



Update for the U.S. Canada Hydrographic Commission Meeting

IHO Inter-Regional Coordinating Committee Crowdsourced Bathymetry Working Group

16 May 2016

Halifax, Nova Scotia, Canada

LT Anthony Klemm, NOAA

CSBWG

CSBWG

- **October 2015 Kuala Lumpur**
- **February 2016 Boulder CO**

- **Participation in Boulder Colorado:**
 - **USA (NGA/NOAA/NCEI)**
 - **Italy**
 - **Japan**
 - **France (remotely)**



CSBWG2 Boulder, Colorado

- **Expert Contributors**

Olex

TeamSurv



CSBWG - Organization

- **Lisa Taylor (USA) - CSBWG Chair**
- **Vice-Chair (Vacant)**

- **Three Correspondence Groups**

- **Uncertainty**

- **Data Formats and Metadata**

- **Systems and Hardware**



Mission:

Empower mariners to
map the gaps

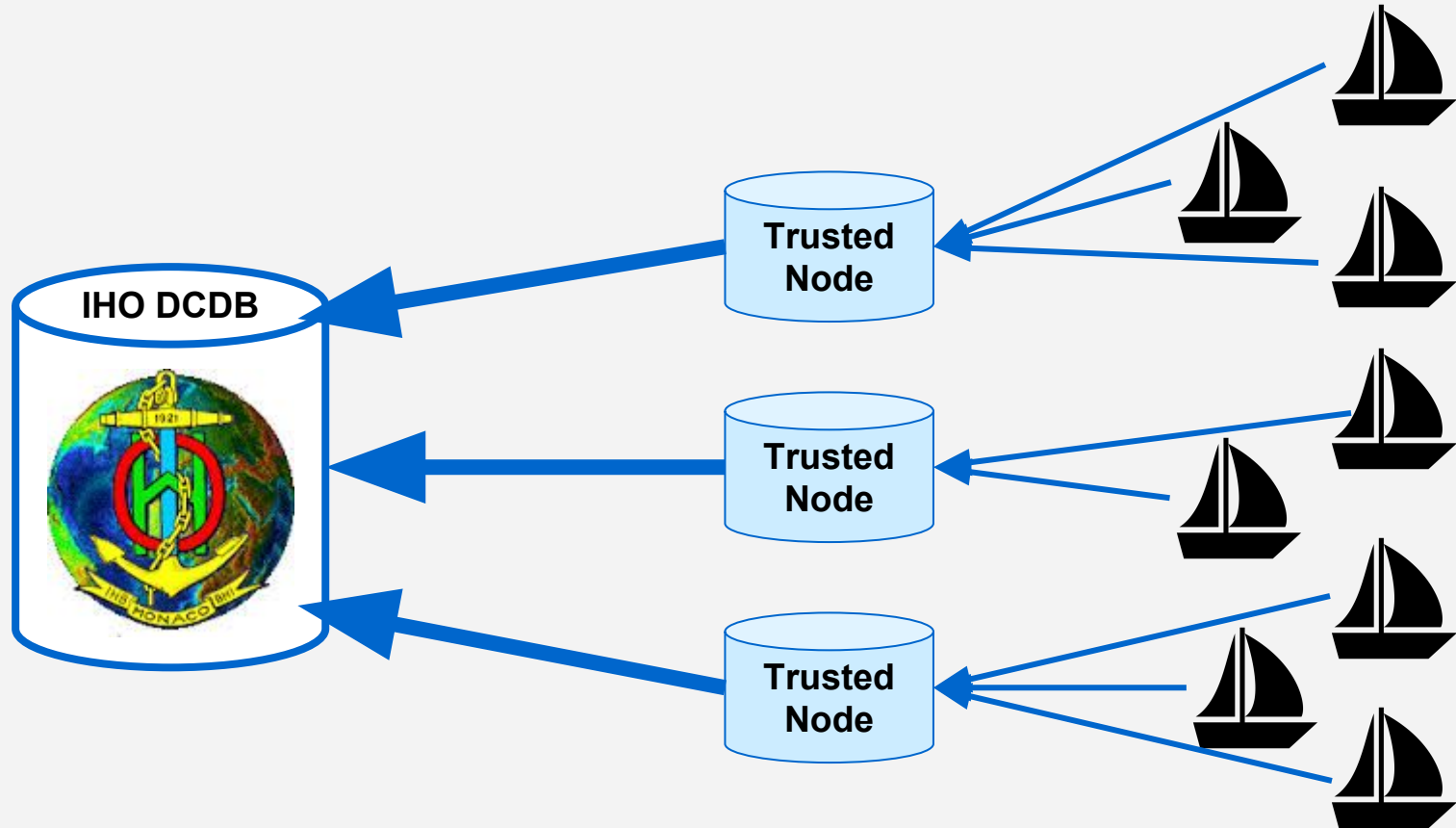


