



**INSTITUTO HIDROGRÁFICO**

<http://www.hidrografico.pt/>

2023

## ***PORTUGAL***

### ***National Report***

This report describes the main technical activities and developments at Instituto Hidrográfico (IHPT), the Portuguese Hydrographic Office, during the period from May 2022 to August 2023. It was prepared to be presented at the 19<sup>th</sup> SAIHC Meeting in accordance with IHO Resolution 2/1997 as amended.



## **19th Southern Africa and Islands Hydrographic Commission (SAIHC)**

**Plenary meeting 29th – 31th August 2023**



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## 1- **HYDROGRAPHIC OFFICE**

Established in 1960, Instituto Hidrográfico (IHPT) is both an organization within the Portuguese Navy and a national marine research laboratory. It is the national hydrographic service, provides environmental support to naval operations and does research and development activities in physical and chemical oceanography, marine geology, hydrography, safety of navigation and marine data management.

IHPT is focused on the ocean observation, mapping its several scientific dimensions and predicting its behavior in the short, medium and long term. It is committed to open data policies and sharing its capabilities with the society for faster research, development and knowledge of the ocean.

The main objectives of IHPT activities are the safety of navigation, the environmental monitoring and the protection of the marine environment. It is permanently involved in several R&D projects, which ultimately contribute to the climate change analysis and the development of the blue economy. It has established a Quality Management System recognized by an independent, credible and competent external entity, according to the normative reference (NP EN ISO 9001). The Quality Policy includes a commitment to meeting regulatory requirements and continuously improving to meet customer needs.

Among these activities, the training provided by the Hydrography and Oceanography School stands out, with FIG/IHO/ICA category A and B courses. Its students are Navy officers and civilian technicians, from Portugal and Portuguese-speaking African countries, as well as from other friendly nations.

In SAIHC region, IHPT is the Primary Cartographic Authority (PCA) in:

- Angola
- Mozambique

## 2- **SURVEYS**

### **a) Coverage of new surveys**

New surveys in SAIHC region: NTR

The main hydrographic program of IHPT, the “SEAMAP 2030: Mapping of the Portuguese Sea” (<http://www.hidrografico.pt/iprojeto/16>) is in progress. This program has the objective of contributing to the conservation and sustainable use of the sea, supporting research, and promoting development. It is aligned with United Nations Decade of Ocean Science for Sustainable Development.

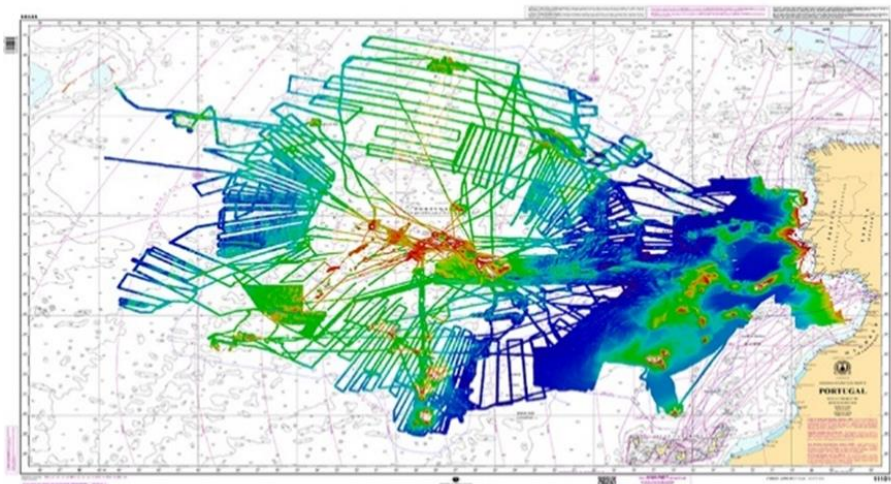


Figure 1 – SEAMAP 2030 actual coverage with multibeam survey.

**b) New technologies and /or equipment**

Portugal is using top of the shelf acoustic systems for hydrographic surveys. New methodologies based on satellite imagery and low flying vehicles imagery is also being used and in current research. Portugal is also using third party surveys data, which is appropriately being checked for quality control.

**c) New ships**

NTR.

**d) Crowdsourced and satellite-derived bathymetry - national policy**

The Portuguese national policy for crowdsourced bathymetry is currently under review.

A regular updated service of coastal bathymetry is one objective for the coming future.

Portugal is currently conducting research and development projects 4S – Satellite Seafloor Survey Suite, and SimShore focused on multispectral image derived bathymetry (using SDB and drone multispectral imaging data).

**e) Challenges and achievements**

Obtaining funding for new surveys in Mozambique and Angola, in conjunction with those countries, is considered the greatest challenge.

