

LAKE LEVEL Trends & Projections

July 2022



Lake Michigan-Huron

Did you know that Lake Michigan-Huron is recognized as the largest lake in the world by surface area? Because Lake Huron and Lake Michigan are connected through the deep Straits of Mackinac, these two lakes are considered to function as one and therefore share the same water levels (1). Lake Michigan-Huron's inflow is only slightly regulated, and its outflow has no regulations (1). As a result, water levels are dependant mainly on precipitation, runoff and evaporation (1).

Water Level Patterns

Annually, Lake Huron goes through seasonal fluctuations of high and low water levels. Highs typically occur in the late spring and early summer from spring runoff and increased rainfall (2). During the fall and winter months water levels usually decline as a result of cold dry air moving over the warm lakes, which cause high rates of evaporation (3). The larger the difference in temperature between the air and water, the greater the evaporation (3).

2020 Records

Throughout 2020, Lake Huron surpassed monthly record high water levels from January through August (7). Scientists at the National Oceanic and Atmospheric Administration (NOAA) concluded that precipitation over 3 years leading up to the record water levels were about 25% higher than any 3-year period on record. Ultimately, it was these consecutive years of record high precipitation that resulted in water levels surpassing seasonal record highs in 2020.

Current Water Level Trends

Table 1: Difference between Current Water Levels and Historical Water Levels on Lake Michigan-Huron

Historical Water Levels (m)	2022's Water Level Difference (m) * current level is 176.82 m
July Average 176.60	+ 0.22 cm
July Monthly Record High (2020) 177.45	- 0.63 cm

Currently, water levels are 63 cm below the monthly record high for July, recorded two years ago in 2020 (4). Recent net water supply to the Huron-Michigan basin has been characterized by below average rates of precipitation in a number of areas (5). This period of below average precipitation and above average evaporation has caused a decline in Lake Huron water levels since 2020 record highs.



Projections

Lake Huron water levels reached their 2021 peak in August and have since continued their seasonal decline. Because water levels on Lake Huron are dependant on weather (evaporation and precipitation), it is difficult to accurately forecast future levels. Weather predictions change frequently throughout the week, therefore projecting these estimates months ahead results in a substantial range of uncertainty (6). Even with this uncertainty, there is a high degree of confidence that Lake Huron water levels will generally sustain a level below recent record highs (6). However, landowners should stay cautious as the impacts of widespread erosion continue to affect the lakeshore.

Please note that although water levels are on the decline, the risk of bluff failures remains high. Maitland Conservation recommends that landowners avoid top of bank areas.

References

- (1) Briscoe. T. (2020, January 09). Homeowners near the Great Lakes face a ‘very scary’ challenge: How do you handle a generation’s worth of water level changes in just a few years? Chicago Tribune. Retrieved from <https://www.chicagotribune.com/news/environment/great-lakes/ct-lake-huron-climate-change-water-levels-20200109-oiw7nunhoh3hm2vg5lrfimou-story.html>
- (2) Government of Canada. (2019, August 02). Fluctuations in Lake Levels – types. Retrieved from <https://www.waterlevels.gc.ca/C&A/fluctuations-eng.html>
- (3) Government of Canada. (2019, August 02). Natural Factors Affecting Lake Levels. Retrieved from <https://www.waterlevels.gc.ca/C&A/natural-factors-eng.html>
- (4) US Army Corps of Engineers. (2022, July 7). Weekly Great Lakes Water Levels. Retrieved from <https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Weekly-Great-Lakes-Water-Levels/>
- (5) US Army Corps of Engineers. (2022, July 06). June 2022 Great Lakes Water Level Summary. Retrieved from <https://www.lre.usace.army.mil/Portals/69/docs/GreatLakesInfo/docs/NewsAndInformation/JUN22summary.pdf?ver=xiQ8rfMcxIL96SHKVPZxOw%3d%3d>
- (6) US Army Corps of Engineers. (2022, July). Monthly Bulletin of Great Lakes Water Levels. Retrieved from <https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Monthly-Bulletin-of-Great-Lakes-Water-Levels/>