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LEVELnews

Great Lakes — St. Lawrence River Water Levels

Wet January Results in Above Average Levels for all Lakes

All of the Great Lakes experienced wet supplies in January and as a result all of the lakes were above their average levels for this time of the year. The lakes remained relatively ice free in January with the above seasonal air temperatures, however with the air temperature conditions over the lakes for the month, evaporation was also somewhat moderated for this time of year.

- The monthly mean water level of Lake Superior was 15 cm above its period-of-record (1918–2015) average in January, but 8 cm lower than January 2016.
- Lake Michigan–Huron's mean level in January was 18 cm above average and 10 cm lower than last January's level.
- Lake Erie's mean monthly level was 30 cm above average and 6 cm above its level the previous January.
- Lake Ontario was 6 cm above its January average and 1 cm lower than the same time last year.
- The below average trend for Montreal Harbour levels continued for the month of January, a trend that began in the spring of last year. The low trend continued due to relatively low outflow from the Ottawa River along with outflow only 2 percent above average from Lake Ontario.

After being the wetter lake for much of 2016, Lake Superior was the closest to its average rate of level change for January

Great Lakes Water Level Information

Lake	January 2017 Monthly Mean Level		Beginning-of-February 2017 Level	
	Compared to Monthly Average (1918–2015)	Compared to One Year Ago	Compared to Beginning-of-Month Average (1918–2015)	Compared to One Year Ago
Superior	15 cm above	8 cm below	15 cm above	8 cm below
Michigan–Huron	18 cm above	10 cm below	21 cm above	6 cm below
St. Clair	36 cm above	1 cm above	44 cm above	4 cm above
Erie	30 cm above	6 cm above	40 cm above	13 cm above
Ontario	6 cm above	1 cm below	15 cm above	2 cm above

Canada

compared to the other Great Lakes with its level falling 6 cm compared to its average (1918–2015) amount of 7 cm. Lake Michigan–Huron saw wetter conditions than Lake Superior with its level remaining the same at the beginning and end of the month, when the January average is a decline of 3 cm. Lake Erie had very wet conditions in January due to the above freezing temperatures, higher than average precipitation and lower evaporation. Lake Erie's level rose by 20 cm over the month of January, the fourth largest January rise on record, when on average it falls by 1 cm. Lake Ontario also saw a significant rise over January. This was due to higher precipitation and runoff and lower evaporation; but also to the increased inflows from a higher Lake Erie and to a lesser extent, the lower regulated outflows to the St. Lawrence River to assist ice formation over the month. This combined effect resulted in Lake Ontario rising 26 cm, the fifth largest January rise on record, and substantially more than the average January rise of 2 cm.

Plan 2014 Implemented

Regulation Plan 2014 for Lake Ontario and the St. Lawrence River was implemented on January 7, 2017. Plan 2014 replaces Plan 1958-D and is designed to provide for more natural variations of Lake Ontario and the St. Lawrence River to enhance ecosystem health, while continuing to balance upstream and downstream water use interests. Additional information on Plan 2014 can be found on the International Joint Commission web site at: ijc.org/en_/Plan2014/Summary. For information on the outflow of Lake Ontario, see the International Lake Ontario – St. Lawrence River Board Facebook Page at: www.facebook.com/InternationalLakeOntarioStLawrenceRiverBoard and the International Joint Commission web site at: www.ijc.org/loslr/en/background/index.php.

Beginning-of-February Lake Levels

Lake Superior's beginning-of-February level was 15 cm above average (1918–2015), but 8 cm lower than the level at the same time last year. Lake Michigan–Huron's beginning-of-February level was 21 cm above average but 6 cm lower than last year. Lake Erie was 40 cm above average at the beginning of February and 13 cm higher than this time last year. Lake Ontario's level at the start of February was 15 cm above average and 2 cm above this time last year. At the beginning of February, all of the lakes were at least 28 cm above their chart datum level.

Winter Lake Evaporation

Lake evaporation, or the process of water moving from the lakes into the atmosphere as the lake water is cooled, is a complex process that contributes, along with precipitation, inflow and outflow, to level fluctuations of the Great Lakes. Evaporation from the Great Lakes generally peaks in the fall to early winter months, when the air temperature above the lakes drops, but the water remains relatively warmer and ice free. The rate of evaporation from the lakes is dependent on a number of factors including wind speed, air

January Precipitation over the Great Lakes*

Great Lakes Basin	**107%**	**Lake Erie (including Lake St. Clair)**	**135%**
Lake Superior	**93%**		
Lake Michigan–Huron	**105%**	**Lake Ontario**	**104%**

January Outflows from the Great Lakes*

Lake Superior	**124%**	**Lake Erie**	**114%**
Lake Michigan–Huron	**121%**	**Lake Ontario**	**102%**

***As a percentage of the long-term January average.**
NOTE: These figures are preliminary.

temperature, water temperature and ice cover. Significant evaporation occurs when dry cold air blows over warmer lake water; conditions typically encountered when temperatures drop rapidly from above- to below-freezing.

Evaporation is a key factor in determining lake levels. In the last few months of 2016, evaporation rates were at or slightly higher than seasonal as a result of low ice cover on the lakes, with relatively warm water and cold air flow over the lakes. This trend was moderated in January with unseasonably warm air temperatures lowering evaporation rates by keeping air temperatures closer to water temperatures, and increasing precipitation runoff into the lakes when it is usually trapped as snow and ice. When air temperatures drop quickly, and the lake is ice free, watch for the mist above the surface of the lake as evidence that evaporation is occurring.

Lake Level Outlook

Relative to their beginning-of-month levels, and assuming average water supply conditions, Lake Superior is predicted to continue its seasonal decline through the month of February, while the other Great Lakes are predicted to rise. 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: tides-marees.gc.ca/C&A/bulletin-eng.html.

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