# MSDIWG14

## 14th Meeting of the International Hydrographic Organization Marine Spatial Data Infrastructures Working Group

**Portugal – Hydrographic Institute**

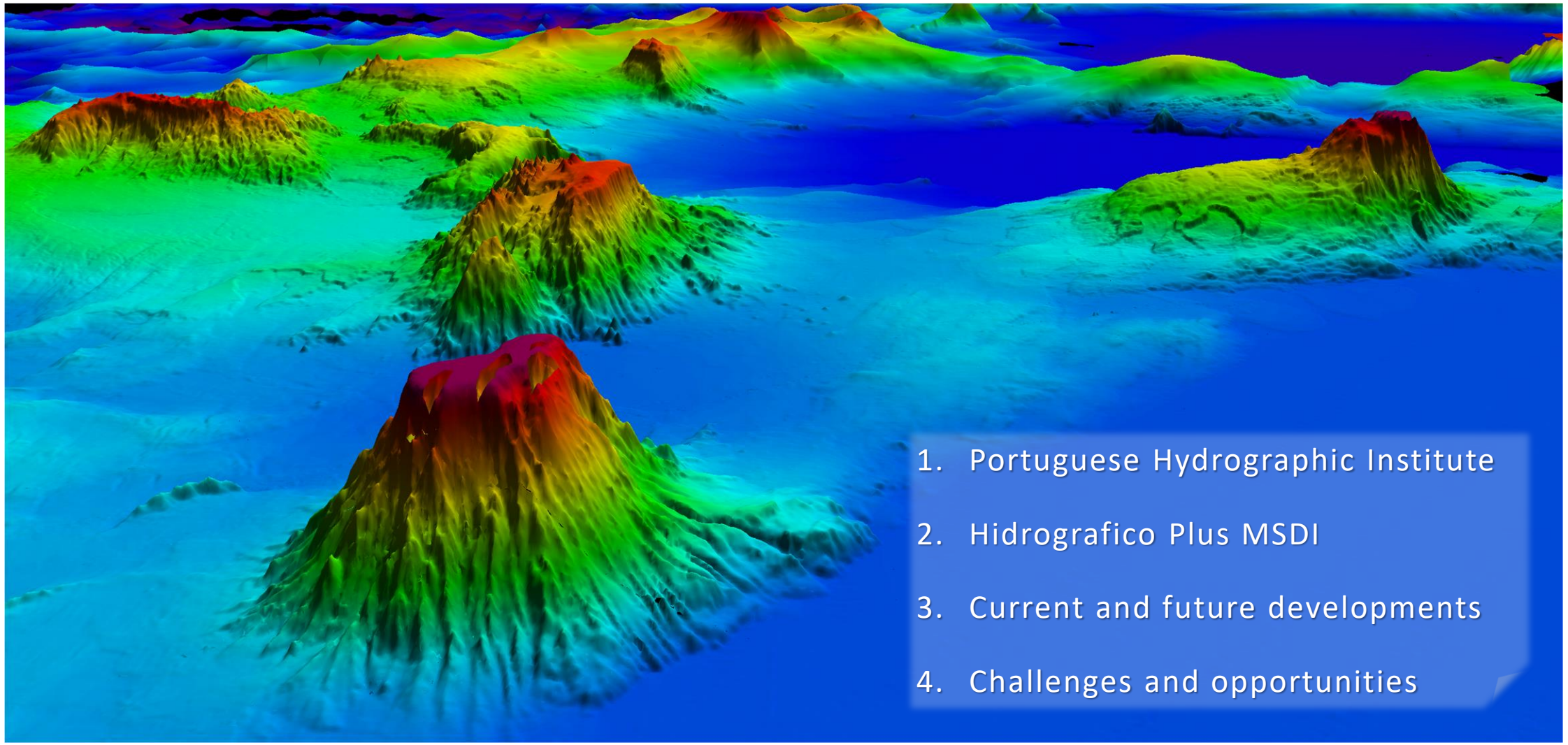
**LCDR Telmo Dias**

Genoa, January 30th to February 3rd, 2022

IHO

International Hydrographic Organization

# Agenda



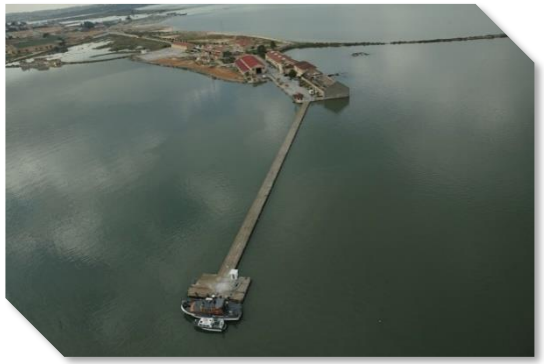
# 1. Portuguese Hydrographic Institute

## 1.1. Data domains

International Hydrographic Organization

- Navy Body
- Hydrographic Office
- State Laboratory


Headquarters, Lisbon



Hydrographic Base, Seixal

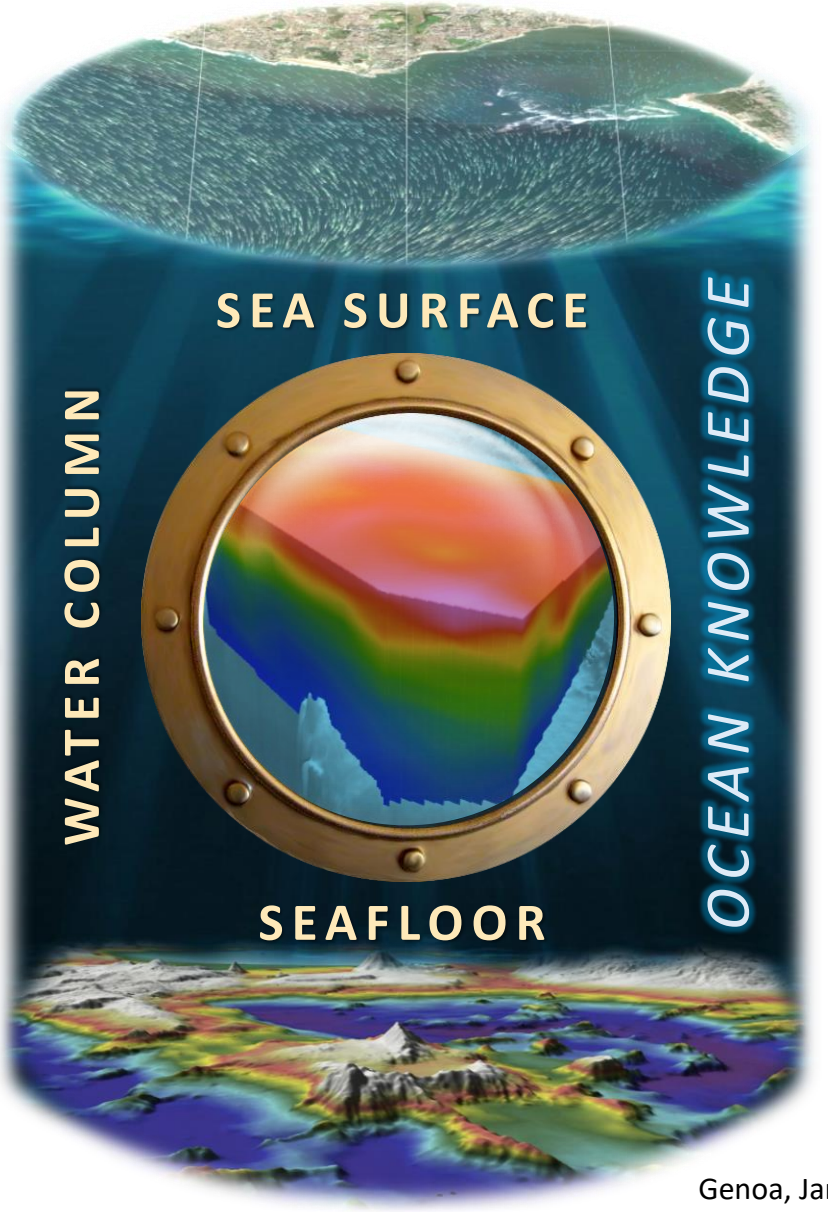
IHO

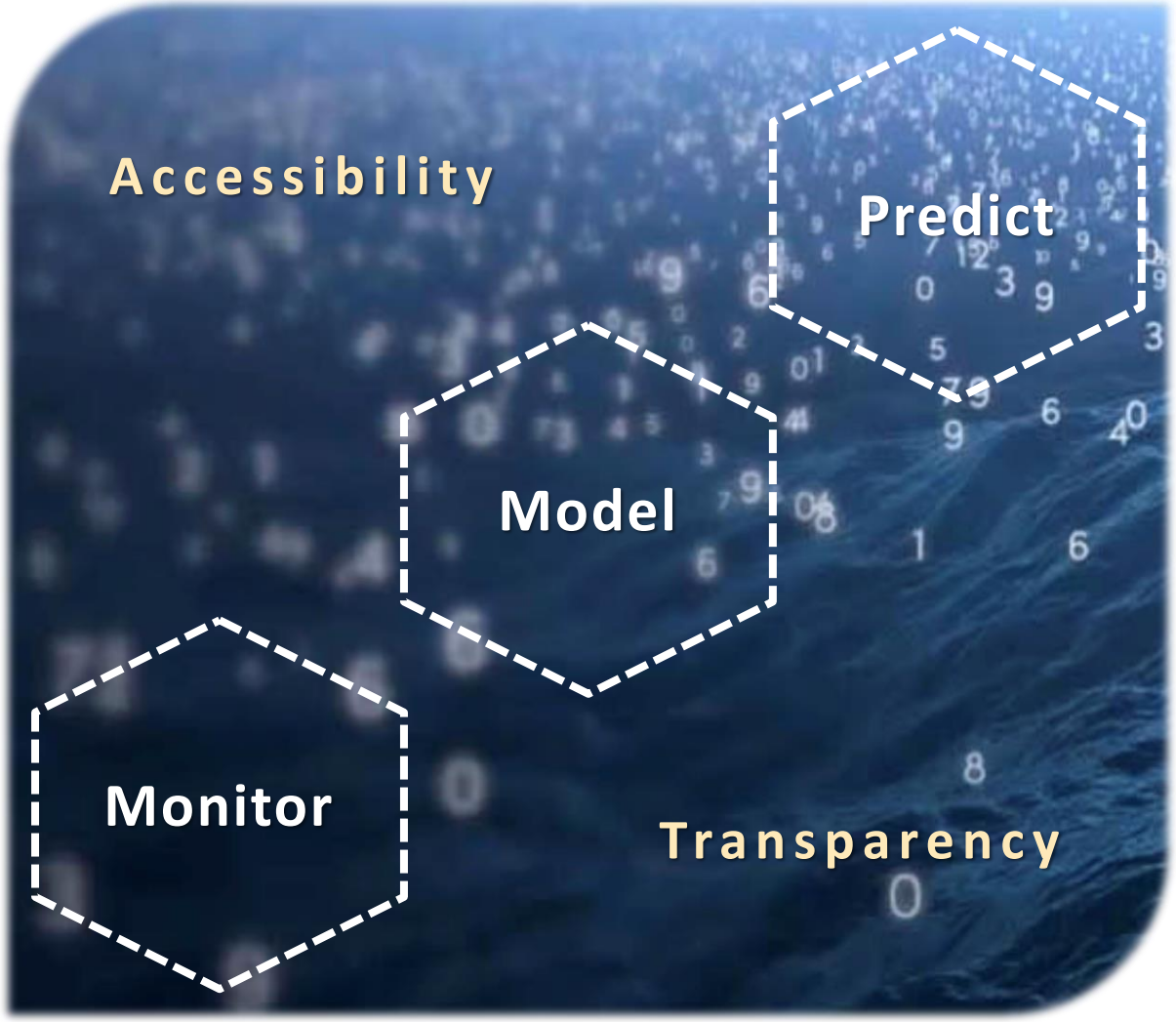
International Hydrographic Organization

# 2. Hidrografico Plus MSDI

## 2.1. Vision: build a digital twin of the ocean

hidrográfico+



# 2. Hidrografico Plus MSDI

## 2.2. Mission: increase the use of hydrographic data for the benefit of society

International Hydrographic Organization

