



International Hydrographic Organization (IHO)

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Director, IHO



OUTLINE

- **Introduction**
- **Hydrography** – What is it?; Uses & Benefits; Who is responsible for it?
- **The IHO and Current Activities**
- **IHO Capacity Building Program**
- **Conclusion**



Hydrography - (Definition)

Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities including economic development, security and defence, scientific research, and environmental protection.



The International Hydrographic Organization

The Need for Hydrography



what is hydrography ?

how is it done ?

what do we do in Monaco ?



Hydrography is

- measuring and describing the physical features of oceans, seas, coastal areas, lakes and rivers

for :

- safety of navigation*
- protecting the marine environment*
- other marine activities including*
 - economic development*
 - security and defence*
 - scientific research*



Hydrography Involves

- The collection of hydrographic data
- The production of nautical charts and publications
- The dissemination of Maritime Safety Information (MSI)



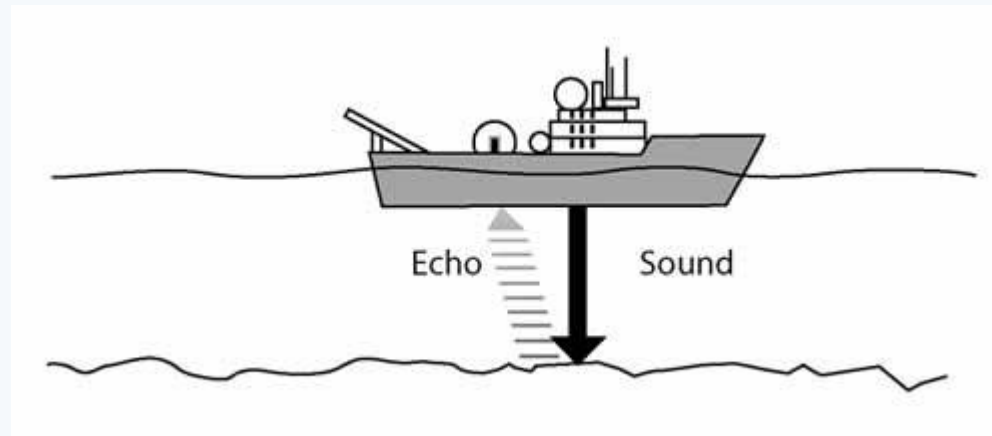


- ***survey ships***
- ***survey boats***

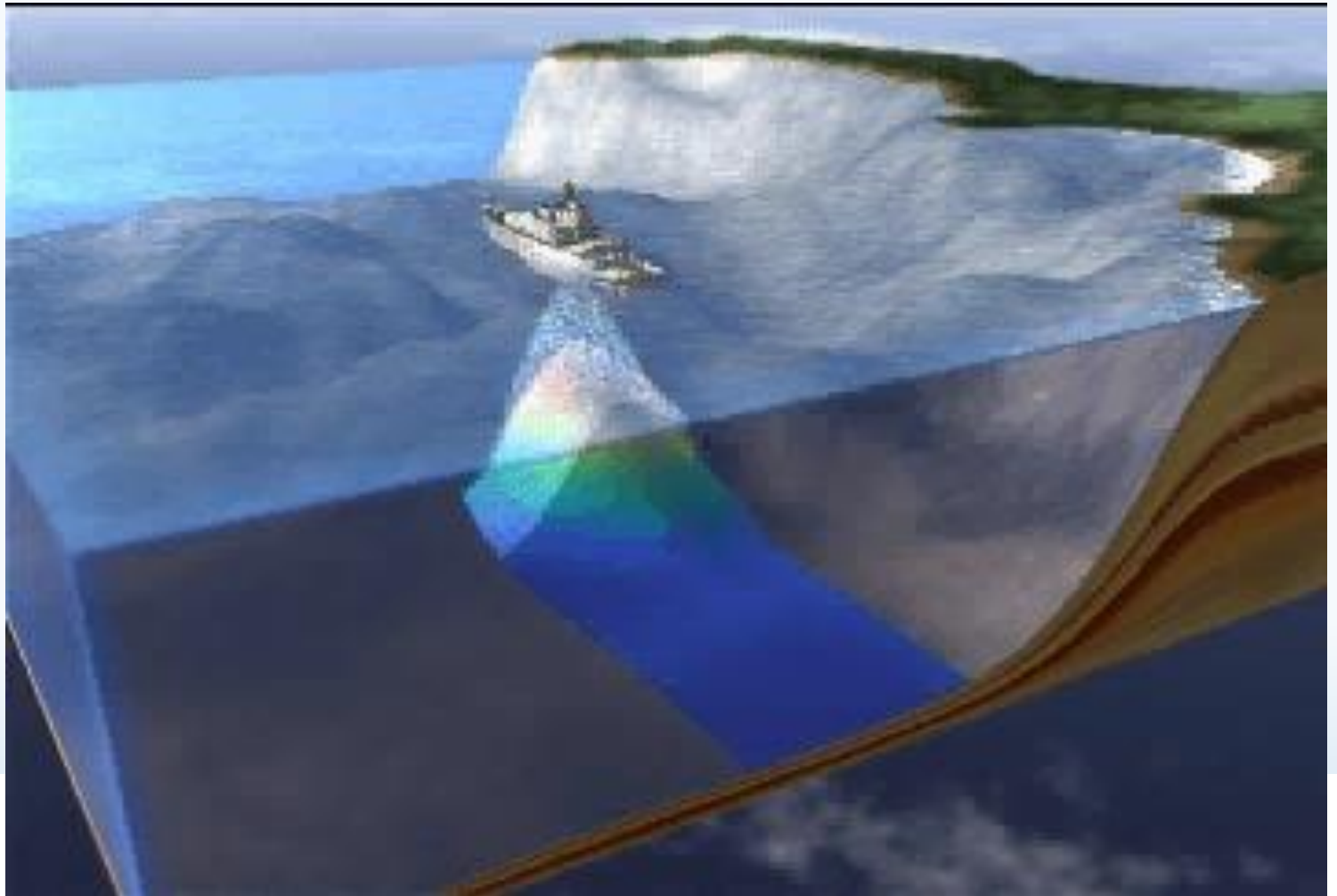


Hydrographic surveying ...

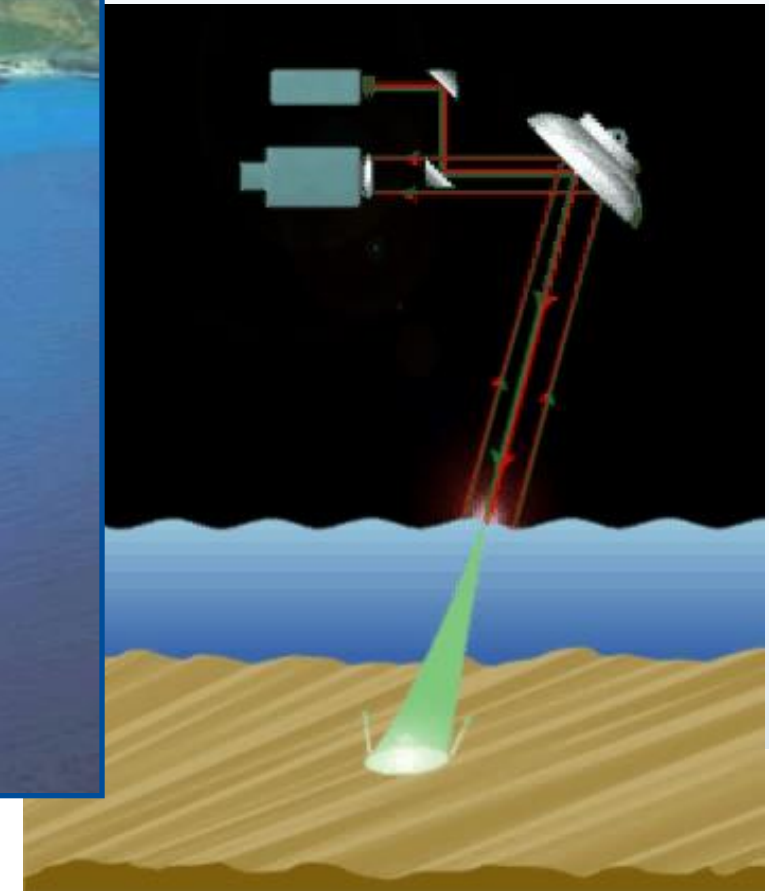
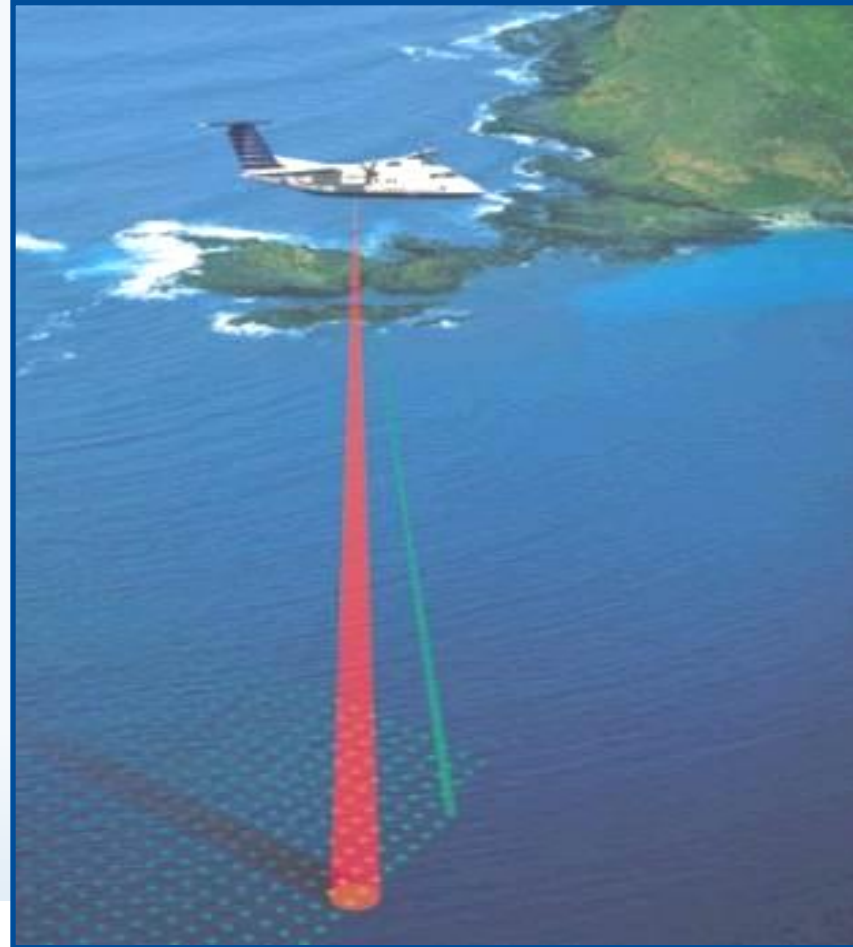
- ***echo sounder***



