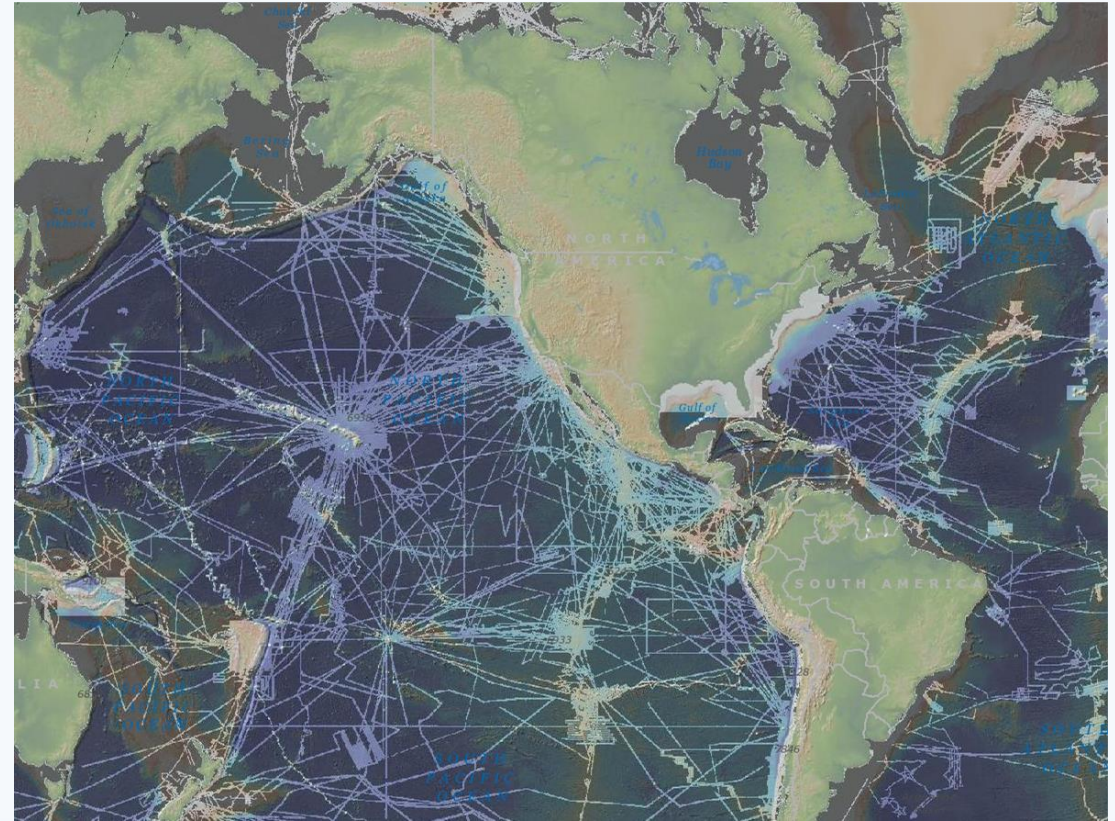


# IHO Crowdsourced Bathymetry Working Group *Presentation Template*



# Bathymetry is a factor in almost every activity that takes place in, on, or under the sea.

- Despite the multitude of data that have been collected over the last 100 years, < 15% of the world's ocean depths have been measured.
- Progress in mapping coastal waters is only marginally better. The IHO indicates that about 50% of the world's coastal waters shallower than 200 metres remain unsurveyed.
- The rest of the data used to compile seafloor maps are estimated depths.



Global Multi-Resolution Topography (GMRT) Synthesis,  
doi:10.1029/2008GC002332



# IHO Crowdsourced Bathymetry Project

*Looking to the crowd is one way to help fill in the gaps in our understanding of ocean bathymetry*

The IHO has often encouraged innovative ways to gather data and data maximizing initiatives so that we can better understand the bathymetry of the seas, oceans and coastal waters.

In 2014, the IHO initiated a collaborative project to enable mariners and professionally manned vessels to collect “crowdsourced bathymetry” (CSB)



CSB can be defined as depth measurements collected from vessels - mostly using their standard navigation instruments - that are engaged in their normal operations of sailing from one place to another.