FAIR – TLC

**FINDABLE**
Data has rich metadata and unique identifier
Metadata

**ACCESSIBLE**
Data can be easily downloaded or used by using standard protocols
Interface

**INTEROPERABLE**
Metadata use an accessible and standard language
Standards

**REUSABLE**
Data is well-described and provides clear usage of licences
Data value

Traceable | Licensed | Connected

One data source


Multiple formats

Extended use

Involve and enable **citizens**, **industries**, and **governments** to make **better-informed decisions** (Blue Economy).

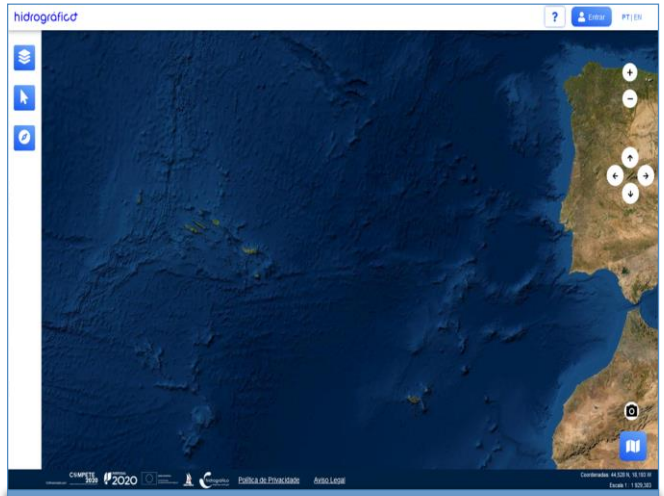
# 2. Hidrografico Plus MSDI

## 2.3. Components

International Hydrographic Organization

hidrográfico+

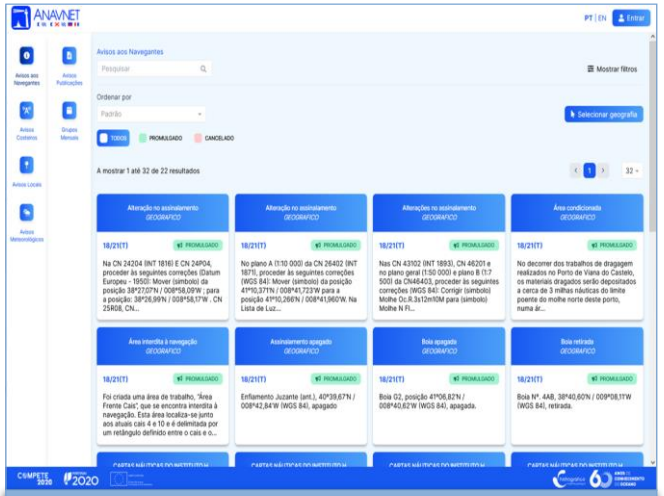
COMPETE 2020 · PORTUGAL 2020 · UNIÃO EUROPEIA · Fundo Europeu de Desenvolvimento Regional



