

## Lake Superior and Lake Ontario water levels remain near average moving into the fall, Lake Michigan-Huron and Lake Erie remain high

During September, overall the Great Lakes basin experienced average water supply conditions; however, the Lake Erie and Lake Ontario basins were wetter than average.

The average level of Lake Superior in September was 3 cm below average and 28 cm below last year's level. The September water level of Lake Michigan-Huron was 40 cm above average and 41 cm lower than last year and it experienced its seventh largest water level decline on record. Lake Erie's water level was 48 cm above average but 16 cm lower than the same time last year, which is its sixth highest September level on record. Lake Erie also experienced its fifth highest beginning of October level on record. The average September water level for Lake Ontario was 4 cm below the long-term September average and 6 cm lower than last year.

At this time of year, all the lakes are continuing their seasonal decline. The water levels of Lake Superior are expected to remain close to average under typical water supply conditions. Wetter than average conditions could result in Lake Superior levels increasing above average and drier than typical conditions may result in below average levels. The water levels of Lakes Michigan-Huron and Erie are expected to remain above average under any water supply scenario. Lake Ontario levels are close to average and expected to remain so under average conditions. In the event of wetter or drier than average conditions, Lake Ontario has the potential to rise well above average by mid-winter, whereas drier than average conditions could result in lower than average levels.

Great Lakes Water Level Information				
Lake	September 2021 Monthly Mean Level		Beginning-of-October 2021 Level	
	Compared to Monthly Average (1918–2020)	Compared to September 2020	Compared to Beginning-of-Month Average (1918–2020)	Compared to October 2020
Superior	3 cm below	28 cm below	4 cm below	31 cm below
Michigan–Huron	40 cm above	41 cm below	39 cm above	42 cm below
St. Clair	53 cm above	24 cm below	57 cm above	13 cm below
Erie	48 cm above	16 cm below	50 cm above	10 cm below
Ontario	4 cm below	6 cm below	8 cm above	Same

With water levels remaining above average on some lakes and the possibility of large storms and winds during the fall and winter 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.

### September monthly levels

Lake Superior's monthly mean level was 183.51 m (IGLD85), 3 cm below average and 28 cm lower than this time last year.

Lake Michigan-Huron's monthly mean level in September was 176.93 m (IGLD85). This was 40 cm above its September monthly mean water level and 41 cm lower than last year.

Lake Erie had an average monthly water level of 174.67 m (IGLD85), 48 cm above average and 16 cm below last year's level. This is Lake Erie's sixth highest September water level on record.

Lake Ontario's September monthly mean level was 74.79 m (IGLD85), 4 cm below average and 6 cm lower than the level from a year ago.

### Lake level changes

Lake Superior declined by 5 cm in September, more than twice its typical September decline of 2 cm.

Lake Michigan-Huron declined by 12 cm, double its typical decline of 6 cm. This is the seventh largest water level decline on record for the month.

Lake Erie declined by 13 cm, more than its average decline of 9 cm.

Lake Ontario's level decreased by 7 cm in September, less than half of its typical decline of 15 cm.

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

### September Precipitation over the Great Lakes<sup>1,2</sup>

Great Lakes Basin	103%	Erie	133%
Superior	99%	(including Lake St. Clair)	
Michigan-Huron	90%	Ontario	129%

### September Outflows from the Great Lakes<sup>1</sup>

Superior	90%	Erie	118%
Michigan-Huron	115%	Ontario	111%

<sup>1</sup> As a percentage of the long-term average.

<sup>2</sup> US Army Corps of Engineers (<https://lre-wm.usace.army.mil/reports/GreatLakes/GLP-LastMonth.pdf>).

**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.**

### Beginning-of-October lake levels

Lake Superior's beginning-of-October level was 4 cm below average, which is 31 cm lower than last year.

Lake Michigan-Huron's level was 39 cm above average at the beginning of October and 42 cm lower than this time last year.

Lake Erie was 50 cm above average at the beginning of October and 10 cm lower than last year at this time. This is the fifth highest beginning of October level on record.

Lake Ontario's level at the start of October was 8 cm above average and the same as it was this time last year.

At the beginning of October, all of the Great Lakes were at least 29 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/international-great-lakes-datum-update/low-water-datum/>.

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<sup>1</sup>Water levels are referenced to International Great Lakes (Vertical) Datum 1985 (IGLD85). For more information, please visit <http://www.greatlakescc.org/wp36/home-2/international-great-lakes-datum-update/>.

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### Water levels forecast

At this time of year, all the lakes are continuing their seasonal decline.

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 dipping below average in the coming months, while wetter than average conditions may result in lake levels moving further above average.

The level of Lake Michigan-Huron is expected to decline throughout the fall under all water supply conditions; however, it is expected to remain well above average.

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 slightly above average and are expected to remain so under typical water supply conditions. Drier than average conditions could result in Lake Ontario levels falling below average, while wetter than average conditions may result in lake levels rising well above average throughout the fall and winter 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 the Canadian Hydrographic Service's Monthly Water Levels Bulletin at:

<https://waterlevels.gc.ca/C&A/bulletin-eng.html>

### Summary of the 2021 seasonal rise

The timing of the seasonal rise varies from lake to lake. Lake Superior typically experiences its peak in late summer or early fall, whereas, Lakes Michigan-Huron, Erie, and Ontario peak slightly earlier in mid-summer (June or July). Lake Superior has now likely seen its highest level of the season, with the other lakes continuing their yearly descent. We can look at how the seasonal rise in the lakes compared to their averages.

Lake	Average seasonal rise (1918–2020)	2021 seasonal rise
Superior	33 cm	20 cm
Michigan–Huron	32 cm	18 cm
Erie	45 cm	36 cm
Ontario	62 cm	42 cm

Lake Superior experienced about two-thirds of its typical rise this year. It started the year above average, however this less than typical rise and subsequent decline has resulted in lake levels approaching average by the end of the summer. It is also interesting to note that Lake Superior experienced its seasonal peak approximately two months earlier than average.

Lake Michigan-Huron saw a rise that was close to half of its average and started the year above average, peaking about a month later than average. Even with

the lower than average rise, lake levels remain well above average.

Lake Erie experienced almost three-quarters of its typical rise, and peaked about a month later than average. Lake Erie started the year with higher than average levels and remains well above average.

The rise of Lake Ontario was about two-thirds of its typical seasonal rise, and after a very dry spring in the basin, the peak occurred about two months later than average.

### **Information on flooding**

With water levels remaining high on some of the lakes, the risk of flooding is also high. Great Lakes water levels are difficult 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 website at <https://www.ontario.ca/flooding>.

Additional information can also be found at the International Lake Superior Board of Control website, <https://www.ijc.org/en/labc>, and the International Lake Ontario–St. Lawrence River Board website, <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 webpage 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 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 webpage 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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