



# **18<sup>th</sup> Meeting of the Southern African and Islands Hydrographic Commission**

## **National Report by Portugal**

Associate Member State

SAIHC18, 9 - 13 May 2022



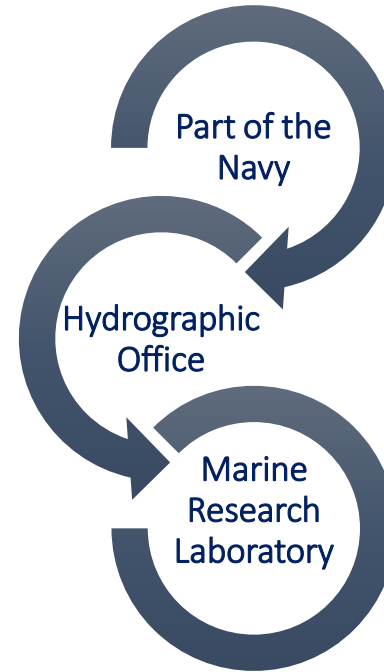
IHO

International  
Hydrographic  
Organization

Portuguese Navy organization with administrative and financial autonomy

- National Hydrographic Office
- National Research Lab (R&D)

- Minister of Defence  
in articulation with the
- Minister of the Sea
- Minister of Science, Technology and Higher Education



hidrográfico  
marinha.portugal

# Instituto Hidrográfico

## Legal Framework



Headquarters, Lisbon



Hydrographic Base, Seixal (river Tagus south bank)





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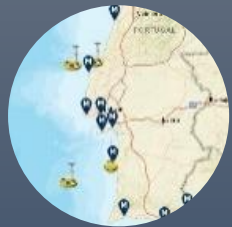
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Hydrographic  
Organization

Activities related to marine science and techniques

- Hydrographic service
- Research and Development
- Protection of the marine environment
- Environmental support to naval and maritime operations



**Safety of  
Navigation**



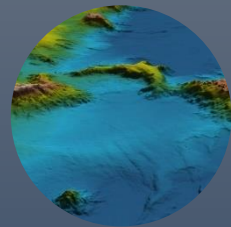
**Oceanography**



**Chemistry**



**Geology**



**Hydrography**

**Data Management**

**GEOMETOC Support to Naval & Maritime Ops**

# IHPT Technical Areas & Main Programs



## Ocean Mapping

Hydrographic Surveys

Hydrographic and Nautical Cartography

Seafloor characterization, Seismic surveys & ROV

## Ocean Observation

Observation & Environmental Monitoring

Marine Chemistry and Pollution

## Ocean Forecasting

GEOMETOC maritime operations support

Support to mariners

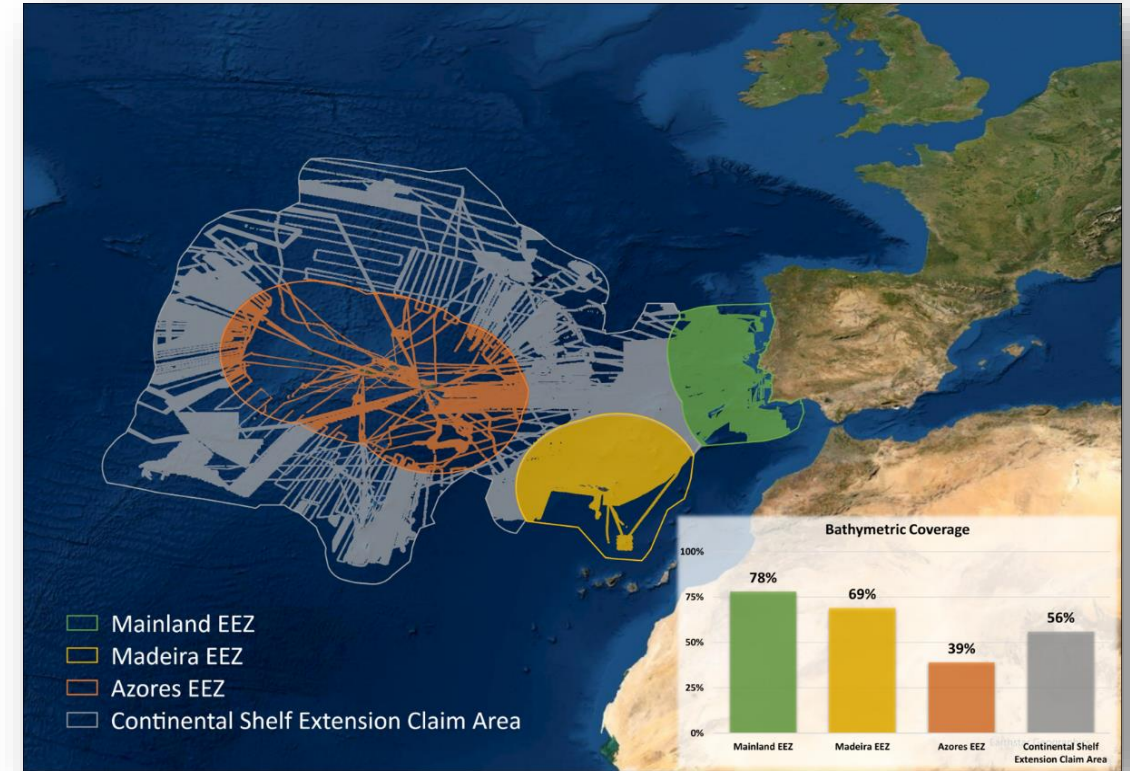
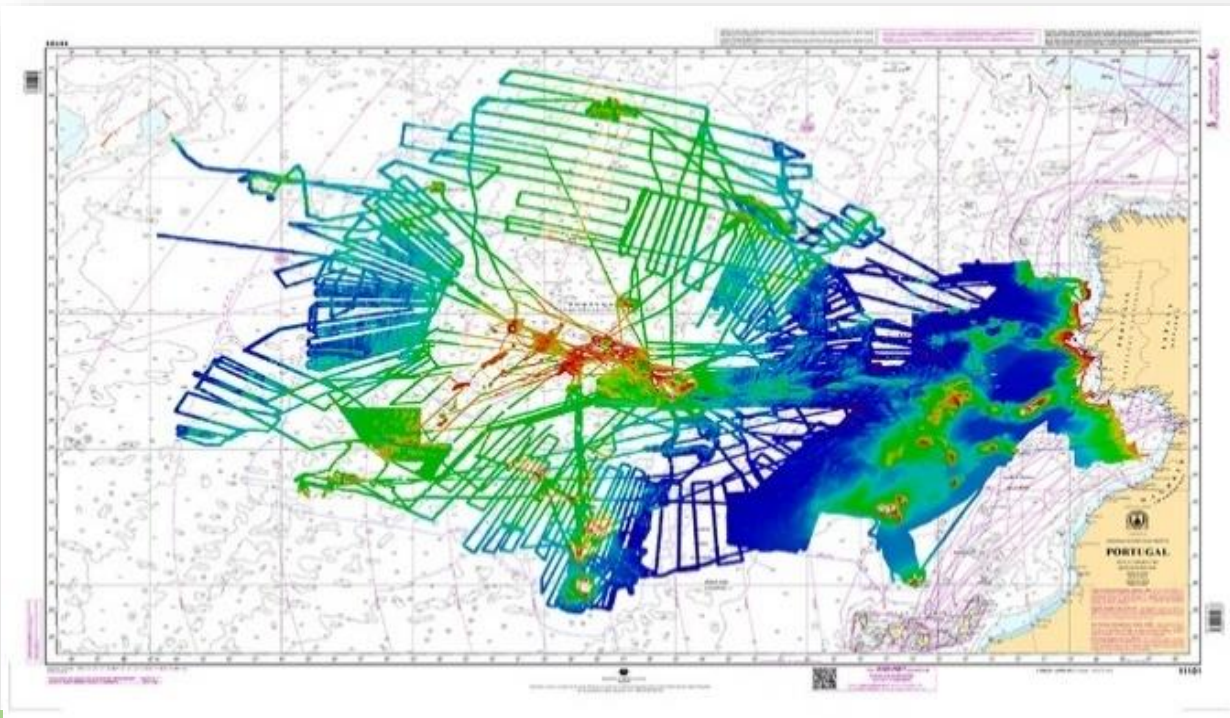


