

Current DCDB Work & IHO Projects

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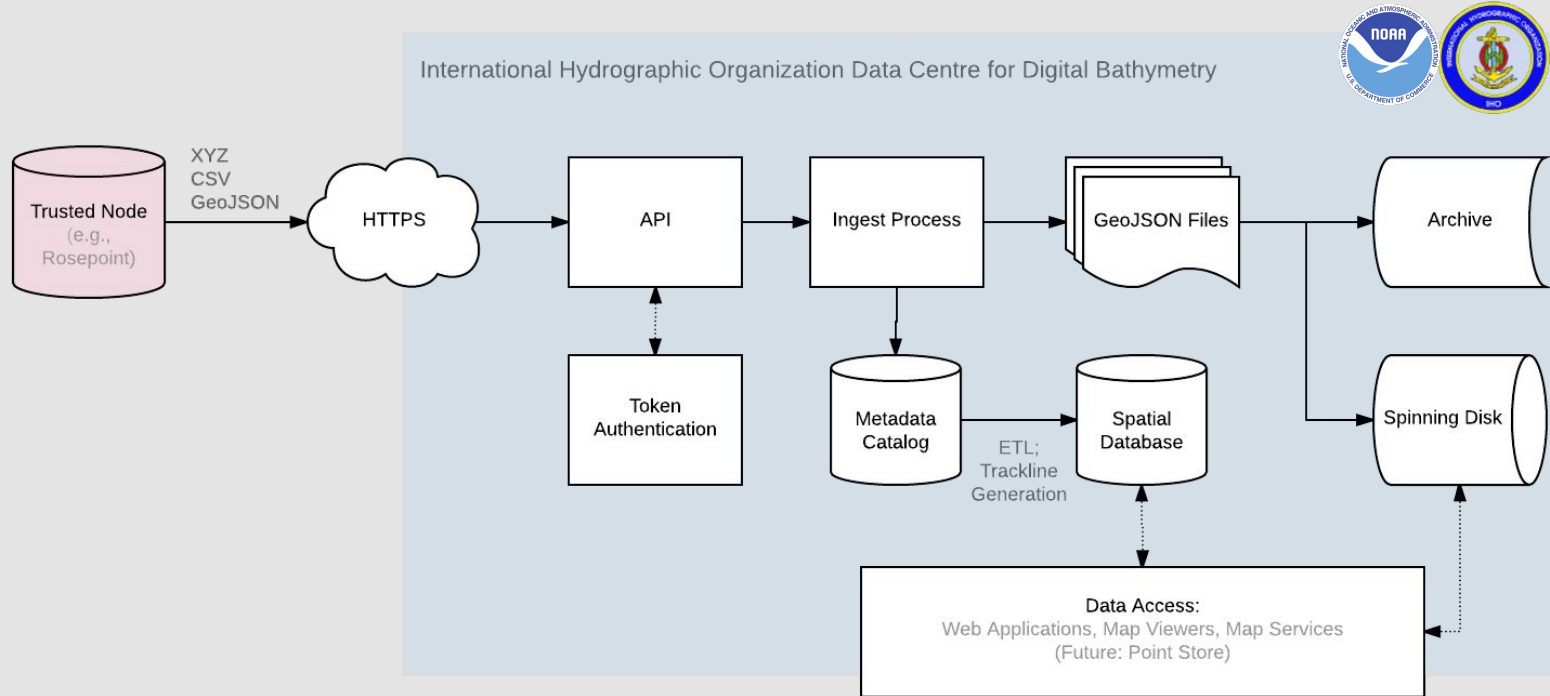
National Centers for
Environmental Information

National Oceanic &
Atmospheric Administration

<https://www.ngdc.noaa.gov/iho/>

IHO CSBWG9
Virtual 30th June – 02nd July 2020

Current CSB Pipeline



Trusted Nodes - Current

Rose Point Navigation System

- Mariners can enable their electronic charting system log file to record *position, depth and time*.
- When a mariner updates their software or chart catalog, data is transmitted to the DCDB.



www.pcmaritime.com



www.rosepointnav.com

MacGregor/Carnival Cruise Line

- Voyage Data Recorders (VDR) are a mandated device for effectively all ships on international voyages.
- By default, this device is logging depth sounding data for IMO mandated shipborne single beam devices.



