



FIG/IHO/ICA IBSC

International Standards of Competence

Maintaining Standards of Competence for Hydrographic Surveyors and Nautical Cartographers

IHO-NF Alumni Seminar
London, October 2023

Gordon Johnston and Adam Greenland
25th October 2023
London, United Kingdom

www.iho.int/ibsc

Who we are!

The FIG/IHO/ICA International Board

- The FIG/IHO/ICA International Board on the Standards of Competence of Hydrographic Surveyors and Nautical Cartographers or simply “**the Board**” or “**IBSC**”.
- It has members supported by **FIG** (the International Federation of Surveyors), **IHO** (the International Hydrographic Organisation) and **ICA** (the International Cartographic Association)
- The Board meets annually. It is governed by Terms of Reference & Rules of Procedure
- Its duties are to maintain Standards, review Programme submissions, visit & review Programmes



The Board 2018 - 2023

Now 12 Board members: 4 FIG, 4 IHO, 4 ICA
(+IHO Secretariat)



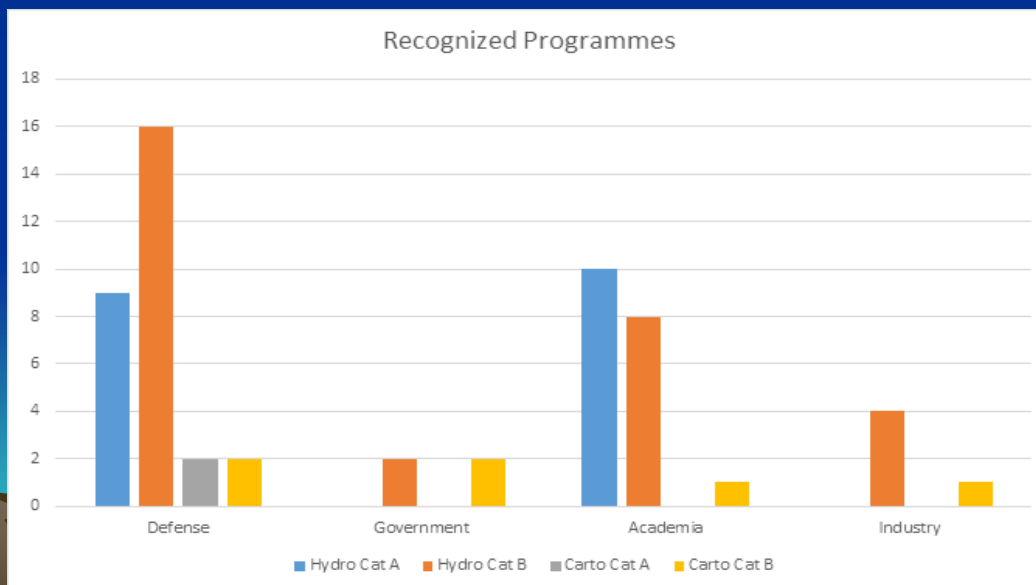
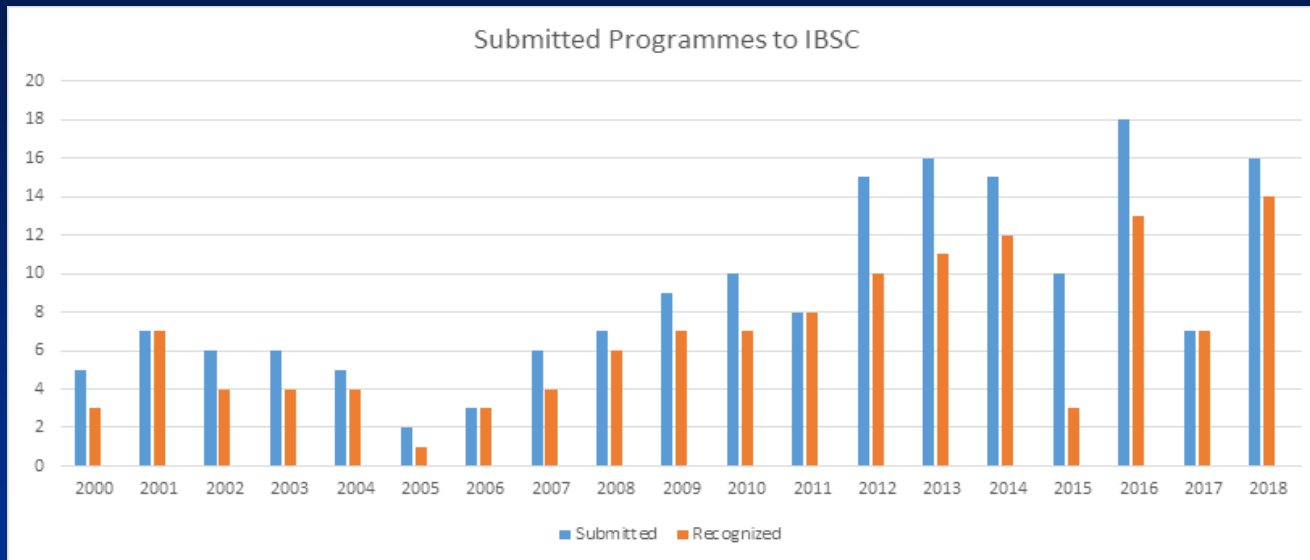
What we do

