

A world map showing bathymetry (ocean depths) in shades of blue, overlaid on a topographic map of the continents. The map is labeled with major ocean basins: PACIFIC OCEAN, INDIAN OCEAN, and NORTHWEST PACIFIC BASIN. Continents are labeled: NORTH AMERICA, SOUTH AMERICA, EUROPE, and AUSTRALIA. The title text is centered over the map.

IHO Data Centre for Digital Bathymetry & Crowdsourced Bathymetry Activities

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How to Contribute Data to the IHO DCDB

Contact bathydata@iho.int for more information on contributing data or sharing web services to the IHO DCDB.
Refer to [Submitting Marine Geophysical Data to the IHO DCDB](#) for how to package and submit data.

Governments, organizations, academia, industry and individuals are encouraged to contribute data to the IHO DCDB.

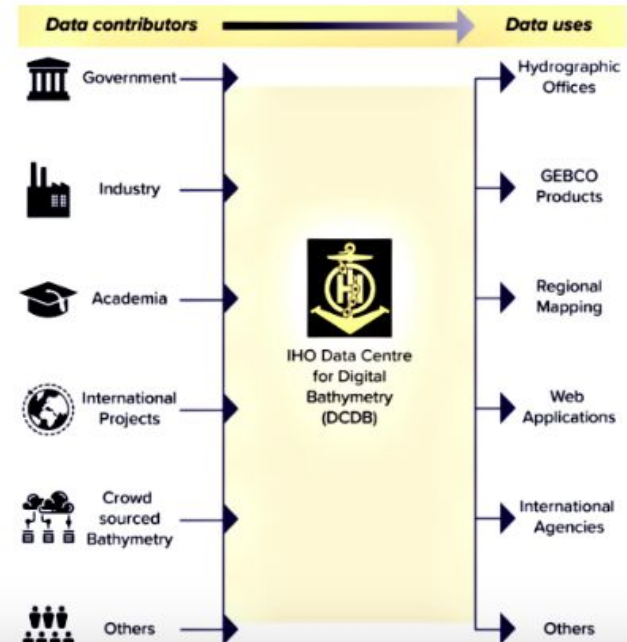
Bathymetric data and metadata can be submitted via File Transfer Protocol (FTP), email, or mail (hard drive) in the formats listed below.

- **Raw sonar data:** MGD77T or the original manufacturer's format
- **Processed data:** gsf, BAG, NetCDF, tiff, xyz, sd, asc, etc.
- **Metadata:** XML or text

Other formats and products will be considered on a case-by-case basis.

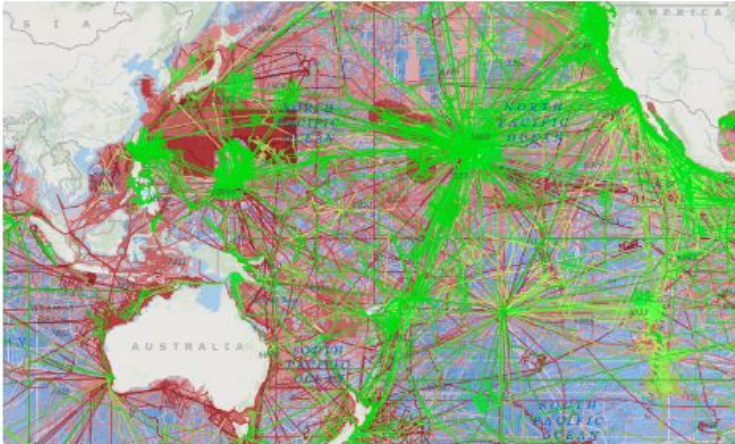
Learn more about contributing [crowdsourced bathymetry](#).

IHO Member States are invited to provide sounding data extracted from their Electronic Navigational Charts (ENC). Only soundings from ENC cells in navigational purpose bands 2 and 3 are requested. For more information, please refer to [IHO Circular Letter 11/2016](#).



IHO Data Centre for Digital Bathymetry (DCDB)

The IHO DCDB was established in 1990 to steward the worldwide collection of bathymetric data. The Centre archives and shares, freely and without restrictions, depth data contributed by mariners. The IHO DCDB is hosted by the [U.S. National Oceanic and Atmospheric Administration \(NOAA\)](#) on behalf of the IHO Member States.



IHO DCDB Data Viewer highlighting ship tracks and data availability over the Pacific Ocean and neighboring regions

The DCDB archive includes over 30 terabytes of oceanic depth soundings acquired with multibeam and singlebeam sonars by hydrographic, oceanographic and industry vessels during surveys or while on passage.

The DCDB also archives and provides access to data contributed in support of the [IHO Crowdsourced Bathymetry \(CSB\) initiative](#).

The [IHO DCDB Data Viewer](#) shows the global coverage of the DCDB's bathymetric data holdings as well as the spatial extent of data archived at other repositories via web services.

[Access Data](#)

IHO DCDB = World Reference for Raw Bathymetry



Data Centre for Digital Bathymetry Viewer

Layers

▼ IHO DCDB/NOAA NCEI ?

- Multibeam Surveys ?
- Multibeam Survey Footprints ?
- Multibeam Bathymetry Mosaic ?
- Single-Beam Surveys ?
- Single-Beam Sounding Density ?
- NOAA Hydrographic Surveys: ?
 - All Surveys with Digital Data
 - Surveys with BAGs
- BAG Shaded Relief Imagery ?

Search NCEI/DCDB Surveys ?

Crowdsourced Bathymetry Files ?

Search CSB Files ?

U.S. Bathymetry Coverage and Gap Analysis ?