Focus Areas of CSBWG

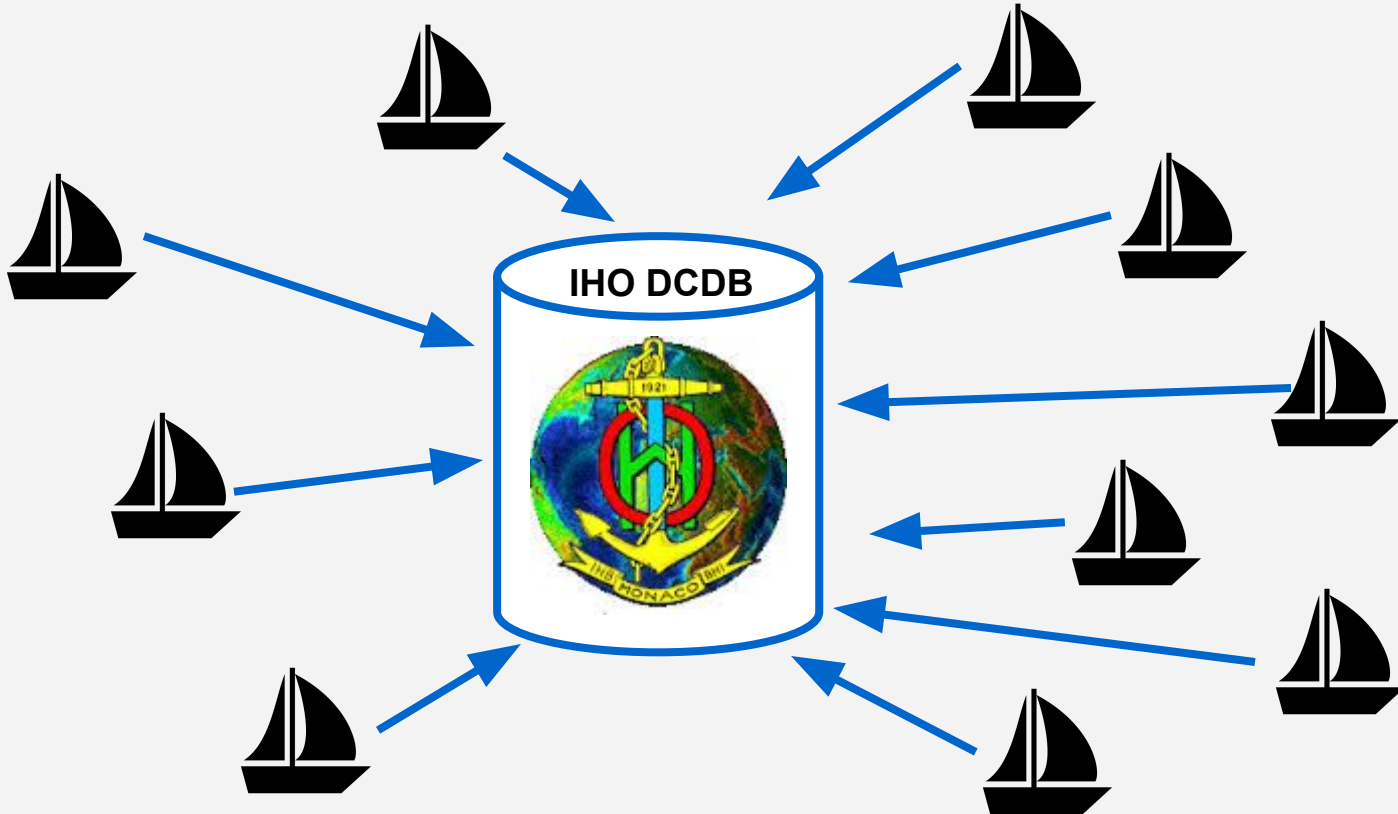
- 1. Write IHO Publication on standards and guidelines for collection and assessment of CSB data**
- 2. Advise in the development of IHO Data Centre for Digital Bathymetry CSB Database**
- 3. Coordinate CSB Pilot Projects that help define and improve CSB workflow**



Collection Model: Trusted Node



Collection Model: Individual Contributors



CSB Systems and Hardware

- Some hardware on the market
 - OpenSeaMap, ARGUS, TeamSurv, Olex, SeaID Logger
- Available hardware issues
 - Reluctance to purchase
 - Need suitable location to install
- Hardware solutions
 - Leverage hardware already being used on most vessels (e.g., Electronic Charting Systems and associated log files)
 - Others?