-
- ***multi-beam echo sounder***



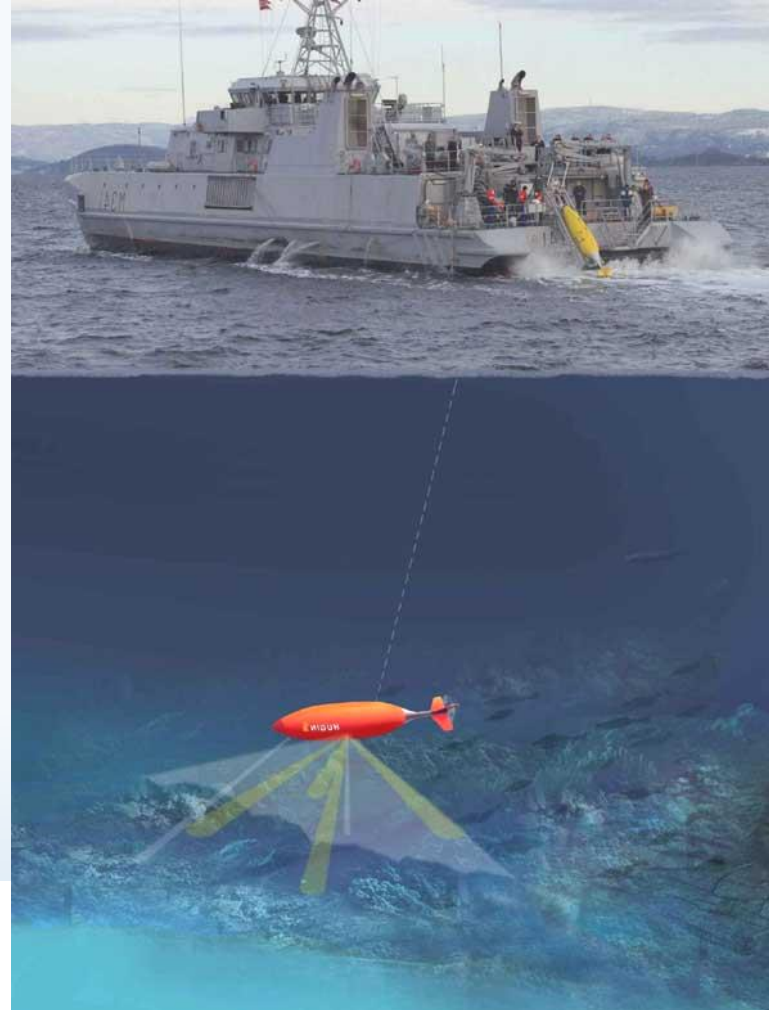
- ***LiDAR – Light Detection And Ranging***