► EMODnet

► Australia

► Canada

► France

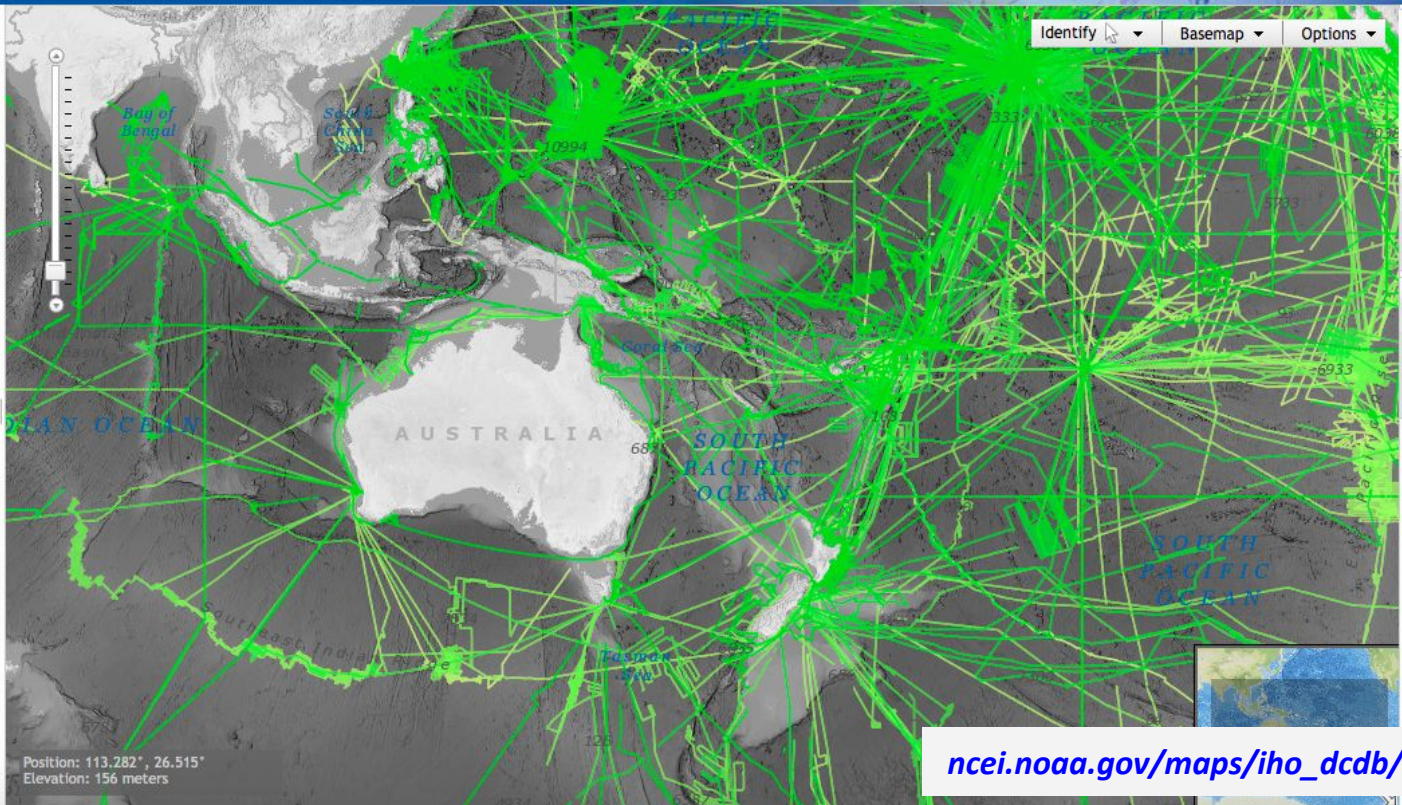
► Germany

► Japan

Grid Extract

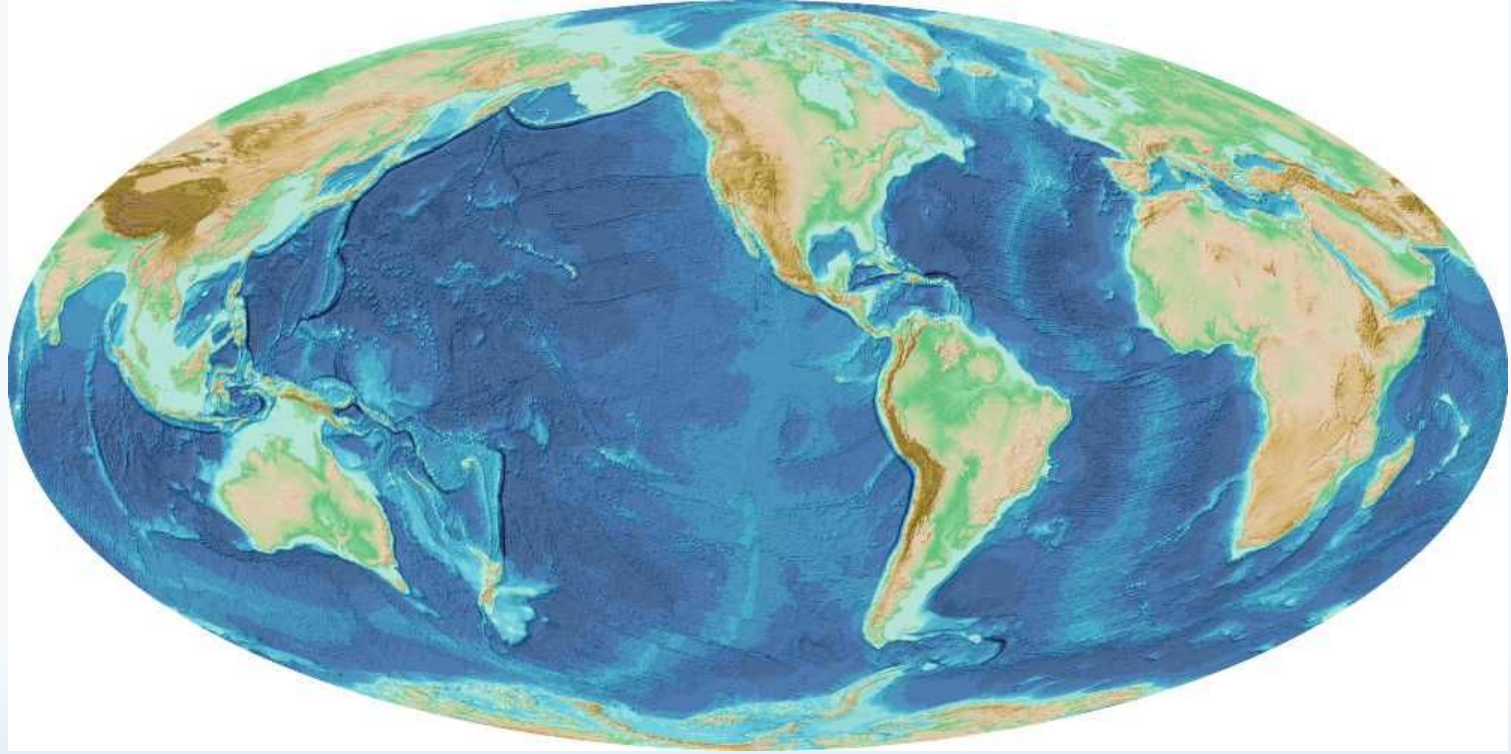
More Information

Help



ncei.noaa.gov/maps/iho_dcdb/

15 arc second GEBCO_2021 grid



IHO DCDB & NOAA NCEI Data Holdings



Data Centre for Digital Bathymetry Viewer

Layers

- IHO DCDB/NOAA NCEI
 - Multibeam Surveys
 - Multibeam Survey Footprints
 - Multibeam Bathymetry Mosaic
 - Single-Beam Surveys
 - Single-Beam Sounding Density
 - NOAA Hydrographic Surveys:
 - All Surveys with Digital Data
 - Surveys with BAGs
 - BAG Shaded Relief
- EMODnet
- Australia
- Canada
- France
- Germany
- Japan
- Grid Extract
- More Information
- Help

Attributes: FK200110 (2020)

Multibeam Bathymetric Survey: FK200110

[Link to Data](#)

Survey ID: FK200110
Platform Name: Falkor
Survey Year: 2020
Source Organization: Rolling Deck to Repository
Chief Scientist: SOI Data Manager
Instrument: Kongsberg EM302; Kongsberg EM710
File Count: 234
Track Length: 3654 km
Total Time: 214 hours
Bathymetry Beams: 278.500576 million
Amplitude Beams: 278.500576 million
Sidescan: 1398.194176 million pixels

Back Zoom to

Identify Basemap Options

Mercator Arctic Antarctic

Multibeam Mosaic

Data Centre for Digital Bathymetry Viewer



Layers

▼ IHO DCDB/NOAA NCEI ?

- Multibeam Surveys ?
- Multibeam Survey Footprints ?
- Multibeam Bathymetry Mosaic ?
- Single-Beam Surveys ?
- Single-Beam Sounding Density ?
- NOAA Hydrographic Surveys: ?
 - All Surveys with Digital Data
 - Surveys with BAGs
- BAG Shaded Relief Imagery ?

?

Crowdsourced Bathymetry Files ?

?

U.S. Bathymetry Coverage and Gap Analysis ?

