LEVEL news

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Great Lakes – St. Lawrence River Water Levels

Lakes Michigan-Huron and Erie experience a very wet April

In April, the Great Lakes Basin experienced the following:

- The mean monthly water level of Lake Superior was slightly below average, while Lake Michigan-Huron was somewhat above average. Lake Erie remained well above average, while Lake Ontario was slightly below average.
- Lakes Superior and Ontario experienced average (1918-2023) water supply conditions (a combination of the precipitation, evaporation, and runoff), while lakes Michigan-Huron and Erie experienced very wet conditions.
- March precipitation amounts were close to average (1981-2010) for Lake Superior and well above average for the remainder of the lakes.
- Lake Superior experienced an average monthly water level rise, while lake Michigan-Huron and Erie experienced higher than average monthly rises. Lake Ontario also experienced an average monthly water level rise.

Great Lakes water level information:

April 2024 monthly mean levels

Lake	Level[a]	Compared to April monthly average (1918–2023)	Compared to April 2023	Compared to record high (1918-2023)	Notes
Superior	183.24 m	3 cm below	24 cm below	44 cm below	-
Michigan–Huron	176.46 m	5 cm above	10 cm below	83 cm below	-
St. Clair	175.32 m	24 cm above	10 cm below	59 cm below	-
Erie	174.56 m	30 cm above	8 cm below	49 cm below	-
Ontario	74.87 m	2 cm below	26 cm below	78 cm below	-

[a]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/

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

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 below.

Later in this issue, we summarize the declines in the Great Lakes water levels over this past season.

Great Lakes water level information:

April lake level changes[a]

Lake	April lake level change	April monthly average change (1918-2023)	Compared to average April change (1918-2023)	Notes
Superior	8 cm rise	8 cm rise	average rise	-
Michigan–Huron	14 cm rise	11 cm rise	greater than average rise	-
St. Clair	18 cm rise	10 cm rise	much greater than average rise	-
Erie	16 cm rise	12 cm rise	greater than average rise	-
Ontario	21 cm rise	21 cm rise	average rise	-

[a] Lake 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-May level[a]					
Lake	**Level[a,b]**	**Compared to May beginning-of-month average (1918–2023)**	**Compared to May 2023**	**Compared to record high (1918-2023)**	**Notes**
Superior	183.30 m	2 cm below	30 cm below	44 cm below	-
Michigan–Huron	176.52 m	6 cm above	11 cm below	82 cm below	-
St. Clair	175.40 m	30 cm above	4 cm below	52 cm below	-
Erie	174.60 m	30 cm above	3 cm below	46 cm below	-
Ontario	74.95 m	4 cm below	31 cm below	76 cm below	-

[a] At the beginning of April, all of the Great Lakes were at least 10 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/

[b] 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 just below its average level and is expected to remain near 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 close to average under typical water supply conditions, although wetter than average conditions could result in a further increase above average. 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 early summer.

Lake Ontario water levels are expected to remain near or a bit below average under typical water supply conditions. 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.

April basin statistics			
Lake	**Precipitation-percentage of LTA (1981 – 2010) [a,b]**	**Net basin supply (probability of exceedance) [c,d]**	**Outflows (percentage of LTA)[a]**
Superior	99%	47% (average)	96%
Michigan-Huron	158%	19% (very wet)	107%
Erie	140%	18% (very wet)	113%
Ontario	140%	52% (average)	110%

[a] As a percentage of the long-term average (LTA).
[b] 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
[c] <5% extremely wet; <25% very wet; <45% wet; 45-55% average; >55% dry; >75% very dry; >95% extremely dry.
[d] 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 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.

Summary of the 2023/24 seasonal decline

By this time of year, all the lakes have typically completed their seasonal declines, which typically begin in in late summer or fall (2023). We can now compare these to their averages.

Lake	Average seasonal decline (1918–2023)	2023-24 seasonal decline
Superior	34 cm	47 cm
Michigan–Huron	33 cm	32 cm
Erie	46 cm	39 cm
Ontario	64 cm	87 cm

Lake Superior's seasonal decline of 47 cm was higher than the 1918-2023 average of 34 cm. Its record seasonal decline occurred in 1939, when it decreased by 58 cm. The lake was above average when the 2023/24 seasonal decline started, however the larger than average seasonal decline this year resulted in below average lake levels by the Spring of 2024. When the levels went below average in November 2023, it was the first time since June 2022 that they were below average.

Lake Michigan-Huron experienced a close to average seasonal decline, allowing lake levels to remain higher than average. The record seasonal decline for Lake Michigan-Huron was 79 cm, which occurred in 1977.

Lake Erie also experienced a close to average seasonal decline with lake levels remaining well above average, as they have for many years. Lake Erie experienced its record seasonal decline in 1920, when lake levels decreased by 99 cm.

Lake Ontario experienced a seasonal decline about one third more than average, bringing levels below average after starting the season above. The previous record high seasonal decline was 119 cm, back in 1998.

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.

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/lsbc, 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.

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