

MEMORANDUM OF UNDERSTANDING BETWEEN
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE
AND
THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION
TO COOPERATE ON THE DATA CENTRE FOR DIGITAL BATHYMETRY

I-PREAMBLE

The National Oceanic and Atmospheric Administration (NOAA) of the United States of America, and the International Hydrographic Organization (IHO or Organization), hereinafter collectively referred to as the "Participants,"

NOTING the United States of America is a member of the IHO, an intergovernmental organization that works to ensure all the world's seas, oceans and navigable waters are surveyed and charted,

NOTING it is in the mutual interests of the Participants to cooperate to improve the quality of services for maritime navigation safety, conserving the marine environment, and promoting the exchange of cartographic, hydrographic, and geodetic information and related services,

RECOGNIZING the long-standing collaborative relationship between NOAA and the IHO on bathymetric data stewardship and public access reflected, *inter alia*, in the IHO Data Centre for Digital Bathymetry (DCDB),

RECOGNIZING the DCDB was established by the IHO in 1990 (IHO CL 23/1990) in response to a proposal from the United States (IHO CL 1/1990) to host and operate the data center. Since that time, the DCDB has been hosted and operated by the NOAA National Environmental Satellite, Data, and Information Service's (NESDIS) National Centers for Environmental Information (NCEI), and

UNDERSTANDING the data provided through the DCDB are a public resource routinely used to produce improved regional and global bathymetric maps and grids in support of science and exploration, and that NOAA hosts the DCDB on behalf of the IHO

Intend to cooperate as follows:

II-PURPOSE

- A. The purpose of this Memorandum of Understanding (MOU) is to reaffirm NOAA as the host of the DCDB on behalf of the IHO and to support, facilitate, and strengthen cooperation between the Participants regarding the DCDB.
- B. This MOU is not intended to create binding legal obligations under international or domestic law. Nothing in this MOU is intended to alter or affect the Participants' authority or ability to carry out their responsibilities and programs in accordance with their respective applicable laws, regulations, and policies. All activities contemplated in this MOU are subject to the availability of funds, personnel, and other resources.

III-BACKGROUND

- A. The IHO established the DCDB in 1990 to steward the worldwide collection of bathymetric data. The DCDB archives and shares, freely and without restrictions, depth data contributed by mariners and other stakeholders consistent with IHO direction and guidance.
- B. NOAA has both legal authority and responsibility for conducting ocean mapping and scientific discovery in waters within and beyond the national jurisdiction of the United States. Since the 1940's, the U.S., and later NOAA, has archived and made accessible these data along with data collected from and contributed by national and international partners and stakeholders in support of current and future ocean mapping efforts.
- C. DCDB data holdings are routinely used for the production of improved and more comprehensive bathymetric maps and grids. The current heightened awareness and global focus on the ocean resulting from a number of high profile initiatives, such as the United Nations' 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 recognized as a fundamental element vital to contributing to the achievement of the goals of these initiatives.

IV-AUTHORITIES

A. NOAA authorities for the activities contemplated herein are:

- 1. The Ocean and Coastal Mapping Integration Act, 33 U.S.C. §§ 3501-3507, which charges NOAA to lead the effort to increase mapping data acquisition, data sharing, use of metadata standards, improved interoperability, processing and archive of data and distribution of derived products.
- 2. The Ocean Exploration Act, 33 U.S.C. §§ 3401-3403, which authorizes a coordinated national ocean exploration program within NOAA. Specifically, the Act authorizes NOAA to explore and survey little known areas of the marine environment, inventory, observe, and assess living and nonliving marine resources, and report such findings and, as appropriate, facilitate coordination of data and information management systems, carry out outreach and education programs to improve public understanding of ocean and coastal resources, and develop and transfer of technologies to facilitate ocean and undersea research and exploration.
- 3. The Coast and Geodetic Survey Act, 33 U.S.C. §§ 883a *et seq.*, which authorizes NOAA to conduct hydrographic surveys and observations to provide charts and related information for the safe navigation of marine and air commerce, to provide basic data for engineering and scientific purposes, to perform related surveying and mapping



activities, including special-purpose maps, and for the preparation and publication of the results thereof. It further authorizes the Secretary of Commerce to enter into cooperative agreements, or any other agreements, with, and to receive and expend funds made available by, any State or subdivision thereof, any Federal agency, or any public or private organization, or individual for surveys or investigations authorized under the Act, or for performing related surveying and mapping activities, including special-purpose maps, and for the preparation and publication of the results thereof.