Voyage Data Recorder



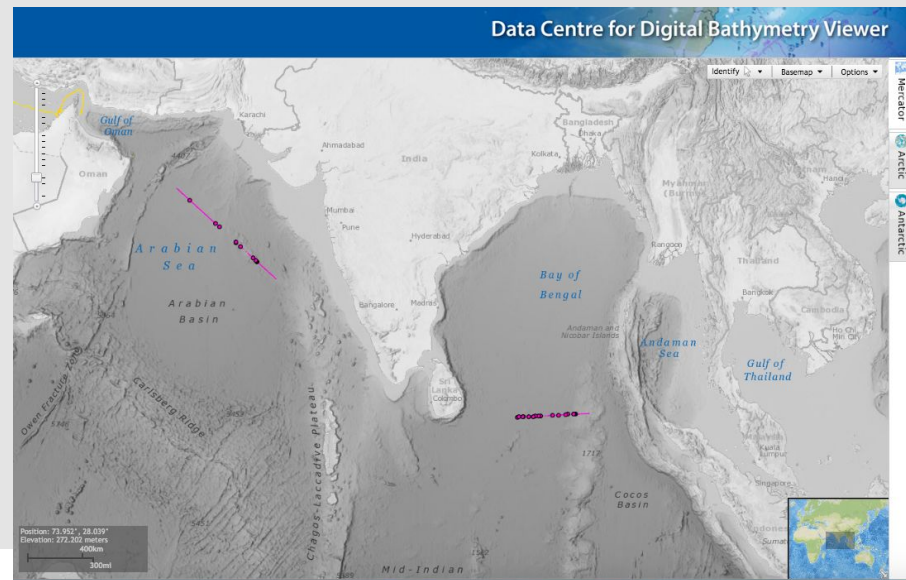
Summary analysis of positive responses

1. Based on the comments received to the questionnaire in Annex B to IHO CL 11/2019, the following table will be published as the Positive List to guide potential data gathering activities undertaken by the wider maritime community in waters of national jurisdiction:

Member State	Area	Specific actions required
Argentina	EEZ only	Provide copy of dataset to Hydrographic Office
Brazil	EEZ only	Provide copy of dataset to Hydrographic Office
Cyprus	All waters	Provide copy of dataset to Hydrographic Office
Denmark	All waters	Inform Hydrographic Office of any variance with published chart
Georgia	All waters	Provide copy of dataset to Hydrographic Office
Germany	All waters	Inform Hydrographic Office of new dataset
Monaco	All waters	Provide copy of dataset to Hydrographic Office
Netherlands	All waters	Inform Hydrographic Office of new dataset
New Zealand	All waters	Inform Hydrographic Office of new dataset
Norway	All waters – no multibeam activity without prior permission	Inform Hydrographic Office of new dataset
Philippines	Shipping routes and transit passages only	None
South Africa	EEZ only	Provide copy of dataset to Hydrographic Office
Sweden	EEZ only	Inform Hydrographic Office of new dataset
USA	All waters	None

Geographic Filter

At the request of the IHO, we have implemented a geographic filter for incoming data to take in to account coastal countries' positions on the collection of CSB in their areas of jurisdiction.



