LEVEL news

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Great Lakes – St. Lawrence River Water Levels

Lakes Superior, Michigan-Huron, and Ontario end the year with below average water levels

In December, the Great Lakes Basin experienced the following:

- The mean monthly water level of Lakes Superior, Michigan-Huron, and Ontario were below average, while Lakes St. Clair and Erie were above average.
- Lakes Superior, Erie, and Ontario experienced wet or very wet water supply conditions (a combination of the precipitation, evaporation, and runoff), while Lake Michigan-Huron had average conditions.
- Lake Superior received higher than average December precipitation, and Lake Michigan-Huron had precipitation amounts that were closer to average. Both Lakes Erie and Ontario received below average precipitation.
- Lakes Superior and Michigan-Huron experienced close to average monthly declines, while lakes St. Clair, Erie and Ontario experienced greater than average rises.

Great Lakes water level information:

December 2024 monthly mean levels

Lake	Level[1]	Compared to December monthly average (1918 to 2023)	Compared to December 2023	Compared to record high (1918 to 2023)	Remarks
Superior	183.25 m	16 cm below	12 cm below	56 cm below	-
Michigan–Huron	176.23 m	13 cm below	21 cm below	103 cm below	-
St. Clair	174.96 m	2 cm above	17 cm below	84 cm below	-
Erie	174.12 m	10 cm above	14 cm below	77 cm below	-
Ontario	74.42 m	11 cm below	7 cm below	78 cm below	-

[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 at https://www.greatlakescc.org/en/international-great-lakes-datum-update/

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This is the time of year when both Lakes Erie and Ontario have reached their lowest water levels of the season. From this point on, they are expected to hold steady and then start to rise over the next few months. Typically, Lakes Superior and Michigan/Huron should continue their seasonal decline for a few more months before starting to rise again.

Low-lying areas are at risk for accelerated coastline erosion and flooding with the increased possibility of large storms and stronger winds in the winter months. For current information and forecasts, please refer to the sources listed at the end of this newsletter.

Now that 2024 is over, we can review the Great Lakes levels throughout the year. Read more about it below.

Great Lakes water level information:

December 2024 lake level changes[1]

Lake	December lake level change	December monthly average change (1918 to 2023)	Compared to average December change (1918 to 2023)	Remarks
Superior	7 cm decline	8 cm decline	Close to average decline	-
Michigan–Huron	6 cm decline	5 cm decline	Close to average decline	-
St. Clair	18 cm rise	4 cm rise	Greater than average rise	-
Erie	7 cm rise	2 cm rise	Greater than average rise	-
Ontario	8 cm rise	2 cm rise	Greater than average rise	-

[1]Lake level changes are based on the differences in levels at the beginning of the month, not the monthly average levels.

Great Lakes water level information: Beginning-of-January 2025 level[1]					
Lake	Level[1,2]	Compared to January beginning-of-month average (1918 to 2023)	Compared to January 2024	Compared to record high (1918 to 2023)	Remarks
Superior	183.22 m	15 cm below	14 cm below	54 cm below	-
Michigan–Huron	176.22 m	11 cm below	22 cm below	104 cm below	-
St. Clair	175.12 m	19 cm above	8 cm below	75 cm below	-
Erie	174.19 m	16 cm above	11 cm below	70 cm below	-
Ontario	74.46 m	10 cm below	8 cm below	73 cm below	-

[1] At the beginning of January, all of the Great Lakes were at least 2 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 below its average level and is expected to remain so under most water supply conditions.

Lake Michigan-Huron ended the month just below its average level and is expected to remain below average under typical and drier than average water supply conditions. However, wetter than average conditions would result in close to or above average water levels.

Lake Erie is expected to stay above average under most water supply scenarios. It would take dry water supply conditions for lake levels to fall below average in the next few months.

Like Lake Michigan-Huron, Lake Ontario also ended the month just below its average level. Water levels are expected to remain below average under dry or typical water supply conditions. However, wetter than average water supply conditions may result in above average lake levels in the next few 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.