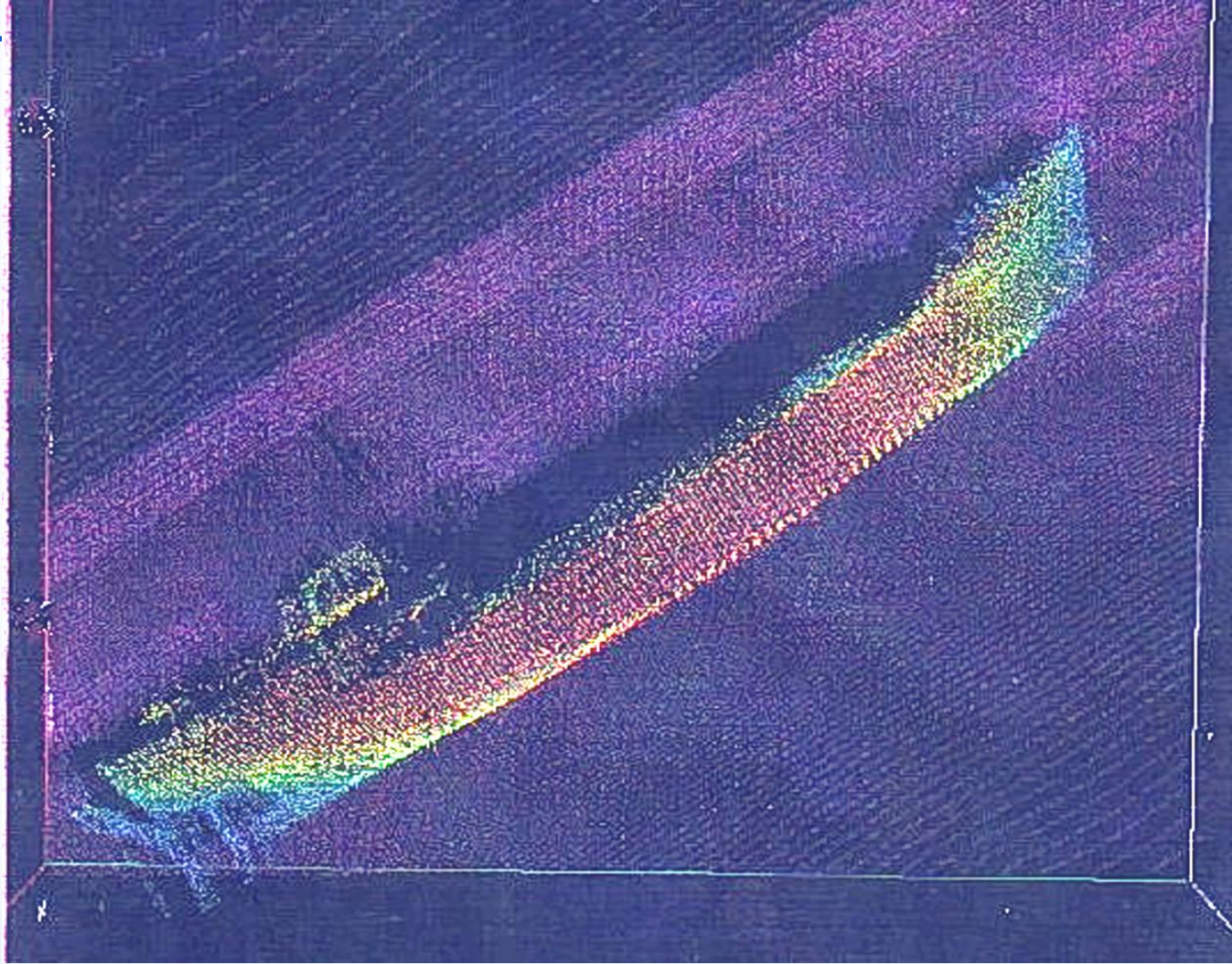


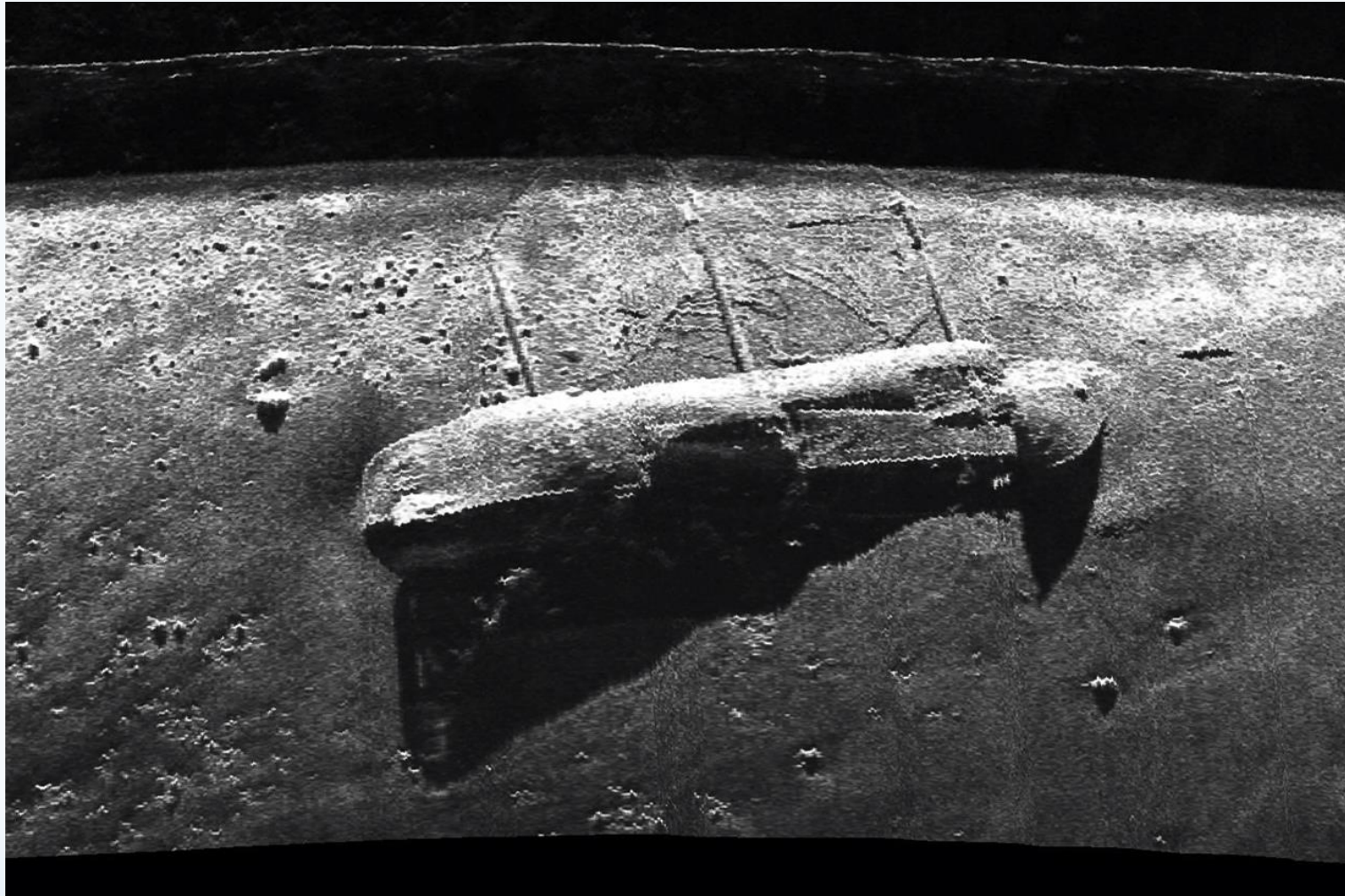
Seafloor searching



-
- ***sonar - SOund Navigation And Ranging***



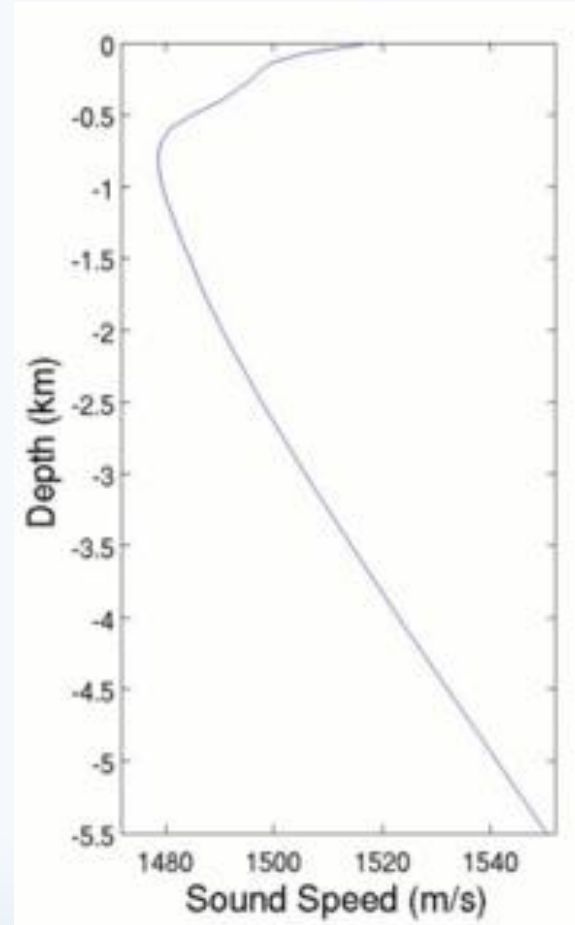




Calibration

sound velocity

- temperature***
- salinity***
- depth***

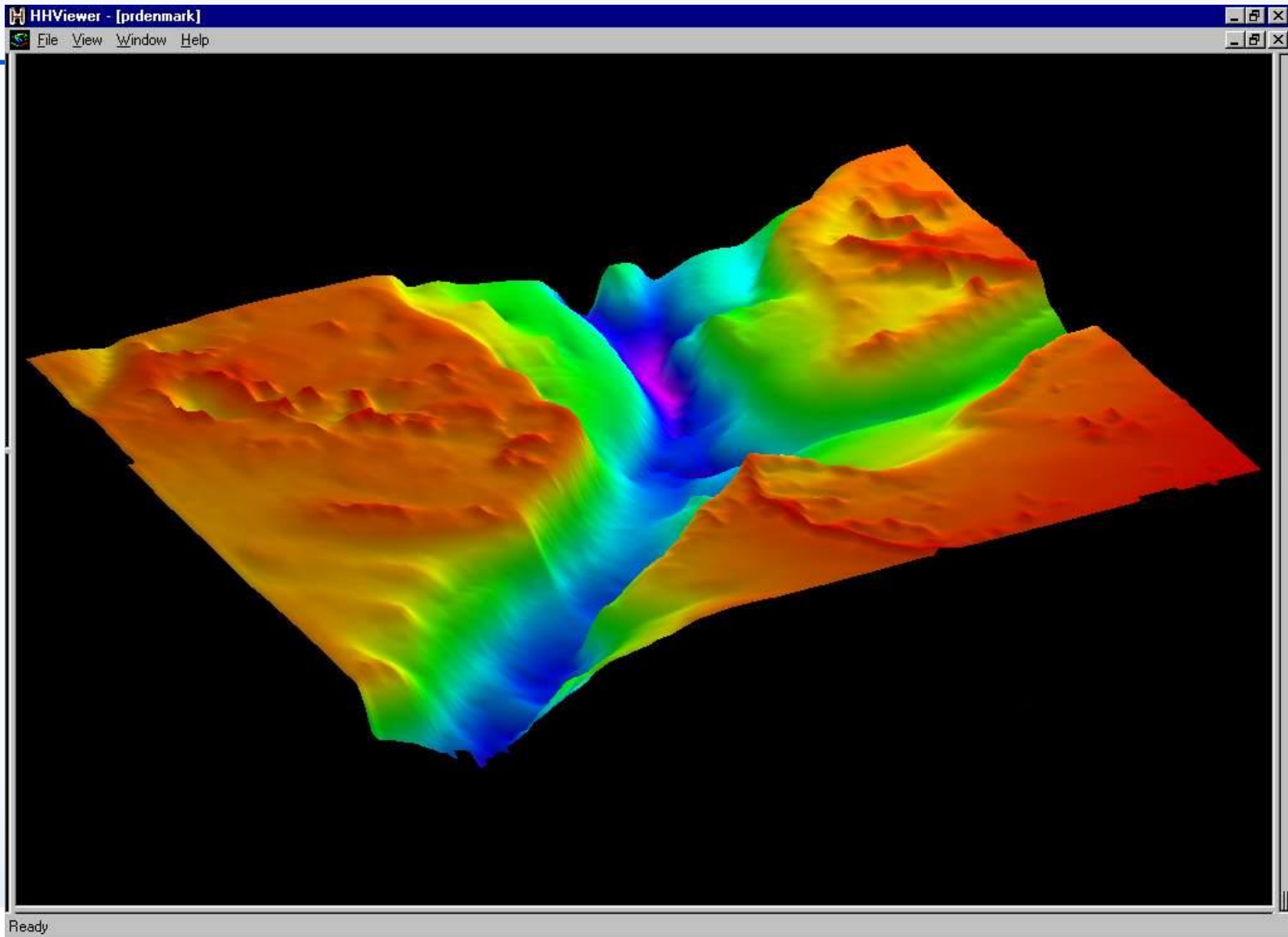