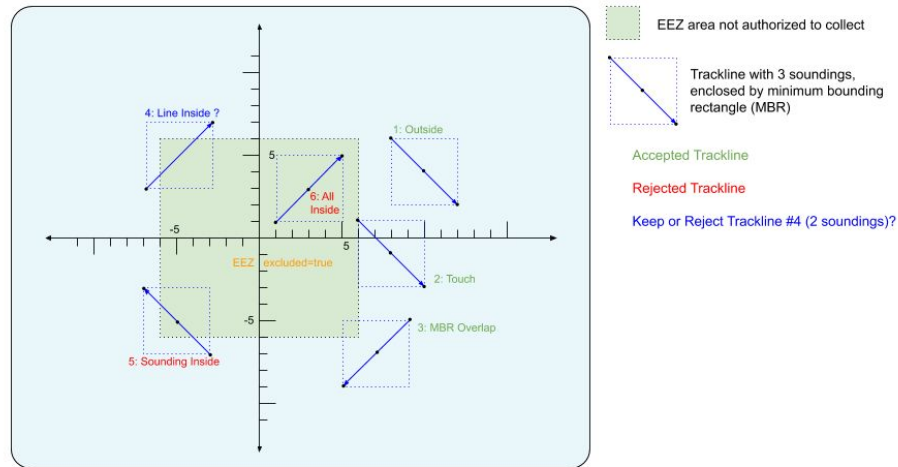
Geographic Filter

Since CSB is stored as files (and NOT points), if any part of a file falls on or within a non-YES country's EEZ, it will not be made available. ***In some cases: 1 survey = 1 file***

Future work:

- Improve the granularity and precision of the filter.
- Mask only the subset of a given submission which intersects with restricted areas.
- Consider including ability to take different actions with the embargoed data depending on the member state's requirements.

EEZ Exclusion Test Cases



Because we are using bounding boxes for surveys (real polygons for the EEZ & Territorial Seas), only Case #1 is accepted, all others are rejected.

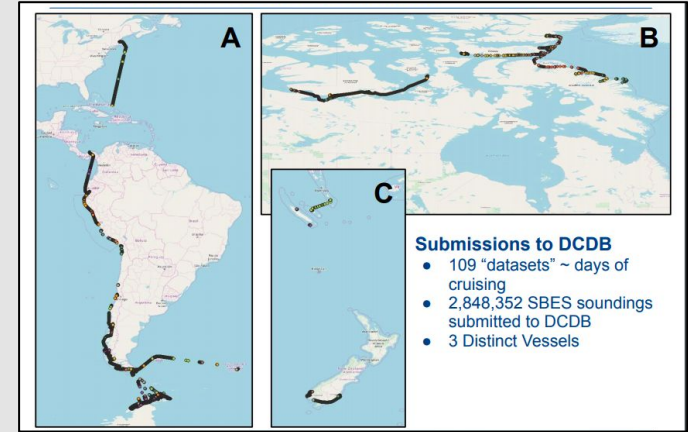
Trusted Nodes - In Process

Far Sounder

- Manufactures 3D Forward Looking Sonar
- Clients, which include expeditionary cruise ships and private superyachts, use FLS to safely explore exotic and poorly charted or uncharted areas.
- Some clients have agreed to ALSO collect/contribute CSB

James Cook University

- Distributed inexpensive data loggers to ~100 volunteer vessels using their own echo sounder and GPS sensors along the Great Barrier Reef
- Awaiting Australia's acceptance of CSB in their waters



SmartLog USB data logger





IHO

International
Hydrographic
Organization

Data Centre for Digital Bathymetry Viewer

Layers

▼ IHO DCDB/NOAA NCEI ?

- ☐ Multibeam Surveys ?
- ☐ 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 ☒ Reset ?

☒ Crowdsourced Bathymetry Files ?

Search CSB Files ☒ Reset ?

☐ U.S. Bathymetry Coverage and Gap Analysis ?

► EMODnet

► Australia

► Canada

► France

► Netherlands

► Bathymetric Coverage Maps



- ~250 million soundings (data points)
- ~220 contributing vessels
- ~150,000 data contributions
- ~10 Gb total data volume

