Environment and Climate Change Canada
Environnement et Changement climatique Canada

Volume 25, Number 12
December 2017

LEVELnews

Great Lakes — St. Lawrence River Water Levels

November levels remain well-above average

All Great Lakes levels in November remained well above average and above last November's levels, despite different water supply conditions across the basin. Both Lakes Superior and Michigan–Huron had relatively dry conditions for the month but Lake Michigan–Huron remained well above average level and Lake Superior is close to its record high level for this time of year. Lakes Erie and Ontario had wet conditions resulting in both their levels rising when their seasonal trend is to decline. Heavy rains in the Ottawa River watershed that occurred at the end of October had the St. Lawrence River levels at seasonal record highs at the beginning of November, although these levels were below the flood levels seen in the spring, and the river's levels declined to average levels by the month's end.

November monthly lake levels

All of the lakes had monthly mean levels at least 31 cm above average in November. The November monthly mean water level of Lake Superior was 31 cm above its period-of-record (1918–2016) average and 19 cm higher than November 2016. This made it the third highest November mean level on record, 11 cm

Great Lakes Water Level Information

Lake	November 2017 Monthly Mean Level		Beginning-of-December 2017 Level	
	Compared to Monthly Average (1918–2016)	Compared to One Year Ago	Compared to Beginning-of-Month Average (1918–2016)	Compared to One Year Ago
Superior	31 cm above	19 cm above	28 cm above	14 cm above
Michigan–Huron	47 cm above	26 cm above	47 cm above	26 cm above
St. Clair	53 cm above	25 cm above	55 cm above	31 cm above
Erie	46 cm above	20 cm above	49 cm above	29 cm above
Ontario	33 cm above	38 cm above	31 cm above	38 cm above

Canada

below the record high set in 1985. Lake Michigan–Huron's mean level in November was 47 cm above average, 26 cm higher than last November's level and the highest since 1997. Lake Erie's mean monthly level was 46 cm above average, 20 cm above its level the previous November and the highest it has been since 1997. Lake Ontario's mean monthly November level was 33 cm above average, 38 cm higher than the level last year and the highest it has been at this time of year since 1986.

Lake level changes

The dry conditions in combination with above average outflow in the upper lakes resulted in both these lakes declining more than average over the month of November. Lake Superior fell 10 cm through November when its average (1918–2016) decline is 5 cm. Lake Michigan–Huron's level fell 6 cm when its average November decline is 4 cm. In contrast, the wet conditions in the lower lakes more than offset above average outflow resulting in these lakes rising over November. Lake Erie rose 7 cm when its average decline is 4 cm. Lake Ontario levels rose 2 cm when its average decline is 3 cm.

Beginning-of-December lake levels

All the lakes had beginning-of-December levels well above average. Lake Superior's beginning-of-December level was 28 cm above average (1918–2016), 14 cm above the level at this time last year. Lake Superior's beginning-of-December level was the fourth highest on record but still 15 cm below the record high set in 1985. Lake Michigan–Huron's beginning-of-December level was 47 cm above average, 26 cm higher than last year and the highest it has been since 1986. Lake Erie was 49 cm above average at the beginning of December, 29 cm above this time last year and the highest it has been since 1997. Lake Ontario's level at the start of December was 31 cm above average, 38 cm above this time last year and the highest it has been since 1992. At the beginning of December, all of the lakes were at least 52 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 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. 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.

November Precipitation over the Great Lakes*

Great Lakes Basin	**97%**	**Lake Erie (including Lake St. Clair)**	**143%**
Lake Superior	**102%**		
Lake Michigan–Huron	**82%**	**Lake Ontario**	**95%**

November Outflows from the Great Lakes*

Lake Superior	**142%**	**Lake Erie**	**119%**
Lake Michigan–Huron	**114%**	**Lake Ontario**	**125%**

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

Water levels forecast

Relative to their beginning-of-December levels and assuming average water supply conditions all the Great Lake levels are expected to decline through December. 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: http://tides-marees.gc.ca/C&A/bulletin-eng.html.

FOR MORE INFORMATION:

Derrick Beach (Editor)
Boundary Water Issues
National Hydrological Services
Meteorological Service Canada
Environment and Climate Change Canada
Burlington ON L7S 1A1
Tel.: 905-336-4714
Email:
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

ISSN 1925-5713

Aussi disponible en français