► EMODnet

► Australia

► Canada

► France

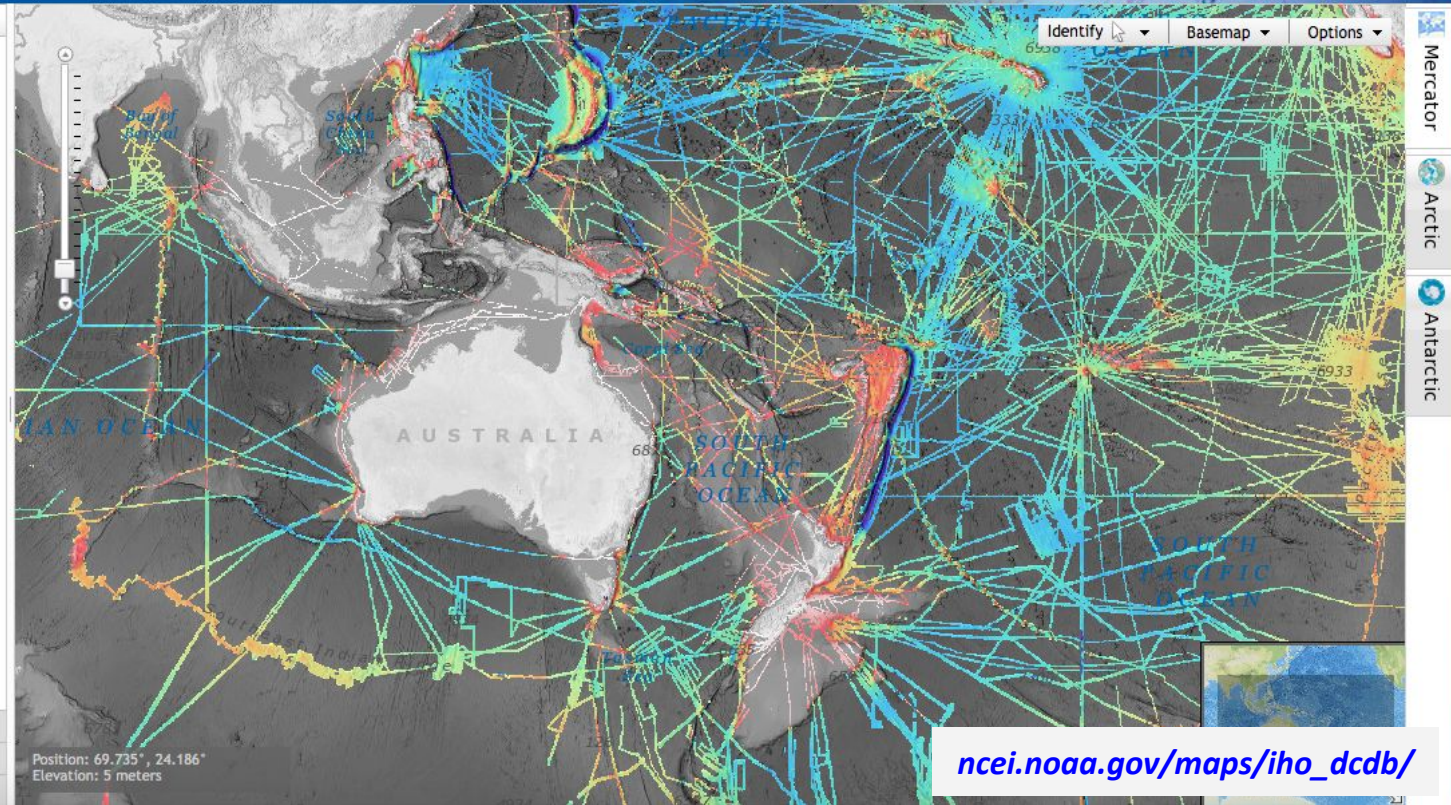
► Germany

► Japan

Grid Extract

More Information

Help



NEW - Grid Extract for MB Mosaic



Data Centre for Digital Bathymetry Viewer

Layers

Grid Extract

► Help

Multibeam Mosaic ▾

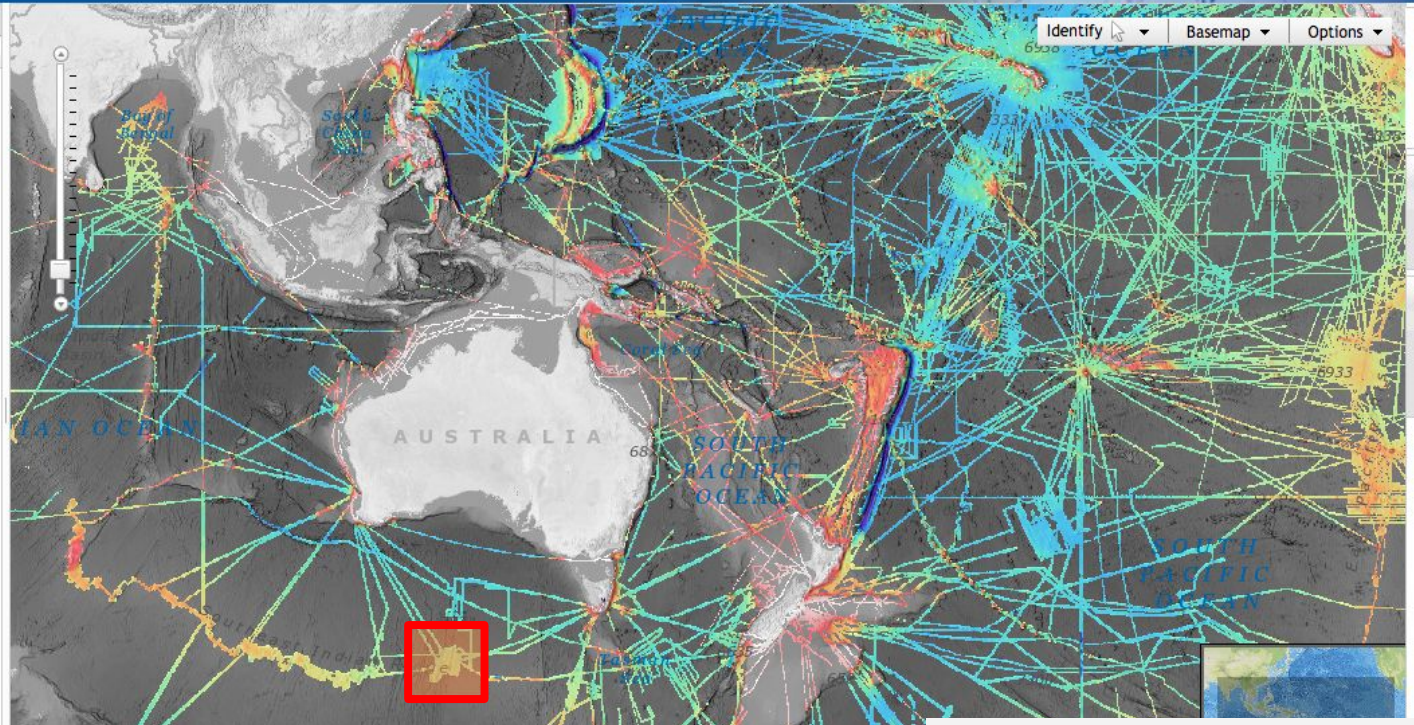
Extract a bathymetric grid from the [NCEI Multibeam Bathymetry Mosaic](#). The depth values are in meters, stored as 32-bit floating point values. The cell size is 3 arcseconds (approx. 90m).

Draw Rectangle Enter Coordinates

Area of Interest: 122.29, -51.74, 131.79, -45.48

Output image dimensions: 11391 x 7518 pixels

[Download Data](#)



exportImage.tiff

NEW data - uploaded since Feb. 2021



Data Centre for Digital Bathymetry Viewer

Layers

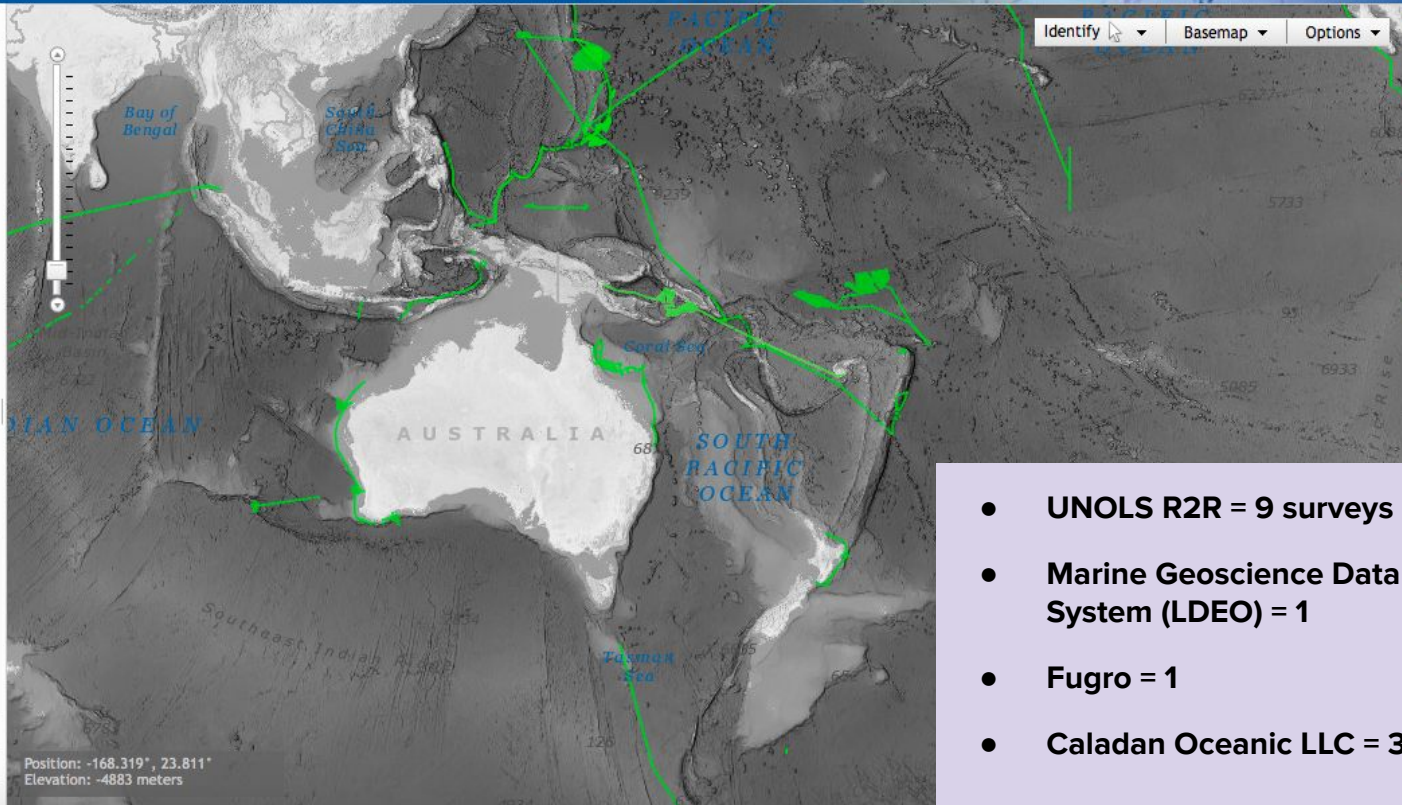
IHO DCDB/NOAA NCEI ?

- Multibeam Surveys ?
- Multibeam Survey Footprints ?
- Multibeam Bathymetry Mosaic ?
- Single-Beam Surveys ?
- Single-Beam Sounding Density ?
- NOAA Hydrographic Surveys: ?
 - All Surveys with Digital Data
 - Surveys with BAGs
- BAG Shaded Relief Imagery ?

Search NCEI/DCDB Surveys ?

Current filter:
Date Added: 2021-02-01-present

- Crowdsourced Bathymetry Files ?
- Search CSB Files ?
- U.S. Bathymetry Coverage and Gap Analysis ?



- UNOLS R2R = 9 surveys
- Marine Geoscience Data System (LDEO) = 1
- Fugro = 1
- Caladan Oceanic LLC = 30

EMODnet Web Services

IHO International Hydrographic Organization

Data Centre for Digital Bathymetry Viewer

Layers

- ▶ IHO DCDB/NOAA NCEI ?
- ▶ **EMODnet**
 - EMODnet Multibeam Surveys ?
 - MAREANO Multibeam Surveys ?
 - MAREANO Multibeam Shaded Relief ?
 - EMODnet Single-Beam Surveys ?
 - MAREANO Single-Beam Surveys ?
 - EMODnet Digital Terrain Model (DTM) ?
- ▶ Australia
- ▶ Canada
- ▶ France
- ▶ Germany
- ▶ Japan
- ▶ Netherlands
- ▶ New Zealand
- ▶ United Kingdom
- ▶ Other C
- ▶ Known
- ▶ Bathym