### GeoPortal H+

*Data download*
*OGC Services*
*API*

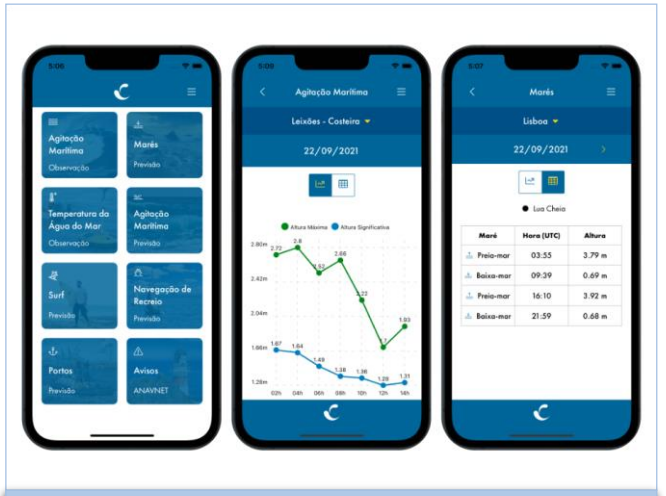
https://geomar.hidrografico.pt



### AnavNet

*Notices to Mariners*
*Navigational Warnings*
*Weather Warnings*

https://geoanavnet.hidrografico.pt



### App H+

*Tide / Sea State*
*Seawater Temperature*
*AnavNet*

Download on the App Store

Download on Google play

Download on AppGallery

# 2. Hidrografico Plus MSDI

## 2.4. Architecture

International Hydrographic Organization

### Databases

ORACLE

PostgreSQL

### Analytics

Grafana

### Helpdesk

REDMINE
flexible project management

### User management

gluu

ama AGÊNCIA PARA A MODERNIZAÇÃO ADMINISTRATIVA
PRESIDÊNCIA DO CONSELHO DE MINISTROS

### Geoservers

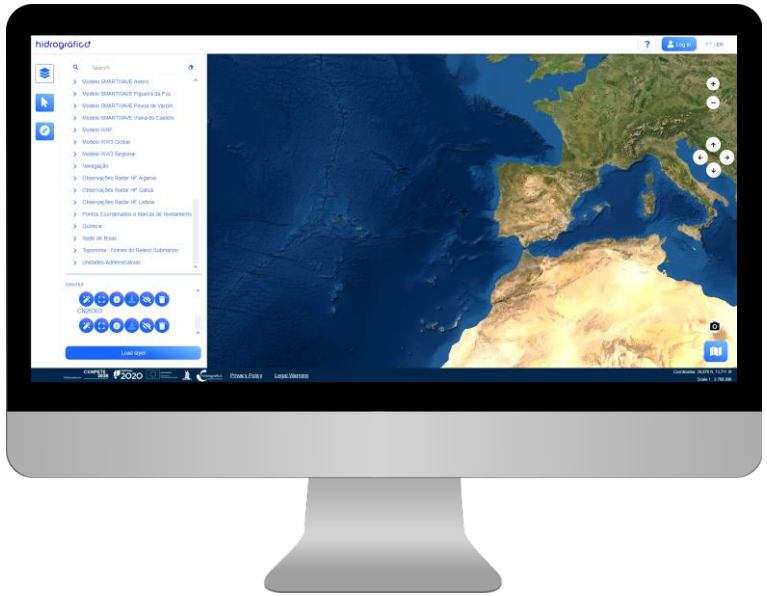
GeoServer

*Web Map Service*
*Web Feature Service*
*Web Coverage Service*
*Web Map Tile Service*