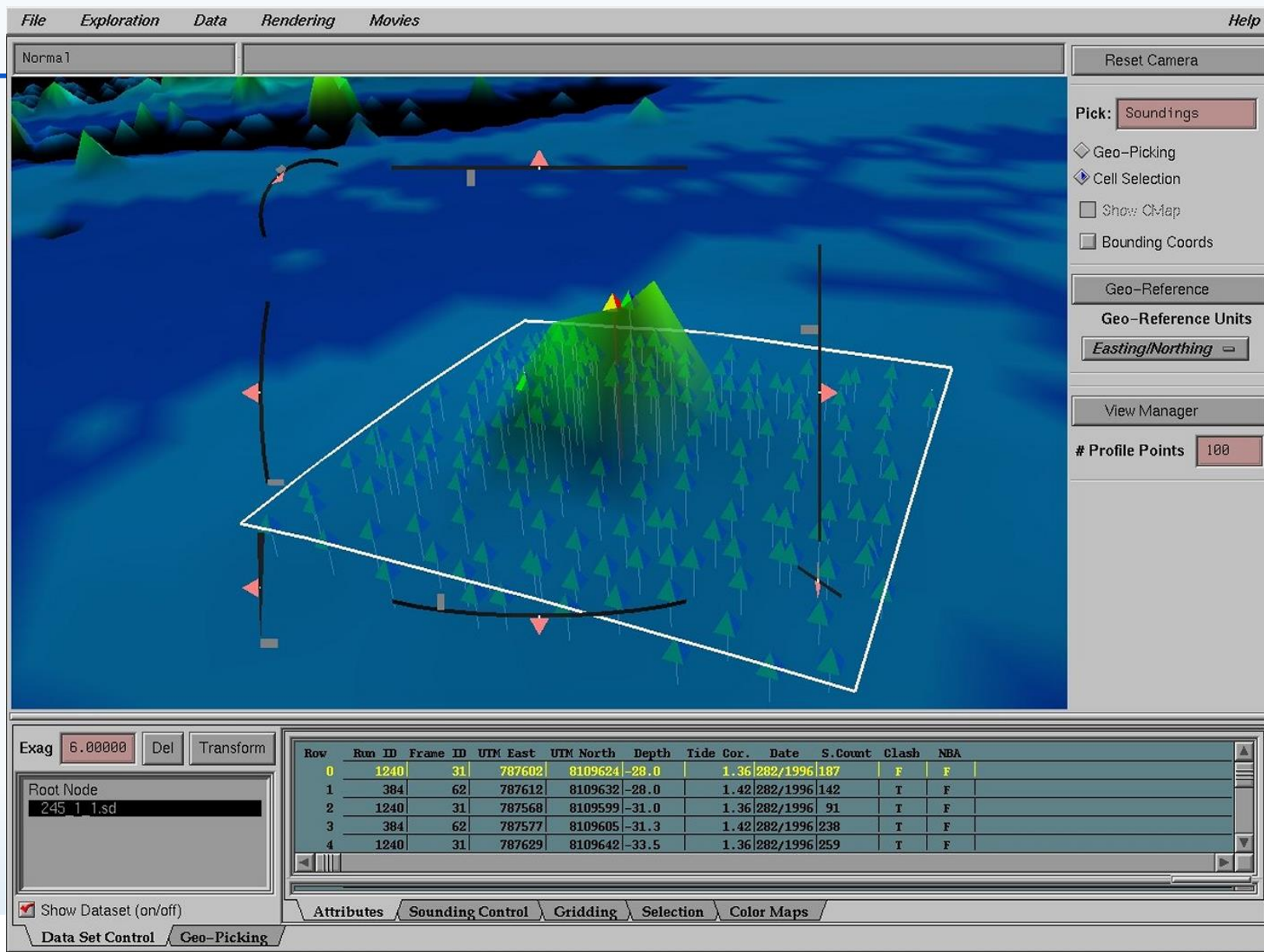
Tides



Processing the data ...







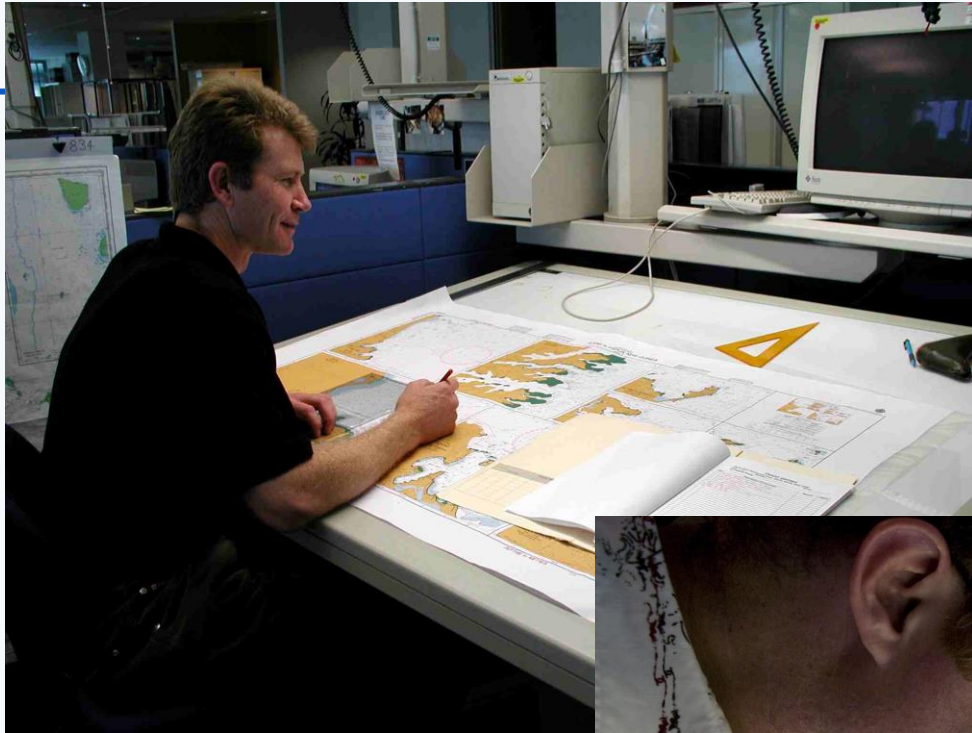
Making a chart





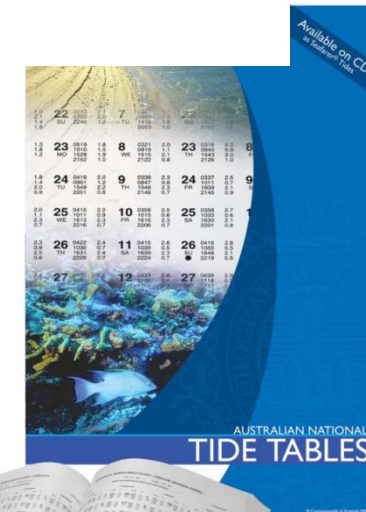
- ***paper charts***
- ***electronic charts***











- ***tide tables***
- ***sailing directions***
- ***lists of lights and radio signals***