The FIG/IHO/ICA International Board

- Establish and maintain the minimum standards of competence described in S-5 and S-8 at two distinct levels.
- Maintain publications (S-5, S-8, S-6, S47).
- Review syllabi and provide advice on syllabi.
- Review procedures on submissions.
- Inform the sponsoring organisations of its work.
- Now reviews Competency Assessment Schemes.

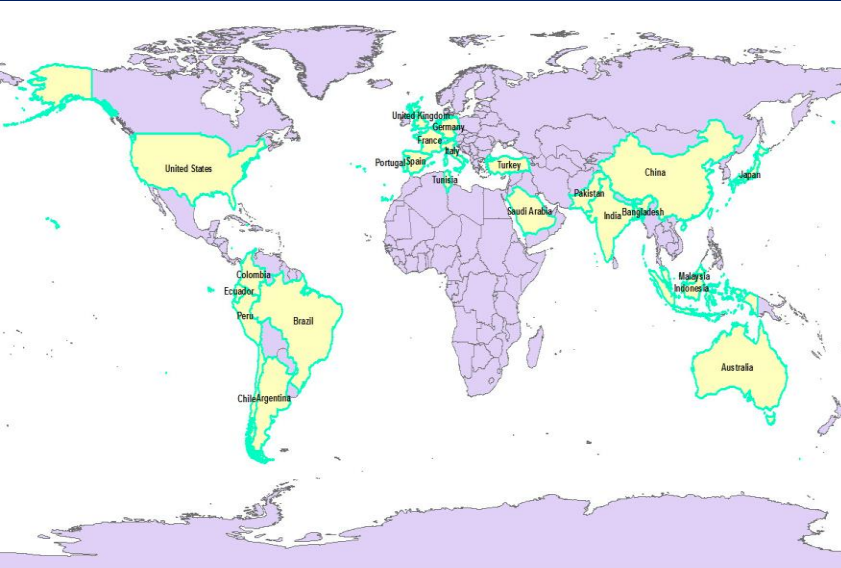


Recognised Programmes

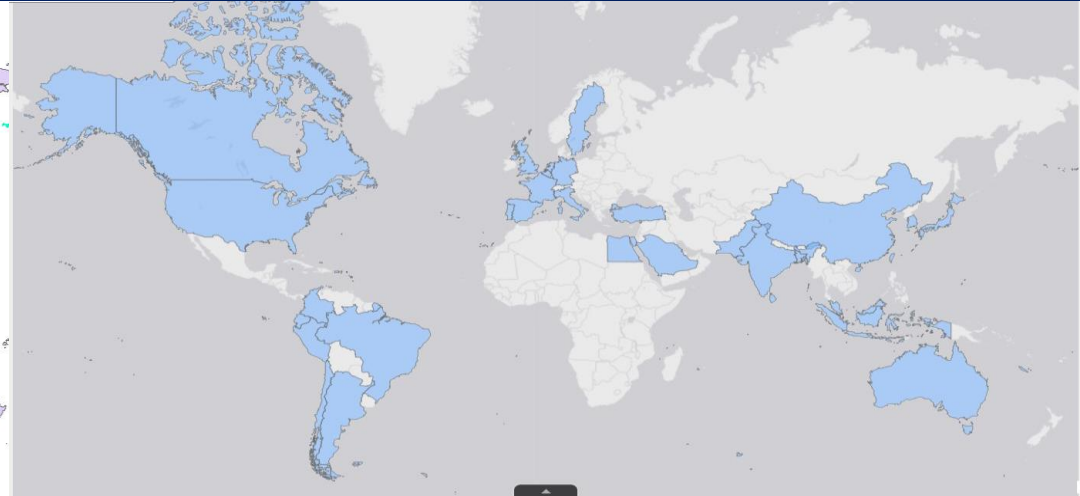


- **Total 60+** recognized programmes & 2 recognized schemes

The Training Landscape



The Recognized Programmes 2013 = 50



The Recognized Programmes 2023 = 65+

Looking Forward

- FIG Commission 4 shall continue to represent Hydrography and Cartography through participation in the next FIG Congress in Accra, Ghana, in June 2024. **(Papers by Dec 2023 please!)**
- The Board shall maintain and update the S-5 and S-8 Standards with revisions soon aiming for major new editions in 2024-26, possibly with more MSDI elements.
- I anticipate 12+ Course submissions next year with 2 of these being new submissions.
- As FIG & IHO have an MOU we are looking at planning a key one day event in June 2024 alongside FIG Congress to further develop strategic views for the Maritime and Hydrographic community (EWH, Remote Hydro, NextGen, Standards, Capacity Development)
- Continue to identify Capacity Development opportunities
- The further promotion of the work of FIG, IHO & ICA for Hydrography & Cartography shall be continued through articles, presentations and papers.

