GNSS Campaign

COORDINATING COMMITTEE

Updating data on 350 bench marks around the Great Lakes

BACKGROUND

Surveyors from government agencies in Canada and the United States will be out in the Great Lakes region this summer for a major five week project collecting Global Navigation Satellite Systems (GNSS) data, such as GPS, at over 300 locations. The data will be used to determine the heights of water level gauges as part of an update to the International Great Lakes Datum (IGLD).

The Great Lakes – St. Lawrence River system is one of the world's greatest freshwater resources and has important environmental, cultural, and economic value for Canada and the United States. The Great Lakes have long been an economic driver for both nations, generating $180 billion in Canada-U.S. trade. More than 1.5 million jobs are directly connected to the Great Lakes, generating $1.3 trillion in annual wages. Use of Great Lakes freshwater resources by the people of Canada, the United States, First Nations and Native Americans, requires binational coordination of water levels, depths, volumes and flows.

Bi-national System:
9 States & 2 Provinces

350 Water Level Gauges
Permanent & Seasonal Water Level Gauges

25-35 Year Update Cycle
To Account for Land Movement

2027

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

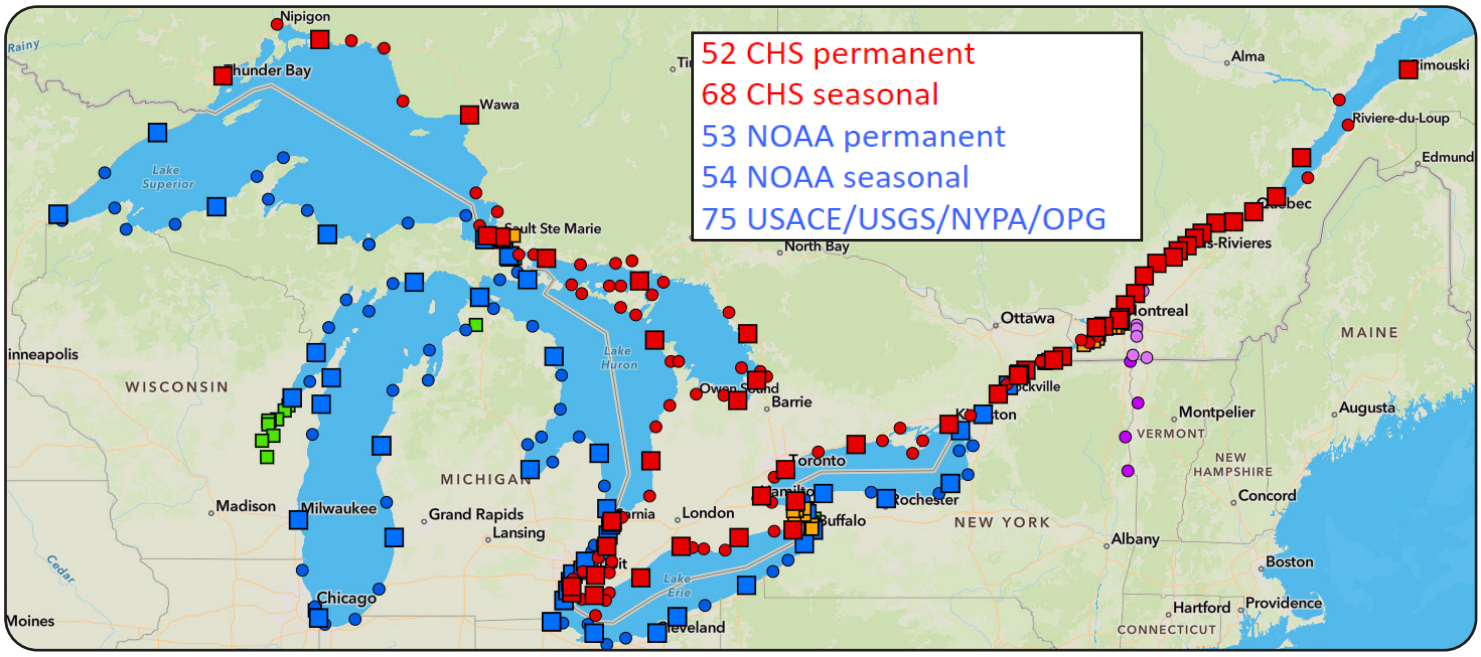

Fig. 1: Locations of over 300 permanent and seasonal water level stations from U.S. and Canadian agencies.

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 is planned to be adopted in the US in 2025, and the existing Canadian Geodetic Vertical Datum of 2013, in use in Canada.

Fig. 2: Surveyors mapping coastlines using the datum to determine marine boundaries. Image credit: NOAA.

Fig. 3: Typical GNSS set-ups in U.S. and Canada. Image Credit: NRCan.

Why is the IGLD Updated?

IGLD is revised every 25-35 years to account for glacial isostatic adjustment (GIA). GIA is the ongoing or “rebounding” of land brought on by the retreat of glaciers that covered the region during the last ice age 12,500 years ago. IGLD (1955) was released in 1961 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 and is the current datum used for the Great Lakes - St. Lawrence River system. IGLD (1985) is scheduled to be replaced by IGLD (2020) around 2027, and requires both measurements of water levels and GNSS-determined heights.

Activities

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