Hydrography provides the
fundamental backdrop



for almost everything that happens in, on
or under the sea



... without hydrography -

- no ship sails



... without hydrography -

- no port is built



... without hydrography -

- no offshore infrastructure is developed



... without hydrography -

- no environmental plan is implemented



... without hydrography -

- no shore is defended, no island protected



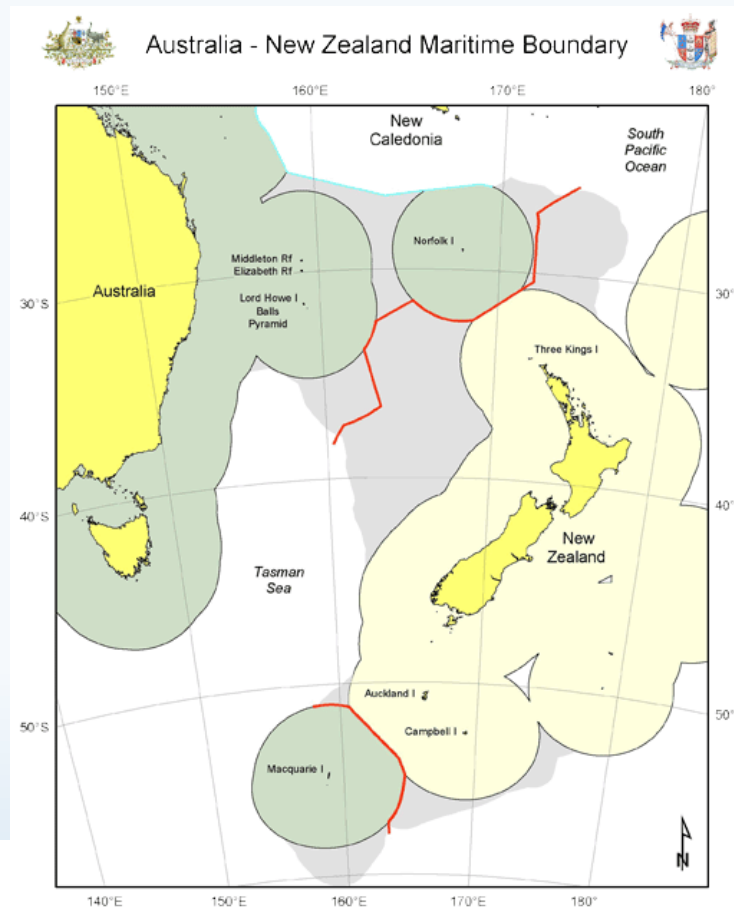
... without hydrography -

- no rescue is attempted



... without hydrography -

- no maritime boundary is delimited



National Uses and Benefits



Hydrography supports :

- Safety of navigation
- Protection of marine environment
- National infrastructure development
- Coastal zone management
- Marine exploration
- Resource exploitation – minerals, fishing
- Maritime boundary delimitation (UNCLOS, others)
- Maritime defence and security
- Disaster management



... Safety of Navigation



... Transport

98% goods by volume



... Tourism

- a growing market
- larger ships
- new destinations



... Natural resources

- fishing
- seabed



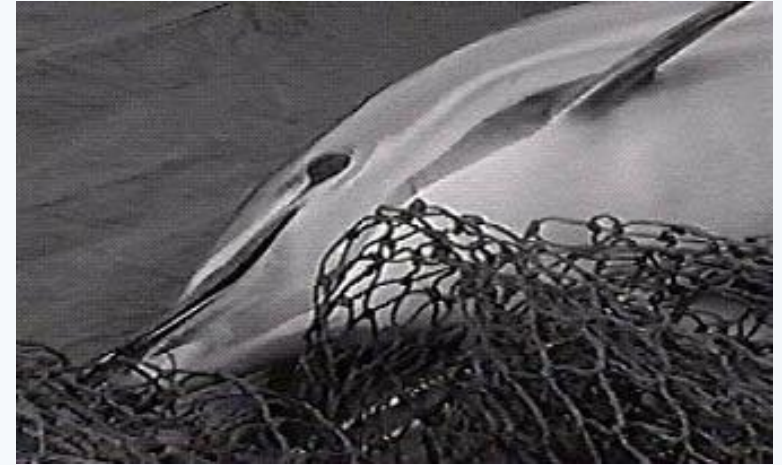
... Security and defence

- Maritime patrol and military operations
- Fishery protection
- Surveillance
- Disaster Relief
- Search and Rescue (SAR)



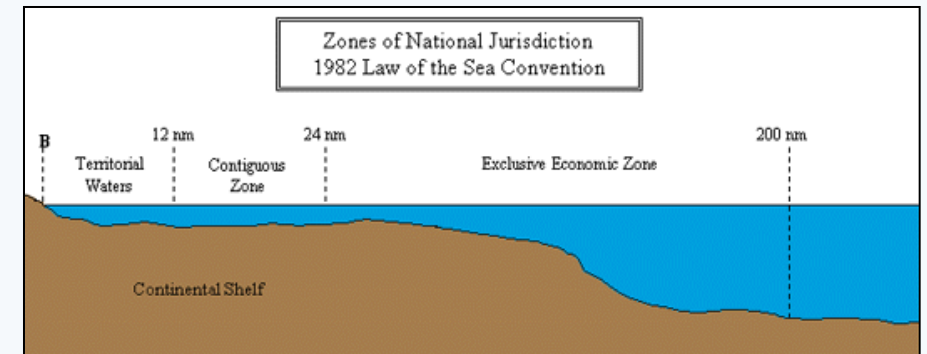
... *Protection of the marine environment*

- dumping
- oil spill
- industrial pollution



... Coastal zone management

- resource management
- industrial pollution
- port development
- areas of national jurisdiction



... Natural disaster management

- inundation modelling
- sea level rise
- tsunami
- relief planning



Inadequate hydrography means:

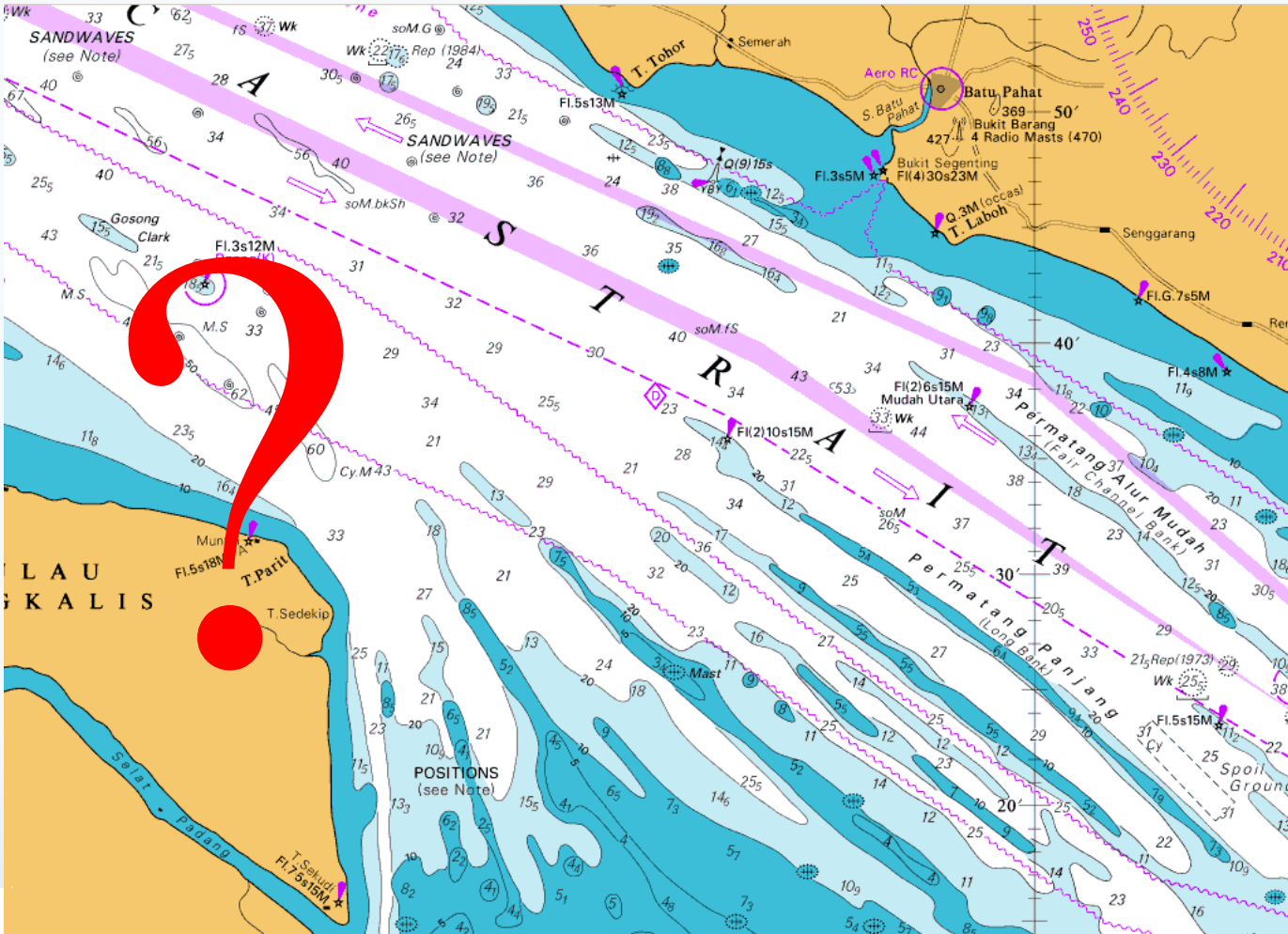
- risk of marine accidents increases
 - environmental pollution
 - loss of life
- shipping lacks confidence in ports and routes
- international trade is limited
- missed economic opportunities
- environmental impacts
- potential liability and litigation



-
- **What is the cost of:**
 - under-developed ports?
 - using complex and hazardous shipping routes?
 - lack of fundamental planning data for the coast and seas?
 - imprecise disaster planning models?
 - limited sea room for patrol vessels?



