Environment and Climate Change Canada | Environnement et Changement climatique Canada

Volume 24, Number 12
December 2016

LEVELnews

Great Lakes — St. Lawrence River Water Levels

General Dry Trend Continues Across Great Lakes

Conditions were dry in most of the Great Lakes basin throughout November mainly due to below average amounts of precipitation. All lakes experienced below average precipitation with the exception of Lake Superior which received only slightly above average precipitation. On average all lake levels decline through the month of November, however lower precipitation combined with the seasonal fall increase in evaporation rates resulted in greater than average declines in Lakes Michigan–Huron, Erie and Ontario. Despite generally dry November conditions, all of the lake levels, except for Lake Ontario, remained well above average, and the beginning-of-December levels of Lakes Superior and Michigan–Huron were above those seen last year at the same time. With a colder than average winter forecasted for the Great Lakes basin, the rate of evaporation from the lakes over the winter could play a significant role in whether the lake levels gain or lose water compared to average conditions come spring.

- The monthly mean water level of Lake Superior was 13 cm above its period-of-record (1918–2015) average in November and 1 cm higher than November 2015.
- Lake Michigan–Huron's mean level in November was 22 cm above average and 5 cm higher than the previous November level.

Great Lakes Water Level Information

Lake	November 2016 Monthly Mean Level		Beginning-of-December 2016 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	13 cm above	1 cm above	14 cm above	1 cm above
Michigan–Huron	22 cm above	5 cm above	22 cm above	4 cm above
St. Clair	29 cm above	7 cm above	25 cm above	6 cm below
Erie	27 cm above	4 cm above	20 cm above	2 cm below
Ontario	5 cm below	8 cm below	7 cm below	11 cm below

Canada

- Lake Erie's mean monthly level was 27 cm above average and 4 cm higher than last November.

- Lake Ontario was 5 cm below its November average and 8 cm lower than the same time last year.

- The below average trend which began in the spring of this year for levels at Montreal Harbour continued through the month of November, in part due to relatively low outflow from the Ottawa River for the month.

Above-average water supplies to Lake Superior resulted in the lake falling only 4 cm, when on average (1918–2015) it falls 5 cm through November, despite the outflow from the lake remaining higher than average. Even so, the higher than average outflow from Lake Superior was not enough to prevent Lake Michigan–Huron from falling more than the average November decline of 5 cm, with a decline of 8 cm seen through the month. The dry November conditions resulted in a decline in Lake Erie's levels by 12 cm, three times the average 4 cm decline for the month and tied for the seventh largest decline for the month on record. Lake Ontario declined 5 cm, also more than its average November decline of 3 cm.

Beginning-of-December Lake Levels

Lake Superior's beginning-of-December level was 14 cm above average (1918–2015), 1 cm above last year's, but 8 cm lower than the level at the same time in 2014. However, the Lake Superior 2014 beginning-of-December level was the highest it has been at this time of year since 1986. Lake Michigan–Huron's beginning-of-December level was 22 cm above average, 4 cm higher than last year and the highest it has been since 1997. Lake Erie was 20 cm above average at the beginning of December, but 2 cm lower than the same time last year. Lake Ontario's level at the start of December was 7 cm below average and only 4 cm below this time last year. At the beginning of December, all of the lakes were at least 26 cm above their chart datum level. For more information on chart datum see the July 2016 edition of LEVELnews.

Ice Information

Environment and Climate Change Canada monitors ice conditions in five regional areas, including the Great Lakes. If you would like to track ice conditions throughout the winter, please visit the Canadian Ice Service website at: www.ice-glaces.ec.gc.ca

If you click on the Great Lakes map on the regional area map provided you will find a number of ice information products for the Lakes. This includes Ice Charts (showing ice concentrations and stages of development), Ice Hazard Bulletins, Ice Forecasts, and Ice Cover Graphs. You can also view high resolution maps showing the latest ice cover in Canadian waters nation-wide and animation of the changes in ice cover over the past 10 days. Be sure to look at the Ice Products Guide provided on the Canadian Ice Services website to learn more about

November Precipitation over the Great Lakes*

Great Lakes Basin	**77%**	**Lake Erie (including Lake St. Clair)**	**62%**
Lake Superior	**101%**		
Lake Michigan–Huron	**72%**	**Lake Ontario**	**64%**

November Outflows from the Great Lakes*

Lake Superior	**118%**	**Lake Erie**	**107%**
Lake Michigan–Huron	**107%**	**Lake Ontario**	**103%**

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

the ice products and how to interpret them. The links to the product guide and the high resolution maps can be found below the regional area map.

Lake Level Outlook

Relative to their beginning-of-month levels, and assuming average water supply conditions, all the lakes are predicted to continue their seasonal decline through the month of December. Looking at the predictions for the next 6 months, the forecasted colder than average winter could indicate that evaporation from the lakes could play a significant role in their levels for this coming spring. If temperatures drop through December and remain below freezing for much of the winter so that significant ice cover forms on the lakes, we can expect evaporation to be lower for the winter, and with average precipitation, water levels for all the lakes could be above average by May 2017. However if there are numerous ups and downs in the air temperature that prevent the formation of ice on the lakes and create a significant temperature difference between warmer water and colder air, evaporation could be significant, and with below average precipitation, all the lakes could be at or below average levels by May 2017. 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.

Bulletin's Naming Convention

Each month, LEVELnews directs its readers to the Canadian Hydrographic Service's monthly water levels bulletin (the bulletin) for the latest six-month water level forecast. For example, this month's issue points to the November 2016 edition. This naming convention is used to indicate that the water level data documented in the bulletin includes recorded water level data up to and including, November 2016. The bulletin covering each month is produced and posted on the internet by the Canadian Hydrographic Service early in the month following the month covered by the bulletin.

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