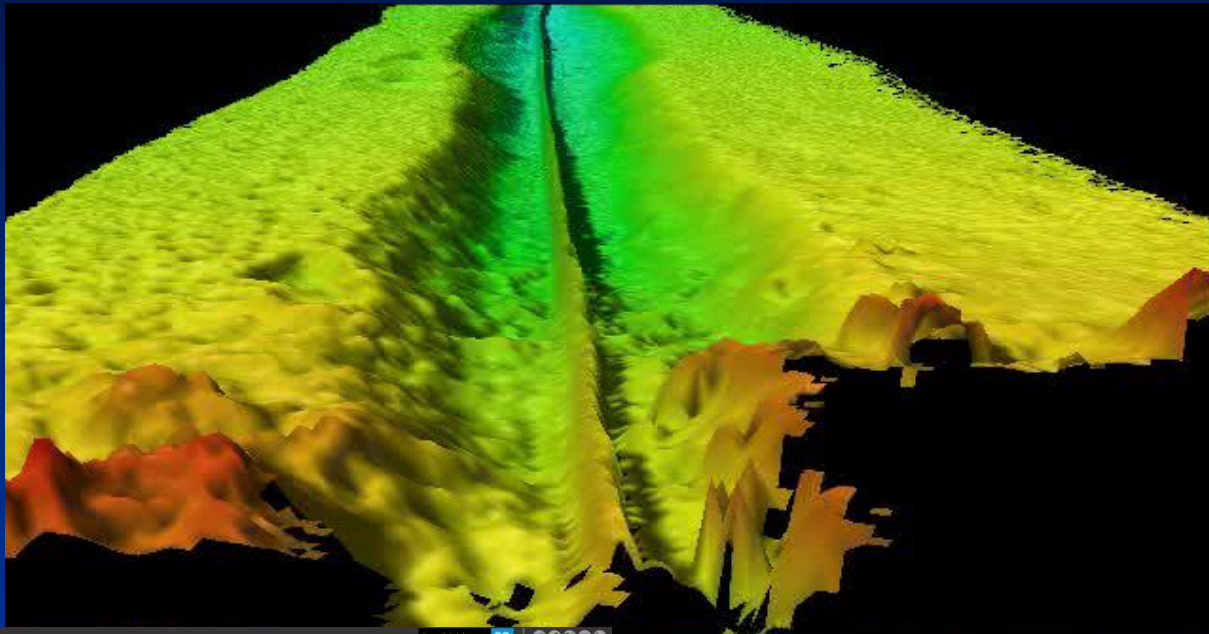


Challenges (Internally):



- Quality of submissions
 - The new standards framework implementation is a major undertaking and requires a step change in the preparation of programmes and submissions to match the improved standards
 - Recognized with conditions / Not Recognized
 - *Right First Time* principle – Our aim is to get all programmes Recognized at the first review stage
- Managing workload
 - Large number of submissions
 - Recognition period 6 yrs
 - New programmes and schemes