Who is responsible for Hydrography?



– Hydrographic Services –

International Obligations



Mariners' Obligations

Convention on the Safety of Life at Sea (SOLAS) Chapter V

SOLAS V/19 – Carriage requirements for Nav equipment

- ...shall carry nautical charts and publications ...
- ...issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution
- ... [adhering to] IHO specifications and guidelines

SOLAS V/27 – Nautical charts and nautical publications

- ...adequate and up to date



SOLAS Chapter 5 regulations 9 and 4

This means each State must ensure that :

- hydrographic surveys are carried out
- appropriate nautical charts and other nautical publications are available and up to date
- Maritime Safety Information (MSI) is promulgated



Meeting Governmental Obligations

SOLAS V/9 and V/4 can be satisfied:

- directly via government
- through bi-lateral cooperation with other States
- using commercial support providers
 - in whole or in part

Overall responsibility and obligation to ensure that a national hydrographic service is provided remains with the Government



Role of the IHO



International Hydrographic Organization
Organisation Hydrographique Internationale

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)

- intergovernmental consultative and technical organization
- established in 1921
- to support safety of navigation and the protection of the marine environment



History of the IHO

- 1908 International Congress of Navigation, St Petersburg
- 1912 International Maritime Conference, St Petersburg
- 1919 International Hydrographic Conference, London
- 1921 IHB established by 24 nations in Monaco
- 1970 International Convention: established
- 2005 Protocol of Amendments to the IHO Convention
- 2016 Revised IHO Convention entered into force on 8 November



IHO Programmes

- raising awareness on importance of hydrography
- setting international standards and guidelines
- coordination of regional and global nautical charting services
- hydrographic capacity building



The IHO Secretariat in Monaco



International Hydrographic
Organisation Hydrographique

The IHO MANAGEMENT TEAM



International Hydrographic Organization
Organisation Hydrographique Internationale

The IHO Secretariat

20 Personnel

- 1 Secretary General and 2 Directors
- 5 Professional Assistants
- 2 + 1 Translators
- 9 Supporting Staff
- + 3 Seconded Staff (Japan, Peru, ROK)

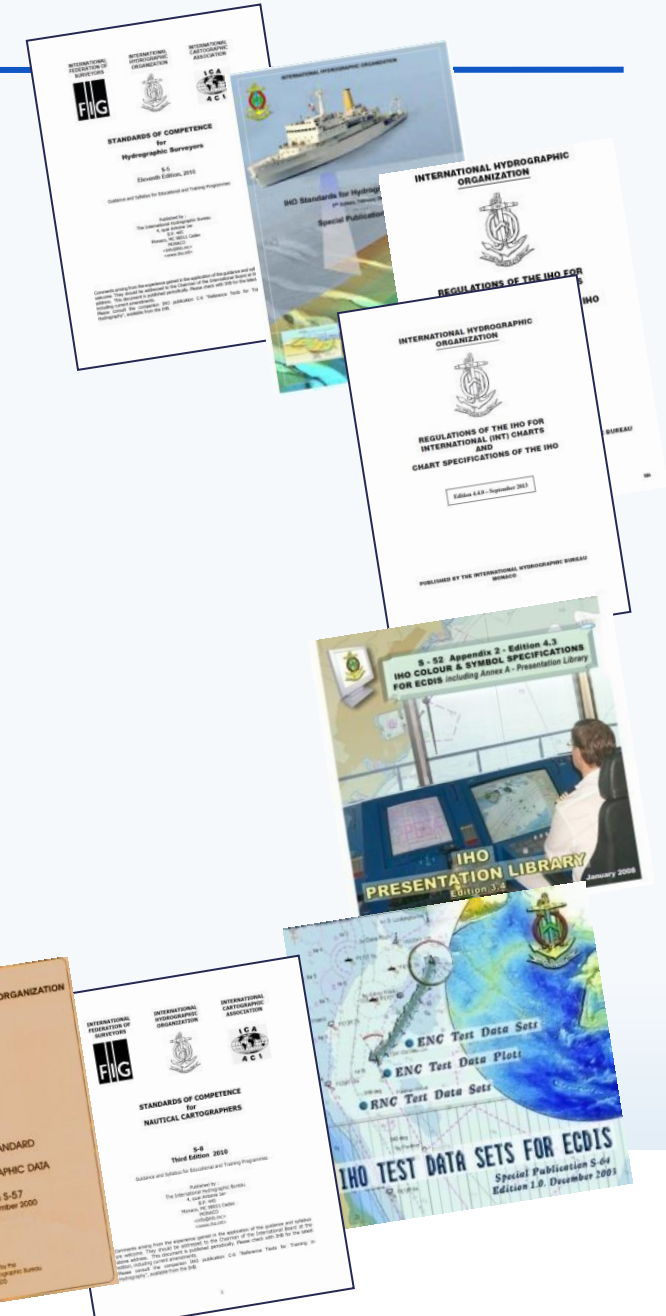


Activities of the IHO Secretariat

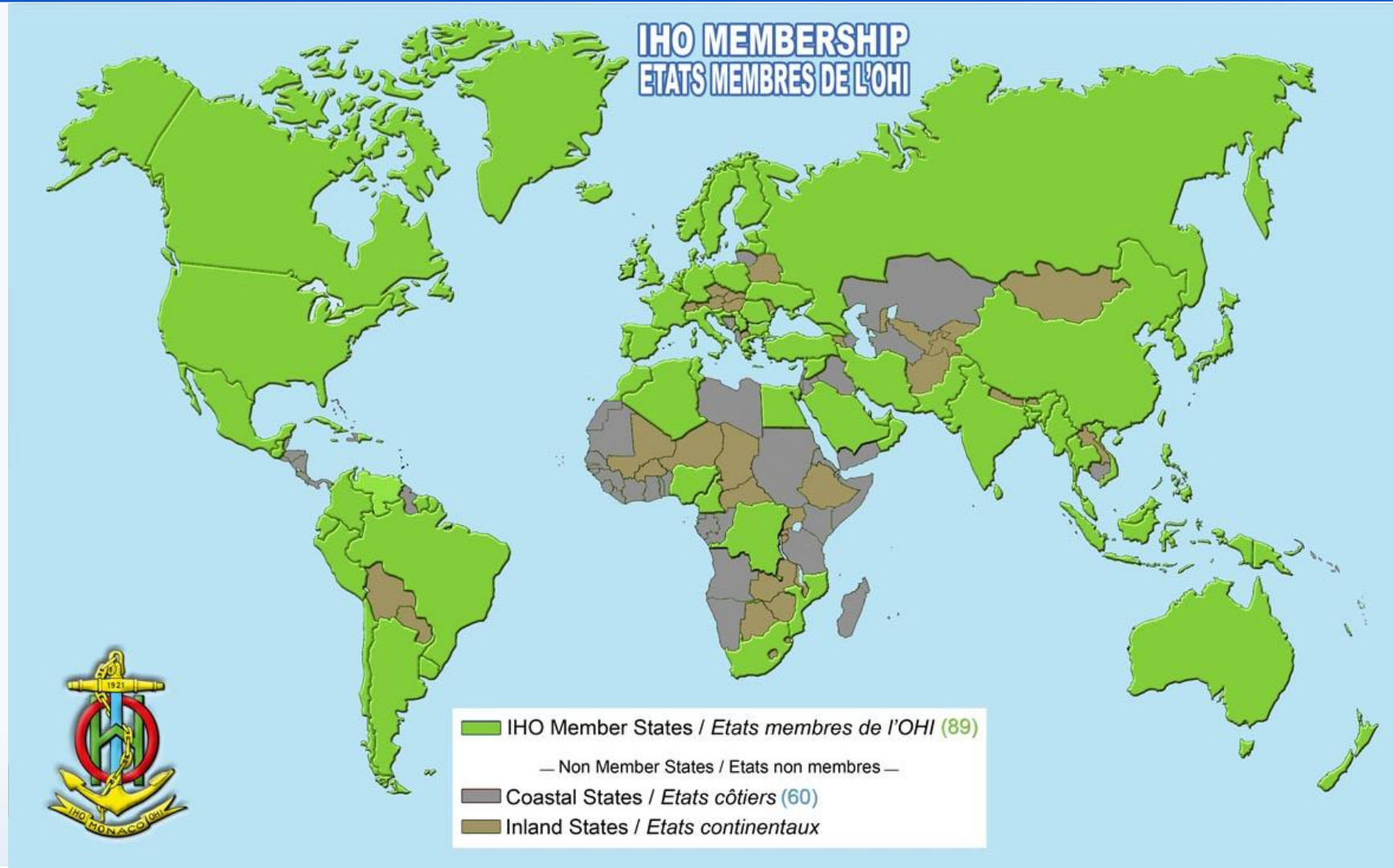
- Secretariat role
- 15 technical standards
- 10 associated guidelines
- 18 other publications
- Direct support to 40 bodies (Committees, WGs and RHCs)
- Conference organisation
- External representation
- bi-lingual website