### Data catalogue

GeoNetwork opensource

### Webportal



open source®

INTEROPERABILITY
MODULARITY
SCALABILITY

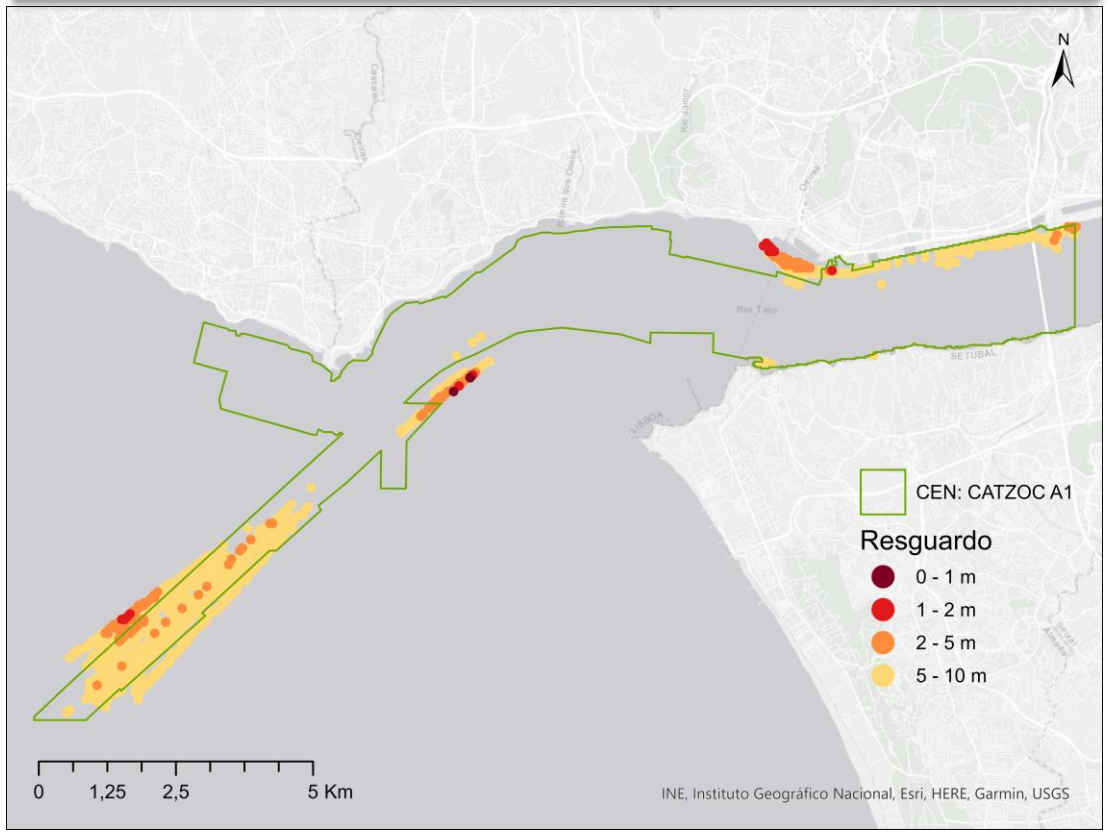
# 3. Current and future developments

## 3.1. IHO Strategic Plan – Goal 1

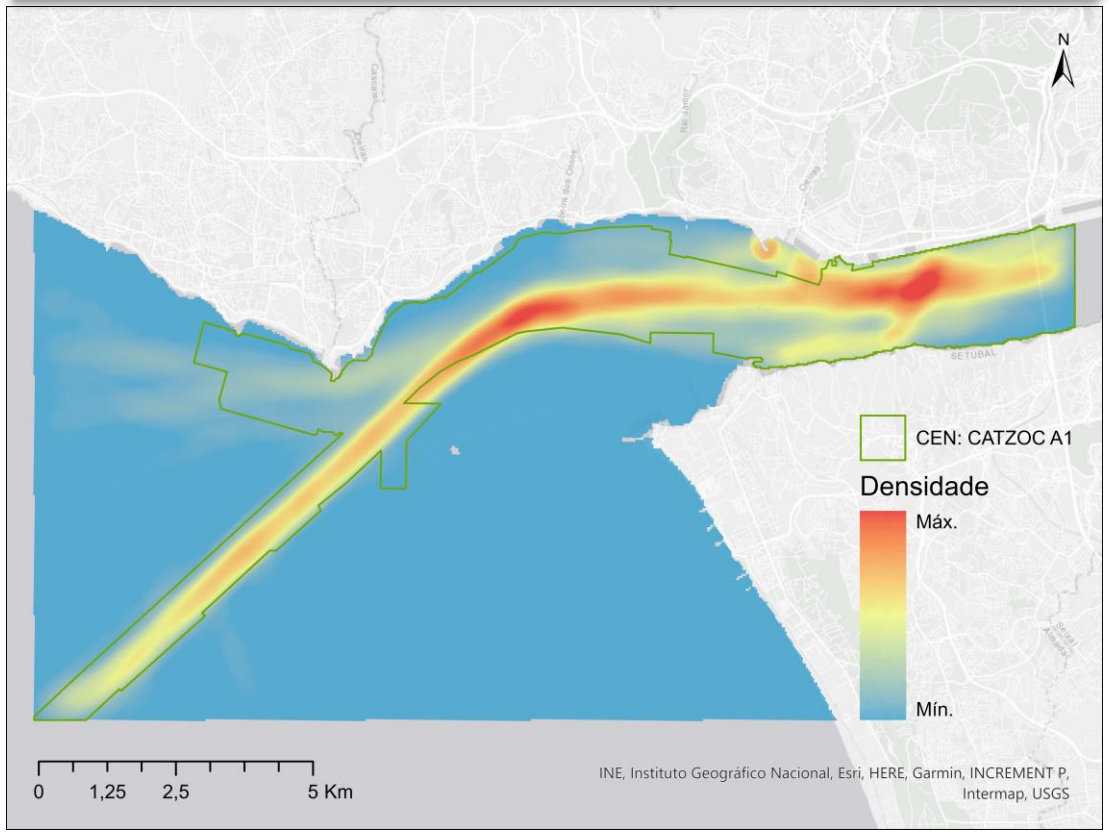
International Hydrographic Organization

✓ Evolving the hydrographic support for **safety and efficiency of maritime navigation**, undergoing profound transformation.

### ➥ CATZOC A1 (ENC) – Under Keel Clearance (AIS)




### ➥ CATZOC A1 (ENC) – Ship Track Density (AIS)



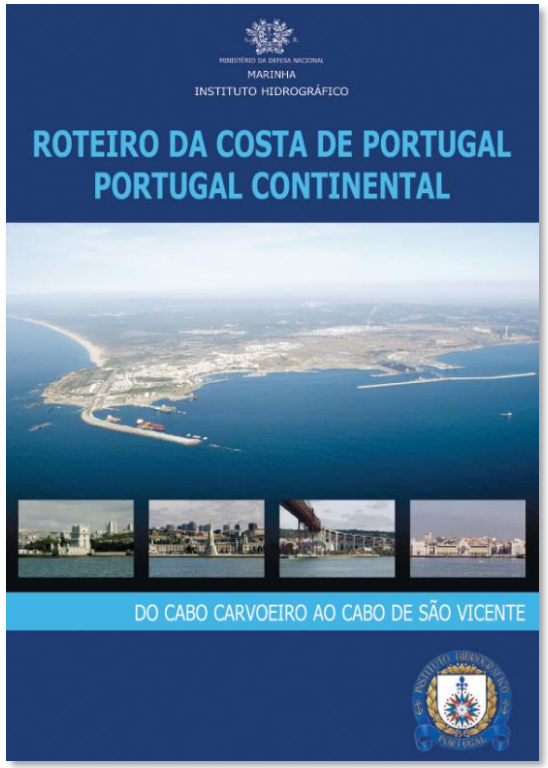
# 3. Current and future developments

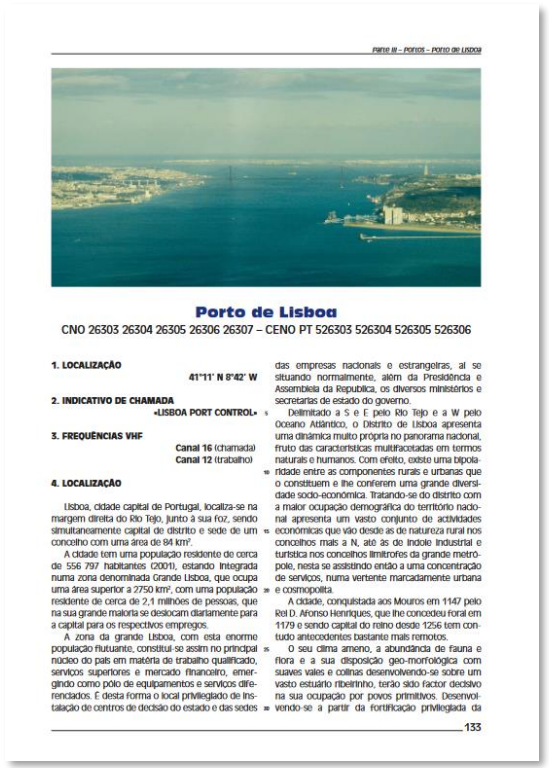
## 3.1. IHO Strategic Plan – Goal 1

International Hydrographic Organization

✓ Evolving the hydrographic support for **safety and efficiency of maritime navigation**, undergoing profound transformation.

➥ **Digital pilots (sailing directions)**



Porto de Lisboa

CNO 26303 26304 26305 26306 26307 – CENO PT 526303 526304 526305 526306

1. LOCALIZAÇÃO
41°11' N 8°42' W

2. INDICATIVO DE CHAMADA
«LISBOA PORT CONTROL»

3. FREQUÊNCIAS VHF
Canal 16 (chamada)
Canal 12 (trabalho)

4. LOCALIZAÇÃO

Lisboa, cidade capital de Portugal, localiza-se na margem direita do Rio Tejo, junto à sua Foz, sendo simultaneamente capital de distrito e sede de um concelho com uma área de 84 km².

A cidade tem uma população residente de cerca de 556 797 habitantes (2001), estando integrada numa zona denominada Grande Lisboa, que ocupa uma área superior a 2750 km², com uma população residente de cerca de 2,1 milhões de pessoas, que na sua grande maioria se deslocam diariamente para a capital para os respectivos empregos.