- Stakeholder engagement & outreach
 - Promoting the work of the IBSC and Standards
 - Guidance and assistance to institutions
 - Providing appropriate skills for the future workforce

Robotics, Drones, Data Visualisation



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Shell OCEAN DISCOVERY XPRIZE

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GETTING TO THE BOTTOM OF OUR OCEAN

OpenROV Trident - An Underwater Drone for Everyone

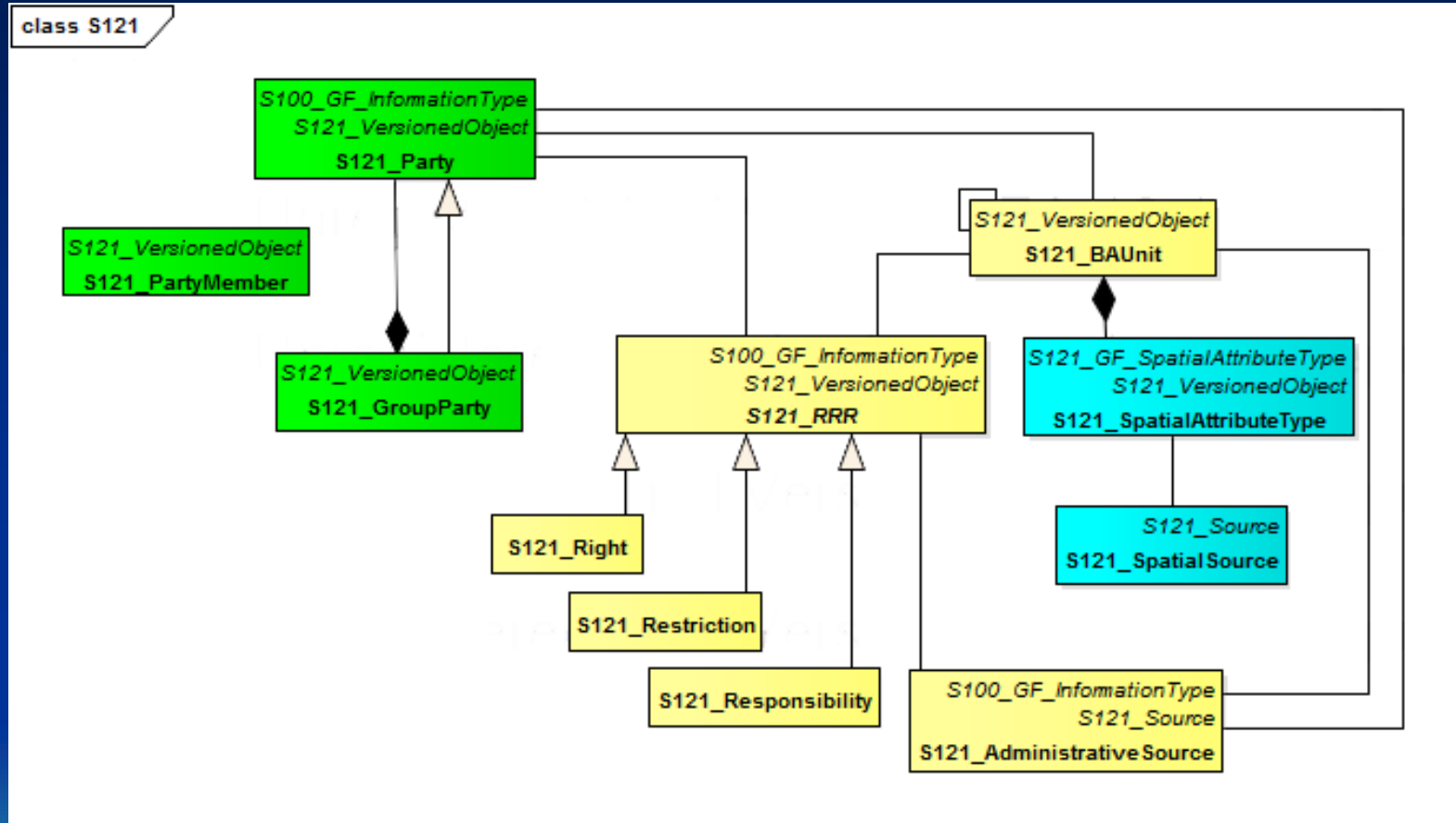
The future of ocean exploration is here.

