high last year at this time.

April Precipitation over the Great Lakes[1,2]

Great Lakes Basin	**81%**	**Erie (including St. Clair)**	**72%**
Superior	**128%**		
Michigan–Huron	**63%**	**Ontario**	**84%**

April Outflows from the Great Lakes[1]

Superior	**104%**	**Erie**	**118%**
Michigan–Huron	**126%**	**Ontario**	**104%**

[1] As a percentage of the long-term average.
[2] US Army Corps of Engineers
NOTE: These figures are preliminary.

Lake Ontario's level at the start of May was 30 cm below average and 69 cm lower than the water level from last year.

At the beginning of May, all of the Great Lakes were at least 32 cm above their chart datum level. Chart datum is a reference elevation for each lake in order to provide more information on the depth of water for safe boat navigation on the lakes. For more information, please visit

[1]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 http://www.greatlakescc.org/wp36/home/international-great-lakes-datum-update/

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

Water levels forecast

We are at the time of year when all of the lakes typically continue their seasonal rise going into the summer.

The level of Lake Superior is expected to rise during the next month if it receives average water supplies, however, only very wet conditions would see the lake levels approach record values during the summer months.

As Lake Michigan-Huron started the month of May well above average, it is expected to remain at above average levels even under dry conditions. In the event of a wetter than average summer, Lake Michigan-Huron is not expected to reach record levels.

Lake Erie levels are currently well above average, if it experiences average water supply conditions, the lake level would remain above average. It is not expected to reach record levels in the event of wet conditions and is expected to remain above average even in the event of drier than average conditions over the summer months.

Average water supplies would keep Lake Ontario below average throughout the rest of the spring and into the summer, while very wet conditions could see the water levels approach average levels by end of the summer.

For more information on the probable range of water levels consult the July 2018 edition of LEVELnews at https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data/levelnews-great-lakes-st-lawrence/july-2018.html

For a graphical representation of recent and forecasted water levels on the Great Lakes, refer to the Canadian Hydrographic Service's Monthly Water Levels Bulletin at: https://waterlevels.gc.ca/C&A/bulletin-eng.html

Summary of the 2021 seasonal decline

We are now at a time of year when typically all the lakes have completed their seasonal declines since last summer or fall, so we can see how they levels compared to their averages. As a result of generally dry conditions throughout the basin, the seasonal declines were greater than average for all the great lakes.

Lake	Average seasonal rise (1918-2020)	2020 seasonal decline
Superior	33 cm	44 cm
Michigan-Huron	32 cm	54 cm
Erie	47 cm	62 cm
Ontario	66 cm	94 cm

Lake Superior's seasonal decline was about a third greater than average with a decline of 44 cm; this is the 10th highest decline on record. Lake Superior's record seasonal decline occurred in 1939, when it decreased 59 cm. Although this year's seasonal decline is greater than average, Lake Superior levels still remain above average.

Lake Michigan-Huron experienced a decline that was approximately two thirds above average and the 6th highest on record. 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.

Lake Erie saw a seasonal decline about a third greater than average but also finished the season with lake levels well above average. This seasonal decline of 62 cm is the 9th highest on record. Lake Erie experienced its record decline in 1998, when lake levels decreased by 88 cm.

Lake Ontario started the season with well above average lake levels but by the end of the seasonal decline, the lake levels were below average. The seasonal decline was approximately 40% above average at 94 cm and is the 10th highest on record. The record seasonal decline of 113 cm occurred in 1998.

Even with these larger than average declines the lakes remain above average, apart from Lake Ontario. This shows just how high most of the lakes were last year and how even with dry conditions it may take some time, even years, for all the upper lakes to decline to more average levels. It is important to note that the lakes 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.

Information on flooding

With water levels so high, the risk of flooding is also high. Great Lakes water levels are hard to predict weeks in advance due to natural variations in weather. To stay informed on Great Lakes water levels and flooding, visit the Ontario flood forecasting and warning program web site at https://www.ontario.ca/page/floods.

Additional information can also be found at the International Lake Superior Board of Control web site, https://www.ijc.org/en/lsbc, and the International Lake Ontario–St. Lawrence River Board web site, 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 on the Great Lakes water levels and related data at https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data.html and 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 change 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: http://tides.gc.ca/eng/find/region/6. 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 on the Great Lakes water level and related data web page 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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