Factsheet

International Great Lakes Datum

Moving from IGLD (1985) to IGLD (2020)

Bi-National System
8 States & 2 Provinces

230 Water Level Gauges
Permanent & Seasonal

25-35 Year Update Cycle
To Account for Land Movement

2027
Planned Release for next IGLD
Referred to as IGLD (2020)

WHAT IS IGLD? The International Great Lakes Datum (IGLD) is a common vertical reference used throughout the Great Lakes - St. Lawrence River system to measure water levels. IGLD was first released in 1955 by the *Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data*, a bi-national committee dedicated to joint water resource management. IGLD (1955) was updated to IGLD (1985) in 1992. IGLD (1985) is scheduled to be replaced by IGLD (2020) around 2027. The updated IGLD will be compatible with national datum frameworks used in both countries, including the upcoming North American - Pacific Geopotential Datum of 2022, which will be adopted in the US sometime after 2025, and the existing Canadian Geodetic Vertical Datum of 2013, in use in Canada.

WHY IS IGLD UPDATED? IGLD is revised every 25-35 years to account for Glacial Isostatic Adjustment (GIA). GIA is the ongoing "rebounding" of land caused by the retreat of glaciers that covered the region during the last ice age, circa 12,000 years ago. GIA tilting of the region alters water levels relative to the rising or subsiding (sinking) shorelines. IGLD (2020) will utilize more accurate Global Navigation Satellite Systems technology instead of traditional leveling used in IGLD (1985).

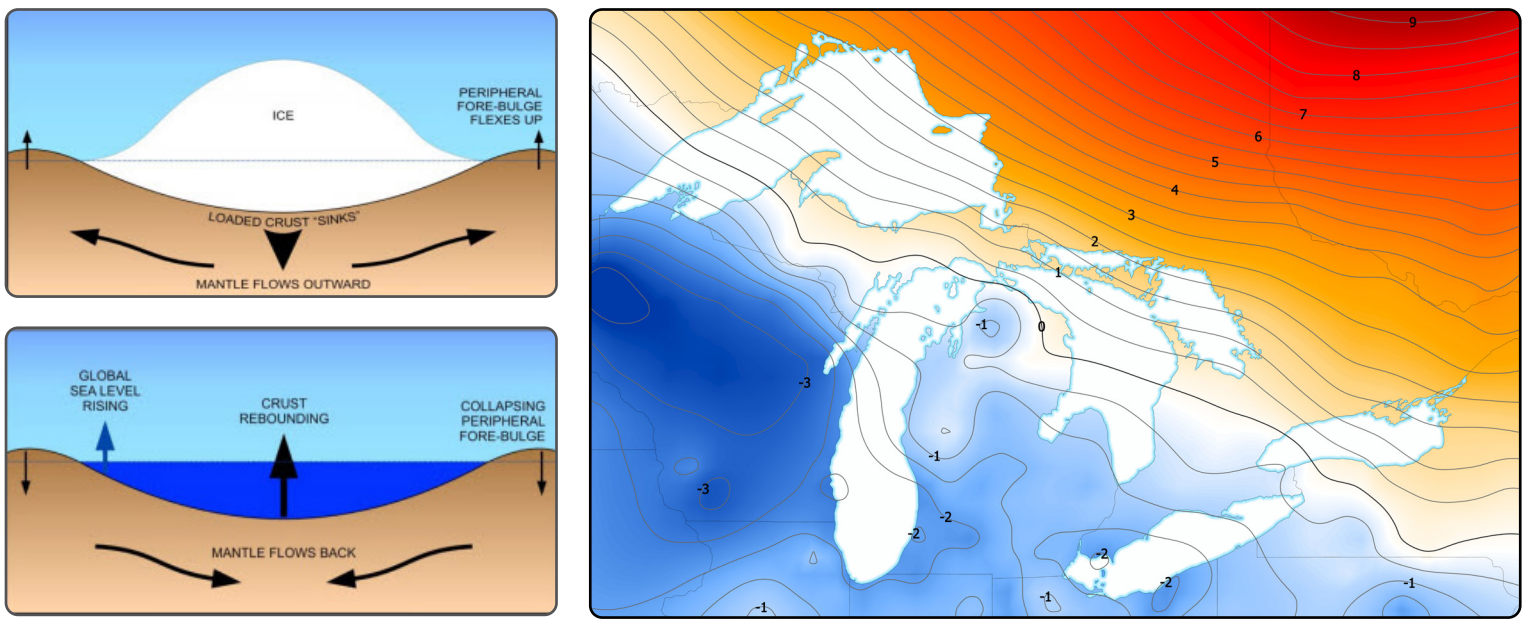

Fig. 1-3: Process of Glacial Isostatic Adjustment (left) and the resulting tilting of the entire Great Lakes region as determined by high accuracy GPS measurements in units of mm/year (right).

Changes

- Water level elevations for lakes and channels will be referenced to IGLD (2020) and assigned new values. These elevation values will change as much as 60 cm (2 ft), resulting from the elimination of systemic errors in IGLD (1985) and the alignment of IGLD (2020) with the new zero reference (Mean Sea Level) adopted for the North American Pacific Geopotential Datum of 2022.
- The traditional method of accessing a vertical datum, by leveling to known benchmarks, will be replaced by modern GNSS methods, which provide a direct and more accurate connection to the geoid-based IGLD (2020). Leveling will still be required between benchmarks at water level gauges.
- Low Water Datum (LWD), or Chart Datum, on the Great Lakes - St. Lawrence River system may also be revised. LWD sets authorized depths for navigational improvement projects. Changes will be communicated to impacted and interested stakeholders over the next 3-4 years.

Fig. 4: A Great Lakes water level station in Rochester, NY. Situated along Lake Ontario.

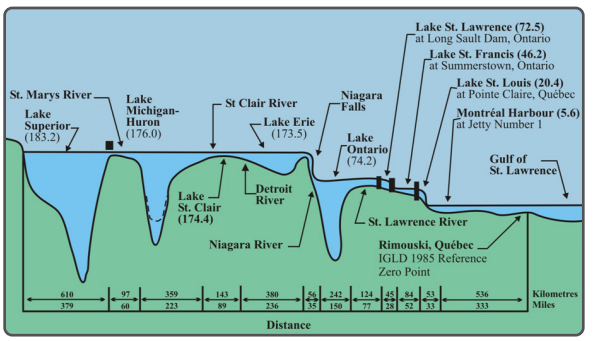

Fig. 5: Low Water Datum for the Great Lakes region.

Impacts

- **Chart depth references & under keel clearance**
- **Low Water Datum: the elevation for water depths on nautical charts**

- **Height references for regulating outflow in the Great Lakes**
- **Flooding & erosion-control reference heights** (to consider in land use planning)

- **Dredging in harbors & navigational improvement projects**
- **Dam/lock operations & models/decision making tools** (e.g. NOAA Lake Level Viewer)

- **Permits issued by federal agencies**
- **Ordinary High Water Mark: Federal Navigation Servitude & Regulatory Permit Program**
- **Shoreline datums and permits issued by First Nations/Tribes, provinces/states**

- **Ecosystem restoration & management** (e.g. fish spawning habitat connectivity in wetlands)
- **Future surface water modeling & river management plans**

- **Planning for power generation**
- **Hazard mapping & planning** (for transportation and disaster planning agencies)

- **Geodetic leveling: augmented by Global Navigation Satellite Systems**
- **Updated transformation models and tools to convert between datums**

Activities

Visit www.greatlakescc.org to follow IGLD (2020) progress, download technical reports, read FAQs, find events, and learn more!