



LEVELnews

Great Lakes – St. Lawrence River Water Levels

Beginning-of-July levels of all Great Lakes are at or above record-highs

Due to continued high water levels, the risk of accelerated coastline erosion and flooding to low-lying areas continues. For local sources of information on this, see the following sections of this edition of LEVELnews.

All of the Great Lakes began July at or above their record high levels, when we look at our period of record from 1918 to 2018. Parts of the St. Lawrence River also continued to experience high levels, including areas around Montreal Harbour.

Record high levels could continue for the remainder of the summer for all the Great Lakes, if wet conditions continue. However if they receive average water supplies, all lakes will be entering their seasonal decline by mid to late summer. However, even if the remainder of the summer and fall are very dry, forecasts for all of the lakes predict above average water levels through to the beginning of winter.

Continued wet conditions in June resulted in record high June-monthly-mean levels on lakes Superior, St. Clair, Erie and Ontario. Lake Michigan–Huron was just below its June-monthly-mean record.

Great Lakes Water Level Information				
Lake	June 2019 Monthly Mean Level		Beginning-of-July 2019 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	39 cm above	28 cm above	36 cm above	25 cm above
Michigan–Huron	77 cm above	34 cm above	79 cm above	35 cm above
St. Clair	81 cm above	27 cm above	86 cm above	30 cm above
Erie	79 cm above	25 cm above	83 cm above	30 cm above
Ontario	85 cm above	69 cm above	85 cm above	74 cm above

The beginning-of-July water levels for Lake Erie and Lake Ontario are the highest beginning-of-month levels that have ever been recorded since 1918, at any time of the year on these lakes. Lake Superior's and Michigan–Huron's beginning-of-July water level are a record high for this time of year, but higher beginning-of-month water levels have been recorded at other times of the year.

Be prepared for high water

With beginning-of-July levels of all the lakes at record-high or near-record-high values, all should be prepared for its impacts during summer. Stakeholders with interests along the lakeshore that are susceptible to shoreline erosion or are in low-lying areas should pay close attention to any weather systems that generate strong sustained winds. Such weather systems can result in a storm surge possibly causing localized flooding and accelerated erosion due to waves reaching higher up on the shoreline. With current lake levels, waves could reach elevations that have not been affected since prior to 1918.

Property owners around the Great Lakes should be following information from their local responsible agencies on high water impacts. For those planning activities around the Great Lakes this summer it is a good idea to check current local conditions before heading out. Be prepared for some possible impacts such as flooding of beaches, boat ramps, docks, low-lying parks, campgrounds, property and structures.

To help you plan your summer and keep you safe, consult the sources of information on flood conditions in your area. You will find references in the “Information on flooding” section. As well it’s a good idea to check current water levels and wave forecasts when planning for activities around the lakes. Sources of current water levels and marine wave forecasts are provided in the “Current water levels, marine forecasts” section below. Property owners around the Great Lakes are also strongly encouraged to consult the information provided

by their local responsible agencies on high water impacts on a regular basis.

Information on flooding

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>.

Local flood watches and flood warning information are issued in Ontario by Conservation Authorities at <https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/> or Ministry of Natural Resources and Forestry district office at <https://www.ontario.ca/page/ministry-natural-resources-and-forestry-regional-and-district-offices>.

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>.

More information is also provided in the “Water levels forecast” section at the end of this newsletter.

June Precipitation over the Great Lakes^{1,2}			
Great Lakes Basin	109%	Lake Erie	124%
Lake Superior	87%	(including Lake St. Clair)	
Lake Michigan–Huron	114%	Lake Ontario	121%
June Outflows from the Great Lakes¹			
Lake Superior	123%	Lake Erie	130%
Lake Michigan–Huron	128%	Lake Ontario	136%
¹ As a percentage of the long-term June average.			
² US Army Corps of Engineers			
NOTE: These figures are preliminary.			

Information on current water levels and marine forecasts

With lake levels changing day-to-day the [Government of Canada Great Lakes water levels and related data website](https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes) at: <https://www.canada.ca/en/environment-climate-change/services/water-overview/quantity/great-lakes>

[lakes-levels-related-data.html](#) provides a source for web sites on up-to-date Great Lakes water levels.

Daily levels: Current daily lake wide average levels of all the Great Lakes are available on the [Government of Canada Great Lakes water levels and related data website](#) 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> provides [hourly water levels](#). 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 you are interested in. To view a text bulletin of recent wave height forecasts for all of the Great Lakes click on the “[Wave height forecasts for the Great Lakes and St. Lawrence River](#)” link.

June monthly levels

All the Great Lakes had well-above-average [monthly-mean water levels](#) in June and lakes Superior, Erie and Ontario had record-high values (1918–2018).