4. The Hydrographic Services Improvement Act, 33 U.S.C. §§ 892-892d, which directs NOAA to acquire and disseminate hydrographic data and provide hydrographic services; promulgate standards for hydrographic data; ensure comprehensive geographic coverage of hydrographic services and maintain a national database of hydrographic data, in cooperation with other appropriate Federal agencies; and participate in the development of, and implement for the United States in cooperation with other appropriate Federal agencies, international standards for hydrographic data and hydrographic services.
 5. The Great Lakes Shoreline Mapping Act of 1987, 33 U.S.C. § 883a note, which directs the National Ocean Service, in consultation with the U.S. Geological Survey, to plan for and prepare maps of the shoreline of the Great Lakes; such maps must include bathymetry, topography, and geological conditions of the near shore area, and to the maximum extent practicable, be consistent with similar shoreline maps prepared by, or for the use of, the Government of Canada.
- B. IHO's authorities for the activities contemplated herein are:
1. The Convention on the IHO, as amended by the Protocol dated 14 April 2005 that entered into force on 8 December 2016, which states that it shall be the object of the Organization:
 - a. To promote the use of hydrography for the safety of navigation and all other marine purposes and to raise global awareness of the importance of hydrography;
 - b. To improve global coverage, availability and quality of hydrographic data, information, products and services and to facilitate access to such data, information, products and services;
 - c. To improve global hydrographic capability, capacity, training, science and techniques;
 - d. To establish and enhance the development of international standards for hydrographic data, information, products, services and techniques and to achieve the greatest possible uniformity in the use of these standards;
 - e. To give authoritative and timely guidance on all hydrographic matters to States and international organizations;
 - f. To facilitate coordination of hydrographic activities among the Member States; and
 - g. To enhance cooperation on hydrographic activities among States on a regional basis.

2. The IHO General Regulations, which set out the authority, structure and decision-making processes, in particular Article 7 which permits the Organization through its Assembly to approve participation of the Organization at inter-organizational boards and other bodies, and in inter-organizational projects and cooperative activities, including the principles for such participation, and shall approve any Terms of Reference necessary for such participation.
3. Numerous IHO Resolutions that refer to, and/or give a mandate to the Organization to promote the collection, storage, centralization and distribution of bathymetric data on behalf of its Member States, in particular:
 - a. Resolution 3/1929 as amended – IHO A-1 – A5.3 – CENTRALIZATION OF OCEANIC SOUNDINGS, which states that all bathymetric data collected should be forwarded by National Hydrographic Offices (HOs) to the DCDB. It further states that at the beginning of each calendar year, the IHO Secretariat shall make available an updated version of the online publication B-4 showing all bathymetric data received during the preceding year. These data will be available for download from the DCDB in several digital formats.
 - b. Resolution 1/2017 – IHO A-1 – IMPROVING THE AVAILABILITY OF BATHYMETRIC DATA WORLDWIDE, which states Member States resolve that, in addition to fulfilling their international obligations to provide hydrographic information in support of safety of navigation, they should also consider implementing mechanisms that encourage the widest possible availability of all hydrographic and particularly bathymetric data, so as to support the sustainable development, management, and governance of the marine environment. Further, it notes that this can be achieved in several ways, including supporting systems, such as Marine Spatial Data Infrastructure and the DCDB, that facilitate data discovery, thereby avoiding unnecessary duplication in bathymetric data collection.

V-COOPERATION ACTIVITIES

- A. NOAA intends to undertake the following activities:
 1. Operation of the DCDB consistent with IHO direction and guidance;
 2. Data stewardship for bathymetric data, ensuring its quality, integrity, and accessibility. Ensure that the data and information are archived and preserved such that they are independently understandable;
 3. Provision, free of charge, of global bathymetric data via interactive map services and viewers (ncei.noaa.gov/maps/iho_dcdb/) that provide visual display of one or more data layers with links to access the underlying data. Users can search all bathymetry in the archive and filter results by various parameters;



4. Maintenance of a quality control facility whereby data provided to the DCDB are at least subjected to simple checks for any irregularities in the data and/or metadata that are revealed by the data packaging and/or ingestion processes;
 5. Generation upon request of inventories of bathymetric data holdings; and
 6. Collaboration with international organizations in the development of exchange formats and standards to expedite bathymetric data exchange, as appropriate.
- B. IHO intends to undertake the following activities:
1. Promote the contribution of bathymetric data to the DCDB in order for it to continue to serve as the preeminent, worldwide, authoritative bathymetric data resource;
 2. Act as the signatory for data sharing agreements as required;
 3. Work to identify new sources of bathymetric data for the DCDB, entering into or facilitating partnership arrangements, projects and initiatives as required; and
 4. Use the DCDB to identify data gaps and articulate the global paucity of bathymetric data in relevant international fora.