Grid Extract
More Information
Help

Position: 173.927°, 28.077°
Elevation: -5955 meters

ncei.noaa.gov/maps/iho_dcdb/

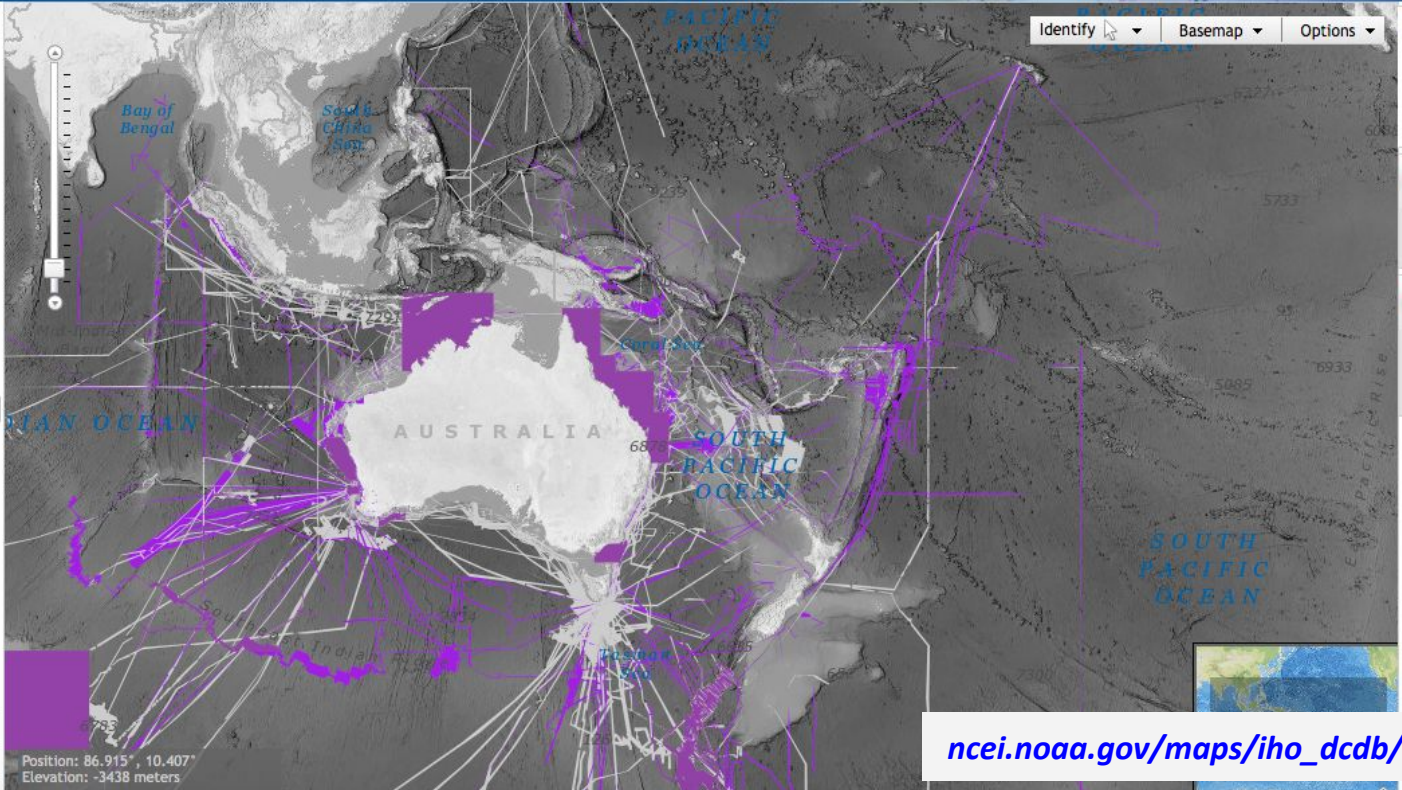
AusSeabed Web Services

Data Centre for Digital Bathymetry Viewer



Layers

- ▶ IHO DCDB/NOAA NCEI ?
- ▶ EMODnet
- ▶ **Australia**
 - AusSeabed Bathymetry Holdings ?
 - AusSeabed Bathymetry Holdings (Compilations) ?
 - AusSeabed 50m Multibeam 2018 ?
 - AusSeabed MH370 Phase 1 Data 150m ?
 - AusSeabed Great Barrier Reef Bathymetry 2018 30m
 - AusSeabed Northern Australia Bathymetry 2018 30m
 - AusSeabed Multibeam Bathymetry of Australia 2015 5m ?
- ▶ Canada
- ▶ France
- ▶ Germany
- ▶ Japan
- ▶ Netherlands
- ▶ New Zealand
- ▶ United Kingdom
- ▶ Other Data Sources
- ▶ Known Non-Public Data ?
- ▶ Bathymetric Coverage Maps



ncei.noaa.gov/maps/iho_dcdb/

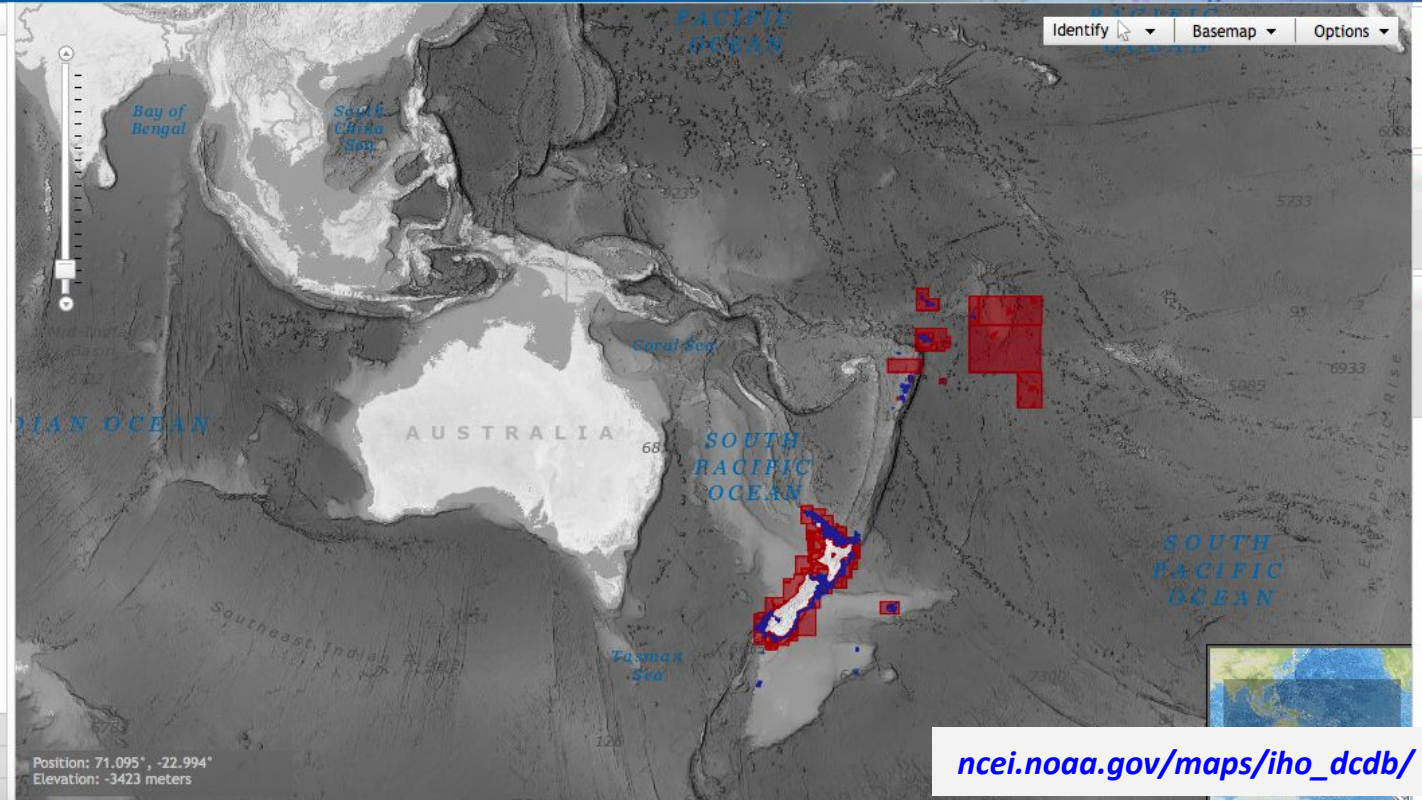
Mercator
Arctic
Antarctic

NEW - LINZ Web Services

Data Centre for Digital Bathymetry Viewer



- Layers
- ▶ IHO DCDB/NOAA NCEI ?
 - ▶ EMODnet
 - ▶ Australia
 - ▶ Canada
 - ▶ France
 - ▶ Germany
 - ▶ Japan
 - ▶ Netherlands
 - ▶ New Zealand
 - LINZ Bathymetric Data Index ?
 - LINZ Bathymetric Surface Model Index ?
 - ▶ United Kingdom
 - ▶ Other Data Sources
 - ▶ Known Non-Public Data ?
 - ▶ Bathymetric Coverage Maps



ncei.noaa.gov/maps/iho_dcdb/

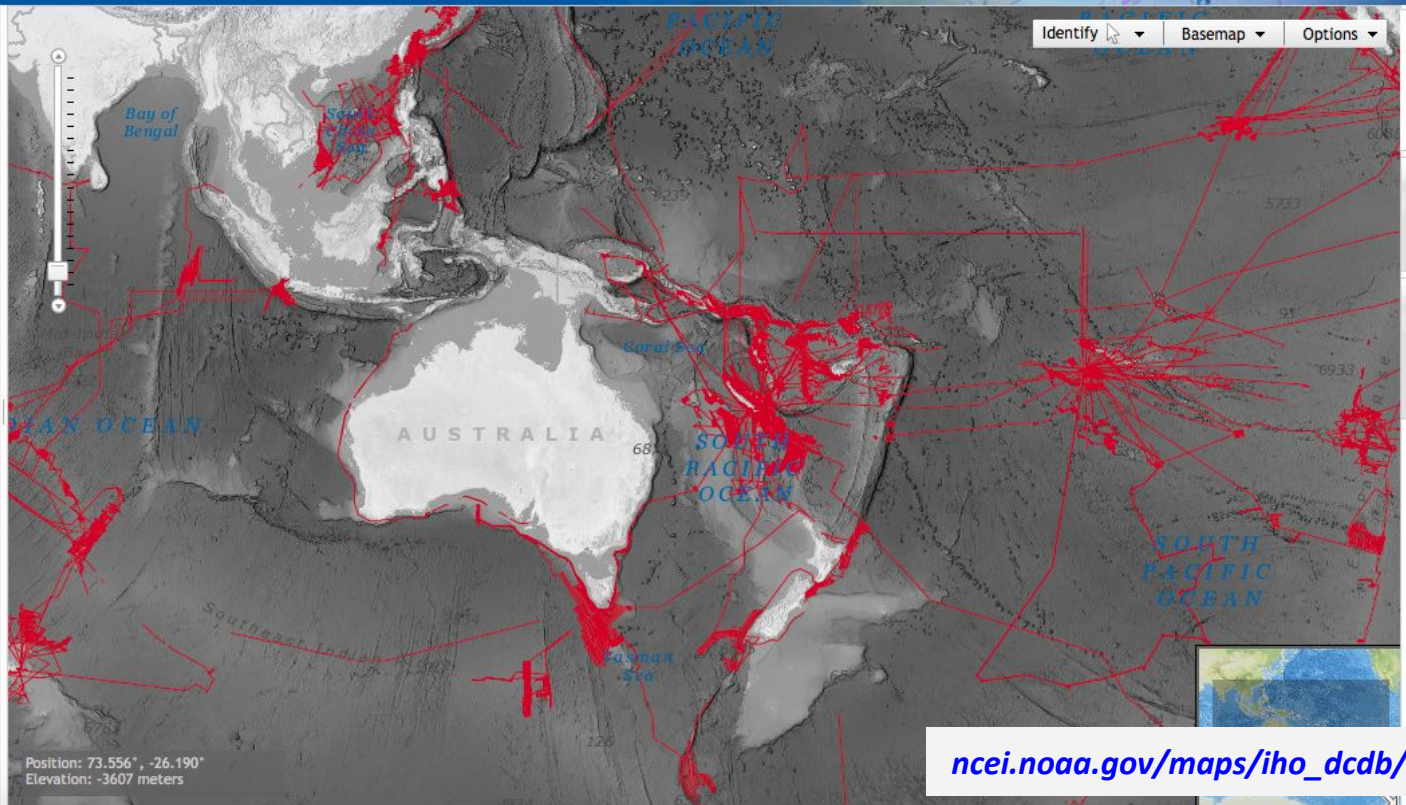
NEW - IFREMER Web Services

Data Centre for Digital Bathymetry Viewer



Layers

- ▶ IHO DCDB/NOAA NCEI ?
- ▶ EMODnet
- ▶ Australia
- ▶ Canada
- ▶ France
 - IFREMER RAW Multibeam ?
 - SHOM Bathymetric Grids ?
- ▶ Germany
- ▶ Japan
- ▶ Netherlands
- ▶ New Zealand
- ▶ United Kingdom
- ▶ Other Data Sources
- ▶ Known Non-Public Data ?
- ▶ Bathymetric Coverage Maps