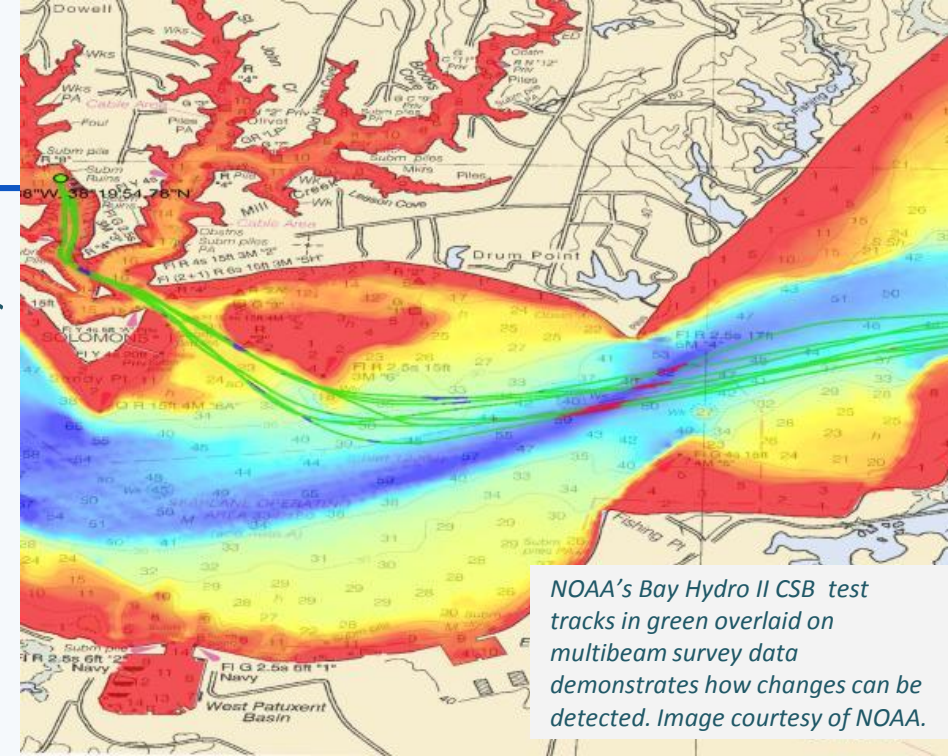




# The Role of CSB Data

*CSB is a powerful source of information to supplement the more rigorous and scientific bathymetric coverage done by hydrographic offices, industry, and researchers around the world.*

- Identify uncharted features
- Assist in verifying charted information
- Confirm whether charts are appropriate for the latest traffic patterns.
- Fill gaps where data is scarce (eg: Arctic, open ocean)
- Useful along shallow, complex coastlines that are difficult for traditional survey vessels to access (areas that may be more frequently visited by recreational boaters)



**“If we got 1% of all seagoing vessels logging data, and on average they spent half their time at sea, then that’s about 5 billion data points a day.”**

**- Tim Thornton, TeamSurv**



# IHO Crowdsourced Bathymetry Project

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1. Establish the IHO Crowdsourced Bathymetry Working Group
1. Enhance the IHO's Data Centre for Digital Bathymetry to accept, archive, and make available to the public CSB data.





# IHO CSB Working Group

*In 2014, the IHO, at its Fifth Extraordinary International Hydrographic Conference (EIHC5), tasked the Inter-Regional Coordination Committee (IRCC) to establish a working group to prepare a new IHO publication on policy for CSB.*

- Representatives from 12 Member States  
Canada, Italy, Nigeria, Norway, Philippines, Denmark, Finland, France, Germany, India, Portugal, and USA
- Observers and expert contributors from TeamSurv, Olex, Sea-ID, GMATEK, Inc./World Maritime University, and SevenC's
- Former IHO Secretary General Robert Ward, IHO Secretary General Mathias Jonas and Assistant Director David Wyatt