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# SEAMAP 2030: Mapping of the Portuguese Sea Program

- **Until 2030:**
  - 100 survey days/year (EEZ) /
  - 180 survey days/year (continental shelf claim)
- **Downsizing the effort:** Data sharing from 3<sup>rd</sup> parties
  - NOAA, BSH, SHOM and NIOZ already shared data with IHPT



Presently high-resolution coverage: 55%

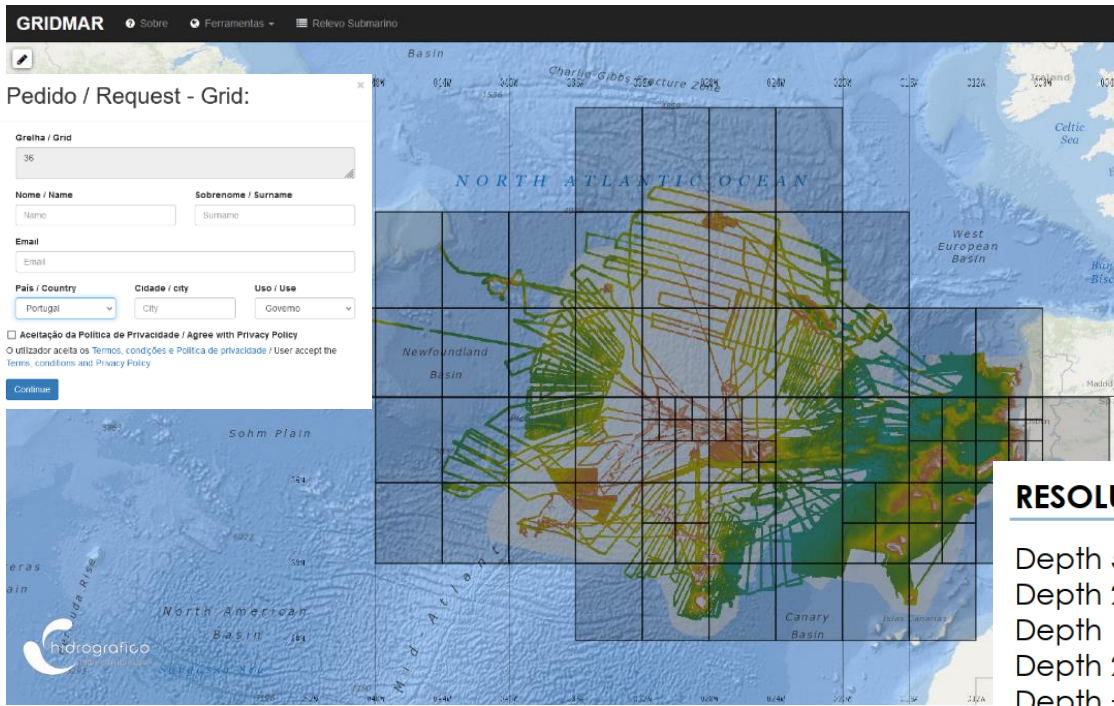


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# SEAMAP 2030: High-resolution Mapping of the Portuguese Sea

- SEAMAP 2030 in line with SEABED 2030
- Webpage: <https://www.hidrografico.pt/iprojeto/16>
- Map Story: <https://storymaps.arcgis.com/stories/334290c8d2b345c78ac7c3f5e0fcb5e2>
- **Download data:** <https://gridmar.Hidrografico.pt>



## Metadata



### SEAMAP 2030 Mapeamento do Mar Português

<https://www.hidrografico.pt/iprojeto/16>

**DATA(S)**  
Levantamentos Hidrográficos (LH) realizados em:  
De 2004 a 2021

**SISTEMA GEOGRÁFICO**  
Coordenadas Geográficas WGS84 (EPSG: 4326)  
Latitude N (grau decimal)  
Longitude W (grau decimal)

**REFERÊNCIA VERTICAL**  
Nível: Médio Acarado (N.M.A.)  
Zero Hidrográfico (ZH) - profundidades inferiores a 200m.

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

**ORIGEM DOS DADOS**  
O produto foi construído com base nos Levantamentos Hidrográficos (LH) do Instituto Hidrográfico (IH), no âmbito do âmbito de estudo da estrutura de I. e II. do Bacia para a Extensão da Plataforma Continental (B. e P.) e pelos dados adquiridos em cruzeiros científicos.

**FORMATO(S)**  
Lista de pontos está na forma: longitude (W), latitude (N), profundidade (m). O separador é o espaço.

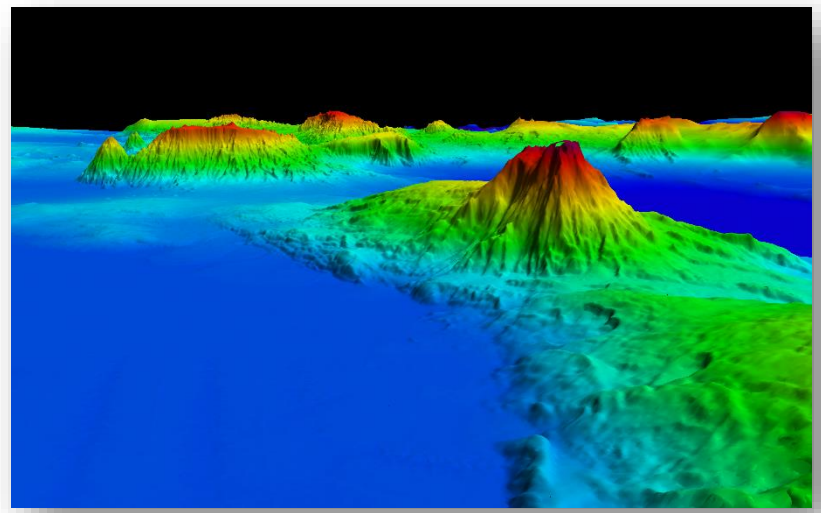
**NOTA(S)**  
Os dados fornecidos não deverão ser usados para fins comerciais sem a prévia autorização do IH e do IHPC. [se desejar: @hidrografico.pt]

