

Report of the IHO Data Centre for Digital Bathymetry

Submitted by:	Director of the DCDB
Related Documents:	IHO CL23-1990 on Establishment of DCDB
Related Projects:	IHO CSB initiative, NF-GEBSCO Seabed 2030 project

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<i>See Annex A for full details</i>	

1. Meetings Held During Reporting Period

N/A

2. Work Program

The IHO Data Centre for Digital Bathymetry 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. Data can be discovered and accessed from the IHO DCDB Data Viewer: maps.ngdc.noaa.gov/viewers/iho_dcdb/ The IHO DCDB is hosted by the U.S. National Oceanographic and Atmospheric Administration (NOAA) on behalf of the IHO Member States. The IHO Secretariat intends to issue a new circular letter with regards to highlighting the roles and importance of the DCDB in relation with the increasing ocean mapping activities (e.g. IHO Crowdsourced Bathymetry initiative, Seabed 2030). The current version of the draft CL submitted as Annex A.

As a result of the National Oceanic and Atmospheric Administration (NOAA) Data Center restructuring and consolidation in 2015, the IHO DCDB is now hosted and maintained by the National Centers for Environmental Information (NCEI), which means that the previous agreement with NOAA is out of date and needs to be revised to reflect the current structure.

Since establishment, the quantity of data archived in the DCDB has grown considerably both in area coverage and size, particularly in recent years with the addition of multibeam echo sounder (MBES) data. Today, the DCDB archives over 30 terabytes (TB) of oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. This includes about 2800 multibeam bathymetry surveys, approximately 5500 singlebeam bathymetry surveys, and over 100 unique contributing vessels in support of the IHO Crowdsourced Bathymetry (CSB) initiative.

In response to the IHO CSB initiative, starting 2014, the DCDB commenced a programme to enhance its infrastructure and interface to provide data ingest, archiving, discovery, display and retrieval of global CSB data contributed from mariners around the world. As the CSB initiative continues to grow, the DCDB intends to develop beyond its current basic file management capabilities to a continuous point store. Moving to the cloud will allow for CSB data (and theoretically all bathymetric data sources) to be stored as a seamless collection of points. It is anticipated that the DCDB could then provide a variety of enhanced services along with the data itself, such as the ability for users to generate bathymetric grids of a given area using user-specified resolution, to retrieve data density information, and better support the guiding of future data collection efforts. In addition to the above developments, the DCDB plans to work with Member States to archive and make publically available shallow water bathymetry extracted by Member States from their ENC Usage Bands 2 and 3 coverage.

DCDB data holdings are routinely used for the production of improved and more comprehensive bathymetric maps and grids, particularly in support of the GEBSCO Ocean Mapping Programme and the Nippon Foundation-GEBSCO Seabed 2030 project. The current heightened awareness and global focus on the ocean and related topics resulting from a number of high profile initiatives, such as the United

Nation's 2030 Agenda for Sustainable Development Goals, The Paris Agreement under the UN Framework Convention on Climate Change, The Sendai Framework for Disaster Risk Reduction 2015-2030 and the UN Decade of Ocean Science for Sustainable Development (2021-2030), have all highlighted the lack of comprehensive global bathymetric coverage, which is recognised as a fundamental element to achieve the goals of these initiatives. In particular, the Seabed 2030 project has created a global drive to search out new datasets to be added to the currently available bathymetry and the IHO DCDB has been identified as the preferred archive and data store.

All these activities have raised the global profile of the IHO DCDB and increased demands placed on the current limited resources. The publication in March 2019 of the new 15 arc second GEBCO_2019 grid is the first tangible result of the Seabed 2030 Project, further increasing demands on the IHO DCDB infrastructure.

3. Progress on IRCC Action Items

N/A

4. Problems Encountered

N/A

5. Any Other Items of Note

N/A

6. Conclusions and Recommended Actions

It has been considered that the IHO Member States should take more ownership of the IHO DCDB and its development, rather than relying on the good will and resources of a single funder. Therefore there is a need to include a reasonable funding contribution in the next 3-year (2021-2023) IHO budget and work programme, subject to approval of Member States.

As a result, it is felt IHO Member States will feel empowered to contribute ideas to the future development of and the services provided by the IHO DCDB. It is anticipated that the DCDB will be recognized as an IHO Member State resource, in which all IHO Member States should have an interest and stake thus benefiting from the globally contributed bathymetric dataset.

It is highlighted that the DCDB is an IHO Member States owned resource that requires additional data to increase the coverage and move towards a comprehensive global bathymetric dataset. Therefore IHO Member States and stakeholders are invited to contribute and encourage the provision of bathymetric data regardless of its origin or reason for gathering.

7. Justification and Impacts

During this review of the DCDB activities and its future support and service provision, it has been recognised that there is also a need to revise the original (1990) Terms of Reference (ToR) for DCDB. It is intended that proposed revised ToR will be submitted to the Member States for approval later this year.