Pre-Order Now!

Created by OpenROV

1,324 backers pledged \$815,601 to help bring this project to life.

Technical Matters – Schemas for Data

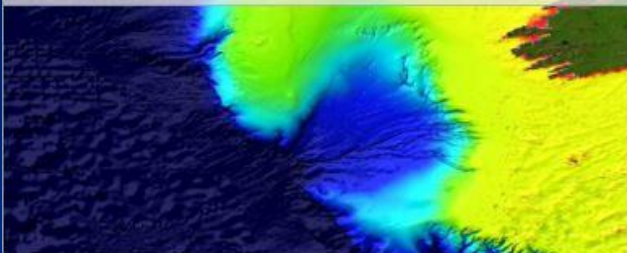


After Athanasiou et al 2016



7 portals

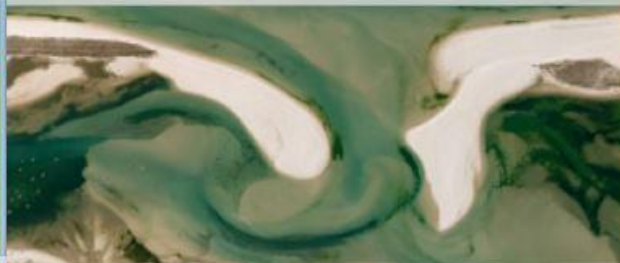
Bathymetry



Porcupine Seabight, © EMODnet Bathymetry 2013

Data on bathymetry (water depth), coastlines, and geographical location of underwater features: wrecks.

Geology



Data on seabed substrate, sea-floor geology, coastal behaviour, geological events, and minerals.

Seabed Habitats



Data on modelled seabed habitats based on seabed substrate, energy, biological zone, and salinity.

Chemistry



Rosette, ©Bennet-Foell - POGO

Data on the concentration of nutrients, organic matter, pesticides, heavy metals, radionuclides and antifoulants in water, sediment and biota.

