



# LEVELnews

## Great Lakes – St. Lawrence River Water Levels

### High water levels on Lakes Superior, Michigan/Huron, and Erie to start 2021

Moving into 2021, Lakes Superior, Michigan/Huron, and Erie continue to be well above average and are anticipated to remain high throughout the winter. Lake Superior’s level was the ninth highest December level ever recorded, 11 cm below last year’s level and Lake Michigan-Huron experienced its fourth highest level for the month and was also 11 cm below last year. The level of Lake Erie was its fourth highest for the month of December; 3 cm lower than last year. Lake Ontario was 9 cm above its average value and 38 cm lower than last year. Lakes Michigan-Huron and Erie start January at their fourth and second highest levels in the period of record (1918-2019), respectively. Lake Ontario starts the year closer to its average seasonal level.

We are now at the time of year when both Lakes Erie and Ontario have reached their seasonal minimum levels. From this point on, they would be 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.

Great Lakes Water Level Information				
Lake	December 2020 Monthly Mean Level		Beginning-of-January 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	22 cm above	11 cm below	21 cm above	16 cm below
Michigan–Huron	79 cm above	11 cm below	80 cm above	15 cm below
St. Clair	70 cm above	5 cm below	73 cm above	1 cm above
Erie	64 cm above	3 cm below	67 cm above	2 cm above
Ontario	9 cm above	38 cm below	11 cm above	36 cm below

With very high levels on all of the lakes and the possibility of large storms and winds during winter months there is high 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.

Included below is a summary of the very memorable year for Great Lakes water levels in 2020.

### December monthly levels

Lake Superior had a monthly average of 183.63 m (IGLD85<sup>1</sup>) for December. This was 22 cm above its December monthly-mean water level and 11 cm lower than its level last year. This year was the ninth highest December level on record, 18 cm lower than the highest in the period of record in 1985.

Lake Michigan–Huron’s monthly-mean level in December was 177.14 m (IGLD85), 79 cm above average and 11 cm below last December’s level. This was the fourth highest December level on record at 12 cm below the previous monthly record value in 1986.

Lake Erie’s monthly-mean level was 174.65 m (IGLD85), 64 cm above average and 3 cm below its December 2019 level. This was the fourth highest December lake level on record, 24 cm below the record high in 1986.

Lake Ontario’s December monthly-mean level was 74.62 m (IGLD85), 9 cm above average, 38 cm lower than the level from a year ago, and 58 cm below the record high in 1945.

### Lake level changes

The level of Lake Superior went down by 12 cm during the month of December, more than its typical decline of 8 cm.

Lake Michigan/Huron went down by 5 cm during the month, which is the same as its average decline.

The level of Lake Erie went up by 3 cm in December, a little more than its typical rise of 1 cm.

Lake Ontario increased by 6 cm in December, more than its average increase of 2 cm.

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

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

<b>Great Lakes Basin</b>	<b>73%</b>	<b>Lake Erie</b>	<b>56%</b>
<b>Lake Superior</b>	<b>72%</b>	<b>(including Lake St. Clair)</b>	
<b>Lake Michigan–Huron</b>	<b>51%</b>	<b>Lake Ontario</b>	<b>97%</b>

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

<b>Lake Superior</b>	<b>105%</b>	<b>Lake Erie</b>	<b>127%</b>
<b>Lake Michigan–Huron</b>	<b>129%</b>	<b>Lake Ontario</b>	<b>121%</b>

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

<sup>2</sup> US Army Corps of Engineers

**NOTE: These figures are preliminary.**

### Beginning-of-January lake levels

Lake Superior’s beginning-of-January level was 21 cm above average, which is 16 cm lower than last year, and the ninth highest on record.

Lake Michigan–Huron’s beginning-of-January level was 80 cm above average and 15 cm lower than it was last year. This is the fourth highest in the period of record, with a level that is 15 cm lower than the previous beginning-of-month record for January set in 2020.

Lake Erie was 67 cm above average at the beginning of January and 2 cm higher than the same time last year. This level is the second highest on record, 21 cm behind the record high in 1987.

Lake Ontario’s level at the start of January was 11 cm above average and 36 cm lower than the water level from last year.

At the beginning of January, all of the Great Lakes were at least 38 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).

### **Water levels forecast**

Relative to their beginning-of-January levels and with average water supplies for this time of year, some of the lakes would be expected to continue their seasonal decline while others may hold steady or begin their seasonal rise in the coming months.

The level of Lake Superior is expected to continue its seasonal decline, but stay above average if it receives average water supplies throughout the fall and the winter.

Lake Michigan-Huron will likely remain below record levels with average water supplies, but still much higher than average in the coming months. However, above average water supplies could bring the level above record levels in the coming months.