8. Action Required of IRCC

The IRCC is invited to:

- a. Encourage Member State and stakeholder bathymetric data contributions to the DCDB, regardless of origin; and
- b. Review draft CL at Annex
- c. Take any other action it considers appropriate.

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CIRCULAR LETTER XX/2019
XX **XX**May 2019

IHO DATA CENTRE FOR DIGITAL BATHYMETRY (DCDB)

Reference: IHO CL 23/1990 dated 25 June 1990 - *IHO Data Centre for Digital Bathymetry*

Dear Hydrographer,

1. The Reference highlighted comments received from the IHO Member States to the modified proposal by the United States (USA) for the establishment of an IHO Data Centre for Digital Bathymetry (DCDB) at the US National Geophysical Data Center (NGDC) of Boulder, Colorado, USA. The modified proposal received overwhelming support and therefore the date of establishment of the IHO DCDB was fixed as 1 June 1990.
2. As a result of the National Oceanic and Atmospheric Administration (NOAA) Data Center restructuring and consolidation in 2015, the IHO DCDB is now hosted and maintained by the National Centers for Environmental Information (NCEI). The Centre archives and shares, freely and without restrictions, depth data contributed by mariners. Data can be discovered and accessed from the IHO DCDB Data Viewer: maps.ngdc.noaa.gov/viewers/iho_dcdb/
3. In the intervening period the quantity of data archived in the DCDB has grown considerably both in area coverage and size, particularly in recent years with the addition of multibeam echo sounder (MBES) data. Today, the DCDB archives over 30 terabyte (TB) of oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. This includes about 2800 multibeam bathymetry surveys, approximately 5500 singlebeam bathymetry surveys, and over 100 unique contributing vessels in support of the IHO Crowdsourced Bathymetry (CSB) initiative.
4. In response to the 2014 IHO Crowdsourced Bathymetry initiative that encourages supplementary data gathering, the DCDB enhanced its infrastructure and interface to provide data ingest, archiving, discovery, display and retrieval of global CSB data contributed from mariners around the world. As this initiative continues to grow, the DCDB intends to develop beyond its current basic file management capabilities to a continuous point store. Moving to the cloud will allow for CSB data (and theoretically all bathymetric data sources) to be stored as a seamless collection of points. The DCDB could then provide a variety of enhanced services along with the data itself, such as the ability for users to generate bathymetric grids of a given area using user-specified resolution, to retrieve data density information, and better support the guiding of future data collection efforts. The DCDB also plans on working with Member States to archive and make publically available shallow water bathymetry extracted by Member States from ENC Usage Bands 2 and 3 coverage.
5. DCDB data holdings are routinely used for the production of improved and more comprehensive bathymetric maps and grids, particularly in support of the GEBCO Ocean Mapping Programme and the Nippon Foundation-GEBCO Seabed 2030 project. The current heightened awareness and global focus on the ocean and related topics resulting from a number of high profile initiatives, such as the United

Nation's 2030 Agenda for Sustainable Development Goals, The Paris Agreement under the UN Framework Convention on Climate Change, The Sendai Framework for Disaster Risk Reduction 2015-2030 and the UN Decade of Ocean Science for Sustainable Development (2021-2030), have all highlighted the lack of comprehensive global bathymetric coverage, which is recognised as a fundamental element to achieve the goals of these initiatives. Seabed 2030 has created a global movement to search out new datasets to be added to the currently available bathymetry and the IHO DCDB has been identified as the preferred data store. This has raised the global profile of the IHO DCDB and increased demands placed on the current resources. The publication of the new 15 arc second GEBCO_2019 grid is the first tangible result of the Seabed 2030 Project, further increasing demands on the IHO DCDB infrastructure.

6. It has been considered within the Secretariat that the IHO Member States should take more ownership of the IHO DCDB and its development, rather than relying on the good will and resources of a single funder. It is therefore proposed to include a reasonable funding contribution in the next 3-year (2021-2023) IHO budget and work programme, subject to approval of Member States. In this manner, it is felt IHO Member States will feel more able to contribute ideas to the future development of and the services provided by the IHO DCDB. It is also hoped that the DCDB will be recognized as an IHO Member State resource, in which all IHO Member States will have an interest and stake thus benefiting from the globally contributed bathymetric dataset.

7. During this review of the DCDB activities and its future support and service provision, it has been considered that there is also a need to revise the original (1990) Terms of Reference (ToR) for DCDB. The proposed revised ToR will be submitted to the Member States for approval by a separate Circular Letter.

8. The DCDB is an IHO Member States owned resource from which they can download data that also requires additional data to increase the coverage and move towards a comprehensive global bathymetric dataset. Therefore IHO Member States and stakeholders are invited to contribute and encourage the provision of bathymetric data regardless of its origin or reason for gathering.

9. The IHO Secretariat would also like to renew its thanks to the United States, in particular NOAA-NCEI Boulder, for its substantial support in maintaining and developing this resource.

Yours sincerely,

Dr Mathias JONAS
Secretary-General