**CONTACTO**  
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Rua das Índias, 1649  
1249-003 Lisboa  
PORTUGAL

**TEL.:**  
+351 217 843 000

<https://www.hidrografico.pt>  
<https://seamap.hidrografico.pt>

abr/2022



## 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





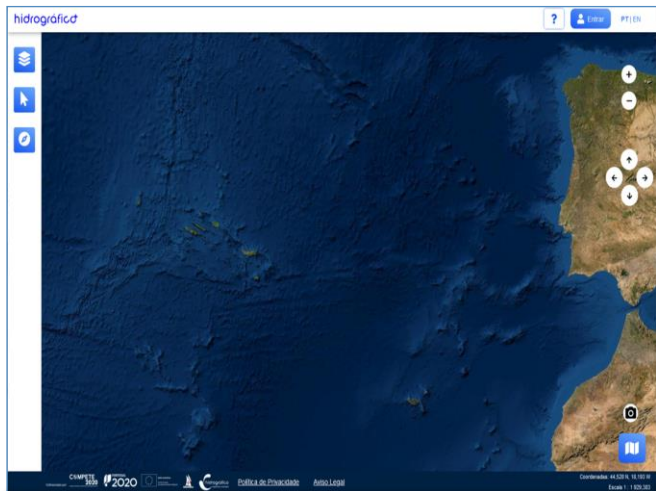
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International Hydrographic Organization

MSDI

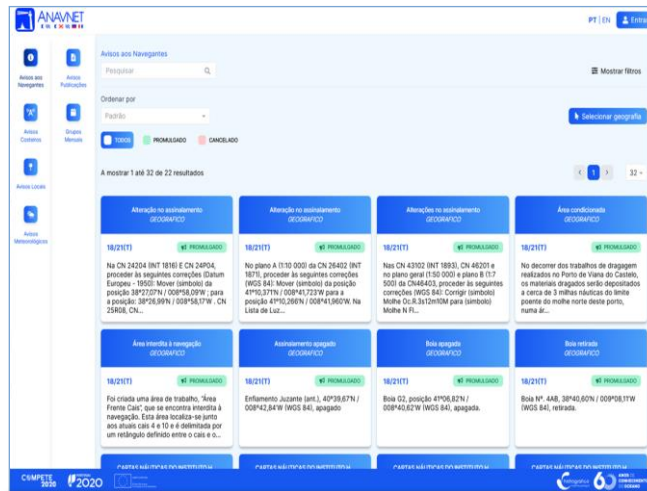
# hidrográfico

INTEROPERABILITY  
MODULARITY  
SCALABILITY



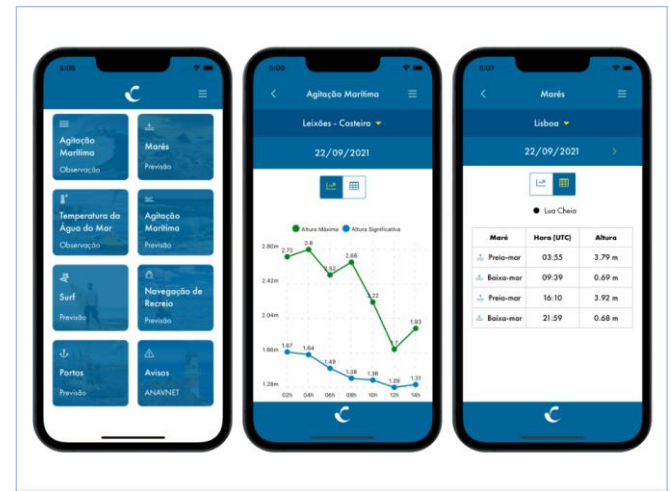
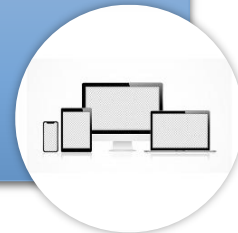
GeoPortal H+

Download  
OGC Services  
API



AnavNet

Notices to Mariners  
Navigational Warnings  
Weather Warnings



App H+

Sea State / Wind / Tide  
Seawater Temperature  
AnavNet



<https://geomar.hidrografico.pt>

<https://geoana2022hidrografico.pt>





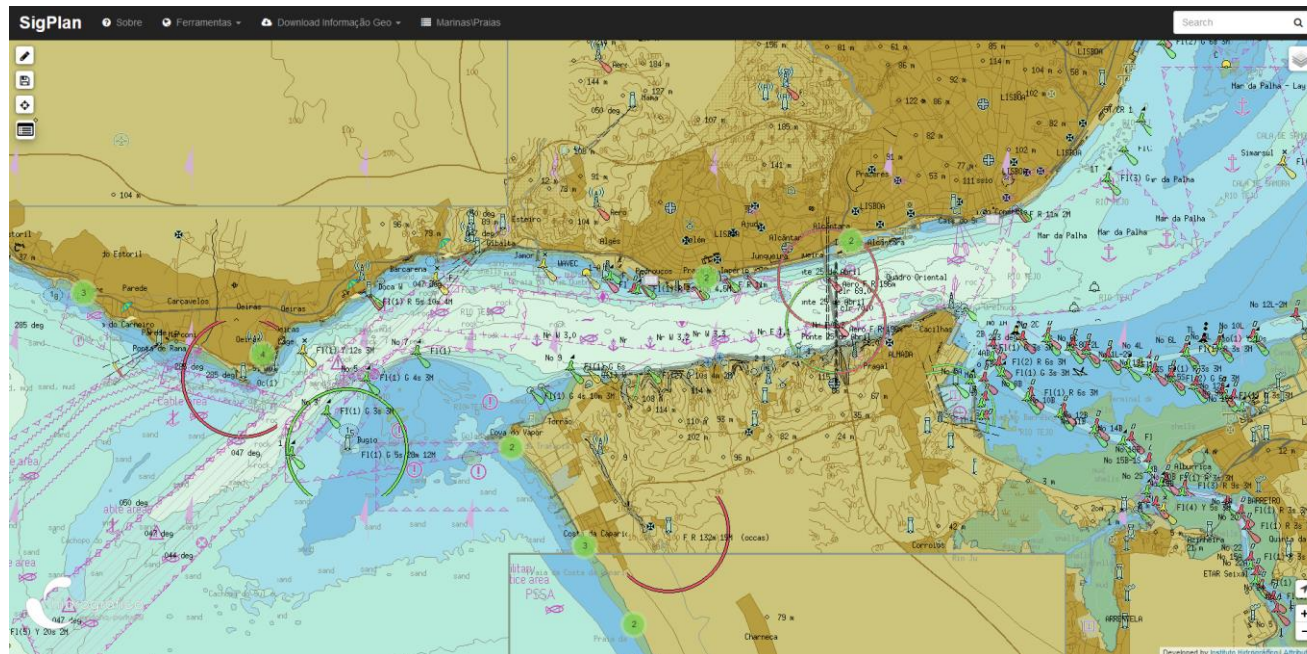
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MSDI