Identify ▾ Basemap ▾ Options ▾

Mercator
Arctic
Antarctic

- Grid Extract
- More Information
- Help

ncei.noaa.gov/maps/iho_dcdb/

GEBCO 2021 Type Identifier Grid Web Service

IHO International Hydrographic Organization

Data Centre for Digital Bathymetry Viewer

Layers

- ▶ IHO DCDB/NOAA NCEI ?
- ▶ EMODnet
- ▶ Australia
- ▶ Canada
- ▶ France
- ▶ Germany
- ▶ Japan
- ▶ Netherlands
- ▶ New Zealand
- ▶ United Kingdom
- ▶ Other Data Sources
- ▶ Known Non-Public Data ?
- ▼ Bathymetric Coverage Maps
 - Global Multi-Resolution Topography ?
 - GEBCO_2021 Type Identifier ?

Type Identifier (TID) grid for the GEBCO_2021 grid. Explanations of the data sources are available [here](#). Note: when zoomed out, resampling artifacts may cause smaller lines to disappear; zoom in for a more accurate view. Click on the map to display the type identifier description at each point.

Legend:

GEBCO_2021 TID

- Singlebeam
- Multibeam
- Seismic
- Isolated sounding
- ENC sounding
- Lidar
- Depth measured by optical light sensor
- Combination of direct measurement methods
- Predicted based on satellite-derived gravity data
- Interpolated (computer algorithm/GMT)
- Digitized contour
- Bathymetric sounding within gridded dataset
- Pre-generated grid
- Unknown source
- Steering points

ncei.noaa.gov/maps/iho_dcdb/

Crowdsourced Bathymetry Data

Data Centre for Digital Bathymetry Viewer

The screenshot displays the Data Centre for Digital Bathymetry Viewer interface. The top left features the IHO logo and the International Hydrographic Organization name. The main map area shows a grayscale bathymetric view of the Pacific Northwest coast, with purple lines representing survey tracks and a red dashed box highlighting a specific area. A 'Layers' panel on the left lists various data sources, including 'Crowdsourced Bathymetry Files' and 'NOAA Hydrographic Surveys'. A 'Identified Features (135)' window is open, showing a list of survey files with their respective timestamps. A dropdown menu is visible over the list, offering options to 'Extract NCEI/DCDB Data', 'Extract Multibeam Data', 'Extract Single-Beam Data', 'Extract CSB Data Files', 'Extract CSB Point Store Data', and 'Extract NOAA Hydrographic Survey Data'. The bottom left shows a position and elevation readout, and the bottom right contains the URL ncei.noaa.gov/maps/iho_dcdb/.

IHO International Hydrographic Organization

Layers

- IHO DCDB/NOAA NCEI
- Multibeam Surveys
- Multibeam Survey Footprints
- Multibeam Bathymetry Mosaic
- Single-Beam Surveys
- Single-Beam Sounding Density
- NOAA Hydrographic Surveys
- All Surveys with Digital Data
- Surveys with BAGs
- BAG Shaded Relief Imagery

Search NCEI/DCDB Surveys [X] Reset

Crowdsourced Bathymetry Files

Search CSB Files [X] Reset

U.S. Bathymetry Coverage and Gap Analysis

EMODnet

Australia

Canada

France

Germany

Japan

Grid Extract

More Information

Help

Identified Features (135)

- Crowdsourced Bathymetry Files (135)**
- 2019-08-29T16:28 - 2019-09-04T05:33
- 2019-08-28T16:14 - 2019-08-29T06:05
- 2019-08-24T20:32 - 2019-08-28T03:02
- 2019-08-23T21:56 - 2019-08-24T20:32
- 2019-08-22T05:13 - 2019-08-22T19:41
- 2019-08-21T14:23 - 2019-08-28T16:13
- 2019-08-21T03:49 - 2019-08-22T01:41
- 2019-08-16T15:54 - 2019-08-21T03:48
- 2019-08-13T22:32 - 2019-08-16T15:53
- 2019-08-10T05:03 - 2019-08-18T05:19
- 2019-08-10T03:13 - 2019-08-13T22:32
- 2019-08-07T18:32 - 2019-12-27T00:00
- 2019-08-07T16:18 - 2019-08-08T15:17
- 2019-07-27T14:12 - 2019-08-10T05:03

Extract NCEI/DCDB Data

- Extract Multibeam Data
- Extract Single-Beam Data
- Extract CSB Data Files
- Extract CSB Point Store Data**
- Extract NOAA Hydrographic Survey Data

Position: -137.815°, 49.772°
Elevation: -3909 meters

300km
200mi

ncei.noaa.gov/maps/iho_dcdb/

Crowdsourced Bathymetry Data



Data Centre for Digital Bathymetry Viewer

Layers

- IHO DCDB/NOAA NCEI
 - Multibeam Surveys
 - Multibeam Survey Footprints
 - Multibeam Bathymetry Mosaic
 - Single-Beam Surveys
 - Single-Beam Sounding Density
 - NOAA Hydrographic Surveys:
 - All Surveys with Digital Data
 - Surveys with BAGs
 - BAG Shaded Relief Imagery
- EMODnet
- Australia
- Canada
- France
- Germany
- Japan
- Grid Extract
- More Information
- Help

Identified Features (135)

- Crowdsourced Bathymetry Files (135)
 - 2019-08-29T16:28 - 2019-09-04T05:33
 - 2019-08-28T16:14 - 2019-08-29T06:05
 - 2019-08-24T20:32 - 2019-08-28T03:02
 - 2019-08-23T21:56 - 2019-08-24T20:32
 - 2019-08-22T05:13 - 2019-08-22T19:41
 - 2019-08-21T14:23 - 2019-08-28T16:13
 - 2019-08-21T03:49 - 2019-08-22T01:41
 - 2019-08-16T15:54 - 2019-08-21T03:48
 - 2019-08-13T22:32 - 2019-08-16T15:53
 - 2019-08-10T05:03 - 2019-08-18T05:19
 - 2019-08-10T03:13 - 2019-08-13T22:32
 - 2019-08-07T18:32 - 2019-12-27T00:00
 - 2019-08-07T16:18 - 2019-08-08T15:17

Request Data from CSB Point Store

Please enter your email address to request these data. You will be notified when the file is ready.

Email:

Area of Interest:

Create grid?

Grid Cell Size (m)

Grid Format

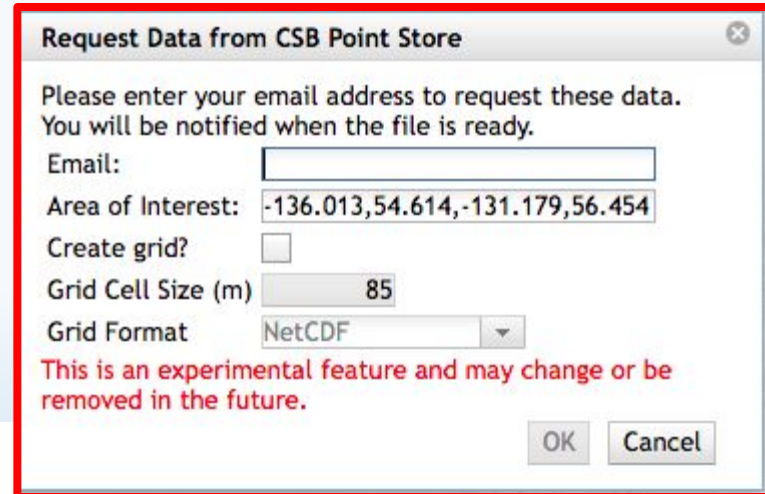
This is an experimental feature and may change or be removed in the future.

OK Cancel

Position: -137.815°, 49.772°
Elevation: -3909 meters
300km
200mi

Data Infrastructure - Cloud Platforms

- Operationalize current efforts to access CSB (and eventually ALL bathymetry) data from a cloud-hosted point store.
- Providing data as “points” instead of just “files” would allow the user to:
 - Generate bathy grids of a given area using user-specified resolution
 - Show data density, guiding future data collection efforts
 - Query the data collection, providing statistics on bathymetric measurements



Request Data from CSB Point Store

Please enter your email address to request these data. You will be notified when the file is ready.

Email:

Area of Interest:

Create grid?

Grid Cell Size (m)

Grid Format

This is an experimental feature and may change or be removed in the future.

OK Cancel



IHO Crowdsourced Bathymetry Initiative

Crowdsourced bathymetry (CSB) is the collection of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.