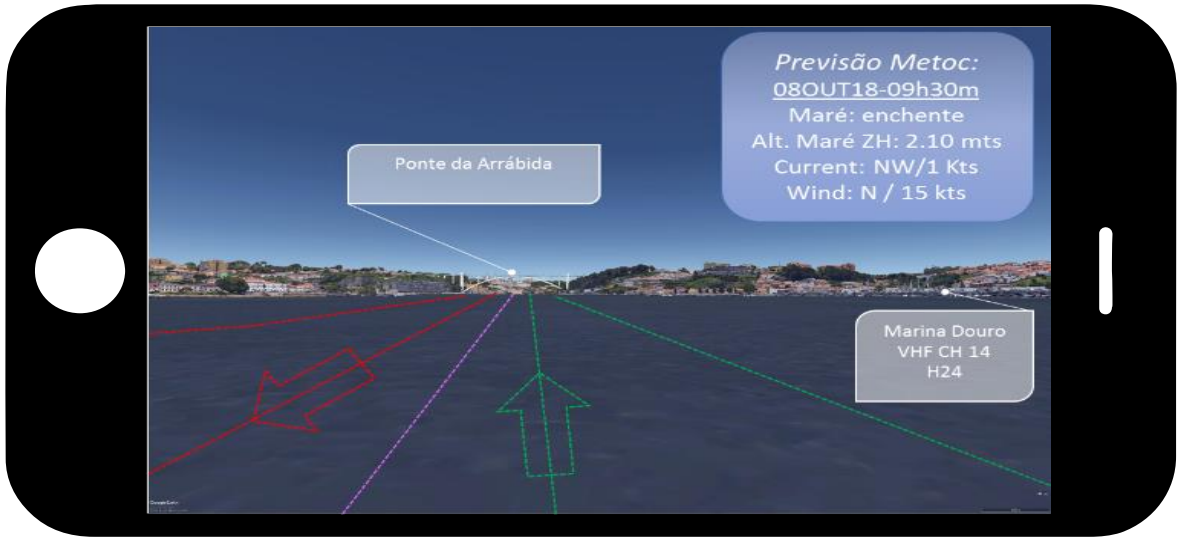
A zona da grande Lisboa, com esta enorme população flutuante, constitui-se assim no principal núcleo do país em matéria de trabalho qualificado, serviços superiores e mercado financeiro, emergindo como pólo de equipamentos e serviços diferenciados. É desta forma o local privilegiado de instalação de centros de decisão do estado e das sedes das empresas nacionais e estrangeiras, aí se situando normalmente, além da Presidência e Assembleia da República, os diversos ministérios e secretarias de estado do governo.

Delimitado a S e E pelo Rio Tejo e a W pelo Oceano Atlântico, o Distrito de Lisboa apresenta uma dinâmica muito própria no panorama nacional, fruto das características multifacetadas em termos naturais e humanos. Com efeito, existe uma bipolaridade entre as componentes rurais e urbanas que o constituem e lhe conferem uma grande diversidade socio-económica. Tratando-se do distrito com a maior ocupação demográfica do território nacional apresenta um vasto conjunto de actividades económicas que vão desde as de natureza rural nos concelhos mais a N, até às de índole industrial e turística nos concelhos limítrofes da grande metrópole, nesta se assistindo então a uma concentração de serviços, numa vertente marcadamente urbana e cosmopolita.

A cidade, conquistada aos Mouros em 1147 pelo Rei D. Afonso Henriques, que lhe concedeu Foral em 1179 e sendo capital do reino desde 1256 tem contudo antecedentes bastante mais remotos.

O seu clima ameno, a abundância de Fauna e flora e a sua disposição geo-morfológica com suaves vales e colinas desenvolvendo-se sobre um vasto estuário ribeirinho, terão sido factor decisivo na sua ocupação por povos primitivos. Desenvolvendo-se a partir da fortificação privilegiada da

133



# 3. Current and future developments

## 3.2. IHO Strategic Plan – Goal 2

✓ Increasing the **use of hydrographic data** for the benefit of society.

### ➥ High-value datasets

- (…) ”associated with **important benefits for society, the environment and the economy**, in particular, because of their suitability for the **creation of value-added services**, applications and new, high-quality and decent jobs, and of the number of potential beneficiaries of the value-added services and applications based on those datasets”.
- EU Directive 2019/1024 – Open data and the re-use of public sector information (20JUN2019)

  https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L1024
- EU Implementing Regulation 2023/138 – laying down a list of specific high-value datasets and the arrangements for their publication and re-use (21DEC2022)