With average conditions, Lake Erie would stay well above average throughout the fall, while very wet conditions could result in the levels surpassing record levels during the winter.

Lake Ontario would begin its seasonal rise with average conditions and remain above average throughout the fall and winter. However, with conditions that are well above average, Lake Ontario could approach record high levels.

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>

### **Review of 2020 Great Lakes water levels**

The year 2020 was a notable year for the Great Lakes levels, with all lakes starting the year well above average and many of them experiencing record highs at the start of the year. By the

summer, only Lake Michigan-Huron was still at record high with the other lakes still well above average. The fall saw all the lakes continue their season decline and remain below record levels. Lake Ontario's seasonal decline was much more than its average and was the only lake to end the year close to its average.

It was overall a relatively average year in terms of precipitation over the Great Lakes. March, July, August, and October had above average precipitation, January, May, and June had close to average precipitation, with the remaining months having below average precipitation.

Lake Superior started 2020 with record high levels, which persisted until February. In the spring, water levels dropped below record highs, but remained well above average throughout the remainder of the year. The seasonal behaviour of the lake was typical with the seasonal low occurring in March and the seasonal high occurring in August. Overall, Lake Superior finished the year with well above average levels.

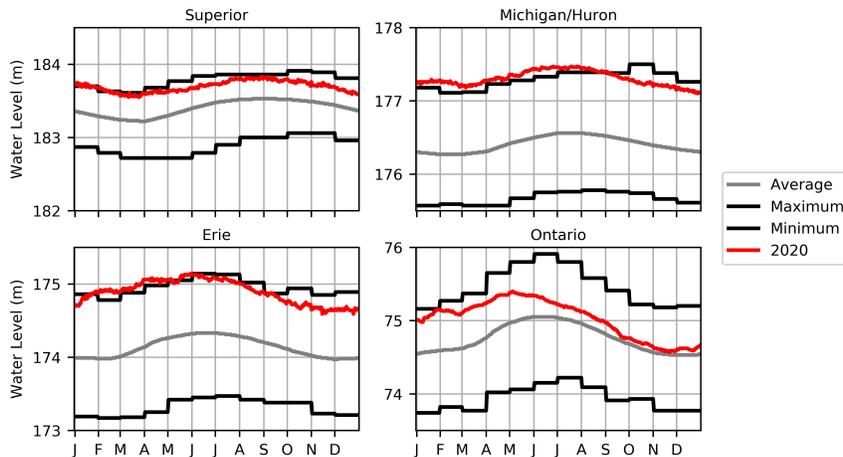
Lake Michigan/Huron had a notable 2020 with record breaking levels for the first 8 months of the year until the seasonal decline in October. The Lake's seasonal increase in the spring and seasonal decrease in the fall followed a typical yearly pattern, however, the lake ended 2020 well above average but lower than record high levels.

Lake Erie started out the year at record breaking levels which continued throughout the spring until the beginning of its seasonal decline in June. Similar to Lakes Superior and Michigan/Huron, a typical seasonal increase in levels was observed throughout the spring and decrease in the fall. Lake Erie ended 2020 with well above average levels.

Lake Ontario was the only lake to not experience record breaking levels in 2020. The year began with lake levels in January well above average, and they continued to be well above average throughout the spring. The lake peaked in early May and the seasonal decline from May through November of 76 cm was higher than the average decline of 49 cm. This resulted in the lake level

being close to average during the fall with average climatic conditions prevailing throughout that season.

The levels for all the lakes from 2020 can be seen in the graph below, along with the average and the maximum and minimum levels during the period of record (1918-2019).



### 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/flooding>.

Additional information can also be found at the International Lake Superior Board of Control web site, <https://www.ijc.org/en/lisbc>, 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](#) 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 the high precipitation recently experienced.

**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](#) 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:**

Frank Seglenieks (Editor)  
Boundary Water Issues  
National Hydrological Services  
Meteorological Service Canada  
Environment and Climate Change Canada  
Burlington ON L7S 1A1  
Tel.: 905-336-4947  
Email: [ec.levelnews-infoniveau.ec@canada.ca](mailto:ec.levelnews-infoniveau.ec@canada.ca)

Rob Caldwell  
Great Lakes–St. Lawrence Regulation Office  
Meteorological Service Canada  
Environment and Climate Change Canada  
111 Water Street East  
Cornwall ON K6H 6S2  
Tel.: 613-938-5864

For information regarding reproduction rights, please contact Environment and Climate Change Canada's Public Inquiries Centre at 1-800-668-6767 (in Canada only) or 819-997-2800 or email to [ec.enviroinfo.ec@canada.ca](mailto:ec.enviroinfo.ec@canada.ca).  
Photos: © Environment Canada – 2011

© Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change, 2020

**ISSN 1925-5713**

Aussi disponible en français