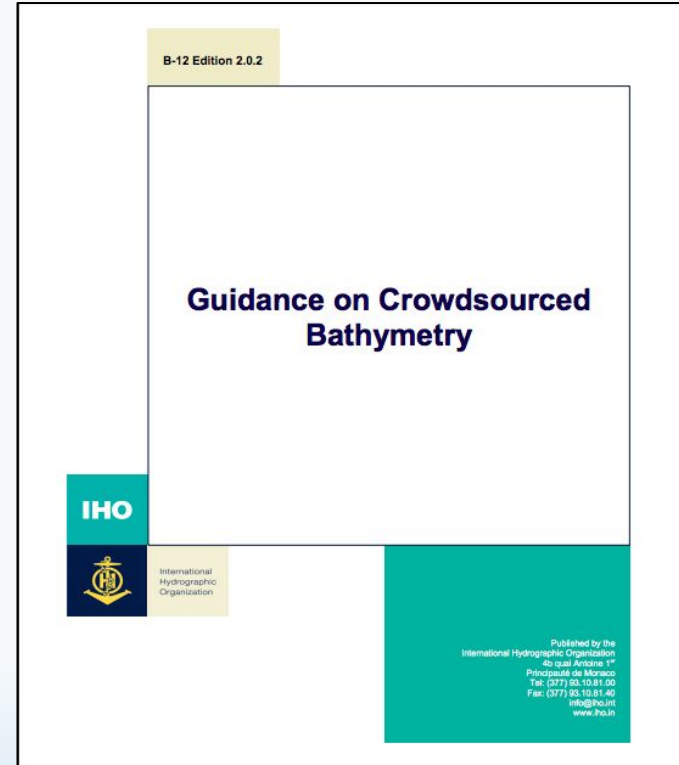


IHO Crowdsourced Bathymetry Initiative

In 2014, the IHO initiated a collaborative project to encourage mariners to collect and contribute “crowdsourced bathymetry”.

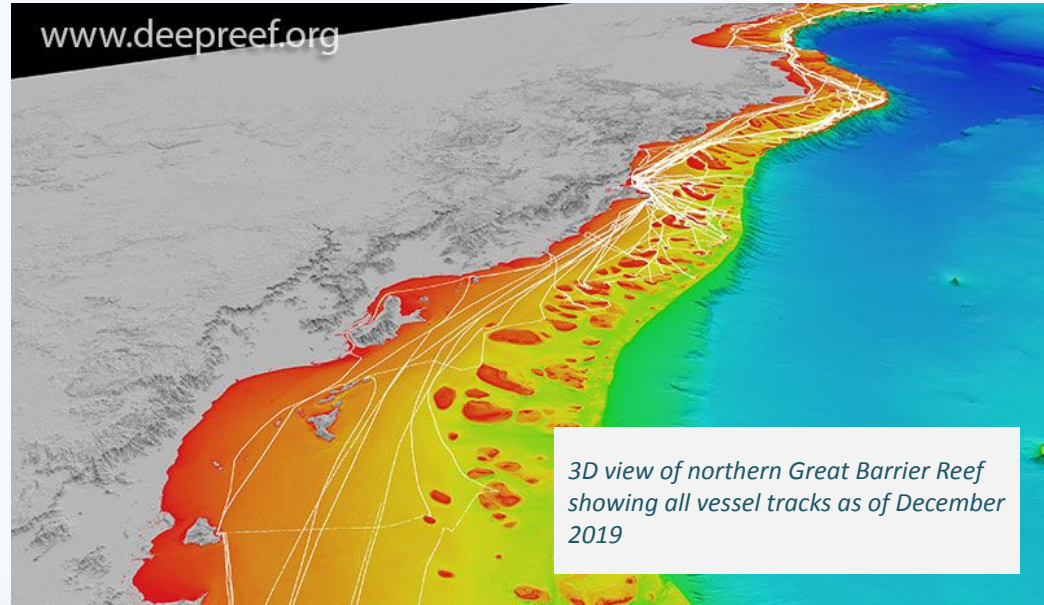
A Working Group was formed and tasked to develop **B-12 IHO Guidance on Crowdsourced Bathymetry** that states the IHO’s policy towards, and best practices for, the collection and contribution of CSB.

IHO Data Centre for Digital Bathymetry (DCDB) built a data pipeline to allow the public to contribute and access CSB data.



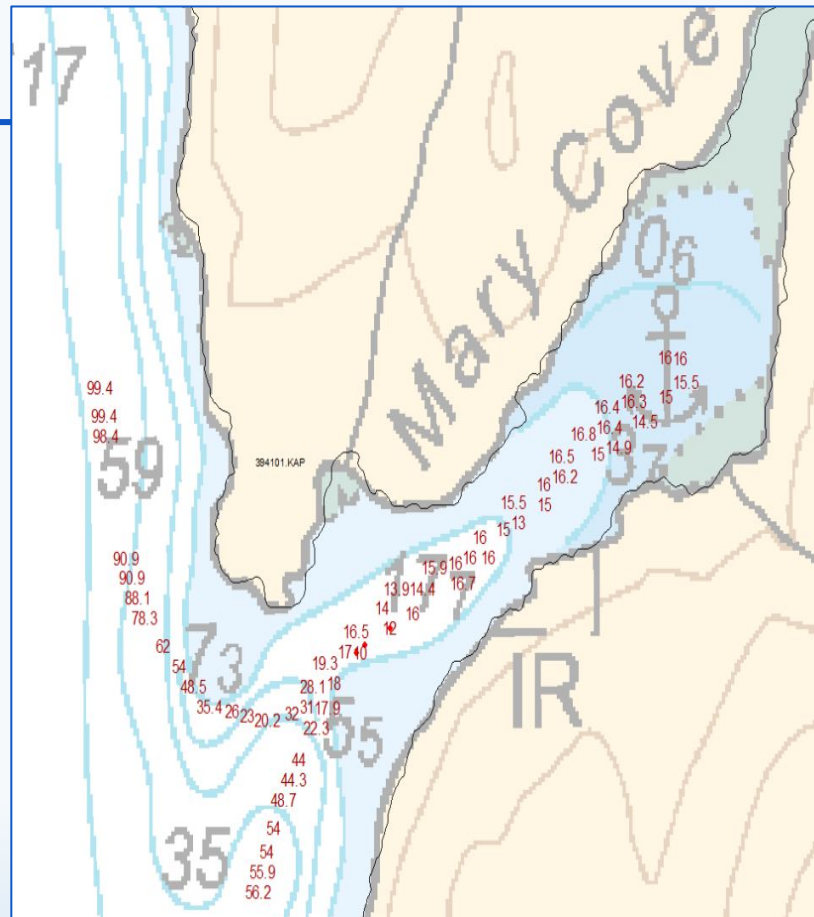
The Value of CSB Data

- Data with scientific, commercial & research value at **no cost** to the public sector
- Fill gaps where data is scarce (eg: Arctic, SIDS)
- Useful along shallow, complex coastlines
- Identify uncharted features
- Assist in verifying charted information
- Confirm whether charts are appropriate for the latest traffic patterns.



The Value of CSB Data

- CHS has used CSB to update several Inside Passage charts along coastal routes.
- A systematic comparison of charted depths < 10 m yielded improved charted channel depths, data density and improved chart compilation in areas that were surveyed with singlebeam.
- CSB helped prioritize survey areas for the following survey season
- CSB has initiated the publication of Notices to Mariners.



CL 21/2020 Questionnaire asks:

- Do you support or object to the CSB data provision for depth measurements from the internal waters, territorial sea, or EEZ of your country?
- Do you wish to be informed when such information is received by the IHO DCDB?
- Do you wish to review such information before its ingestion into the IHO DCDB?
- Do you wish for the opportunity to put caveats on the further dissemination of such data?

Enclosure to IHO CL 21/2020
IHO File S3/2649

CROWDSOURCED BATHYMETRY DATA PROVISION – COASTAL STATE POSITION FOR WATERS SUBJECT TO THEIR NATIONAL JURISDICTION

TEMPLATE FORM

(to be returned to the IHO Secretariat **no later than 4 September 2020**)

E-mail: cl-ic@iho.int - Fax: +377 93 10 81 40)

IHO clarification on Crowdsourced Bathymetry Activity

For the purpose of this Circular Letter, the following terms have the specified meanings:

Bathymetry is the determination of ocean, coastal, and inland water depths. The general configuration of sea floor as determined by profile analysis of depth data.

Crowdsourcing is a process by which people and/or groups voluntarily submit observations, data, or information to accomplish a task or goal.

Crowdsourced bathymetry is defined by the IHO as the collection of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.

Crowdsourced bathymetry data provision is the transmission to the IHO Data Centre for Digital Bathymetry for ingestion, aggregation, categorization, and public dissemination of depth measurements made by vessels, using standard navigation instruments, while engaged in routine maritime operations.

IHO Data Centre for Digital Bathymetry (DCDB) was established in 1990 to steward the worldwide repository of bathymetric data. The Centre archives and shares, freely and without restrictions, depth data contributed by mariners. The IHO DCDB is an IHO resource that is hosted by the U.S. National Oceanic and Atmospheric Administration (NOAA) on behalf of IHO Member States.

Internal Waters, Territorial Sea, and Exclusive Economic Zone have the same meanings as are given those terms under the 1982 UN Convention on the Law of the Sea.

