LEVEL news

Volume 31 | Number 9 | September 2023

Great Lakes – St. Lawrence River Water Levels

All Lakes except Superior experience wet conditions in August

During August, the Great Lakes Basin experienced the following:

- The mean monthly water levels of all the Great Lakes were above average.
- Lake Superior experienced drier than average water supply conditions, Lake Michigan-Huron's water supply conditions were wet, while Lakes Erie and Ontario experienced very wet water supply conditions (a combination of the precipitation, evaporation, and runoff).
- August precipitation amounts were below average for Lake Superior but higher than average for the remaining Great Lakes Basins.
- Lakes Superior experienced a lower than average rise, while Lake Michigan-Huron experienced a smaller than average decline. Lake Erie experienced its third largest rise on record, at a time of year when it is usually declines, most of which was a result of a large rain event on the western end of the lake in late August. Finally, Lake Ontario's level declined close to its average August amount.

Great Lakes water level information:

August 2023 monthly mean levels

Lake	Level[a]	Compared to August monthly average (1918–2022)	Compared to August 2022	Compared to record high (1918-2022)	Notes
Superior	183.67 m	13 cm above	2 cm above	19 cm below	-
Michigan–Huron	176.70 m	12 cm above	9 cm below	72 cm below	-
St. Clair	175.52 m	33 cm above	2 cm above	45 cm below	-
Erie	174.59 m	30 cm above	4 cm above	43 cm below	-
Ontario	75.06 m	17 cm above	32 cm above	52 cm below	-

[a]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 at https://www.greatlakescc.org/en/international-great-lakes-datum-update/

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This is the time of year where all the lakes have typically reached their annual peaks and started their seasonal declines, aside from Lake Superior that is typically nearing its seasonal peak.

With water levels remaining above average in all 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.

It is the 30th anniversary of LEVELnews! Find out more below about the history of this publication in this month's edition.

Great Lakes water level information:

August lake level changes[a]

Lake	August lake level change	August monthly average change (1918-2022)	Compared to average August change (1918-2022)	Notes
Superior	3 cm decline	1 cm rise	less than average rise	-
Michigan–Huron	2 cm decline	4 cm decline	less than average decline	-
St. Clair	1 cm rise	6 cm decline	less than average decline	-
Erie	1 cm rise	8 cm decline	less than average decline	third largest rise on record
Ontario	13 cm decline	14 cm decline	slightly less than average decline	-

[a] Lake level changes are based on the differences in levels at the beginning of the months and not the monthly average levels.

Great Lakes water level information: Beginning-of-September level[a]					
Lake	**Level[a,b]**	**Compared to September beginning-of-month average (1918–2022)**	**Compared to September 2022**	**Compared to record high (1918-2022)**	**Notes**
Superior	183.65 m	10 cm above	1 cm above	21 cm below	-
Michigan–Huron	176.68 m	13 cm above	8 cm below	70 cm below	-
St. Clair	175.53 m	40 cm above	8 cm above	42 cm below	-
Erie	174.62 m	38 cm above	10 cm above	32 cm below	-
Ontario	74.99 m	16 cm above	33 cm above	52 cm below	-

[a] At the beginning of September, all of the Great Lakes were at least 45 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 Low Water Datum – Great Lakes Coordinating Committee at https://www.greatlakescc.org/en/international-great-lakes-datum-update/low-water-datum/

[b] 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 at https://www.greatlakescc.org/en/international-great-lakes-datum-update/

Water levels forecast

Lake Superior is currently above its average level and is expected to remain so under most water supply conditions. If there are very wet water supply conditions, lake levels could increase further throughout the fall and winter, while very dry conditions could result in lake levels falling below average.

Lake Michigan-Huron is expected to remain above average under most water supply conditions; it would take very dry conditions to bring the level below average by late fall.

Lake Erie is also expected to stay above average under most water supply scenarios.

Lake Ontario is above average but may come close to an average level by early winter under typical water supply conditions. Wetter than average conditions may result in the level remaining above average, while drier than average water supply conditions would result in the level moving below average.

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 https://www.tides.gc.ca/en/monthly-water-level-bulletin-great-lakes-and-montreal-harbour.

August basin statistics			
Lake	**Precipitation (percentage of LTA) [a,b]**	**Net basin supply (probability of exceedance) [c,d]**	**Outflows (percentage of LTA)[a]**
Superior	93%	60% (dry)	116%
Michigan-Huron	115%	31% (wet)	106%
Erie (including Lake St. Clair)	188%	7% (very wet)	108%
Ontario	123%	8% (very wet)	111%

[a] As a percentage of the long-term average (LTA).
[b] Environment and Climate Change Canada – Canadian Precipitation Analysis System
[c] <5% extremely wet; <25% very wet; <45% wet; 45-55% average; >55% dry; >75% very dry; >95% extremely dry.
[d] Please refer to the LEVELnews "What is net basin supply" (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 description of net basin supply.
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.

