

# **LEVEL** news

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### Great Lakes – St. Lawrence River Water Levels

## Lakes Superior and Michigan-Huron are near seasonal peak, while Lakes Erie and Ontario continue their seasonal decline

During August, the Great Lakes Basin experienced the following:

- The mean monthly water levels of all of the Great Lakes except Lake Ontario were above average. ٠ The level of Lake Ontario was below average.
- Lakes Michigan-Huron, Erie, and Ontario received slightly above average precipitation, while Lake Superior had below average precipitation.
- Lake Superior experienced near average water supply conditions, Lake Michigan-Huron and Erie experienced wetter than average conditions, and Ontario experienced drier than average water supply conditions.
- Lake Superior's water level remained constant throughout August but it is near its seasonal peak. Lake Michigan-Huron is likely past its seasonal peak and its levels decreased throughout August. Lakes Erie and Ontario levels are continuing their seasonal declines.

At this time of year, all of the lakes have typically reached their annual peaks and started their seasonal declines. Lake Superior water levels are expected to remain above average under typical and wetter than average water supply conditions, while drier than typical conditions may cause levels to drop to below average by late fall or early winter. The water levels of Lakes Michigan-Huron and Erie are expected to remain above or close to average under most water supply scenarios. Lake Ontario levels are below average but would move to above average levels under wetter than average conditions. However, average or drier than average conditions could result in continued lower than average levels within the

Great Lakes water level information						
	August 2022 monthly mean level		Beginning-of-September 2022 level			
Lake	Compared to monthly average (1918–2020)	Compared to August 2021	Compared to beginning-of-month average (1918–2020)	Compared to September 2021		
Superior	11 cm above	11 cm above	9 cm above	10 cm above		
Michigan–Huron	21 cm above	23 cm below	21 cm above	24 cm below		
St. Clair	32 cm above	21 cm below	32 cm above	26 cm below		
Erie	27 cm above	24 cm below	28 cm above	25 cm below		
Ontario	16 cm below	11 cm below	17 cm below	17 cm below		





next few months.

With water levels remaining above average in 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.

#### August monthly levels

Lake Superior's monthly mean level was 183.65 m (IGLD85<sup>1</sup>), 11 cm above the long-term average (1918-2021) and 11 cm higher than this time last year.

Lake Michigan-Huron's monthly mean level was 176.79 m (IGLD85). This was 21 cm above its August monthly mean water level and 23 cm lower than last year.

Lake Erie had an average monthly water level of 174.55 m (IGLD85), 27 cm above average and 24 cm below last year's level.

Lake Ontario's August monthly mean level was 74.74 m (IGLD85), 16 cm below average and 11 cm lower than last year.

#### Lake level changes

Lake Superior's level did not change in August, when it typically rises by 1 cm.

Lake Michigan-Huron experienced its average monthly decline of 4 cm.

Lake Erie declined by 4 cm, half of its typical decline of 8 cm.

Lake Ontario declined by 20 cm, more than its typical decline of 14 cm.

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

#### **Beginning-of-September lake levels**

Lake Superior was 9 cm above average at the beginning of September, which is 10 cm higher than last year.

Lake Michigan-Huron's level was 21 cm above average at the beginning of September and 24 cm lower than this time last year. Lake Erie was 28 cm above average at the beginning of September and 25 cm lower than this time last year.

Lake Ontario's level at the start of September was 17 cm below average and 17 cm lower than this time last year.

At the beginning of September, all of the Great Lakes were at least 44 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

https://www.greatlakescc.org/en/internationalgreat-lakes-datum-update/low-water-datum/.

#### Water levels forecast

At this time of year, all the lakes have typically reached their annual peaks and started their seasonal declines.

Lake Superior is currently above its average level and is expected to remain so under average water supply conditions. Drier than average conditions could result in lake levels dropping below the long-term seasonal average, while wetter than average conditions would result in lake levels continuing to be above or well above average.

Lake Michigan-Huron is expected to remain above average under most water supply conditions.

Lake Erie levels are expected to stay above average under most water supply scenarios.

Lake Ontario levels are below average and are expected to remain below average under typical or drier than average water supply conditions within the next few months. Water levels could move above average if wetter than average water supply conditions are experienced.

August basin statistics						
Lake	Precipitation (percentage of LTA) <sup>a,b</sup>	Net basin supply (probability of exceedance) °	Outflows (percentage of LTA) <sup>a</sup>			
Great Lakes Basin	101%	-	-			
Superior	71%	53% (average)	112%			
Michigan-Huron	111%	43% (wet)	110%			
Erie (including Lake St. Clair)	113%	18% (very wet)	108%			
Ontario	115%	57% (dry)	112%			

<sup>a</sup> As a percentage of the long-term average (LTA).

<sup>b</sup> United States Army Corps of Engineers (<u>https://lre-</u>

wm.usace.army.mil/reports/greatLakes/greatLakesPrecipitationLastMonth/greatLakesPrecipitationLastMonth.html) <sup>c</sup> <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-levelsrelated-data/levelnews-great-lakes-st-lawrence/february-2022.html) for a description of net basin supply.

For more information on the probable range of water levels, consult

https://www.canada.ca/en/environmentclimate-change/services/wateroverview/quantity/great-lakes-levels-relateddata/levelnews-great-lakes-stlawrence.html#projection.

For a graphical representation of recent and forecasted water levels on the Great Lakes, refer to <u>https://www.tides.gc.ca/en/monthly-</u> <u>water-level-bulletin-great-lakes-and-montreal-</u> harbour.

#### Fall and winter storms

The fall and winter can bring higher waves and storm surges on the Great Lakes. Winds blowing across long open water sections, or fetch, can cause large waves and push water levels up on the downwind side of the lakes creating a storm surge.

The largest waves occur on Lake Superior, where wave heights have approached 9 m. The largest storm surge occurs on Lake Erie, with the largest being about a 2.5 m rise. Although waves and storm surges are usually well below these maximums, they can create rapid changes in water levels that should be considered when undertaking activities on the shores of the Great Lakes.

In the coming months, the above-average levels of lakes Superior, Michigan–Huron and Erie could increase the potential for erosion of some shorelines, especially steep shoreline bluffs made up of silts, sands, gravels and cobbles that are exposed to waves. Although erosion around the Great Lakes can cause significant changes to the shoreline that can impact property and activities around the lakes, it is also a naturally occurring process that helps support shoreline dynamics such as beach building and the natural ecosystem of the Great Lakes.

Keep in mind that conditions can change quickly along the shores of the lakes and this can lead to dangerous conditions, especially if you are not prepared. Check the local forecasts and always keep a safe distance from the shoreline edge.

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#### **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 <u>https://www.ijc.org/en/lsbc</u>, and <u>https://ijc.org/en/loslrb</u>.

### Information on current water levels and marine forecasts

**Daily levels**: Current daily lake-wide average levels of all the Great Lakes are available at <u>https://lre-</u>

wm.usace.army.mil/reports/greatLakes/greatLa kesLevelsThisMonth/greatLakesLevelsThisMont h.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 <u>https://canada-</u>

preview.adobecqms.net/en/environmentclimate-change/services/water-

overview/quantity/great-lakes-levels-relateddata.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/environmentclimate-change/services/wateroverview/quantity/great-lakes-levels-relateddata.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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