Questions:

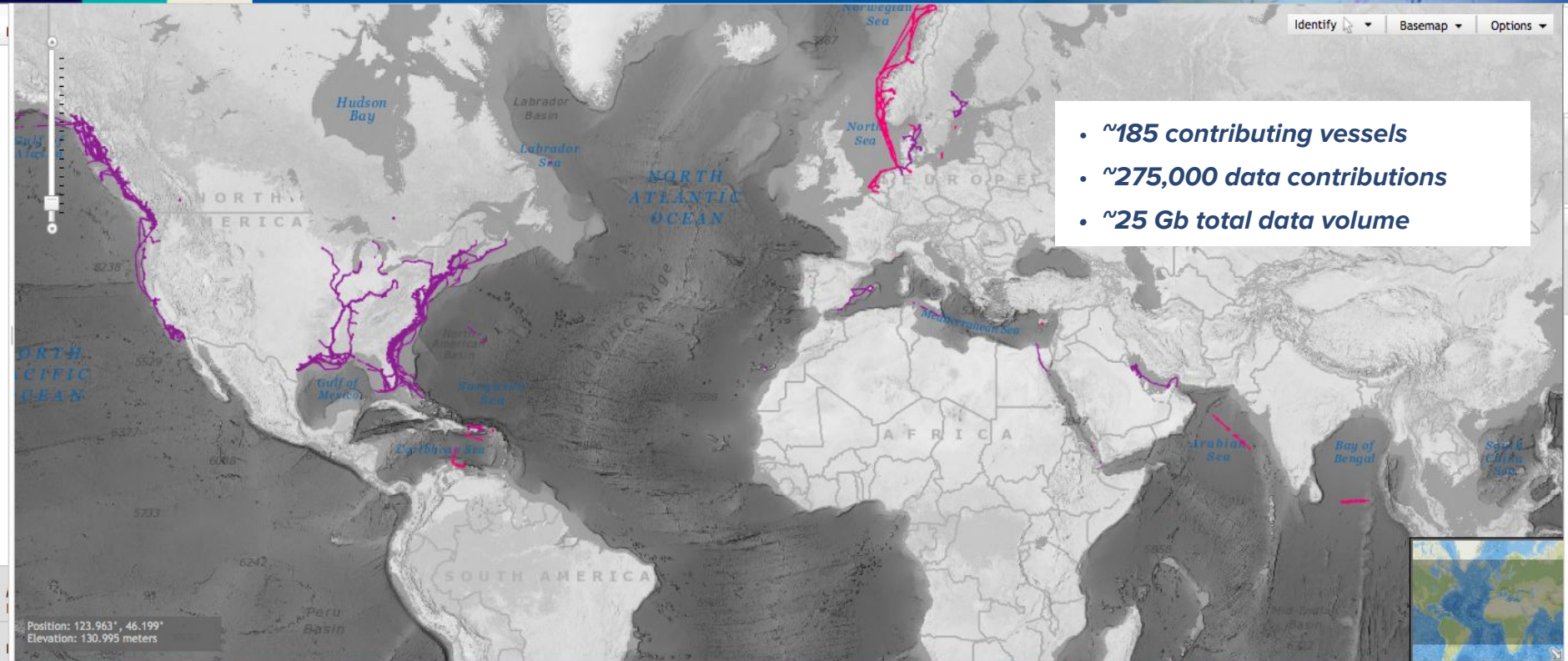
- 1) Do you support or object to the crowdsourced bathymetry data provision for depth measurements from the internal waters of your country?

SUPPORT

OBJECT

CAVEAT:







IHO

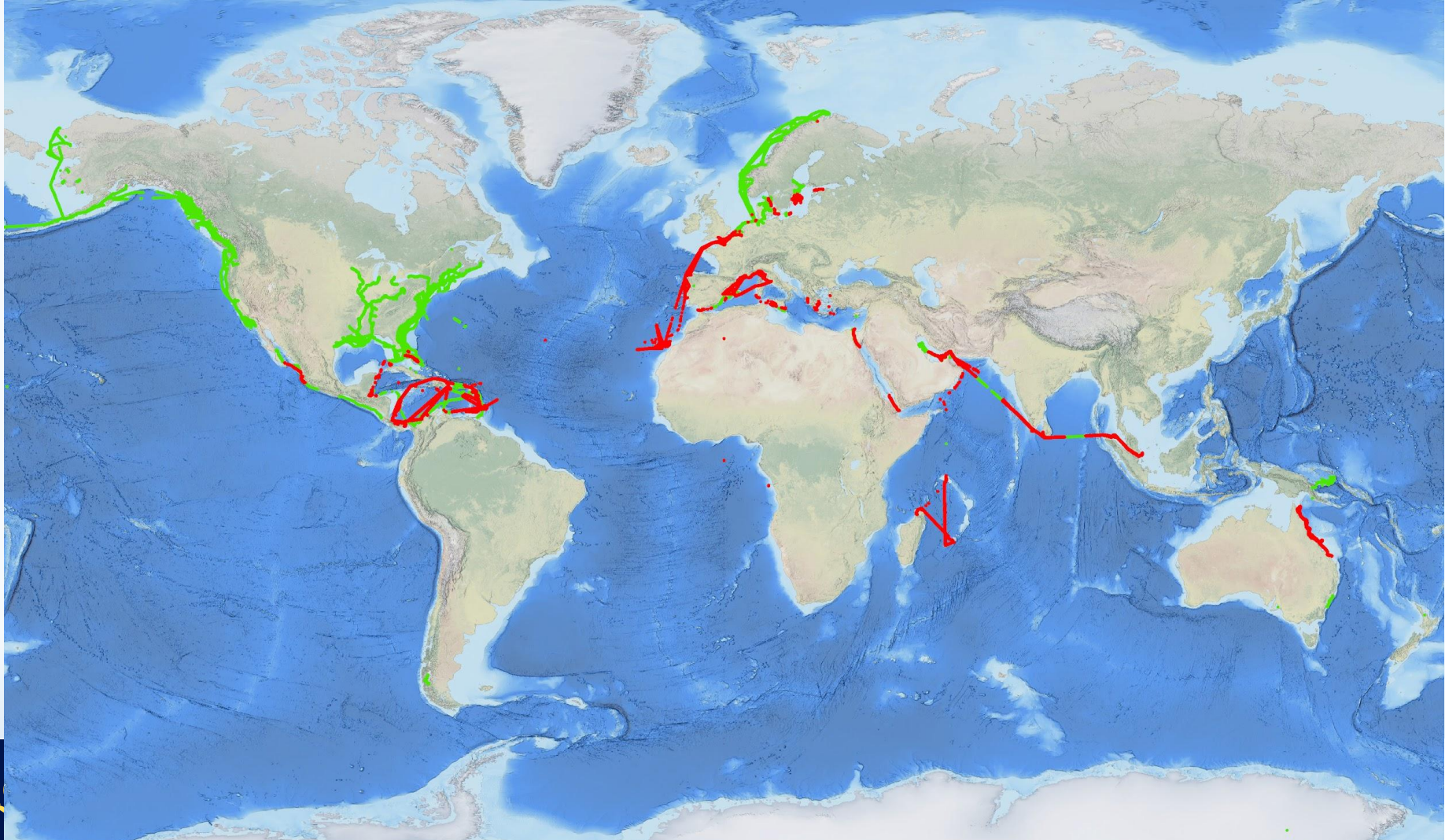
International Hydrographic Organization

Data Centre for Digital Bathymetry Viewer



International Hydrographic Organization
Organisation Hydrographique Internationale

ncei.noaa.gov/maps/iho_dcdb/



How to Contribute CSB Data

The DCDB accepts CSB contributions through a network of "**Trusted Nodes**"

- Eg: organizations, companies or universities serving as data liaisons between mariners (data collectors) and the DCDB.
- Trusted Nodes may supply data logging equipment, provide technical support to vessels, download data from data loggers, and be responsible for data transfer directly to the DCDB.



CSB Trusted Nodes - Current

Rose Point Navigation System

- Mariners can enable their electronic charting system log file to record position, depth, and time.

MacGregor/Carnival Cruise Line

- Data provided by Voyage Data Recorders (VDR) logging depth sounding data for IMO mandated shipborne single beam devices.

FarSounder

- Manufactures 3D Forward Looking Sonar; some clients have agreed to ALSO collect/contribute CSB

Petroleum Geo-Services (PGS)

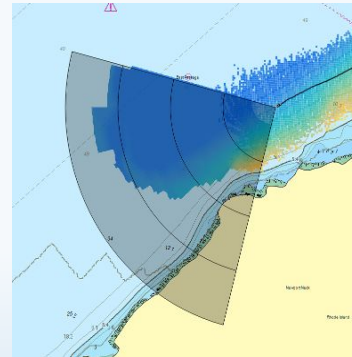
- Implemented a data feed from PGS vessels to the DCDB



www.rosepointnav.com



Voyage
Data
Recorder



CSB Trusted Nodes - *In process*

James Cook University

- Data submitted to the DCDB; Awaiting Australia's response to IHO CL

Navico C-MAP

- Recently established a new bathymetric feed b/w DCDB & navigation software company

Great Lakes Observing System

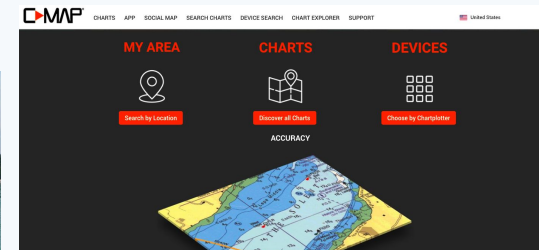
- Awaiting test submissions, initial checks complete

M2Ocean

- Finalizing metadata content and testing data submissions with data collected by Hydroballs (small autonomous bathymetric buoys)



SmartLog USB
data logger



Seabed 2030-funded CSB Field Trials

Objective:

1. Facilitate field trials that will accelerate CSB activity
2. Collect data in data scarce areas
3. Grow excitement about the CSB initiative
4. Develop a repeatable regional CSB mapping project strategy

In return, a potential program must guarantee the provision of staff to:

1. Hand out data loggers to the community
2. Assist local mariners in set up
3. Act as a data assembly center
4. Provide a copy of these data to the IHO DCDB to be used in the GEBCO grid



Support includes provision of data loggers (NMEA0183 and NMEA2000) and installation support (where needed).



Seabed 2030-funded CSB Field Trials

Greenland Institute of Natural Resources

- Phase 1: aim to engage approximately 50 vessels of various sizes- 30 data loggers deployed so far.

The Institute For Maritime Technology & The South African Navy HO

- 100 data loggers deployed to SANHO/IMT.
- Planning of trials: identification of stakeholders, establish relationships, feasibility studies, regular communication via various channels.

Bureau of Marine Transportation - Palau

- 100 data loggers received (NMEA0183 and NMEA2000)
- Coordinating with South & West Pacific Seabed 2030 Data Center
- Will receive support from U.S. Navy for logger installation and setup in 2022.



“Sea Lab 1”, IMT – trial deployment (Credit: CDR Christoff Theunissen)



Other CSB Field Trials in Progress

- **Tall Ship Pelican of London:** testing in UK waters complete, further data collection 2022 and beyond.
- **Lisa Blair Sails the World:** Antarctica 2022 and future voyages.
- **Bernhard Schulte Ship Management (BSM):** Discussions currently underway; potential to roll out to 400+ vessels.
- **New Zealand:** Several test cases currently underway via S&WPac Regional Center.