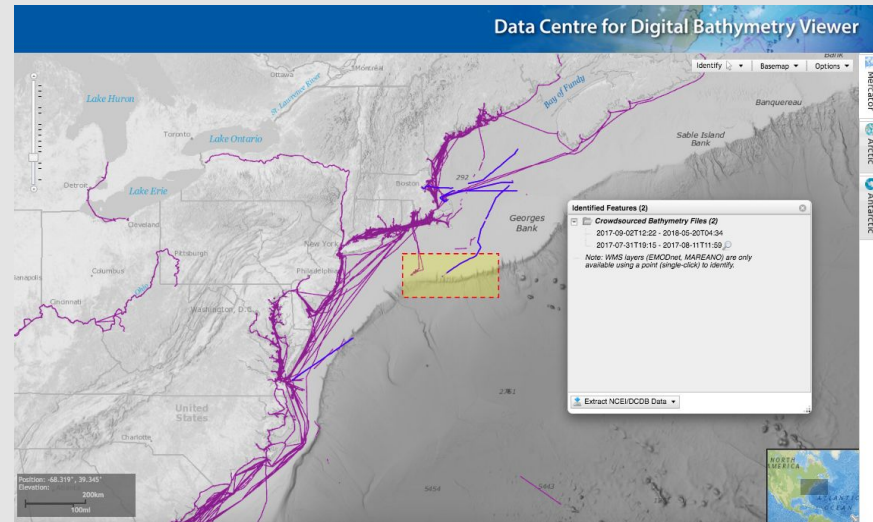
Discovery & Access

Current:

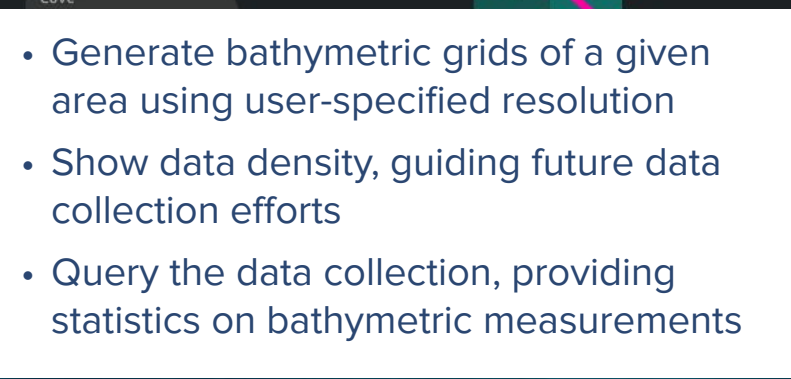
- Tracklines are created of where data was collected to visualize on the map
- Individual file-based delivery of data

Limitations:

- Data aggregation, processing, and grid generation remains the responsibility of the end user.
- Data coverage can only be represented as a track...not a polygon or point (actual data coverage)



maps.ngdc.noaa.gov/viewers/iho_dcdb/



Ongoing Cloud Pilot Programs

The Request: To visualize, analyze and download CSB data

NOAA Cloud Pilot Project (2019-2020)

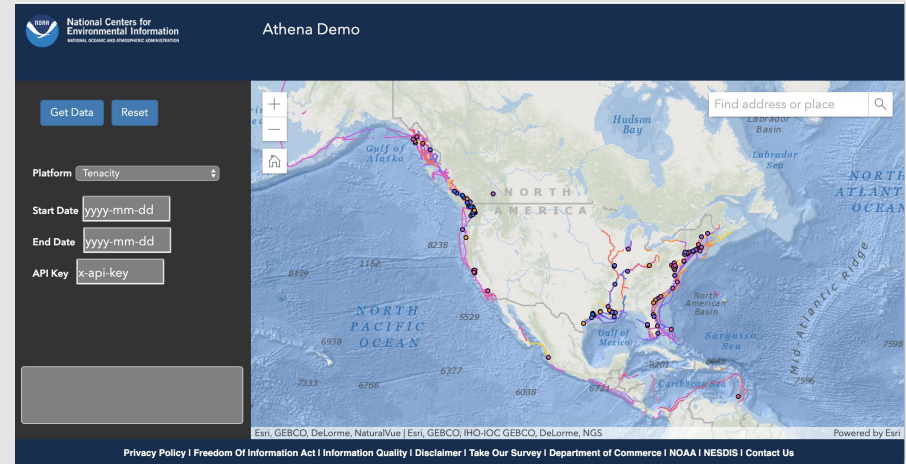
- Explored and demonstrated value of Amazon Athena as a spatially enabled data store for CSB
- Currently laying out requirements/expectations for 2020 work

AWS Public Dataset Program

- Amazon will provide free cloud access for 24 months

ESRI Collaboration (2019-2020)

- Evaluate the suitability of the ArcGIS Enterprise software suite for meeting the CSB data discovery, visualization, and data delivery requirements.