Lake Superior was 39 cm above its period-of-record (1918–2018) June monthly-mean water level and 28 cm above its level in June 2018. This set a record high value for the month, surpassing the previous June record set in 1986 by 8 cm, but is still 7 cm below the record-high monthly-mean level set in October 1985.

Lake Michigan–Huron’s monthly-mean level in June was 77 cm above average, 34 cm above last June’s level, the 2nd highest June mean level on record and just 1 cm below the record set in 1986.

Lake Erie’s monthly-mean level was 79 cm above average, 25 cm above its level the same time last year and 10 cm higher than the previous record set in 1986. This is now the highest mean-monthly level on record.

Lake Ontario’s June monthly-mean level was 85 cm above average, 69 cm higher than a year ago, and 10 cm higher than the previous record set in June 2017.

Lake level changes

All of the Great Lakes, except Lake Superior, had above-average rises over the month of June, due mainly to continued above-average precipitation.

Lake Superior’s levels rose only 3 cm in June, significantly less than its average (1918–2018) rise of 8 cm.

Lake Michigan–Huron rose by 10 cm when on average it rises of 6 cm.

Lake Erie’s level rose by 10 cm, five times its average rise of 2 cm.

Lake Ontario rose by 1 cm when on average in June it falls by 1 cm.

Beginning-of-July lake levels

At the beginning of July lakes Superior, Erie and Ontario all had record high levels for that time of the year. Lake Michigan–Huron’s level tied its record high value.

Lake Superior’s beginning-of-July level was 36 cm above average (1918–2018) and 25 cm higher than July 2018. This beginning-of-July level is 4 cm higher than the previous record-high value set in 1943, but 6 cm below the record high monthly-mean level of October 1985.

Lake Michigan–Huron’s beginning-of-July level was 79 cm above average and 35 cm higher than its level at the same time last year. This equalled the Lake Michigan–Huron record high set at beginning of July 1986.

Lake Erie was 83 cm above average at the beginning of July and 30 cm higher than the same time last year. This was 14 cm higher than the record high beginning-of-July level set in 1986.

Lake Ontario's level at the start of July was 85 cm above average and 74 cm higher than the water levels last year. This also set a new record by 12 cm over the beginning-of-July record set in 2017. Lake Ontario levels reached a maximum daily-average level of 75.92 m by June 6, which was 4 cm higher than the record-high daily-average level first set on May 25, 2017. Levels gradually fell to 75.82 m on July 11 due to very high outflow from the lake.

At the beginning of July, all of the lakes were at least 65 cm above their chart datum level.

Water levels forecast

Relative to their beginning-of-July levels and with average water supplies for this time of year, lake Superior and Michigan–Huron rise over the month of July, while lake Erie and Ontario enter their seasonal decline.

Looking ahead into early fall, and based on their beginning-of-July levels and past conditions on the lakes (1918–2018), continued seasonal record-high water levels are forecasted for all the lakes for the remainder of the summer, if the lakes continue to receive above-average water supplies. If the wet trend changes and very dry conditions occur, all of the lake levels will remain well above average into October.

Lake Superior's probable range of future lake levels looking forward to October are between 19 cm and 41 cm above average. This forecast, based on beginning-of-July conditions, indicates that if the lake receives average water supplies it will be near or above seasonal record levels for August and September, but will only just reach the October 1985 period-of-record high (1918–2018) if it receives very wet water supplies. Lake Superior is forecasted to be only 1 cm above its period-of-record high of October 1985 if very wet conditions are seen between the beginning of July and October, but if average water supplies are seen it will be 9 cm below its October 1985 record high. However, because the August and

September seasonal records are considerably below October's, it will only take above-average water supplies to keep its levels above seasonal August and September records.

The probable range of values until October for Lake Michigan–Huron are between 64 cm and 94 cm above average. Within this probable range of values, Lake Michigan–Huron could break its seasonal records for August and September by a few centimetres, but only if conditions are very wet. However its levels in October are likely to be from 12 cm to 42 cm below its period-of-record high, which occurred in October 1986.

The probable range of values for Lake Erie up to October are between 48 cm and 81 cm above average. If very wet conditions occur, Lake Erie could exceed record high levels by 15 cm within the probable range of future lake levels, however it is more likely to stay just above its seasonal-record-high values for August and September and drop below record values by October.

Lake Ontario's probable range of levels are between 26 cm above average with very dry conditions and 77 cm above average with very wet conditions. Lake Ontario's levels could stay above record high values by as much as 8 cm through to October if very wet conditions occur, but more likely to drop below seasonal-record-high values.

For more information on the probable range of water levels consult the [July 2018 edition of LEVELnews](#).

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>.

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ISSN 1925-5713

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