Biology



Data on temporal and spatial distribution of species abundance and biomass from several taxa.

Physics



Data on salinity, temperature, waves, currents, sea-level, light attenuation, and FerryBoxes.

Human Activities

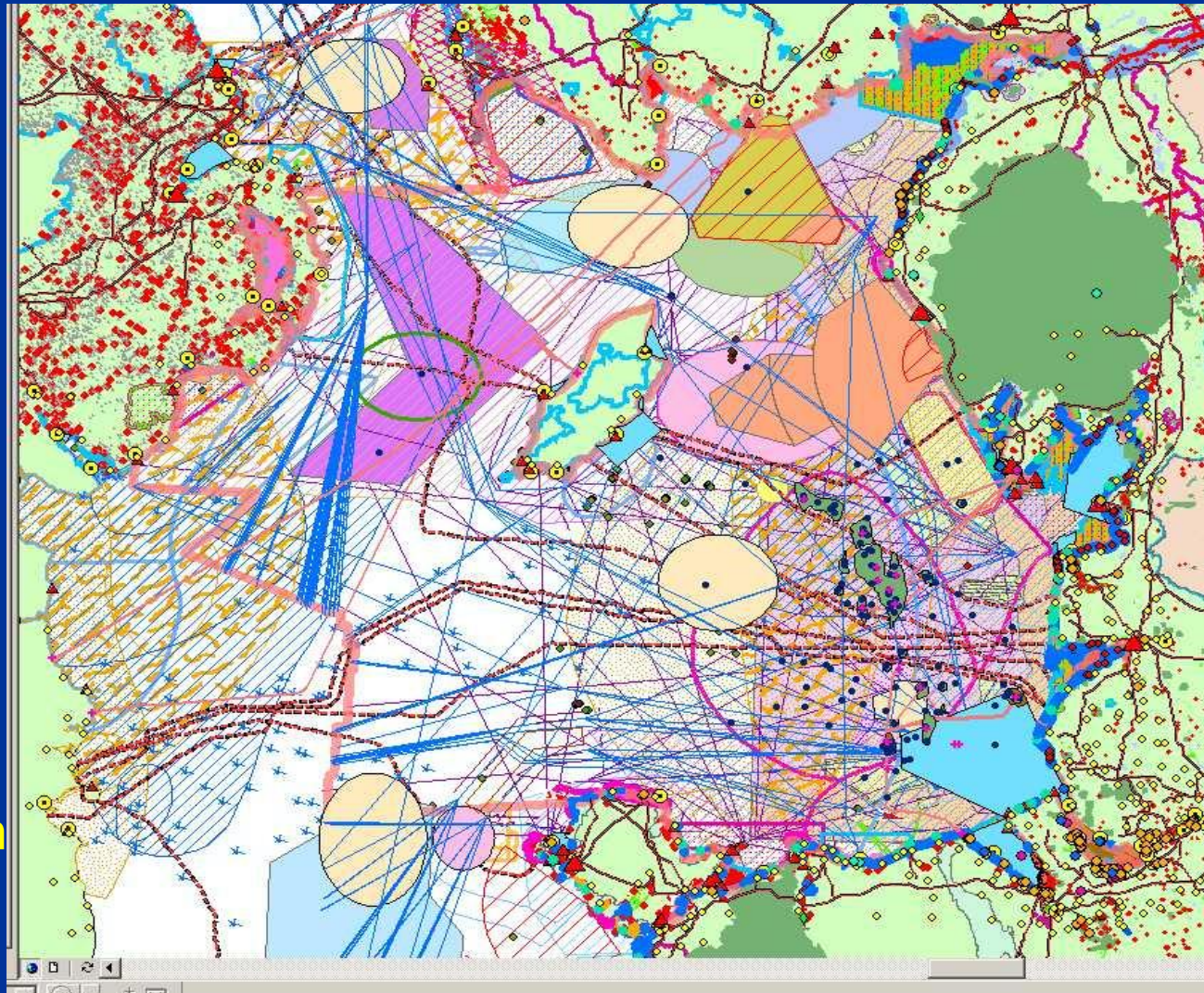


Data on the intensity and spatial extent of human activities at sea.