- **WMS ENC System:**

- Seven Cs WMS ChartServer
- Objective: provide to users a National ENC basemap.
- Stakeholders: All maritime Community and Blue Economy Setors



Instituto Hidrográfico

Manual de utilização do serviço  
WMS com as Cartas Eletrónicas do IH  
“Projeto MarIA”

POCI-02-0550-FEDER-035422

Projeto MarIA é financiado no enquadramento da operação SAMA2020 com o n.º POCI-05-5762-FSE-000400



57665FE9.html

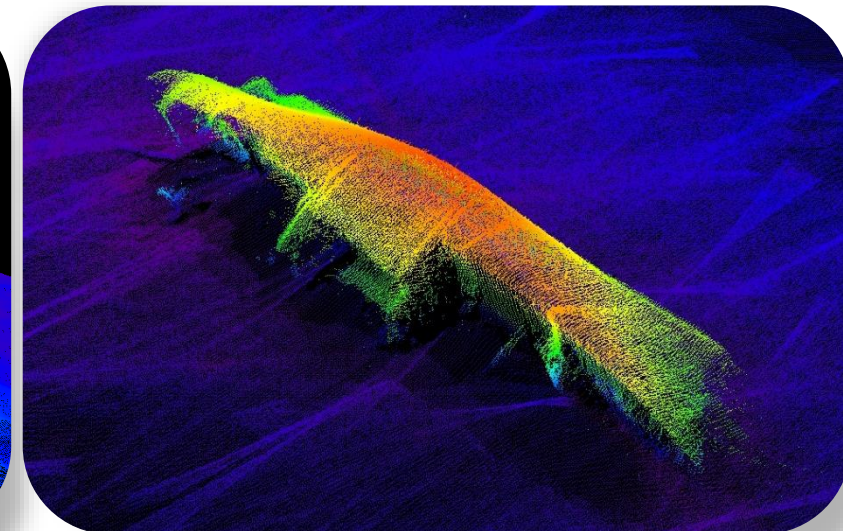
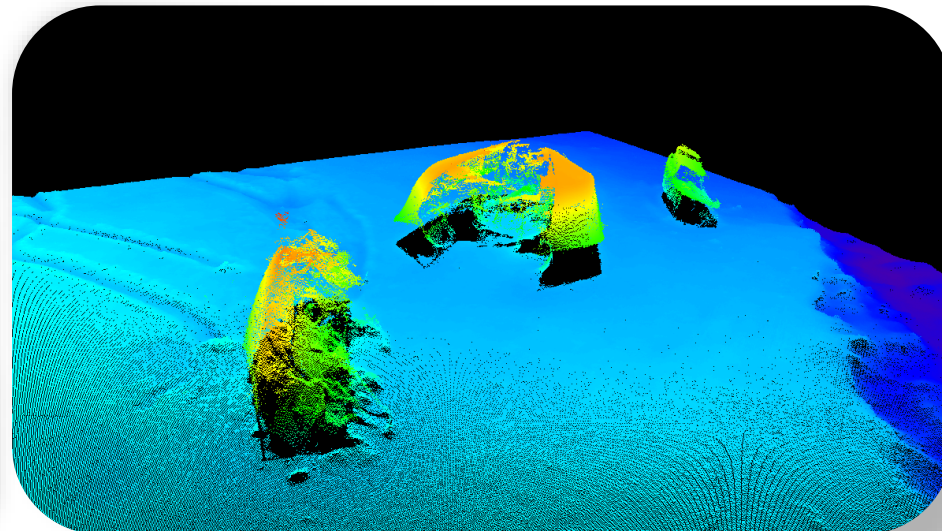
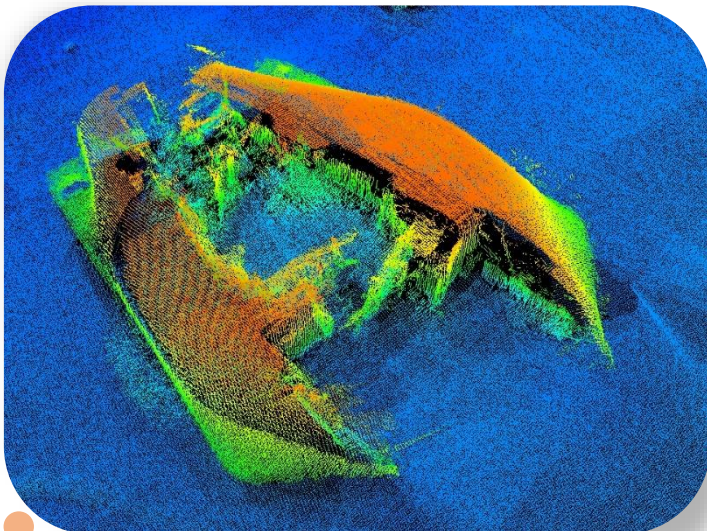
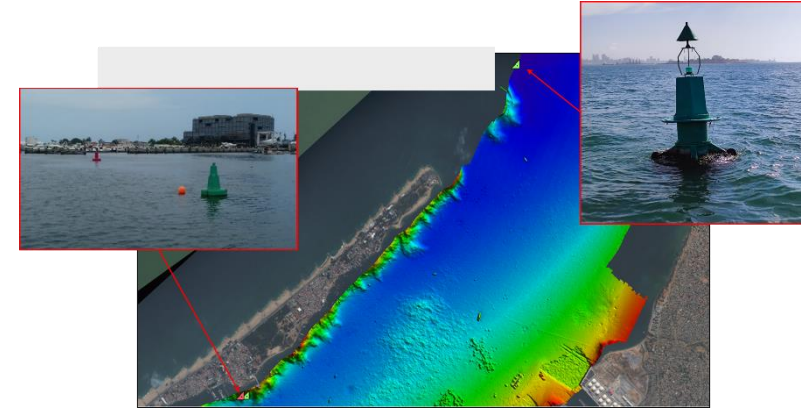
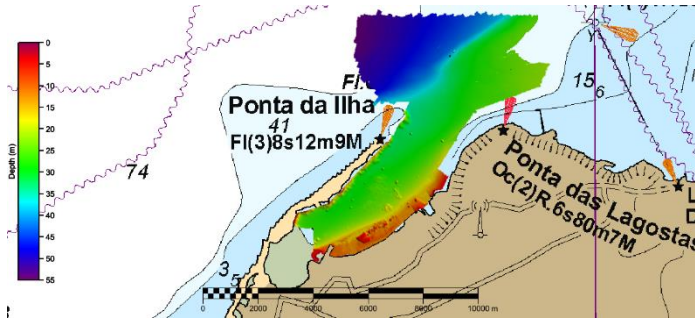