- 89 Member States
- Recognized competent authority at UN General Assembly and IMO
- Active liaison with:
UN-IMO, UN-GGIM, UN-DOALOS,
UNESCO-IOC, UN-WMO, EC, GEO, IALA,
ISO, FIG, ICA, CIRM, ICS,

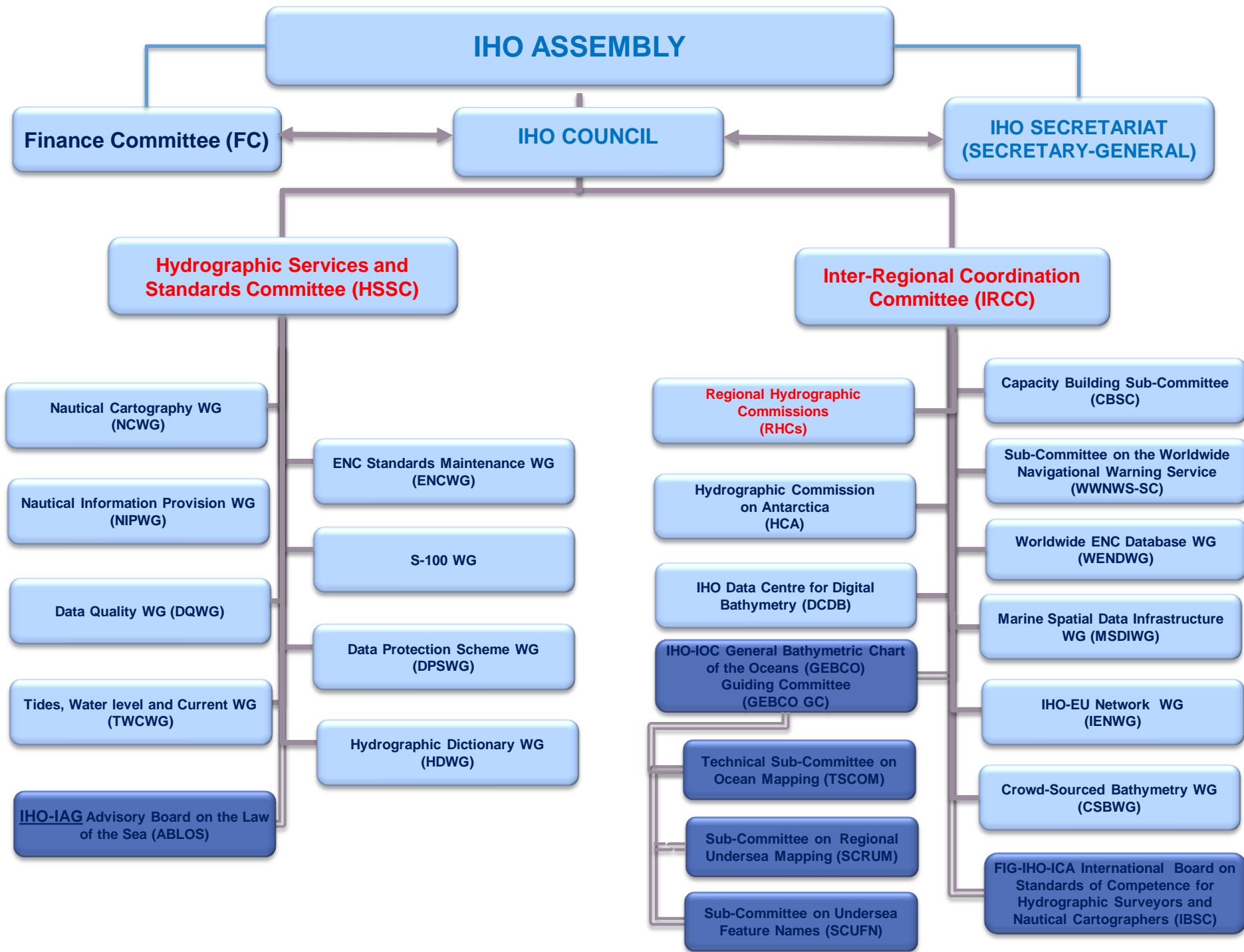


IHO Member States - 2018



The Structure of the IHO



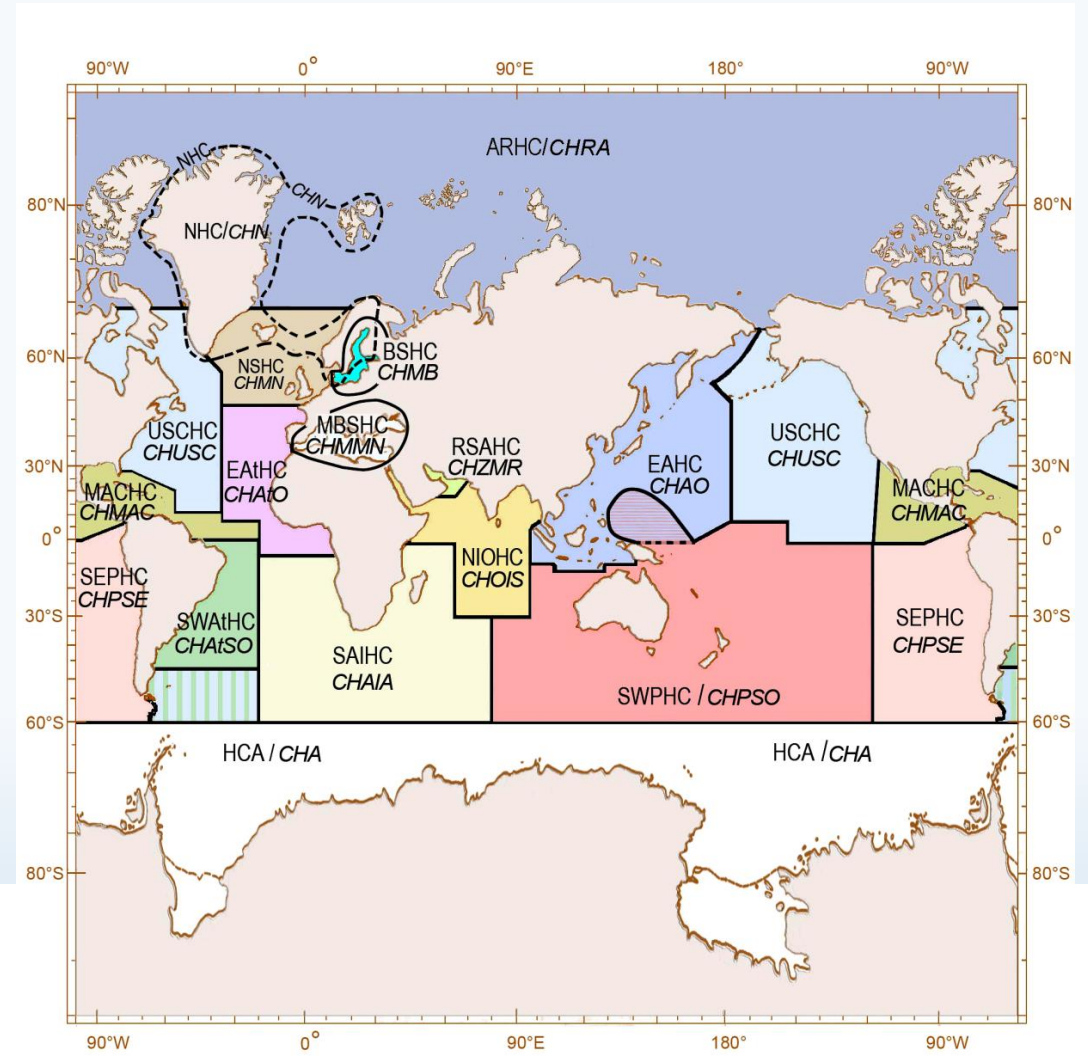


Regional Hydrographic Commission

15 RHCs + Hydrographic Commission on Antarctica

Regional coordination of

- charting schemes
- capacity building and assistance
- bilateral cooperation
- technical cooperation
- training