CSBWG2: 10-11 Jan 2016 - Boulder, CO



CSBWG5: 5-6 Dec 2017 - IHO, Monaco

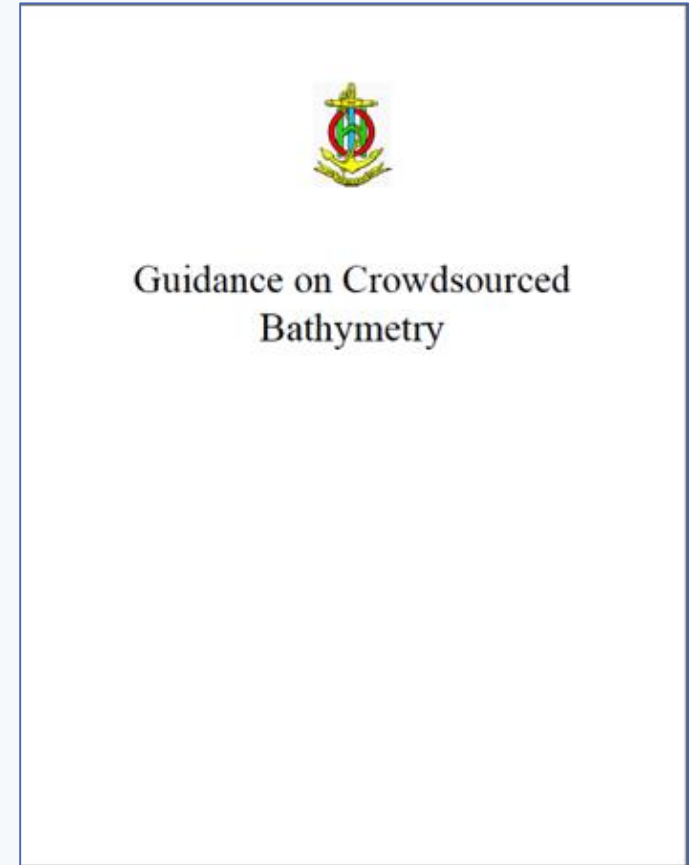


# IHO CSB Working Group

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The working group has since developed ***B-12 IHO Guidance on Crowdsourced Bathymetry*** to state the IHO's policy towards, and provide best practices for collecting, crowdsourced bathymetry.

This document provides guidance on the collection and assessment of CSB data for inclusion in the global bathymetric data set which is maintained in the IHO Data Centre for Digital Bathymetry (DCDB).



To access the document:

[https://www.iho.int/srv1/index.php?option=com\\_content&view=article&id=635&Itemid=988&lang=en](https://www.iho.int/srv1/index.php?option=com_content&view=article&id=635&Itemid=988&lang=en)



# IHO DCDB Enhancements & Pilot Project

For the last several years, the IHO Data Centre for Digital Bathymetry (DCDB) has worked on enhancing its infrastructure to allow the public to upload, discover, display and download CSB data via a web-based interface.

