



WORLD HYDROGRAPHY DAY - 21 JUNE 2014

Hydrography - much more than just nautical charts

On 21st June each year the International Hydrographic Organization celebrates World Hydrography Day. World Hydrography Day is an opportunity to increase public awareness of the vital role that hydrography plays in everyone's life.

The theme for this year's World Hydrography Day, which is also the 93rd anniversary of the establishment of the IHO, is:

"Hydrography - much more than just nautical charts".

Hydrography

Every human activity conducted in, on or under the sea depends on knowing the depth and the nature of the seafloor, and the identification of any hazards that might exist together with an understanding of the tides and the currents. Obtaining and disseminating this hydrographic knowledge is the role of the world's hydrographic surveyors, also known as hydrographers. Their work is the most fundamental of all the enablers that allow the safe and efficient use of the seas, oceans, coastal areas, lakes and rivers.

The most widely-known use of hydrographic data is to make navigational (nautical) charts. Nautical charts enable mariners to navigate their ships and boats avoiding all known dangers along their intended routes. However, hydrographic data has many, many other uses, too.

Mankind's increasing dependence on hydrography

The rapid growth and development of the so-called *blue economy* actually makes hydrography more important than ever before. The seas and oceans are major contributors to the world economy. Over 90% of the world's trade travels by sea. In addition, the seas and oceans, including the seabed and the sub-seabed, represent a vast resource for food, mineral resources, energy, water, bio-medicines, and infrastructure. But they are hard to exploit safely, cost effectively and sustainably without knowing the depth of the water, the shape of the seafloor and the movement of the water.

The *blue economy* is much more than the traditional core activities of fishing, maritime trade and passenger ships. The *blue economy* also includes, but is not limited to:

- Aquaculture
- Biomedicine
- Boats and Shipbuilding
- Cables and pipelines
- Coastal Zone management
- Defence and Security
- Desalination and water treatment
- Marine recreation
- Ocean energy and minerals
- Ocean science and observation
- Port operations
- Robotics and submarines
- Shoreline development
- Telecommunications
- Tourism
- Very large floating platforms
- Weather and climate science

The benefits of hydrography

- Hydrography contributes directly to the efficiency of maritime transport by allowing voyages to be shorter if new routes are surveyed, and allows the optimum loading of ships if the least depth is known for critical areas. Reliable hydrographic information also impacts on the development of the cruise ship industry and that of recreational boating.
- Hydrography allows fishermen not only to navigate safely but also to avoid the loss of fishing gear on uncharted obstructions, to identify fishing areas and to avoid areas where fishing is limited or prohibited.
- Hydrography is a critical element in the characterization and delineation of fish habitats, as well as of the proper location of aquaculture areas.
- Hydrography supports maritime defence and security by allowing freedom of manoeuvre for search and rescue operations and naval operations - surface, submarine, anti-submarine, amphibious, mine-hunting and naval aviation.
- Hydrography provides the primary data essential for coastal zone management and development, including the construction or development of ports and other coastal infrastructures, dredging operations for the maintenance of access to ports, and the monitoring and controlling of coastal erosion.
- Hydrography is a direct contributor to the identification and discovery of mineral resources at sea. It is also critical to the selection of routes for submarine pipelines and cables, to the selection of sites for wind-farms and for offshore oil and gas platforms and for any underwater construction and development.
- Hydrography supports the delimitation of the maritime boundaries defined in the United Nations Convention on the Law of the Sea (UNCLOS).
- Hydrography is the major controlling parameter in ocean dynamics and underpins the models for predicting the natural phenomena such as tides, ocean currents and tsunami inundation as well as for meteo-oceanographic forecasts. Hydrography underpins the forecasting of the likely spread and track of oil slicks as part of oil spill response plans.

The role of the world's hydrographers

Hydrographers work in both the public and private sector. Government hydrographers are usually involved in surveying to improve nautical charts and for defence and security purposes as well as to provide qualified base data for maritime geospatial information systems. Commercial hydrographers are more often involved in specialized tasks including high resolution surveys for undersea pipelines and cables, the installation of offshore structures including wind farms, oil and gas platforms and surveys for new ports and harbours. They also do surveys under contract to governments to improve nautical charts.

Hydrographic Sensors Hydrographers use echo sounders, high definition sonars in boats and ships, lasers from aircraft and sometimes satellite images to obtain precise and accurate measurements of depth. They also need to be experts in precise positioning and in the measurement of currents and tides.

Nautical Charts Nautical cartographers take information from hydrographic surveys and from other sources and turn it into nautical charts and other marine geospatial products and services. Traditionally, the charts are printed on paper but increasingly they are now made in the form of digital electronic charts, as well. The nautical charts follow international standards set by the IHO to ensure that they can be used and understood by all mariners - anywhere in the world.

Marine Spatial Data Infrastructures To make the best use of hydrographic information, it is important to make it easily available through interconnected digital geo-referenced databases accessible via web-based interfaces.