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## TOP ACHIEVEMENT: SURVEYS

- Multibeam hydrographic survey in Luanda harbor in the end of 2021





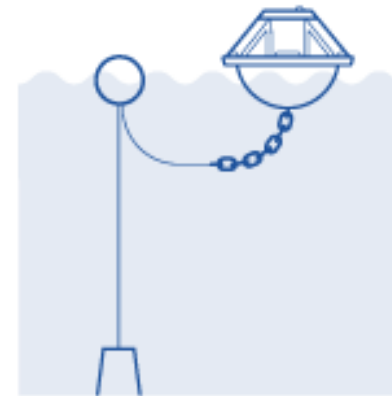


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- In Angola, a Sofar Spotter wave and SST buoy was deployed nearshore Luanda Bay.
- This buoy sends the data in near real time (hourly) using Iridium satellite communication systems to both INIPM and IH.
- Data is made openly available at IHPT mobile application (for both IOS and Android systems).

## TOP ACHIEVEMENT: OCEANOGRAPHY





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- **IHPT**

- Nautical paper Charts (NC) and Electronic Navigational Charts (ENC)
- NC production in the areas of Portuguese responsibility, both national and international
- NC and ENC, including some charts of the International Portfolio (INT), for Portuguese speaking African countries' areas of interest

## Portuguese Folio



**203 NC**  
**46 INT NC**



**119 ENC**

**9 inland (70 paper sheets; 66 IENC)**  
**13 thematic**

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## Portuguese Folio Region H



**26 INT NC**

**10 Angola**  
**16 Mozambique**



**1 ENC**



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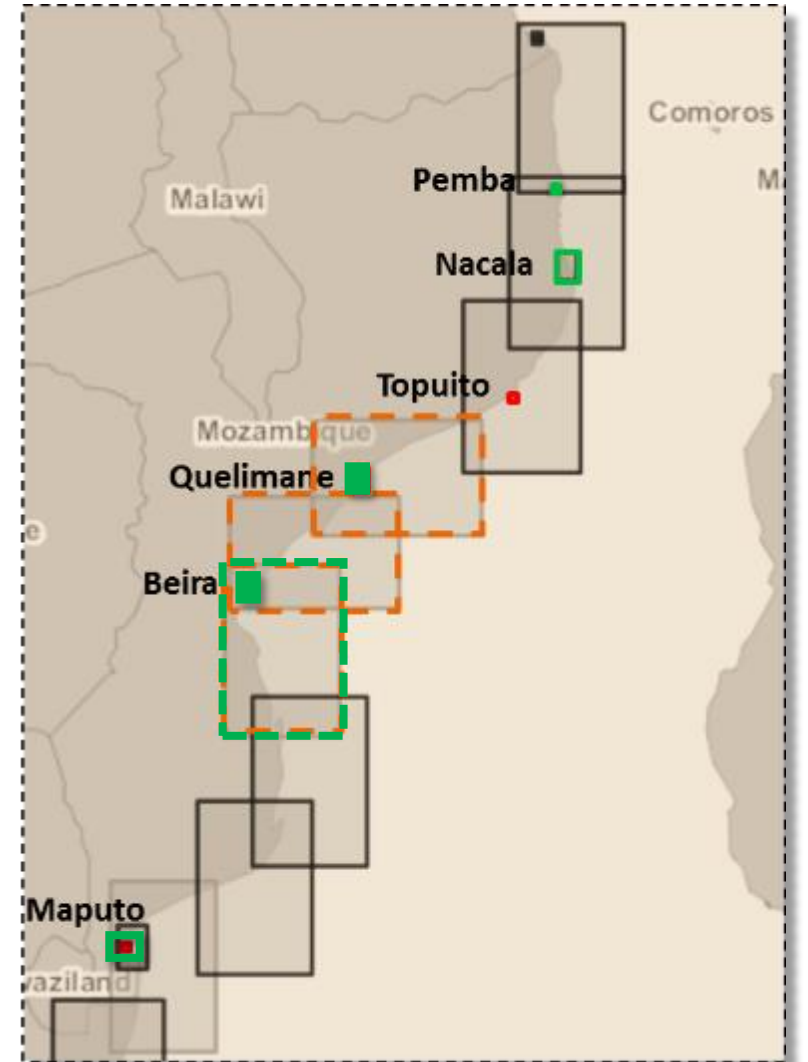
## TOP ACHIEVEMENT: NAUTICAL CARTOGRAPHY



The good cooperation with Mozambique has allowed the co-production of INT charts

Nautical charts co-production:

- INT 7631 “Aproximações ao Porto da Beira” – New Edition Published
- INT 7641 “Aproximações ao Porto de Quelimane” – New Edition Published
- INT 7583 “Aproximações ao Porto de Maputo” – New chart: Final stage CQ/Revision
- INT 7620 “Cabo São Sebastião à Beira ” – New chart: Final stage CQ/Revision





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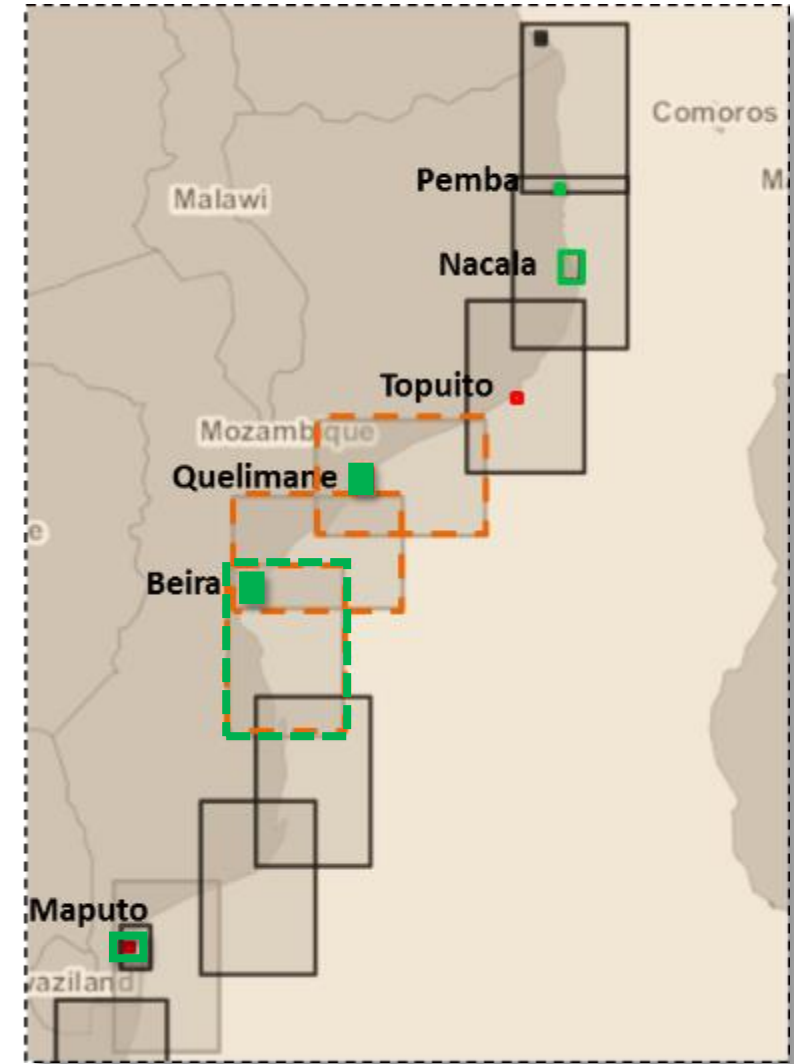
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## TOP PLANS (SAIHC region)