December 2024 basin statistics			
Lake	Precipitation-percentage of LTA (1981 to 2010) [1,2]	Net basin supply (probability of exceedance) [3,4]	Outflows (percentage of LTA)[1]
Superior	84%	41% (wet)	93%
Michigan-Huron	97%	47% (average)	104%
Erie	113%	20% (very wet)	104%
Ontario	94%	34% (wet)	99%

[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://canada-preview.adobecqms.net/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data/levelnews-great-lakes-st-lawrence.html#basin) for a description of net basin supply.
Note: The information contained in this report is provisional and is subject to change. Data are calculated from the best available observations at the time of posting.

Review of 2024 Great Lakes water levels

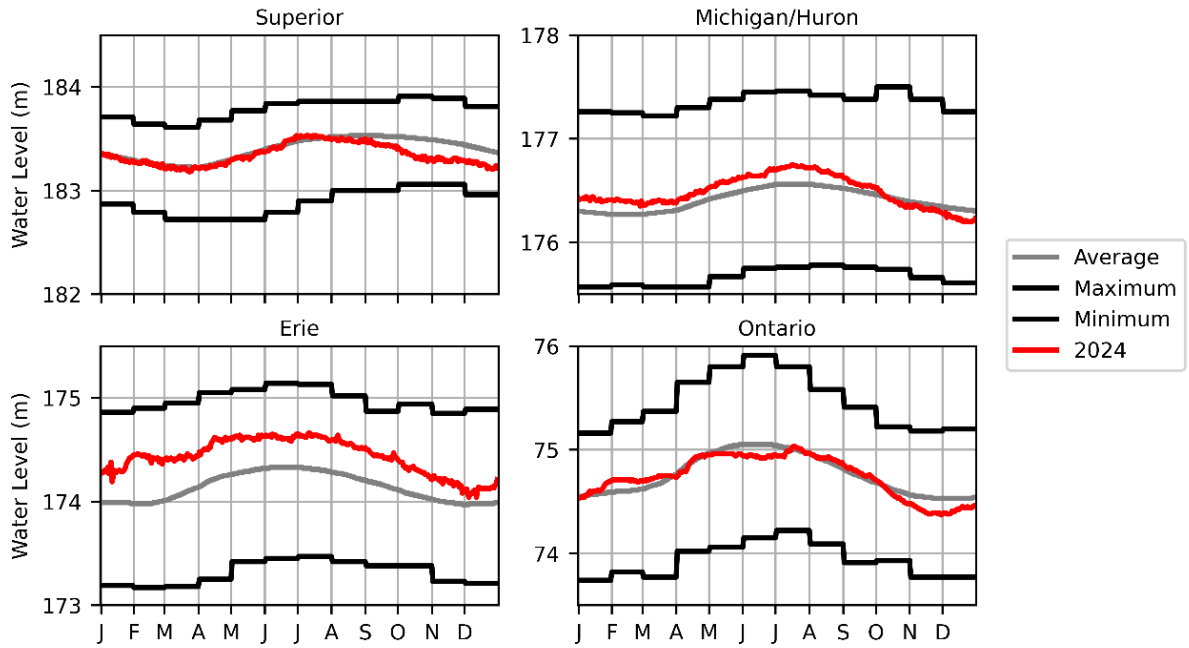
2024 saw the Great Lake levels remaining closer to average for lakes Superior, Michigan-Huron, and Ontario, with Lake Erie remaining above average throughout the year.

For the first half of the year, Lake Superior had average net basin supplies, resulting in a typical seasonal rise in lake levels during the spring. However, it was particularly dry in the Lake Superior basin throughout the summer and fall months following an approximately decade-long period where levels were consistently above average. This resulted in the sixth largest decline in August water levels on record, as water levels reached their lowest values since 2013. These below average water levels persisted in Lake Superior until the end of the year.

It was a similar story for Lake Michigan-Huron with a close to average seasonal rise for the spring followed by the months of August through December bringing dry conditions to the basin. This caused the water levels to fall below average for the first time in 10 years.

The water level of Lake Erie stayed well above average for the first half of the year before drier conditions led to a greater than average seasonal decline in the fall. Even with this decline, the level stayed just above average at the end of year.

Lake Ontario's water level remained very close to average for most of the year. It did experience a drop in levels below average near the end of the year because of dry conditions in October and November.



Flood Information

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.

FOR MORE INFORMATION:

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