The role of the IHO

The principal role of the IHO, as the inter-governmental organization for hydrography, nautical charting and associated matters, is to ensure that all the world's seas, oceans and navigable waters are adequately surveyed and charted. 82 countries are Member States of the IHO. The role of the IHO includes the maintenance of international standards that ensure mariners and other users of hydrographic data can use and understand the data easily.

Standards IHO standards cover a wide range, from defining the training and experience required by hydrographers and nautical cartographers, through the minimum standards for the collection of data and its depiction on charts, to the rapid delivery of Maritime Safety Information to ships at sea. References related to non-navigational applications of hydrographic information, such as Guidance on establishing Maritime Spatial Data Infrastructures and the Manual on Technical Aspects of the UN Convention on the Law of the Sea are also published and maintained by the IHO.

As part of its aims to make hydrographic data as widely used as possible, the IHO has a number of data standards. The latest is known as S-100 - *The IHO Universal Hydrographic Data Model*. S-100 is based on and compatible with the ISO 19100 geographic data standards and enables hydrographic data to be easily merged and used with other non-hydrographic geographic data - especially in geospatial information systems (GIS). As well as the IHO, a growing number of international organizations with diverse maritime interests are taking up S-100 as their data exchange standard, such as the International Association of Marine Aids to Navigation and Lighthouse Authorities, and the Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) of the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

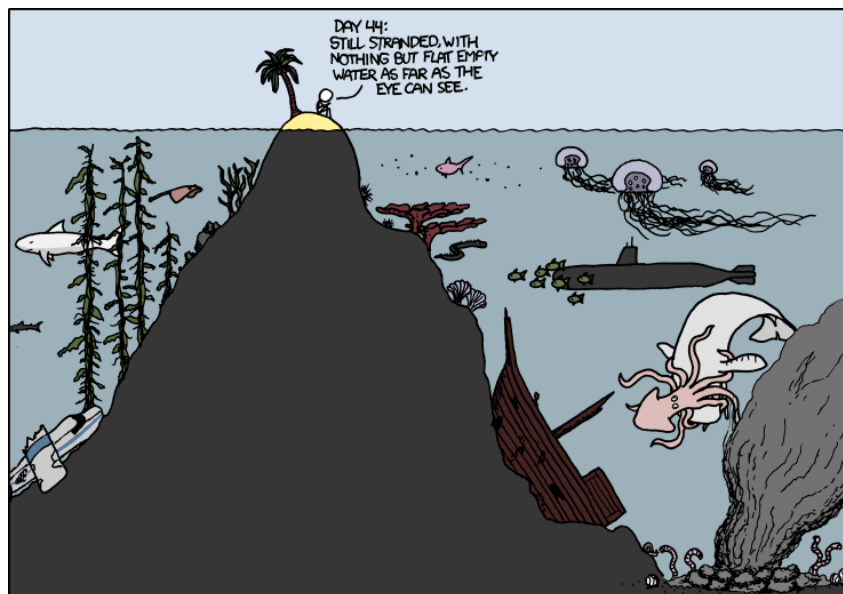
The IHO also provides other references related to hydrography such as the Hydrographic Dictionary in three languages and a Manual on Hydrography.

Establishing the standards and getting them recognised and used requires extensive international cooperation and the involvement of many other organizations.

Inter-Regional Cooperation Another role of the IHO is to help coordinate and enhance cooperation in hydrographic activities between countries on a regional basis, and between regions in order to provide consistent and reliable services to mariners and decision-makers. This is done primarily through the IHO member countries creating 16 regionally-based Hydrographic Commissions that coordinate charting services across the world.

Capacity Building The IHO has an active capacity building programme that assists countries to develop and improve their hydrographic capabilities. Capacity building projects are often done in collaboration with other international organizations and with growing industry participation.

Hydrography really is much more than just nautical charts.



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**IHO Member States
(January 2014)**

Algeria	Guatemala	Portugal
Argentina	Iceland	Qatar
Australia	India	Republic of Korea
Bahrain	Indonesia	Romania
Bangladesh	Iran (Islamic Republic of)	Russian Federation
Belgium	Ireland	Saudi Arabia
Brazil	Italy	Serbia
Cameroon	Jamaica	Singapore
Canada	Japan	Slovenia
Chile	Kuwait	South Africa
China	Latvia	Spain
Colombia	Malaysia	Sri Lanka
Croatia	Mauritius	Suriname
Cuba	Mexico	Sweden
Cyprus	Monaco	Syrian Arab Republic
Democratic People ' s Republic of Korea	Montenegro	Thailand
Democratic Republic of the Congo	Morocco	Tonga
Denmark	Mozambique	Trinidad and Tobago
Dominican Republic	Myanmar	Tunisia
Ecuador	Netherlands	Turkey
Egypt	New Zealand	Ukraine
Estonia	Nigeria	United Arab Emirates
Fiji	Norway	United Kingdom of Great Britain and Northern Ireland
Finland	Oman	United States of America
France	Pakistan	Uruguay
Germany	Papua New Guinea	Venezuela (Bolivarian Republic of)
Greece	Peru	
	Philippines	
	Poland	

Membership pending: Brunei Darussalam, Bulgaria, Georgia, Haiti, Mauritania, Sierra Leone, Viet Nam