Charts , surveys



- 2022 PT/MZ INT chart coproduction:
  - INT 7583 “Aproximações ao Porto de Maputo” – New chart: Final stage CQ/Revision
- 2022 PT/MZ/UK INT chart coproduction
  - INT 7620 “Cabo São Sebastião à Beira ” – New chart: Final stage CQ/Revision
- 2022-2023 PT/MZ/UK INT chart coproduction
  - INT 7630 (Beira ao Rio Zambeze)
  - INT 7640 (Rio Zambeze à Ilha Epidendron)
- Start MZ ENC production





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# TOP ACHIEVEMENT: NAUTICAL CARTOGRAPHY



## Nautical charts co-production PT/UK:

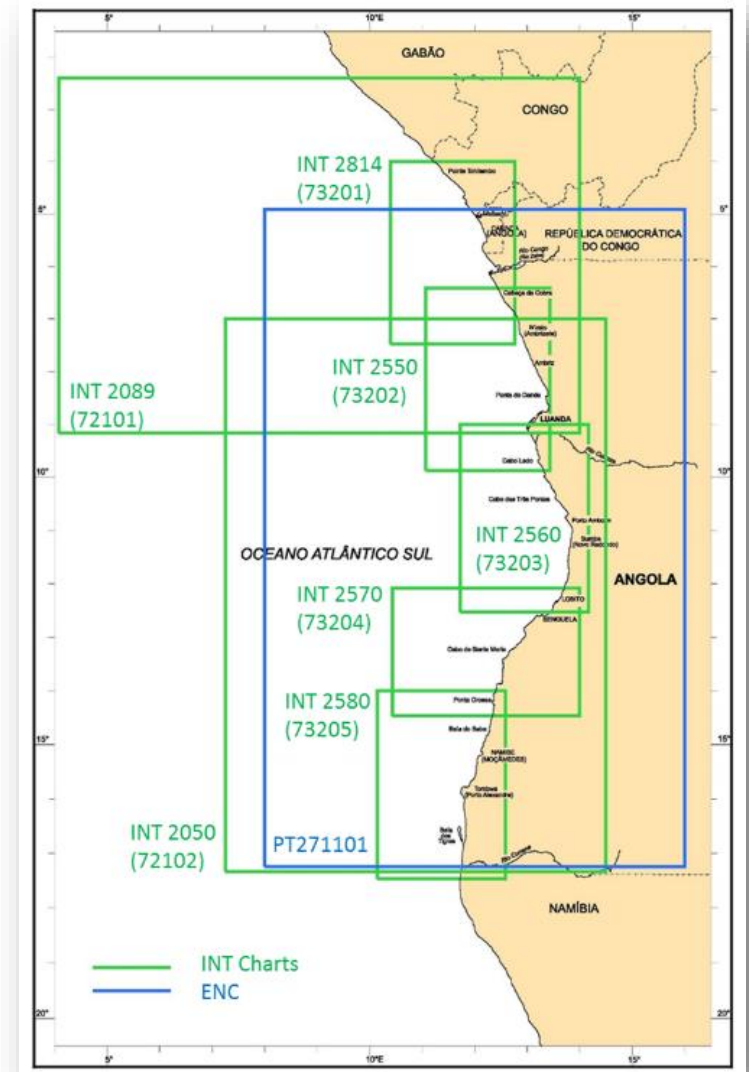
- New editions with new bathymetric information from Angola Government:
  - INT2089 “Gamba to Luanda”
  - INT2050 “Luanda to Baía dos Tigres”
  - INT2814 “Point Tchitembo to Cabeça da Cobra”
  - INT2550 “Cabeça da Cobra to Cabo Ledo”
  - INT2560 “Cabo Ledo to Lobito”
  - INT2570 “Lobito to Ponta Grossa”
  - INT2580 “Ponta Grossa to Foz do Cunene”

## Nautical charts, production PT/AN:

- INT2551 “Porto de Luanda” - New Chart, planned to be published in May/June

## Electronic Nautical Charts, producer PT:

- PT271101 – New edition updated with new bathymetric information from Angola Government
- PT##### “Porto de Luanda” – **New, planned to be published during 1<sup>st</sup> semester 2022**