30 years of Great Lakes level information

The first edition of LEVELnews was issued in September of 1993, and started as an expanded version of a monthly media release prepared by Environment and Climate Change Canada. Of course, back then there were limited ways in which information could be distributed to the public.

At first, the newsletter was printed out and mailed to interested members of the public to augment the monthly water level bulletin produced by Fisheries and Oceans Canada (link below in monthly levels section). In April of 1995 Environment Canada (as we were known then) introduced the "Green Lane" to make environmental information accessible on the internet. From then on, LEVELnews was available on the website and the print edition was discontinued in Oct 2003.

Below is the first page of the first edition, 30 years ago. All editions, starting with September 1993 are available for download at https://publications.gc.ca/site/eng/9.505399/publication.html. Just like today, the lakes were above their long term averages.

The expertise of the following people have contributed to the publication LEVELnews over the last thirty years. Among them include Ralph Moulton, Peter Yee, Ruth Edgett, Chris Stewart, David Fay, Chuck Southam, Rob Caldwell, Derrick Beach, and Daniel Ferreira.

The current editors, Nicole O'Brien and Frank Seglenieks, are proud to be continuing the fine tradition of LEVELnews to keep the public informed about the Great Lakes water levels and other useful information about the lakes.

GREAT LAKES-ST. LAWRENCE RIVER WATER LEVELS

LEVELnews

Volume 1, Number 1 September 20, 1993

Great Lakes Continue Water Level Declines

Normal August precipitation on the Great Lakes Basin allowed water levels of the Great Lakes to continue their seasonal declines.

"As usual, Lake Superior was the last of the lakes to reach its peak level for the year, and this occurred in early September," explained Ralph Moulton, Manager of Environment Canada's Great Lakes Water Level Communications Centre.

"The decline in water levels is expected to continue on all the Great Lakes through the fall months."

Although they are declining, levels of all the lakes are above their average levels.

Lake Superior began September at 8cm above its long-term average for the time of year; Lake Huron began the month at 29 cm higher; Lake St. Clair, at 43 cm higher (1900-1991 average) ; Lake Erie began the month at 31 cm above average; and, Lake Ontario was 4cm above its beginning of September average. (The figure for Lake St. Clair is different than that shown on the Monthly Water Level Bulletin. The Bulletin uses a 1961-1992 average, which is higher than the 1900-1991 average.)

Assuming the most probable water supplies over the next six months, the levels of Lakes Superior, Huron, St. Clair and Erie are forecast to remain above their seasonal averages. Lake Ontario is forecast to decline below its average this month and to remain below average until January, when its seasonal rise is expected to begin. If water supplies are significantly higher or lower, levels could rise above or fall below those forecast.

FOR MORE INFORMATION
Great Lakes Water Level Communication Centre
(416) 336-4581

Lake St. Lawrence Levels Cause Boating Problems

People using the Lake St. Lawrence section of the St. Lawrence River (Between Cornwall and Iroquois) were advised in late August of very low water levels.

By August 20, the water level had fallen to 60 cm below average at Long Sault, very close to its 1987 record low. These low levels decreased depths for boating, and the effects were felt as far upstream as Wolfe Island near Kingston.

The low levels caused previously well submerged objects to be closer to the surface. In some locations, the water level was too low to allow boats to be taken into or out of the water. Others struck bottom or sustained damage to their propellers.

On August 23 and 26, the International St. Lawrence River Board of Control authorized decreases in the outflow from Lake Ontario. These actions were intended to help increase the level in the river upstream of the power dam at Cornwall. The Board agreed to continue a flow reduction for the remainder of the recreational boating season (until approximately Sept. 24). BySeptember 7, the Long Sault level had risen by about 30 cm.

Lake Ontario's outflow is regulated by adjusting the flow through the Moses-Saunders hydropower dam at Cornwall. Regulation activity is supervised by the International St. Lawrence River Board of Control, a Canada-U.S. board of the International Joint Commission.

The recent extremely low river levels on Lake St. Lawrence were a result of higher-than-normal outflows

Environment Canada Environnement Canada

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 https://www.ijc.org/en/lsbc, and https://ijc.org/en/loslrb.

Information on current water levels and marine forecasts

Monthly levels: A monthly water level bulletin, produced by Fisheries and Oceans Canada is available at https://www.tides.gc.ca/en/monthly-water-level-bulletin-great-lakes-and-montreal-harbour and click on the link "Full Monthly Water Level Bulletin for the Great Lakes and Montréal Harbour (PDF)". This publication is intended to complement the information provided by LEVELnews on a monthly basis.

Daily levels: Current daily lake-wide average levels of all the Great Lakes are available at https://lre-wm.usace.army.mil/reports/greatLakes/greatLakesLevelsThisMonth/greatLakesLevelsThisMonth.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 https://canada-preview.adobecqms.net/en/environment-climate-change/services/water-overview/quantity/great-lakes-levels-related-data.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/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.

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En162-1E-PDF
ISSN 1925-5713
EC23052