Top, left: Data collection onboard EV Nautilus (credit: Ocean Exploration Trust). Bottom, left: Scientists onboard RV Falkor (credit: Schmidt Ocean Institute).



IHO CSB Working Group

- 11 meetings; 1 Industry workshop
- **Chair** (Jennifer Jencks, USA) & **Vice-Chair** (Pete Wills, CA)
- **Active Member State Participation:**
 - Canada, China, Denmark, **France**, Germany, India, Italy, Lebanon, Mexico, Netherlands, **New Zealand**, Norway, Portugal, South Africa, Sweden, **UK**, Uruguay, **USA**
- **Observers and expert contributors:**
 - CCOM-JHC, CIDCO, Da Gamma Maritime Ltd, Dongseo U, ECC AS, ESRI, FarSounder, FLIR Systems AB, Fugro, GMATEK, Inc., **James Cook U**, JAMSTEC, Navico/C-Map, ONE Data Tech Co., Olex, PYA, Seabed 2030, Sea-ID, SevenCs/ChartWorld, TeamSurv, Teledyne CARIS, World Maritime University, and WOC
- **IHO:** Assistant Director Sam Harper
- **SWPHC CSB/Seabed 2030 Coordinator:** Stuart Caie



CSBWG 9: 30 Jun-02 Jul 2020



CSBWG 10: 30 Mar -01 Apr 2021



IHO CSB Working Group - Outreach

CSB Outreach Flyers:

- Super yacht & leisure community
- Survey
- Geophysical & Submarine Cable industry
- Fisheries
- Cruise Line industry
- Software/hardware industry
- Hydrographic Offices
- Academic/Scientific Research



IHO
International Hydrographic Organization



CITIZEN SOURCED DATA
HELP REVEAL THE DEEP AND SHARE YOUR DATA

CROWDSOURCED DEPTH INFORMATION
Commerically owned ships can participate in increasing our knowledge of the ocean by sharing depth measurements from navigation instruments while out at sea. Known as Crowdsourced Bathymetry (CSB), this information can help identify uncharted features such as seamounts and canyons, verify charted information, and help fill the gaps where no data exists.

CRUISE SHIPS
Many expedition cruise ships explore the world's oceans, often in areas where data is sparse, non-existent, or of poor quality. These are exactly the places where contributions to global seafloor mapping efforts can have the greatest impact.

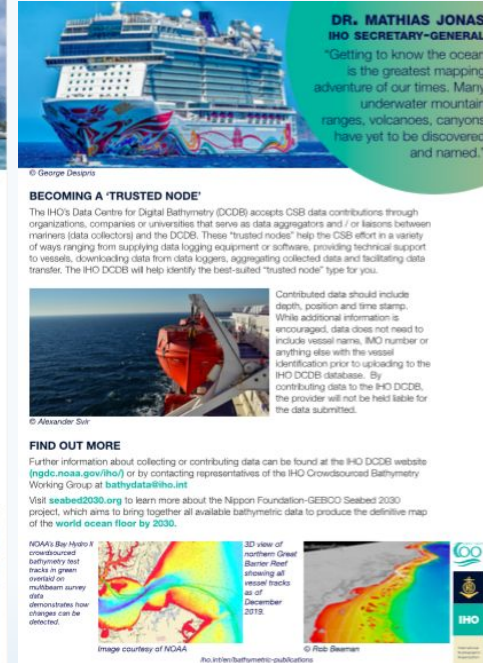
ship's NMEA data bus. Routinely measured parameters such as under keel depth and position, can then be stored, uploaded and contributed to local and global mapping initiatives. These contributions can also benefit navigational safety, detect unknown hazards, and aid other mariners and ocean scientists.

By contributing data, cruise ships can help avoid accidents, environmental damage and make the oceans a safer place for all. Additionally, participation in this global effort can be included in the cruise line's marketing materials highlighting the various ways they contribute to scientific endeavors.

To minimise effort on the part of the ship's crew, data collection and contribution of data can occur by using either built-in navigation software systems that are participating in the CSB initiative, or through a small hardware data logger that can be interfaced to the



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DR. MATHIAS JONAS
IHO SECRETARY-GENERAL

"Getting to know the ocean is the greatest mapping adventure of our times. Many underwater mountain ranges, volcanoes, canyons have yet to be discovered and named."

BECOMING A 'TRUSTED NODE'
The IHO's Data Centre for Digital Bathymetry (DCDB) accepts CSB data contributions through organizations, companies or universities that serve as data aggregators and / or liaisons between mariners (data collectors) and the DCDB. These "trusted nodes" help the CSB effort in a variety of ways ranging from supplying data logging equipment or software, providing technical support to vessels, downloading data from data loggers, aggregating collected data and facilitating data transfer. The IHO DCDB will help identify the best-suited "trusted node" type for you.

Contributed data should include depth, position and time stamp. While additional information is encouraged, data does not need to include vessel name, IMO number or anything else with the vessel identification prior to uploading to the IHO DCDB database. By contributing data to the IHO DCDB, the provider will not be held liable for the data submitted.

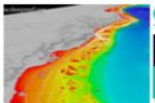
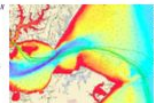


FIND OUT MORE
Further information about collecting or contributing data can be found at the IHO DCDB website (<http://ngdc.noaa.gov/iho/>) or by contacting representatives of the IHO Crowdsourced Bathymetry Working Group at bathymetry@iho.int

Visit seabed2030.org to learn more about the Nippon Foundation-GEBCO Seabed 2030 project, which aims to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030.

NGA's Bay View 1 crowdsourced bathymetry test tracks in green overlaid on multibeam survey data demonstrates how changes can be detected.

3D view of southern Great Barrier Reef showing all vessel tracks as of December 2018.

Image courtesy of NOAA
iho.int/en/bathymetry-publications



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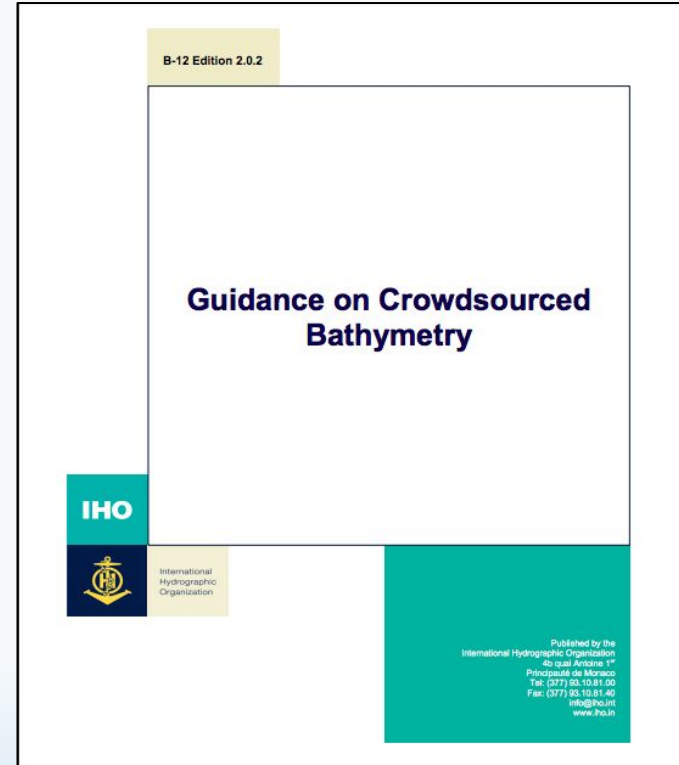


IHO CSB Working Group 12

CSBWG12 will be held virtually 8-11 March 2022.

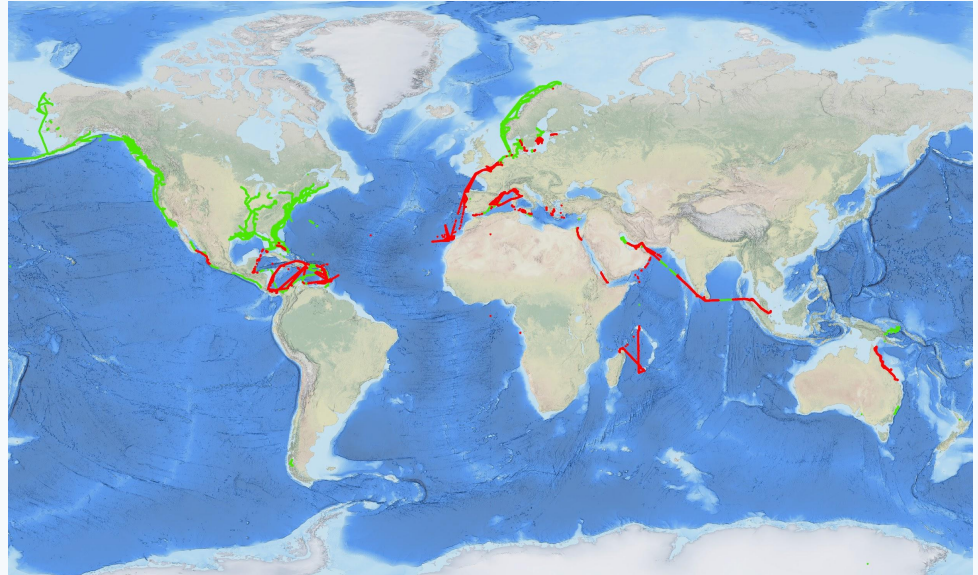
FOCUS: To finalize the review and update of IHO Publication B-12: CSB Guidance Document.

B-12 has now been in circulation for over 2 years and, apart from including feedback from operational use and experience, there is a strong desire to make the document more "equipment agnostic" with the intent of soliciting data from ALL sources, not just single beam echo sounders.



How can HOs become more involved?

- Offer a positive response to the IHO or IRCC Circular Letters
- Consider joining and/or attending the CSBWG - it is open to all!
- Encourage local participation in CSB collection and sharing.
- Volunteer to become the next Seabed 2030-funded CSB Program!





Thank you.

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