VI- DATA SHARING

- A. Bathymetry data is generally provided to the NOAA-hosted DCDB on a full and open basis, licensed using the Creative Commons Zero 1.0 Public Domain Dedication (CC0).
- B. NOAA, on behalf of the IHO, makes such data publicly available on a full and open basis in accordance with the CC0 license.
- C. Crowdsourced bathymetry data collected within waters subject to national jurisdiction of coastal States that did not notify the IHO Secretariat of their support for the provision of these data will not be made publicly available. This data will be stored by NOAA and only made publicly available by the DCDB at such time as authorization is received by the IHO from the respective coastal State, and conveyed to NOAA.

VII- INFORMATION SECURITY

- A. NOAA and IHO intend to include appropriate information security measures to be coordinated by the Participants in compliance with their respective information technology security policies and requirements.



VIII- INTELLECTUAL PROPERTY RIGHTS

- A. Nothing in this MOU will be construed as granting, either expressly or by implication, to any Participant any rights to, or interest in, any inventions or works of a Participant made prior to the entry into force of, or outside the scope of, this MOU, including any patents (or similar forms of protection in any country) corresponding to such inventions or any copyrights corresponding to such works.
- B. Any rights to, or interest in, any invention or work made in the performance of this MOU solely by one Participant, including any patents (or similar forms of protection in any country) corresponding to such invention or any copyright corresponding to such work, will be owned by such Participant.
- C. It is not anticipated that there will be any joint inventions made in the performance of this MOU. Nevertheless, in the event that an invention is jointly made by the Participants in the performance of this MOU the Participants will, in good faith, consult and agree within 30 calendar days as to:
 - 1. The allocation of rights to, or interest in, such joint invention, including any patents (or similar forms of protection in any country) corresponding to such joint invention;
 - 2. The responsibilities, costs, and actions to be taken to establish and maintain patents (or similar forms of protection in any country) for each such joint invention; and
 - 3. The terms and conditions of any license or other rights to be exchanged among the Participants or granted by one Participant to another Participant

IX- FUNDING

- A. This MOU defines in general terms the basis on which the Participants intend to cooperate and, as such, does not constitute a fiscal or funds obligation document.
- B. Each Participant funds its own activities, subject to the availability of appropriated or allocated funds. Support deemed necessary for the activities listed in this MOU is the responsibility of the respective Participants.
- C. Funds may be accepted by NOAA in carrying out its roles and responsibilities under this MOU. Any such fund transfer is to be documented in an Annex to this MOU.
- D. Funds may be accepted by the IHO in carrying out its roles and responsibilities under this MOU.



X- PARTICIPANT POINTS OF CONTACT

A. Each Participant's principal point of contact for carrying out the activities contemplated under this MOU are the following:

1. For NOAA:

Name: Jennifer Jencks
Title: Physical Scientist, National Centers for Environmental Information,
National Environmental Satellite, Data, and Information Service, NOAA
(Serving as Director, IHO Data Center for Digital Bathymetry)
Address: 325 Broadway, E/NE42
Boulder, Colorado 80305
United States of America
Email: jennifer.jencks@noaa.gov

2. For the IHO:

Name: Samuel Harper
Title: Assistant Director Survey and Operations, IHO
Address: 4b quai Antoine 1er, 98000 Monaco
Web Address: www.iho.int
Email: adso@iho.int

B. If there is a change to any point of contact or their contact information, the Participant making the change is to notify the other Participant in writing.

XI- DURATION, MODIFICATIONS, OR DISCONTINUATION

A. Cooperation under this MOU may commence upon signature by both Participants and is intended to remain in place for a period of ten years. The Participants intend to review the provisions of this MOU at least one year prior to the MOU's expiration date, to decide whether to extend the MOU, as written or with adjustments.

B. A Participant may discontinue its participation in this MOU at any time, in which case it intends to provide six (6) months' advance written notice to the other Participant. The MOU may be modified at any time through mutual written decisions of the Participants.

XII- OTHER PROVISIONS

A. If the Participants have differing views on how to interpret this MOU, they intend to present their differences to each other in writing, discuss them, and make best efforts to amicably resolve them.

B. The Participants intend that English will be the working language for all cooperative activities undertaken by them under this MOU.



XIII- SIGNATURES

This MOU becomes operational upon the last affixed Participant signature below.

Each signatory warrants and affirms that they have the authority to enter into this MOU on behalf of their respective Participant.

For NOAA:



Dr. Richard W. Spinrad
Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator
Date:

For IHO:



Dr. Mathias Jonas
Secretary-General of the International Hydrographic Organization
Date:

