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LEVELnews

Great Lakes — St. Lawrence River Water Levels

Dry and cold conditions in February resulted in falling water levels throughout most of the Great Lakes Basin

Lower than average precipitation amounts and cold conditions (which result in lower runoff and increased lake evaporation) contributed to greater than average declines in most of the lake levels throughout February. Despite these declines, water levels remain well above average in all lakes apart from Lake Ontario.

Lake Superior's average level was 19 cm above its February average but 18 cm below last year's level and Lake Michigan-Huron experienced its fourth highest February level but was 26 cm below last year. Lake Erie experienced its eighth highest level for the month of February; 33 cm lower than last year. Lake Ontario was 8 cm below its average value for the month of February and 59 cm lower than last year. Lake Erie experienced its 2nd largest decline, while Lake Ontario experienced its 9th largest February decline on record.

Water levels on all the Great Lakes start the month of March above or well above average with the exception of Lake Ontario, which had a beginning-of-March level 8 cm below its long-term average (1918-2020).

Great Lakes Water Level Information

Lake	February 2021 Monthly Mean Level		Beginning-of-March 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	19 cm above	18 cm below	19 cm above	14 cm below
Michigan–Huron	69 cm above	26 cm below	67 cm above	26 cm below
St. Clair	66 cm above	32 cm below	70 cm above	22 cm below
Erie	56 cm above	33 cm below	51 cm above	35 cm below
Ontario	8 cm below	59 cm below	14 cm below	60 cm below

Canada

We are now at the time of the year when all of the lakes with the exception of Lake Superior are typically starting or continuing their seasonal rise. However, dry and cold conditions throughout the Great Lakes Basin have resulted in sustained decreasing levels in Lakes Michigan-Huron, Erie, and Ontario. With average water supplies, Lake Superior would continue its seasonal decline for another month before starting to rise again.

With water levels continuing to remain very high on some of the lakes and the possibility of large storms and winds during winter months, there remains a 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.

February monthly levels

Lake Superior had a monthly average of 183.46 m (IGLD85[1]) for February. This was 19 cm above its February monthly-mean water level and 18 cm lower than its level last year.

Lake Michigan–Huron's monthly-mean level in February was 176.99 m (IGLD85), 69 cm above average and 26 cm below last February's record level. This was the fourth highest February level on record.

Lake Erie's monthly-mean level was 174.57 m (IGLD85), 56 cm above average and 33 cm below its February 2020 level. This is the 8th highest February level on record.

Lake Ontario's February monthly-mean level was 74.53 m (IGLD85), 8 cm below average, 59 cm lower than the level from a year ago, and 74 cm below the record high in 1952.

Lake level changes

The level of Lake Superior went down by 4 cm during the month of February, just a little less than its typical decline of 5 cm.

Lake Michigan-Huron dropped by 4 cm during the month, more than its average 1 cm decline.

The level of Lake Erie declined by 14 cm during the month; however, it typically increases by 3 cm. This is the 2nd largest February decline on record, the largest decline on record having occurred in 1918.

Lake Ontario decreased by 8 cm in February, in a month where it generally rises by 3 cm. This is the 9th largest February decline on record.

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

Beginning-of-March lake levels

Lake Superior's beginning-of-March level was 19 cm above average, which is 14 cm lower than last year.

Lake Michigan–Huron's beginning-of-March level was 67 cm above average and 26 cm lower than it was last year. This is the fourth highest in the period of record, with a level that is 26 cm lower than the previous beginning-of-month record for March, set in 2020.

February Precipitation over the Great Lakes[1,2]

Great Lakes Basin	**54%**	**Lake Erie (including Lake St. Clair)**	**47%**
Lake Superior	**55%**		
Lake Michigan–Huron	**56%**	**Lake Ontario**	**55%**

February Outflows from the Great Lakes[1]

Lake Superior	**107%**	**Lake Erie**	**123%**
Lake Michigan–Huron	**123%**	**Lake Ontario**	**122%**

[1] As a percentage of the long-term average.
[2] US Army Corps of Engineers
NOTE: These figures are preliminary.

[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 http://www.greatlakescc.org/wp36/home/international-great-lakes-datum-update/

Lake Erie was 51 cm above average at the beginning of March and 35 cm lower than the record high last year at this time.

Lake Ontario's level at the start of March was 14 cm below average and 60 cm lower than the water level from last year. This is the second consecutive month where Lake Ontario beginning-of-month levels have been below average for the first time since October 2018.

At the beginning of March, all of the Great Lakes were at least 24 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. For more information, please visit Low Water Datum – Great Lakes Coordinating Committee website at http://www.greatlakescc.org/wp36/home/international-great-lakes-datum-update/low-water-datum/.

Water levels forecast

We are at the time of year when only Lake Superior would typically still be declining under average water supplies and all the other lake levels would be starting to increase.

The level of Lake Superior is expected to continue its seasonal decline, but stay above average if it receives average water supplies throughout the remainder of winter and early spring. Even with wetter than average conditions, Lake Superior is not expected to reach record breaking levels.

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 late spring.

With average conditions, Lake Erie would stay well above average, while very wet conditions could result in the levels surpassing record levels in early spring.

Lake Ontario water levels have decreased throughout January and February, thus even with above average water supplies, Lake Ontario is not expected to reach 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

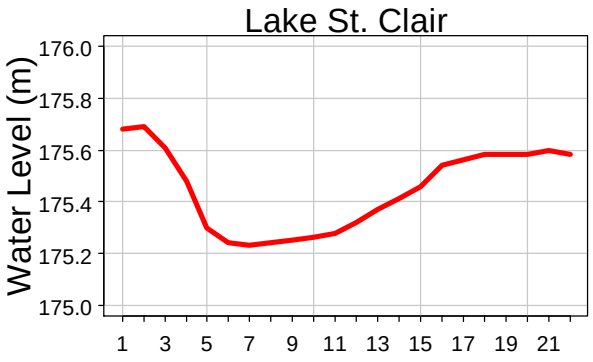
For a graphical representation of recent and forecasted water levels on the Great Lakes, refer to the Canadian Hydrographic Service's Monthly Water Levels Bulletin at: https://waterlevels.gc.ca/C&A/bulletin-eng.html

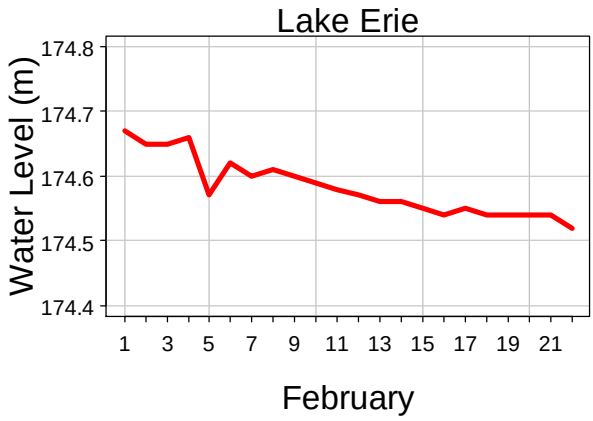
Ice Jamming on the St. Clair River

The St. Clair River serves as the outlet of Lake Michigan-Huron, discharging downstream and southward to Lake St. Clair. The river is comprised of a long main channel that extends from the outlet of Lake Michigan-Huron to an extensive delta region known as the St. Clair Flats and ultimately discharging to Lake St. Clair. Due to swift currents, the main channel above the flat delta region does not generally freeze. However, under certain climatic condition, Lake Michigan-Huron can be a prominent source of ice to the river.

Strong sustained northerly winds in the first few days of February 2021, in addition to unseasonably warm temperatures, resulted in ice movement from Lake Michigan-Huron to the St. Clair River. The accumulation of ice in the channel (referred to as an ice jam) restricted discharge to Lake St. Clair, causing a notable decrease in lake levels and associated flooding upstream of the jam at Port Lambton. A similarly impactful ice jam occurred on the river in April 1984.

The levels for Lake St. Clair and Lake Erie are provided in the graphs below. The effects of the ice jam were more pronounced on Lake St. Clair levels, however, Lake Erie was also impacted. The ice jam resulted in an approximate 45 cm lake level decrease on Lake St. Clair and 9 cm on Lake Erie. The graph also indicates that the effects of the ice jam on Lake St. Clair levels persisted until approximately February 17th, 2021.





Ice breaking operations by the United States and Canadian Coast Guards were in full force in the lower reaches of the St. Clair River, from February 3rd to February 15th, 2021. The image below shows the Canadian Coast Guard Ship Samual Risley performing ice breaking operations on the river.

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/page/floods.

Additional information can also be found at the International Lake Superior Board of Control web site, https://www.ijc.org/en/lsbc, 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 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 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 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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