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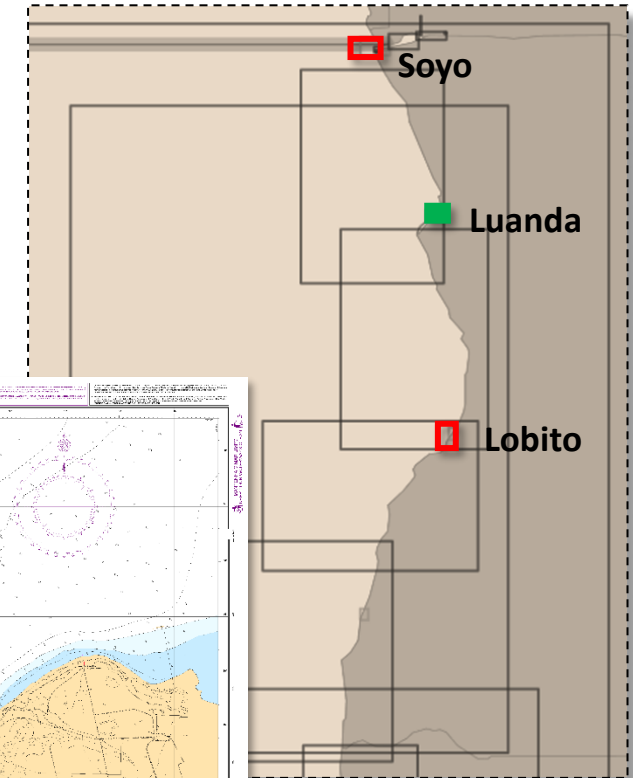
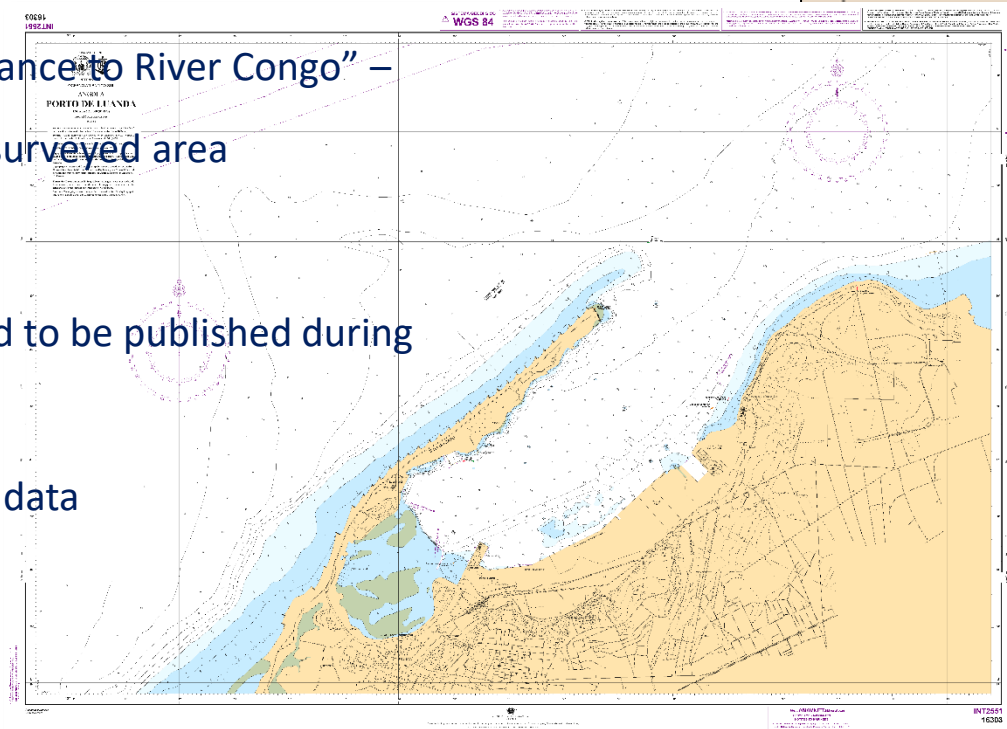
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## TOP PLANS (SAIHC region)

Charts , surveys



- New Surveys - other main harbor than Luanda
- 2022-2023 New Charts:
  - INT2551 “Porto de Luanda” - New Chart, planned to be published in May/June;
  - INT2561 “Porto do Lobito” or INT2511 “Entrance to River Congo” – Planned to produce one, depending on the surveyed area
- 2022-2023 New ENC:
  - PT516303 “Porto de Luanda” – New, planned to be published during 2022
  - One port cell depending on the bathymetric data





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## TOP ACHIEVEMENT: PUBLICATIONS

- Since February 2021, the “Charts and Nautical Publications Catalogue” is freely available online in PDF format to be consulted or downloaded. It is kept up to date.
  - <https://loja.hidrografico.pt/?product=catalogo-de-cartas-e-publicacoes-nauticas-digital>
- IHO has released a Portuguese version of the 6<sup>th</sup> Edition of the Special Publication S-44 'IHO Standards for Hydrographic Surveys'
  - Result of a productive cooperation from Brazil (DHN) and Portugal (IHPT)
  - Available on: [https://iho.int/uploads/user/pubs/standards/s-44/20211216\\_S-44\\_Ed6\\_2.0.1\\_Portugues\\_v2F.pdf](https://iho.int/uploads/user/pubs/standards/s-44/20211216_S-44_Ed6_2.0.1_Portugues_v2F.pdf)
- IHPT publishes, annually, the Tide Tables for the African Portuguese Speaking Countries which, in the SAIHC region, includes the main harbors of Angola and Mozambique



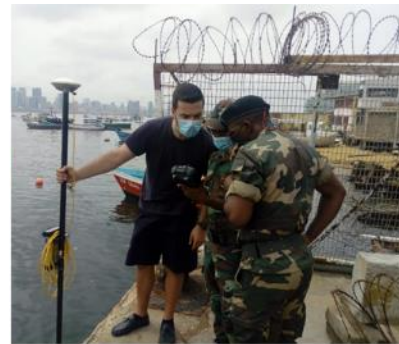
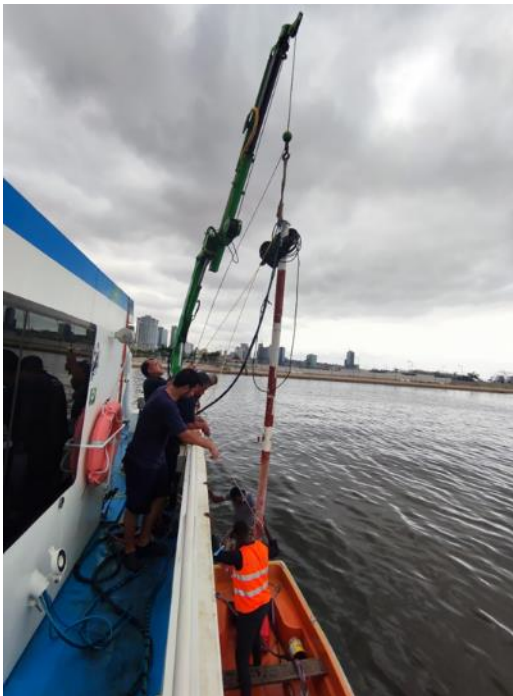


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## TOP ACHIEVEMENT : CAPACITY BUILDING

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- During the hydrographic surveys carried out in Luanda harbor in November and December 2021, the IHPT operationalized the KONGSBERG EM 2040C multibeam echosounder, belonging to the Angolan authorities, which is installed on the vessel Kilamba
- During this period, training was provided to three technicians from the Instituto Hidrográfico e de Sinalização Marítima de Angola (IHSMA) and to two Angolan Navy officers with the category B hydrography course taken at the IHPT's Hydrography and Oceanography School







- School of Hydrography and Oceanography is a department of the IHPT: <https://www.hidrografico.pt/op/23>



CAT B Hydrography Course

Start September 2022



CAT A Hydrography Course

Start September 2023

- Latest CB actions:

November 2018	PT-MZ Training in MBES acquisition and processing.	INAHINA (Maputo)
May 2019	PT-MZ Working meeting on the production of INT nautical charts	IHPT (Lisbon)
2020/21	PT-MZ Working meeting on the production of INT nautical charts.	Email/VTC
December 2021	PT-ANG Training of opportunity in multibeam	Luanda
May 2022	PT-MZ Technical visit to INAHINA (Cartography support)	INAHINA (Maputo)

- CB proposals to IHO:

- Training for cartographic technicians of INAHINA in the production of ENCs
- Training in MBES acquisition and processing to ISHMA

