LEVEL news

Great Lakes - St. Lawrence River Water Levels

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Low Water Supply Conditions Experienced on the Upper Great Lakes

This past December's water supplies to lakes Superior, Michigan-Huron and Erie were all below their long-term averages for the month. For lakes Superior and Michigan-Huron, December was in fact the third consecutive month with significantly below-average supplies. Lake Ontario was the only Great Lake to have a monthly supply greater than its December average.

Water levels on lakes Superior and Michigan-Huron fell by 10 and 8 cm, respectively, during December as these lakes continued their annual seasonal decline. The level of Lake Superior fell 2 cm more than its 8 cm average, while the level of Lakes Michigan-Huron fell by twice its average amount of 4 cm for the month. Water levels also fell on lakes St. Clair, Erie and Ontario. Levels on these lakes fell by 4, 4 and 2 cm, respectively. On average, the level of Lake St. Clair rises 4 cm during December, while lakes Erie and Ontario both increase by 2 cm on average.

The levels of each of the Great Lakes remain below their respective 1918-2009 averages and all are lower than they were a year ago. Since 1918, there have been only two years with a lower level on Lake Superior to begin the year, while for Lakes Michigan-Huron the level has been lower at this time of year 12 times.

It should be noted that even though we are now into 2011, the period of record used for comparison purposes is still 1918-2009, and will likely remain that for a couple more months. The 2010 water level data needs to be verified and accepted as correct before the period-of-record statistics can be updated to 1918-2010.

Water Level Forecast

The levels of lakes Superior, Michigan-Huron and St. Clair are expected to continue to fall in January. The levels of lakes Erie and Ontario are close to their annual lows and are not expected to rise or fall by much in January unless unusually high or low water

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Great Lakes Water Level Information

Lake	December 2010 Monthly Mean Level		Beginning-of-January 2011 Level	
	Compared to Monthly Average (1918-2009)	Compared to One Year Ago	Compared to Beginning-of-Month Average (1918-2009)	Compared to One Year Ago
Superior	34 cm below	23 cm below	35 cm below	26 cm below
Michigan-Huron	48 cm below	36 cm below	48 cm below	34 cm below
St. Clair	20 cm below	16 cm below	27 cm below	26 cm below
Erie	12 cm below	16 cm below	15 cm below	19 cm below
Ontario	1 cm below	3 cm above	7 cm below	2 cm below

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supplies occur. For a complete range of probable water levels over the next six months on each of the Great Lakes and on Lake St. Clair, please refer to the December 2010 edition of the Canadian Hydrographic Service's monthly water levels bulletin found at: **www.waterlevels.gc.ca/C&A/tidal_e.html**.

Lake Erie-Niagara River Ice Boom

Each year since 1964, Ontario Power Generation and the New York Power Authority have installed the Lake Erie-Niagara River Ice Boom at the head of the Niagara River. The use of the ice boom is authorized by the International Joint Commission and is overseen by the Commission's International Niagara Board of Control.

The boom, which is 2,700 m long, is made up of floating steel pontoons joined together to form 22 linked spans that are attached to the bottom of Lake Erie by steel cables. The purpose of the boom is to accelerate the formation of an ice arch that naturally forms in the eastern end of Lake Erie most winters, and to stabilize the ice cover once it forms. The boom also reduces the severity and duration of lake ice entering the Niagara River as the result of storms over the lake. It lessens the probability of large-scale ice blockages in the river that can lead to hydropower generation reductions, shoreline flooding, and property damage. The ice boom does not inhibit the flow of water out of Lake Erie into the Niagara River.

Severe storms with westerly winds may overcome the stability of the ice arch and force large masses of ice against the boom. The boom is designed so that when this occurs, the boom submerges and allows the ice to override it until the pressure is relieved. Once the storm subsides, the boom resurfaces and restrains ice which otherwise would flow down the river.

Installation of the boom spans can begin on whichever comes first: December 16 or when the Lake Erie water temperature, as measured at the Buffalo Water Intake, declines to 4°C. However, preparations to install the boom can, and do, begin earlier than either of these times.

This season, the Lake Erie water temperature as measured at the Buffalo Water Intake reached 4°C on December 8 after dropping from 6°C just two days earlier. The installation of the boom spans did not begin on December 8, but preparations were already well underway, and despite the challenges posed by high winds and deteriorating weather conditions the boom's installation was completed on December 16.

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December Precipitation over the Great Lakes *

Great Lakes Basin	**74%**	**Lake Erie**	**70%**
Lake Superior	**78%**	**Including Lake St. Clair)**	
Lakes Michigan-Huron	**71%**	**Lake Ontario**	**83%**

December Outflows from the Great Lakes *

Lake Superior	**76%**	**Lake Erie**	**98%**
Lake Huron	**92%**	**Lake Ontario**	**106%**

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