  https://eur-lex.europa.eu/eli/reg_impl/2023/138

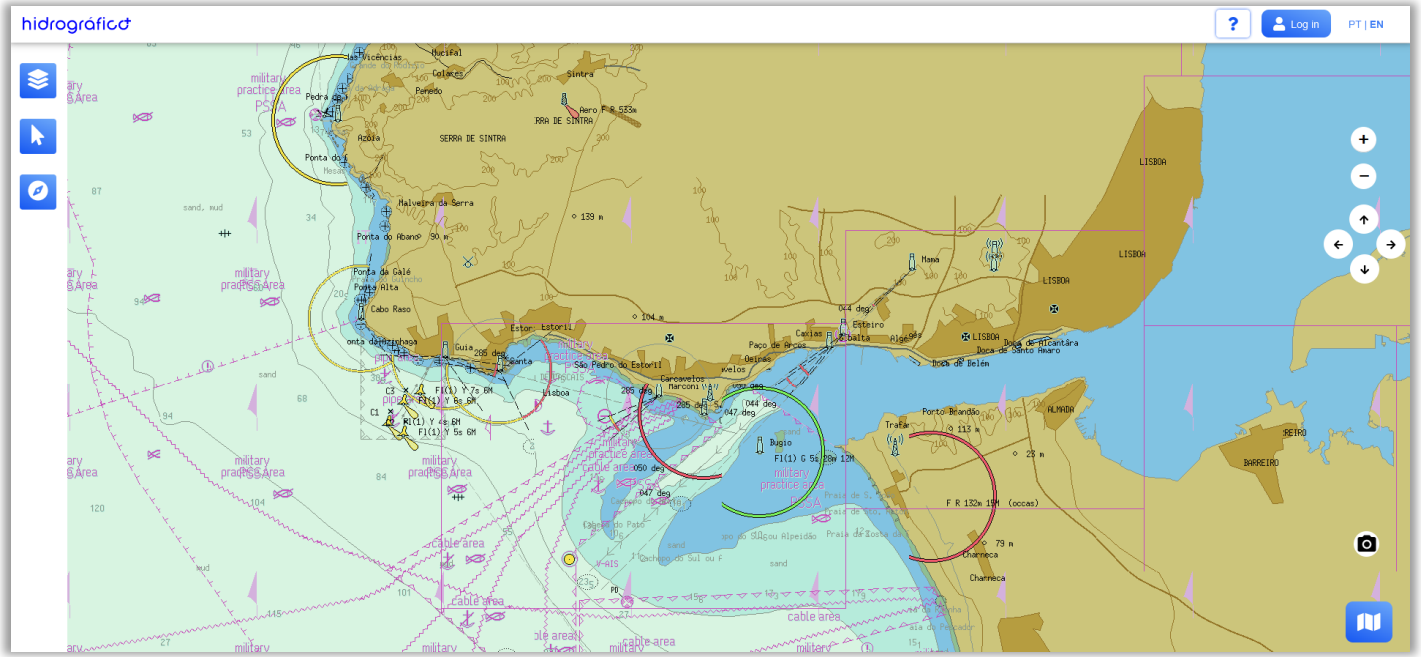
# 3. Current and future developments

## 3.2. IHO Strategic Plan – Goal 2

✓ Increasing the **use of hydrographic data** for the benefit of society.

### ➥ WMS ENC Server (Web Map Service of Electronic Navigational Charts)

- SevenCs WMS ChartServer
- Provide users a ENC basemap
- Support marine and blue economy activities




### ➥ ENC Inland

- Douro river

https://www.hidrografico.pt/vn.douro

- Guadiana river

https://www.hidrografico.pt/cart.guadiana

# 3. Current and future developments

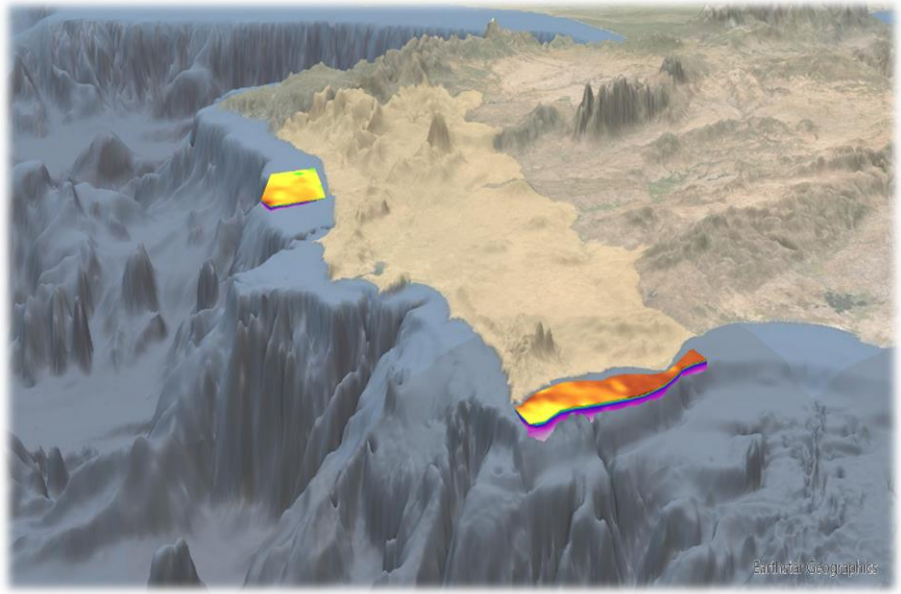
## 3.2. IHO Strategic Plan – Goal 2

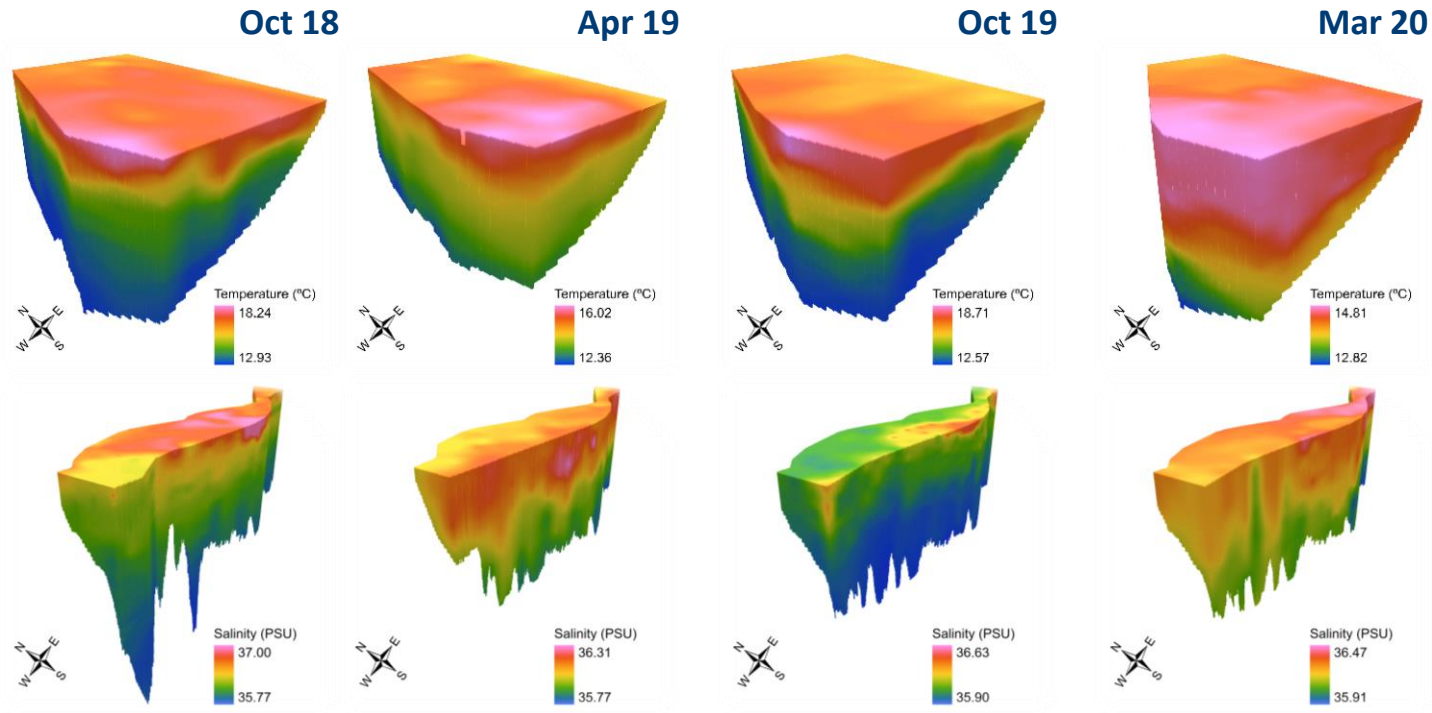
✓ Increasing the **use of hydrographic data** for the benefit of society.