CSB Data Formats & Metadata

- GeoJSON
 - Bathymetry: point feature with time and depth properties
 - Metadata included in file header
 - IHO/Professional Yachting Association pilot project
- XYZT
 - Point bathymetry stored as Longitude, Latitude, Depth, and Time
 - Metadata must be captured externally
 - Successful test ingest of Arctic Expedition Cruise Operators (AECO) data



CSB Uncertainty

This is crowdsourced bathymetry, *not (necessarily) crowdsourced hydrography*

- Need methods for both statistically evaluating outliers and identifying biases
- Need corroborating observations to strengthen trust in aggregate solution
- Need to assess total uncertainty rather than measurement uncertainty



Active Pilots Projects

- IHO, Professional Yachting Association, IHO DCDB, Sea-ID
- ECS-based CSB with Rose Point Navigation Systems



IHO DCDB Infrastructure Enhancement

Automated upload,
display, description,
discovery and delivery
of CSB data



The screenshot shows the IHO DCDB website. At the top is the IHO logo and name in English and French. A navigation menu includes Home, Letters & Documents, Standards & Publications, Committees & WG, Capacity Building, ENCs & ECDIS, Meetings, External Liaisons, IHO Membership, and World Bathymetry. The main content area is titled 'IHO Data Centre for Digital Bathymetry (DCDB)'. It features a search bar with 'Access Data' and a 'Contribute Data' button. Below this is a horizontal menu with 'Contribute Data', 'Crowdsourced Bathymetry', 'Shallow Water Bathymetry', 'Data Uses', and 'Other Resources'. A world map is shown with 'IHO Member States' labeled below it. A 'Contribute Data' button is also present next to the map. Text on the page describes the DCDB's mission and lists accepted data formats. A 'Do You Know?' section contains three bullet points about the importance of global bathymetry.

International Hydrographic Organization
Organisation Hydrographique Internationale

Home Letters & Documents Standards & Publications Committees & WG Capacity Building ENCs & ECDIS Meetings External Liaisons IHO Membership World Bathymetry

IHO Home / IHO DCDB


IHO Data Centre for Digital Bathymetry (DCDB)

The International Hydrographic Organization Data Centre for Digital Bathymetry (IHO DCDB) was established in 1988 to steward worldwide bathymetric data on behalf of the IHO Member States. The Centre provides long term archive of and access to single and multibeam deep and shallow water ocean depths contributed by a range of mariners.

[Access Data](#)

[Contribute Data](#) [Crowdsourced Bathymetry](#) [Shallow Water Bathymetry](#) [Data Uses](#) [Other Resources](#)

[Contribute Data](#)


IHO Member States

The IHO DCDB welcomes bathymetric data and metadata, accepts descriptions and spatial footprints of data that is already online and of data that are not publicly available to provide easy search and discovery. Thank you for contributing to more accurate and comprehensive bathymetric maps, grids and products.

We accept bathymetric data via File Transfer Protocol (FTP), email, CD and DVD, and hard drive in MGD77T format. Other formats will be considered on a case-by-case basis.

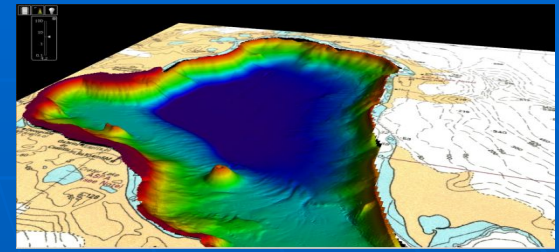
Do You Know?

- Detailed knowledge of global bathymetry is critical for understanding how Earth's systems interact and to support coastal zone management, environmental protection, tsunami modelling, inundation forecasting, and charting.
- The shape of the ocean basins, ridges and mountains influence the flow of sea water carrying heat, salt, nutrients, and pollutants. These features also influence the propagation of energy from undersea seismic events that result in potential disasters such as tsunamis.
- Less than 5% of our oceans are mapped with in situ soundings, making it critical to preserve and share the data already collected and to identify and work together to fill high priority data gaps to support these important uses.

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Next Steps



- Continue to ingest CSB pilot project data into IHO DCDB
- Refine DCDB upload and download capability
- Continue to write IHO CSB Guidance Document
- Partner with additional trusted nodes to include more data sources