Economic activity in the Irish Sea and coastal hinterland

Source: Defra Irish Sea Planning Pilot - 2006

- Land Use
- Tourism
- Oil & Gas
- Mariculture
- Coastal Defence
- Ports & Navigation
- Military Activities
- Culture
- Conservation
- Dredging & Disposal
- Submarine Cables



- Fishing
- Renewable Energy
- Marine Recreation
- Mineral Extraction



Some Wider Sector Challenges

- Training and retention of skilled personnel - Nextgen
- Society and the Environment
 - Adopting the approach for wider use by society
 - Southern Atlantic, Blue Economy via MSP's, MSDI's
- Technology
 - Remote Automated Data Processing, AI & ML
 - Telecommunication Links – capacity, security
- More cost-effective monitoring and collection of data
 - New systems, new platforms, sharing
 - The importance of Natural Capital, Net Zero, Climate
- The Governance of our Oceans – UN-GGIM, IGIF, You

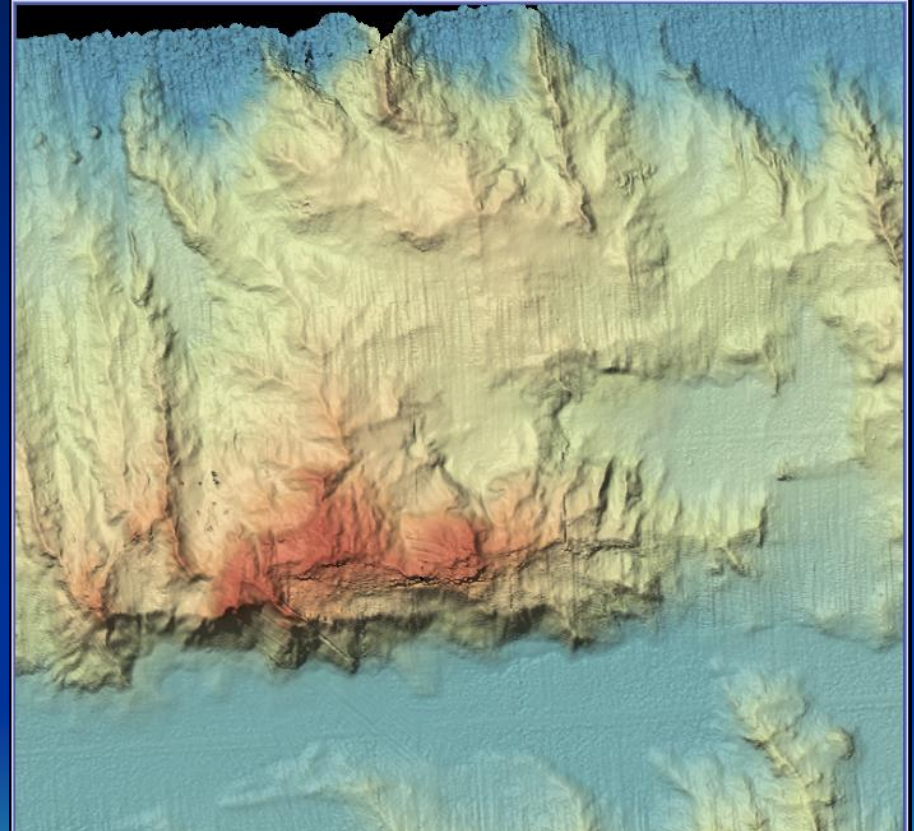


Improved Resolution – just slightly!