Action 4: ECC to discuss suggested DCDB improvements

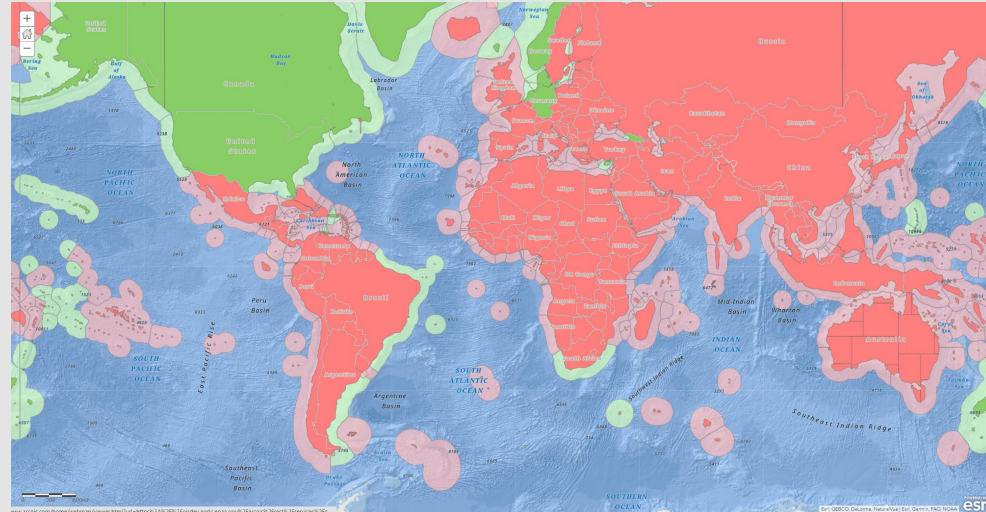
DCDB & Seabed 2030 met twice with Electronic Chart Centre to discuss suggested improvements to the DCDB viewer.

- Some suggestions (route importing, ENC-related) will be passed along to GEBCO and Seabed 2030 for possible implementation (outside of DCDB's scope)
- Some may be easily implemented (eg: basic interface design improvements)
- Some could be implemented but would require resources (ie: funding)
 - Data quality analysis resulting in a coverage consisting of best data available
 - Automated survey comparison
 - Trusted node uncertainty calculation support
- Others are outside of our control: Improved display and access options for data from other repositories
 - We can only display and deliver what other organizations offer.
 - There is a need for standards, coordination, and participation amongst all providers.

Action 5: Database of polygons

DCDB and Sea-ID agreed to work on maintaining the database of polygons where Member States have caveats on handling data so that a single shapefile of limits is used.

- The set of polygons that the DCDB developed for the filtering can be exported from an Oracle database and shared as a pair of shapefiles.
- 2 tables called "EEZ" and "TERRITORIAL_SEAS". They can each be set to EXCLUDE separately.
 - TERRITORIAL_SEAS includes the land area of the country + archipelagic waters + territorial seas
 - EEZ is the EEZ only.