➥ **3D mapping of ocean variables**

AQUIMAR
MARINE KNOWLEDGE SUPPORTING AQUACULTURE

MarIA
Inteligência Artificial para o Mar



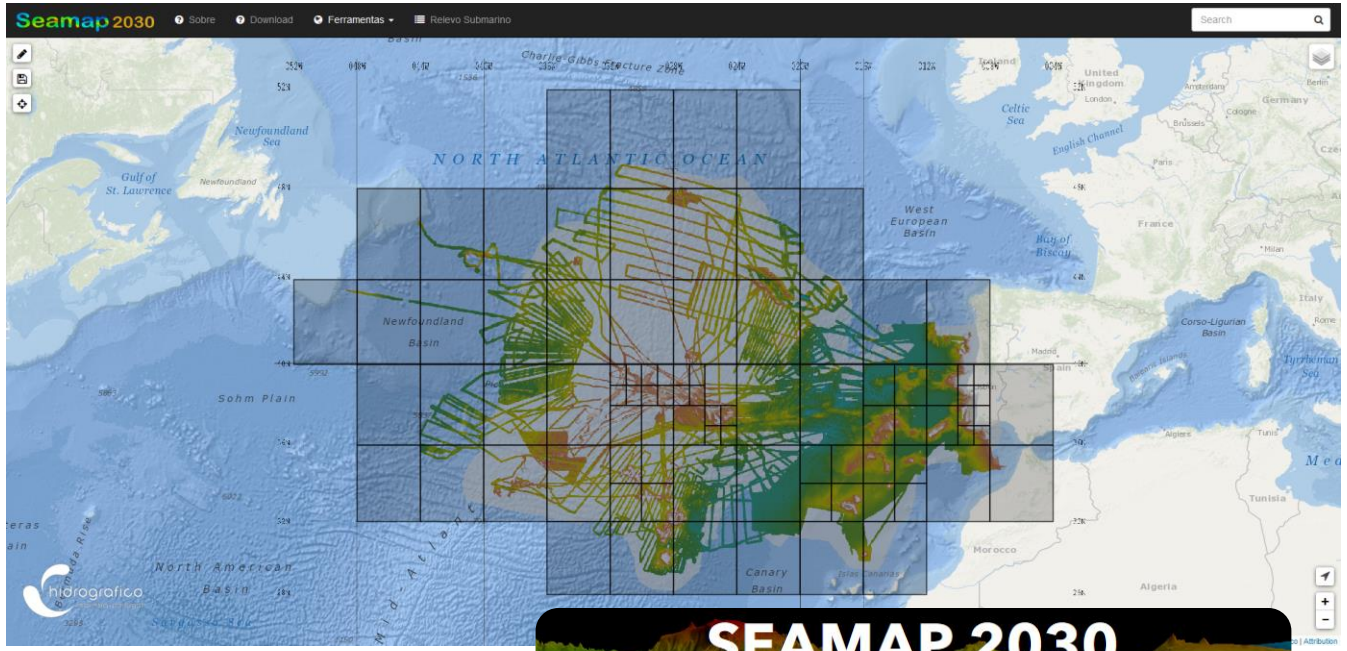


# 3. Current and future developments

## 3.3. IHO Strategic Plan – Goal 3

International Hydrographic Organization

✓ Participating actively in international initiatives related to the **knowledge** and the sustainable use **of the ocean**.



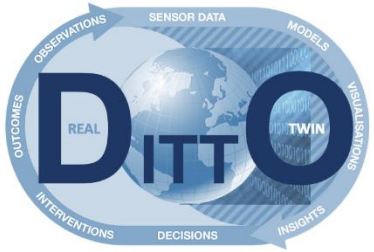

**RESOLUTION(S)**

Depth 50m-250m – Res. 32m
Depth 250m-1000m – Res. 64m
Depth 1000m-2000m – Res. 128m
Depth 2000m-4000m – Res. 256m
Depth +4000m – Res. 512m


https://gridmar.hidrografico.pt

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

**DITTO - Digital Twins of the Ocean**




## VISION

The **Vision** of the DITTO Programme is a world where Digital Twins of the Ocean are used to support ocean protection, ocean governance and a sustainable Blue Economy.

## MISSION

The **Mission** of DITTO is to develop and share a common understanding of digital twins of the ocean (DTO); to establish best practice in the development of DTOs; and advance a digital framework for DTOs to empower ocean professionals from all sectors around the world including scientific users, to effectively create their own digital twins.

# 4. Challenges and opportunities

## ➥ People:

- Human resources (GIS, IT);
- People awareness (metadata, data policy, data integrity);
- Financing (projects).

## ➥ Information systems:

- Storage, servers.

## ➥ Data:

- Data integrity.