- Two bilateral protocols were signed in the end of 2021 regarding hydrography, cartography, oceanography, R&D and capacity building, with:

- ISHMA: Instituto Hidrográfico e de Sinalização Marítima de Angola
- INIPM: Instituto Nacional de Investigação Pesqueira e Marinha de Angola



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## Top challenges and/or obstructions

- Build ENC production capacity in Mozambique in the next 2 years
- Significant number of INT charts still to be produced
- Data sharing among several data holders! **The gaps reported in charts are directly linked to the difficulty of obtaining data that allows the compilation of the nautical cartography.**
- Planning surveys in Portuguese-speaking African countries:
  - Lack of financing, necessary for its realization
  - Logistics and transportation are still the primary concern for any partnership or support actions
- COVID 19 causes the postponement of several capacity building and cooperation actions





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- Portugal participated in the IHO Assembly (A2) and in the celebrations of the 100 years of the IHO. IHPT shared several photos and images, which were used in the commemorative video published by the IHO.
- Portugal also contributed to THE INTERNATIONAL HYDROGRAPHIC REVIEW No. 25 (May 2021), available on [https://iho.int/uploads/user/pubs/ihreview\\_P1/IHR\\_May\\_2021.pdf](https://iho.int/uploads/user/pubs/ihreview_P1/IHR_May_2021.pdf), with two articles:
  - Portuguese Hydrographic Institute: 60 years of ocean knowledge projected into the future by RAdm C. V. Soares;
  - Program SEAMAP 2030 - 100% of the Portuguese maritime spaces mapped by 2030 by Lieutenant-commander T. Geraldes Dias.
- From September 2020 the Diretor-general of IHPT, RAdm Carlos Ventura Soares, took the chair of the EAtHC commission, having handed over to RAdm Mário José Simões Marques in January 2022.



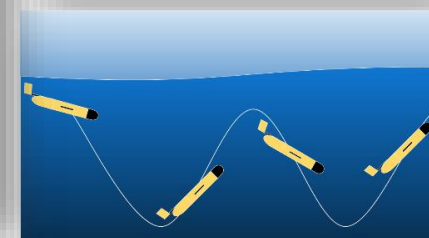
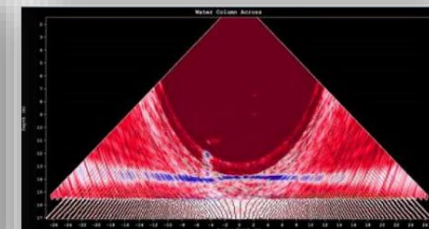
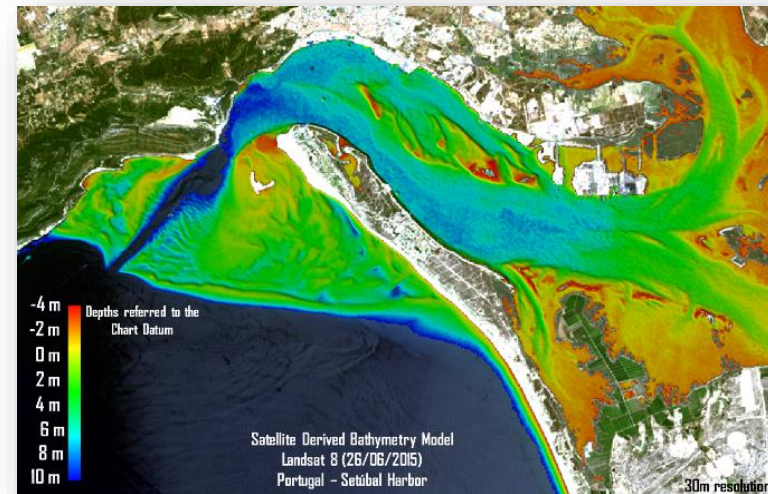
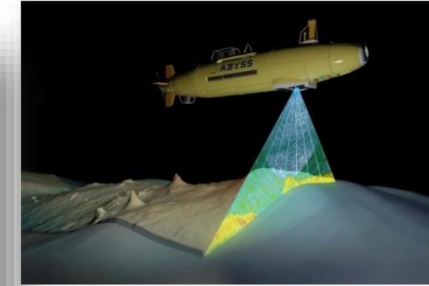
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- The implementation of the S-100 is expected to be a major challenge:
  - S-57 to S-101 transition and the production of S-101 ENC's (Specifications / Production Software / QC / Validation / National Procedures)
  - S-101 ENC's schemes
  - The transition period
- National Capacitation: ships, equipment's modernization, new platform's (UAV, SUV, AAV,..), new technologies
- IHPT in the process to become a National primary MSDI and Oceanographic Data Center.



## TOP CHALLENGES FOR THE NEXT 2-3 YEARS





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## TOP CHALLENGES

**IHPT Programs/Projects for  
2021-2030, aligned with:**

- **IHO Strategic Plan for 2021-2026**
- **United Nations Decade of Ocean Science for Sustainable Development (2021-2030)**
- **SEABED 2030 programme (global knowledge of ocean morphology):**



- **Mapping** of the Portuguese sea (full coverage) - **SEAMAP 2030**
- Implementation of the S-100 standards - internal plans for the transition process and production of S-101 ENC's as a first step
- Support for **capacity building** in marine sciences and techniques and updating nautical cartography in **Portuguese Speaking African Countries**



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## RECOMMENDATIONS

1. IHPT recommends a strong commitment to the training of SAIHC members in the development and production of the new generation of S-100 products and services. These activities should be coordinated in the next years by the Region to include as many participants as possible, as well as to influence the standardization of training
2. Keep capacity building efforts on SAIHC region



United Nations  
UN Ocean Conference  
Lisbon, Portugal

Home About » Programme Participate Documentation » Events » Media Corner Preparatory Process » UN Ocean Action »  
Resources »

**UN OCEAN CONFERENCE**  
Lisbon, Portugal | 27 June to 1 July 2022



CPLP  
Comunidade dos Países  
de Língua Portuguesa

**1st Hydrographic Conference CPLP**  
Lisbon, 4 to 8 July 2022



hidrográfico  
marinha-portugal

Registration - Presentations - Submissions - Scientific Committee - Venue and contacts -

7<sup>as</sup> Jornadas de Engenharia Hidrográfica / 2<sup>as</sup> Jornadas Luso-Espanholas de Hidrografia

21<sup>st</sup>, 22<sup>nd</sup> and 23<sup>rd</sup> June 2022

**HYDROGRAPHIC ENGINEERING CONFERENCE**  
7<sup>AS</sup> JORNADAS DE ENGENHARIA HIDROGRÁFICA / 2<sup>AS</sup> JORNADAS LUSO-ESPAÑOLAS DE HIDROGRAFIA

<https://jornadas.hidrografico.pt/index/en>



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## **ACTIONS REQUESTED FROM SAIHC 18**

To take note of this report

Take any other actions as considered appropriate

**Thank you for your attention**

SAIHC18, 9 - 13 May 2022