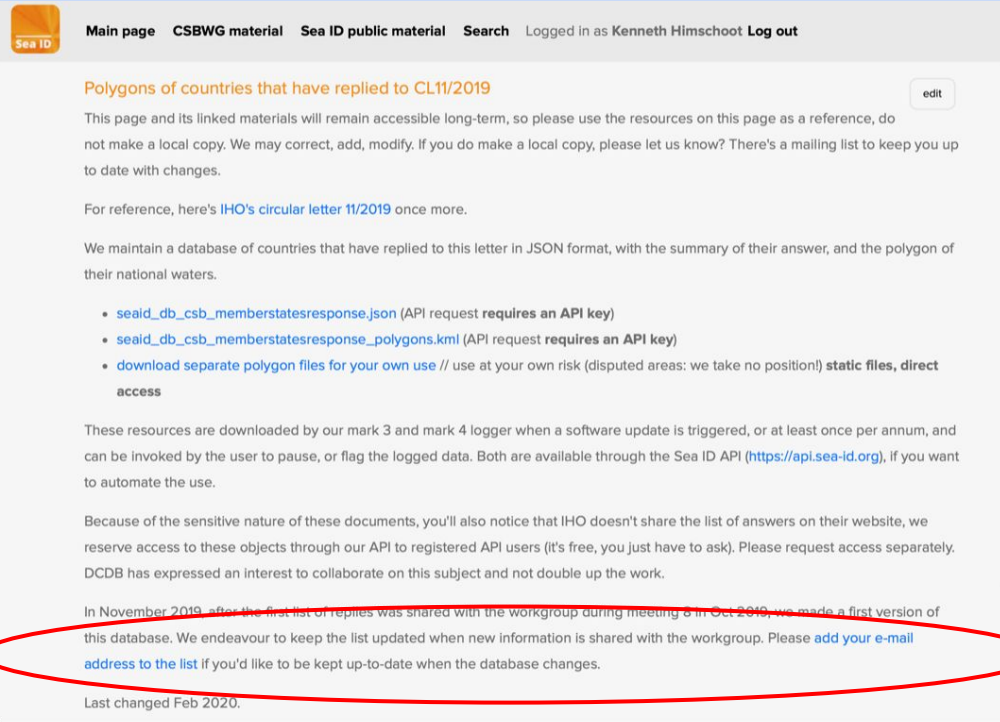


Action 5: Database of polygons

DCDB and Sea-ID agreed to work on maintaining the database of polygons where Member States have caveats on handling data so that a single shapefile of limits is used.

- First link: an API call describing basically in JSON how every country has replied (Yes, Caveats)
- Second link: kml of polygons described in the first
- Third link: list of JSONs to countries's polygons (incomplete) - static files, immediate download
- DCDB and Sea-ID to coordinate when updates to tables are required.

wiki.sea-id.org/noAccess/CSBWGLANDING



Sea ID

Main page CSBWG material Sea ID public material Search Logged in as Kenneth Himschoot Log out

Polygons of countries that have replied to CL11/2019

This page and its linked materials will remain accessible long-term, so please use the resources on this page as a reference, do not make a local copy. We may correct, add, modify. If you do make a local copy, please let us know? There's a mailing list to keep you up to date with changes.

For reference, here's IHO's [circular letter 11/2019](#) once more.

We maintain a database of countries that have replied to this letter in JSON format, with the summary of their answer, and the polygon of their national waters.

- [sea_id_db_csb_memberstatesresponse.json](#) (API request **requires an API key**)
- [sea_id_db_csb_memberstatesresponse_polygons.kml](#) (API request **requires an API key**)
- [download separate polygon files for your own use](#) // use at your own risk (disputed areas: we take no position!) **static files, direct access**

These resources are downloaded by our mark 3 and mark 4 logger when a software update is triggered, or at least once per annum, and can be invoked by the user to pause, or flag the logged data. Both are available through the Sea ID API (<https://api.sea-id.org>), if you want to automate the use.

Because of the sensitive nature of these documents, you'll also notice that IHO doesn't share the list of answers on their website, we reserve access to these objects through our API to registered API users (it's free, you just have to ask). Please request access separately. DCDB has expressed an interest to collaborate on this subject and not double up the work.

In November 2019, after the first list of replies was shared with the workgroup during meeting 6 in Oct 2019, we made a first version of this database. We endeavour to keep the list updated when new information is shared with the workgroup. Please [add your e-mail address to the list](#) if you'd like to be kept up-to-date when the database changes.

Last changed Feb 2020.