-
- 3-yearly IHO Assembly
 - Annual Council meetings
 - Annual Committee meetings
 - Annual or bi-annual WG meetings
+ work by correspondence
 - Voting at Assembly and by correspondence



Participation in IHO Activities

- Permanent Secretariat (20 full-time) + 3 seconded officers from MS
- IHO Member States (via national Hydrographer)
- Sister IGO's
- Accredited Non-Governmental Organizations (recognised international observer organizations)
- Expert Contributors (industry and academia)
- by invitation (to WGs only)

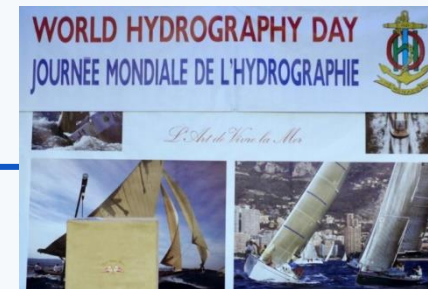


... some current IHO priorities

- **Outreach and raising awareness**
- **Increasing IHO membership**
- **MSDI and provision of geo-data**
- **S-100 implementation and development**
- **Supporting implementation of e-Navigation**
- **Ocean mapping activities**
- **Crowd-Sourced Bathymetry**
- **Satellite Derived Bathymetry**
- **Capacity Building**



World Hydrography Day (21 June)



- Hydrography-underpinning Blue Economy – 2013
- Hydrography- Much More Than Just Nautical Charts - 2014
- Our seas and waterways – yet to be fully charted and explored - 2015
- Hydrography – the key to well-managed seas and waterways - 2016
- Mapping our seas and oceans - more important than ever – 2017
- *Bathymetry-The Foundation for Sustainable Seas, Oceans and Waterways – 2018*
- "Hydrographic information driving marine knowledge - 2019"



IHO Capacity Building Program



Capacity Building

The IHO has defined Capacity Building as:



The process by which the Organization assesses the status of current arrangements and assists States to achieve sustainable development and improvement in their ability to meet hydrographic, cartographic and maritime safety obligations with particular reference to UNCLOS, SOLAS and other international instruments.



Capacity Building Sub Committee

Objectives:

- continuously assess hydrographic surveying, nautical charting and nautical information status in nations and regions where hydrography is developing
- establish and maintain close relationships with national agencies and international organizations, to identify funding and technical assistance
- cooperate with Regional Hydrographic Commissions



Capacity Building Sub Committee

Chair: Mr. Thomas Dehling (Germany) since 2011

Vice-Chair: Mr Lamberto Lamberti (Italia) since 2017

Secretary: Mr Alberto Neves (IHO) since 2011

IHO Director responsible for CB: Rear Admiral (Ret) Mustafa Iptes



Capacity Building Strategy

- Awareness
Raise priority of Hydrography
- Assessment
Identify and prioritize problems
- Analysis
Identify Projects based on national/regional priorities
- Action
Implementation of Activities. Follow-up



Phases of Hydrographic Capacity Building

- **Preliminary**
Raise awareness
- **Phase One**
Collection and circulation of nautical information needed to maintain existing charts and publications
- **Phase Two**
Capacity to conduct hydrographic surveys, data gathering and processing
- **Phase Three**
Production of charts and publications



Delivering CB Programmes

- High level visits
- Technical visits
- Short courses
- Seminars, Workshops
- CAT A and CAT B courses
- Technical assistance
- Involvement in comprehensive projects



IHO Capacity Building Funds

Fund supports:

- Technical Assistance
 - Training and Education
 - Financial Assistance
 - Start-up Projects
-
- Proposals submitted via Regional Hydrographic Commission



Regional CB Coordinators

In all Regional Hydrographic Commissions (RHCs) where CB is required, the RHCs installed a CB Coordinator to

- assist the Chairman of the RHC;
- assure continuity;
- closely cooperate with the CBSC, preferably as a member.



Funding Agencies

- IHO CB Fund (small, no funding agency)
- Republic of Korea provision for CB
- Nippon Foundation (Japan)
- Bilateral support from Member States
- New Funds possibly available in the future
- Industry involvement to be extended



International Hydrographic Organization

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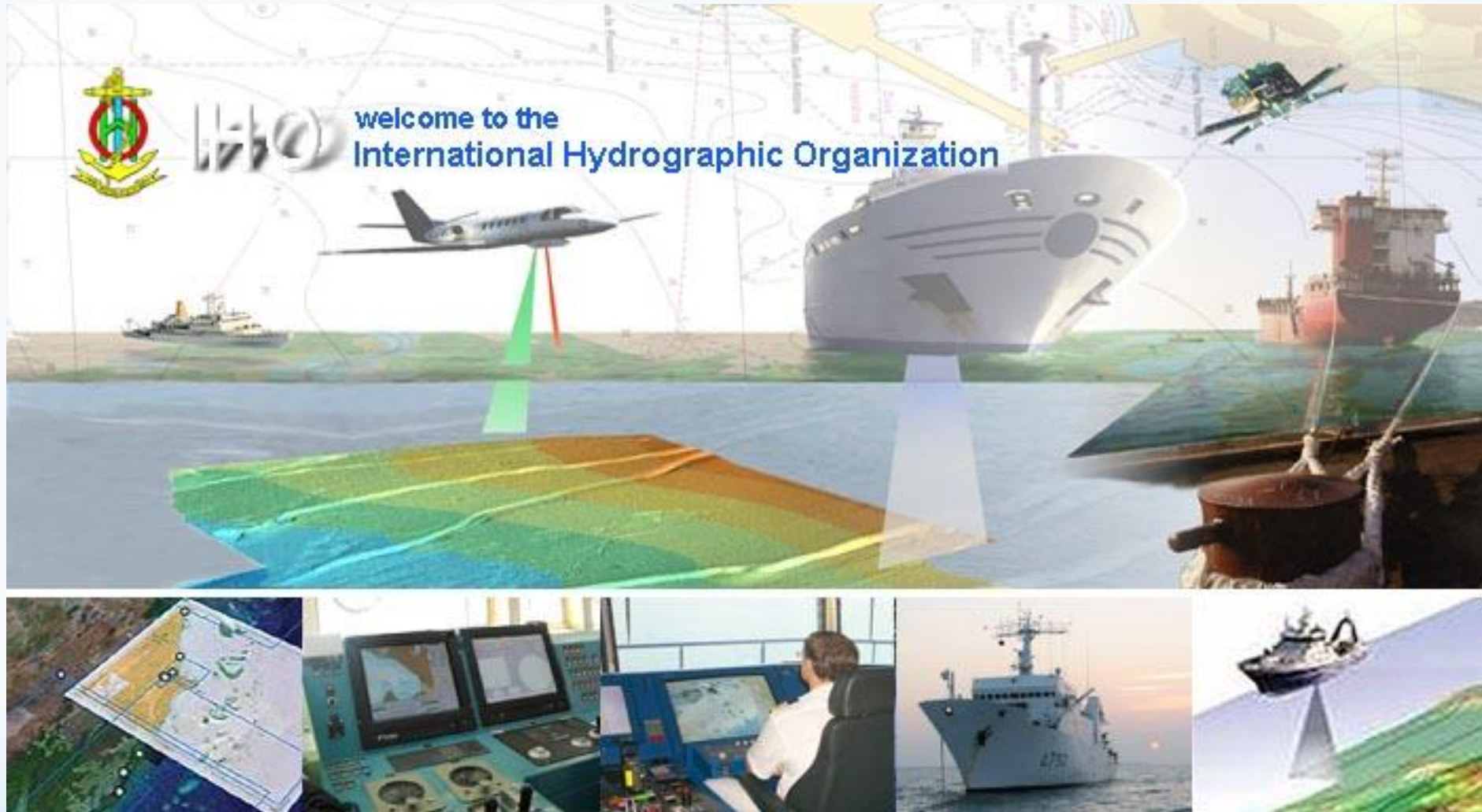
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Questions?



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