Before

50x50 Km

After



Mapping with the EM122 system on RV "Sonne II" gridded at 50m. Courtesy GEOMAR



Sustainable Development Goals (SDGs)



- 1,2,5,11,15,16 are directly related to Land issues, New Urban Agenda & Rapid Urbanisation
- 1,2,3,6,7,12,13,14 are related to **Seas and Oceans**

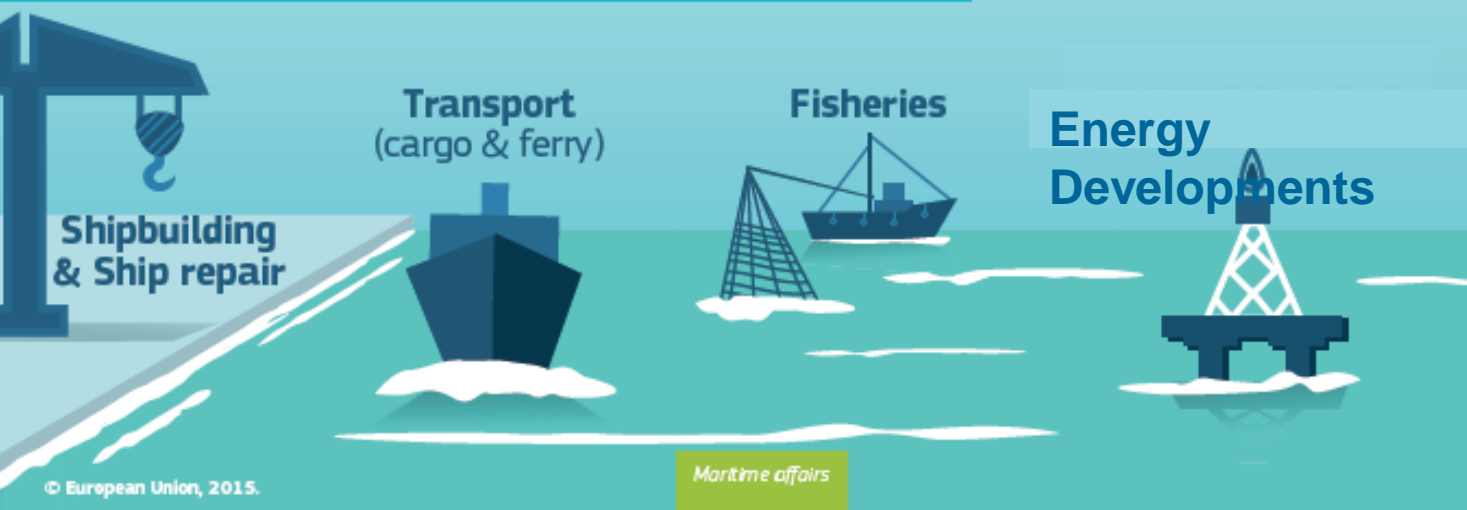
The Potential Future Growth

Focus Area

Five sectors with high potential for sustainable Blue Growth are to be further developed:



other sectors of the blue economy crucial for value & jobs



Why we do it – **IBSC – the Context – the Challenges!**

- Standards emphasis too much on products
- Modules and teaching/learning methods
- Sea Time and Practicals will become Obsolete
- Marine Data Sciences MSDI, the Wider “Geo” data perspective
- UN-SDGs, UN Decade of the Ocean 10 Challenges
- Planet Ocean, FAIR data principles, AI, Robotics, the data value chain
- Sustainable Operations & Data Management
- ????

Conclusions

- It is exciting times.....
- Marine Data is increasing in importance – more users
- Technology can be our friend – AI and ML combat data sizes
 - But we need to understand it and use it wisely
- National plans and projects will extend to include the coasts, seas and oceans even more than currently.
- How do we all prepare and support the Nextgen?
- Are our Standards, Programmes and Skills, fit for purpose going forward.....and if not, how do we make them so?



IBSC Standards and Programmes

Plain Sailing or Storms ahead?



Thank You

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