

LEVEL *news*



Great Lakes - St. Lawrence River Water Levels

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A Few Words about Water Level Data

Water levels are measured at several locations along the shore of the Great Lakes and their connecting channels by the National Oceanic and Atmospheric Administration (NOAA) in the United States and Fisheries and Oceans Canada (DFO) in Canada.

Great Lakes water levels are expressed in two ways, either as: 1) a height above (or below) Chart Datum, or 2) as an elevation above IGLD1985, the current International Great Lakes (vertical) Datum. Simply stated, an elevation above IGLD1985 is an elevation above mean sea level as defined at Rimouski, Quebec.

In order to meet water management and public information needs, the U.S. Army Corps of Engineers (USACE) and Environment Canada (EC) calculate lake-wide average daily and monthly mean water levels for each of the Great Lakes under the auspices of the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data. These lake-wide average values are determined using levels recorded at a coordinated network of NOAA and DFO gauges on each lake selected considering the effect of short-period water level fluctuations due to meteorological disturbances

and the impact of differential crustal movement that continues to tilt the Great Lakes basin over time. Water level data collected by NOAA and DFO and the lake-wide average levels calculated by the USACE and EC are available on the Internet. One of the easiest ways to find this data is via the following Web page: <http://www.on.ec.gc.ca/water/levels/intro.html>

A Word of Caution

If you visit some of the U.S. and Canadian water level sites available on the Web you will find that both short-term (e.g., instantaneous, **(continued on next page)**

Great Lakes Water Level Information

Lake	January 2006 Monthly Mean Level		Beginning of February 2006 Level	
	Compared to Monthly Average (1918-2004)	Compared to One Year Ago	Compared to Beginning-of-Month Average (1918-2004)	Compared to One Year Ago
Superior	10 cm below	8 cm below	9 cm below	6 cm below
Michigan-Huron	45 cm below	20 cm below	39 cm below	17 cm below
St. Clair	11 cm below	26 cm below	same	20 cm below
Erie	1 cm below	26 cm below	5 cm above	21 cm below
Ontario	8 cm above	11 cm below	20 cm above	4 cm below



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hourly and daily) as well as long-term (e.g., monthly and annual) water level data are available. Sometimes more than one type of water level data may be presented on the same page or graph. As a result, care must be taken to interpret the data correctly.

For example, DFO provides tabular and graphical representations (such as the one provided at the end of this text) of recent hourly water level heights above Chart Datum at each of its water level gauging stations on the Great Lakes. The hourly heights plotted are the instantaneous water levels measured on the hour at each gauge site, and as such reflect the short-period changes in water levels that occur at the gauge locations due to meteorological disturbances. On the other hand, the maximum and minimum values provided on the graphs for reference

January Precipitation Over the Great Lakes *

Great Lakes Basin	120%	Lake Erie	117%
Lake Superior	72%	(including Lake St. Clair)	
Lakes Michigan-Huron	145%	Lake Ontario	118%

January Outflows From the Great Lakes *

Lake Superior	101%	Lake Erie	103%
Lakes Huron	93%	Lake Ontario	99%

* As a percentage of the long-term January average.

NOTE: These figures are preliminary

purposes are lake-wide average monthly mean values. As indicated on the plot, hourly water levels declined significantly at Collingwood, Ontario on the 16th and 17th of January. Although the hourly water levels recorded at Collingwood were below the period-of-record minimum January monthly mean level recorded on the lake in 1965 for most of the 17th; at its lowest point it was still about 26 cm above the lowest hourly water level recorded at Collingwood during any January since a gauge was installed there in May 1906. Similarly, the record low daily and monthly levels recorded at Collingwood were not broken. Therefore, even if an hourly height does go above the maximum or below the minimum lines shown on the DFO plots it does not necessarily mean that a new record high or low level has been achieved. In order to determine if a new record level has been set, we need to compare hourly data to the hourly extremes, daily data to the daily extremes, and monthly data to the monthly extremes.

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