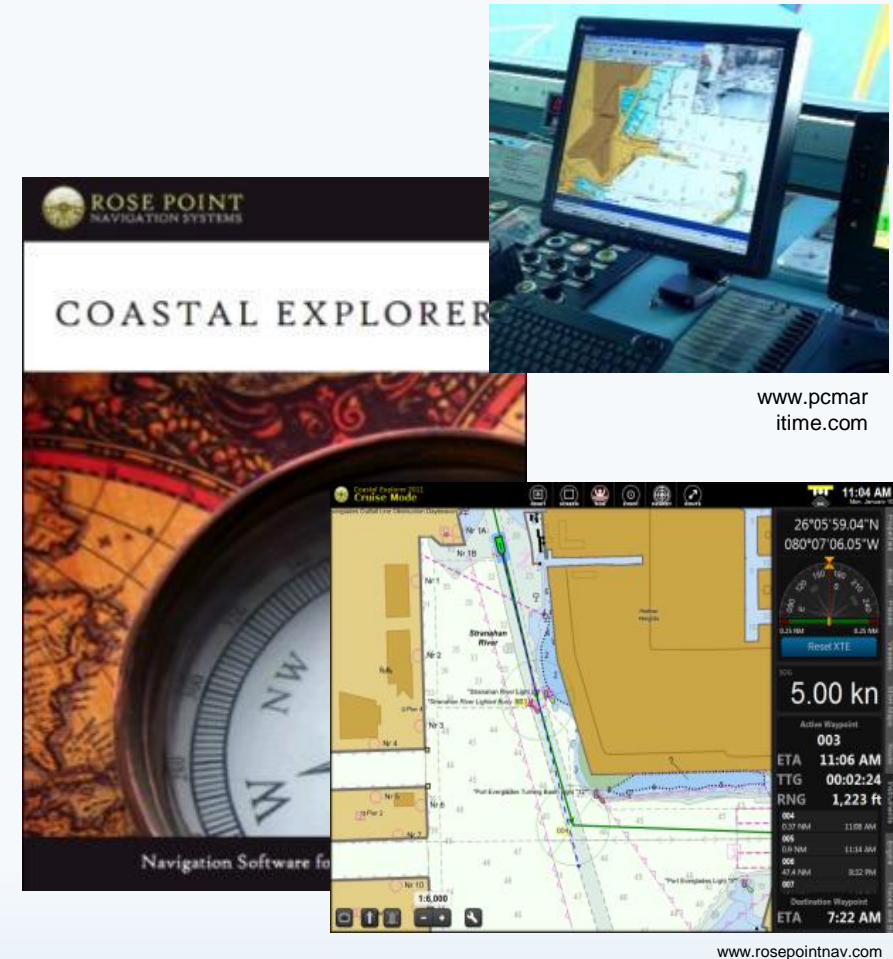
[https://maps.ngdc.noaa.gov/viewers/iho\\_dcdb/](https://maps.ngdc.noaa.gov/viewers/iho_dcdb/)





# IHO DCDB Enhancements & Pilot Project

- IHO DCDB and NOAA teamed up with Rose Point Navigation Systems
- Mariners given an option to enable CSB logging, allowing a modified ECS log file to record position, depth and time.
- Mariners can choose to be anonymous or to submit metadata about vessel and equipment
- The ECS software transmits the data via HTTPS post when the mariner updates the software or chart catalog



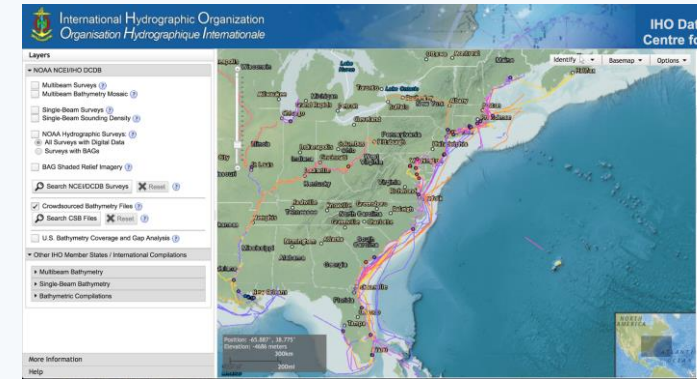
# IHO DCDB Enhancements & Pilot Project

**Data discovery and access via our map viewer.**  
**Data delivered as a collection of files.**

```
{  
  "platform":  
  {  
    "uniqueID": "ROSEP-e8c669f8-df38-16e5-b86d-9a79606e9478",  
    "type": "Ship",  
    "name": "SS Dinghy",  
    "length": 65,  
    "lengthUnitOfMeasure": "meters",  
    "IDType": "IMO",  
    "IDNumber": "1008140"  
  }  
}
```

**CSB data log file (with  
JSON metadata string)**

```
lat,lon,depth,time  
47.666520,-122.098525,21.49,20161017T234638Z  
47.666518,-122.098525,11.98,20161017T234739Z  
47.666517,-122.098527,14.63,20161017T234839Z  
47.666515,-122.098527,17.16,20161017T234935Z  
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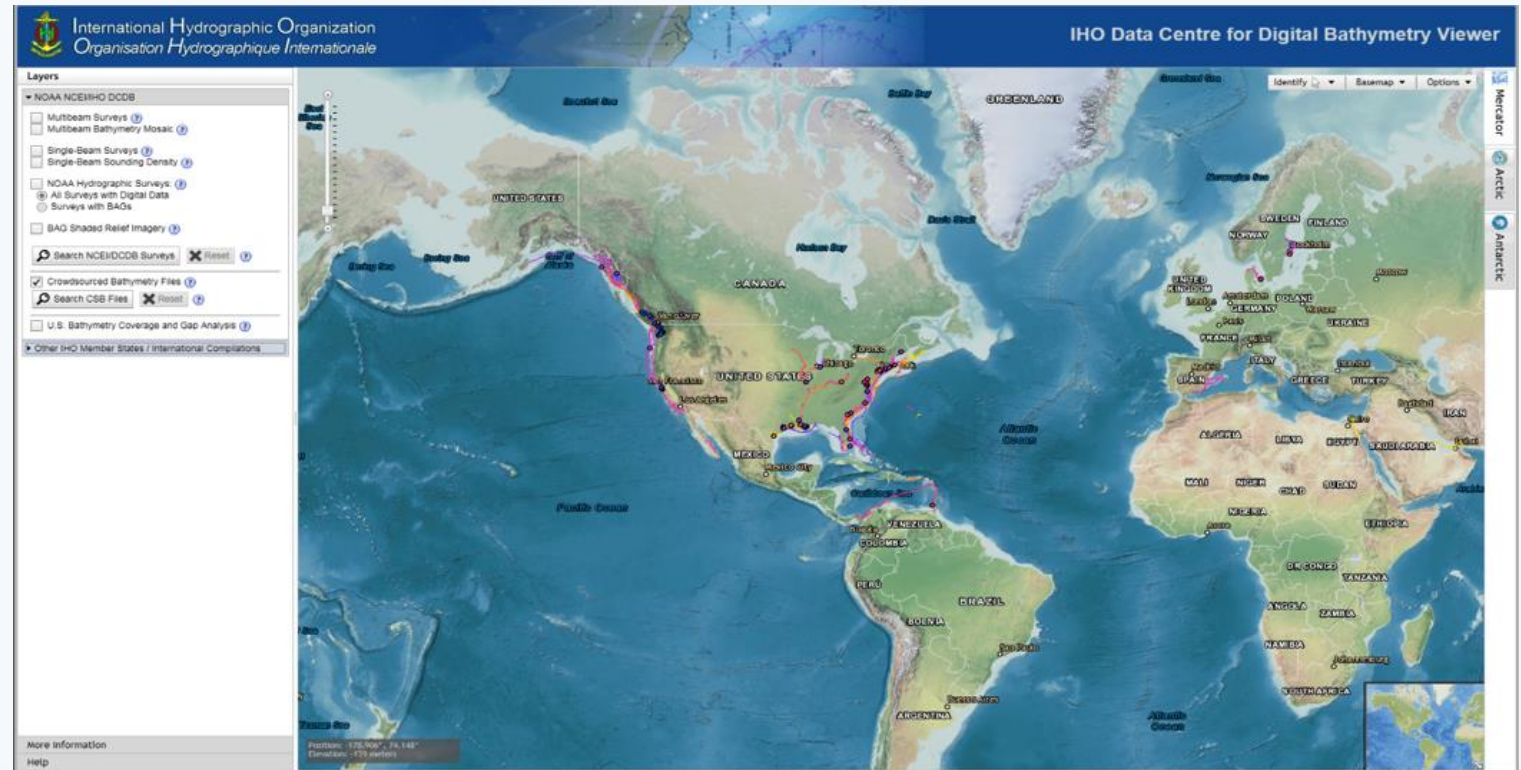
**Data and  
identifying token  
are submitted to  
DCDB via HTTP  
post**

**Frequent  
update of  
viewer**



# IHO DCDB CSB Data Holdings

- 117 million soundings
- 110 contributing vessels
- 3435 data deliveries



[https://maps.ngdc.noaa.gov/viewers/iho\\_dcdb/](https://maps.ngdc.noaa.gov/viewers/iho_dcdb/)