Two Angolan Navy officers are finishing the category B hydrography course at the IHPT's Hydrography and Oceanography School.

**3- NEW CHARTS & UPDATES**

All IHPT Electronic Navigational Charts (ENC) and updates are produced according to the S-57 standard. All new Nautical Charts (NC) and new editions are bilingual (Portuguese and English) and

follow INT specifications, whether or not they belong to INT series. Presently, IHPT provides its Nautical Charts using a Print-on-Demand system. All charts are continuously updated according to the published “Notices to Mariners”. IHPT also produces NC and ENC, including some charts of the International Portfolio (INT), for African Portuguese Speaking Countries.

**a) ENC coverage, gaps and overlaps**

The Portuguese ENC national portfolio has 100 cells organized in five (5) Usage Bands. Since the last SAIHC meeting, Portugal produced one ENC cell in the SAIHC Region. Table I shows published ENC.

Table I – IHPT ENC published

Area	Cell number	Usage Band	Status	Observations
<b>ANGOLA</b>				
Porto de Luanda	PT516303	5	Published	1st Edition, September 2022

**b) ENC\_Distribution method**

IHPT is a member of the International Centre for Electronic Navigational Charts (IC-ENC), participating actively in its works, including their subordinate bodies. IC-ENC RENC distributes all Portuguese ENC.

**c) RNC**

NTR.

**d) INT Charts**

Since the last meeting, IHPT produced/co-produced for SAIHC region the INT Nautical Charts showed in tables II and III.

Table II – INT charts produced or co-produced by IHPT

INT Number	PT NAC Number	Title	Scale	Edition	Status
<b>ANGOLA</b>					
2551	16303	Porto de Luanda	1/15000	1ª 2022	New Chart Produced
<b>MOZAMBIQUE</b>					
7583	-	Aproximações ao Porto Maputo (Porto Maputo)	1/30 000 (1/10 000)	1ª 2023	New Chart Produced
7641	-	Aproximações ao Porto de Quelimane (Porto Quelimane)	1/30 000 (1/10 000)	2ª 2023	Produced
7662	-	Porto de Nacala	1/20 000	1ª 2023	New Chart Produced

The good cooperation with Angola and Mozambique has increased the production and/or co-production of INT charts in accordance with the IHO standards and specifications.

Table III –INT charts under construction and planned to be produced

INT Number	PT NAC Number	Title	Scale	Status	Comments	Producer(s)
<b>ANGOLA</b>						
-	-	-	various	schemed	Waiting for data	Co-production PT-Angola
<b>MOZAMBIQUE</b>						
7645	-	Topuito	1/30 000	Schemed New Chart	No data available	Co-production MZ-PT
7620		Cabo São Sebastião à Beira	1/300 000	CQ	1ªED planned to be published during 2023	Co-production MZ-PT
7630	-	Beira ao Rio Zambeze	1/300 000	Schemed New Chart	-	Co-production PT-GB
7640	-	Rio Zambeze à Ilha Ependron	1/300 000	Schemed New Chart	-	Co-production PT-GB

In a joint effort with the Angolan authorities, IHPT has maintained the updates, through Notices to Mariners (NtM), of the published charts.

#### e) National paper charts

All IHPT new charts and new editions are bilingual (Portuguese and English) and follow INT specifications, whether or not they belong to INT series. The existing nautical paper chart portfolio aims to meet the specific needs of mariners, being grouped according to their purpose.

The number of the existing charts in the Portuguese nautical charts portfolio for SAIHC region is mentioned on table IV.

Table IV –Portuguese nautical charts portfolio in SAIHC Region

Country		NC (Portuguese folio)	INT	ENC	Old Folio (Portuguese folio)
<b>PAL* SAIHC Region</b>	Mozambique	<b>33</b>	<b>**</b>	<b>0</b>	<b>33</b>
	Angola	<b>46</b>	<b>6***</b>	<b>2</b>	<b>38</b>
<b>Overview</b>		<b>1</b>	<b>0</b>	<b>-</b>	<b>1</b>
*PAL - African Portuguese speaking countries					
** No PT national number assigned to Mozambique INT charts					
*** Plus 2 in EAtHC Region					
OBS: New chart scheme under development for the PAL to allow cancellation of the old folio. These charts will be produced in the next 3-5 years in accordance with IHO specifications.					

#### f) Other charts, e.g. for pleasure craft

Charts for other purposes as Fisheries, Yachting, Sediments distribution, special training and Inland (Douro and Guadiana rivers) were produced for Portugal geographical area. IHPT did not produce any Other Charts for the SAIHC region.

## g) Challenges and achievements

The good cooperation with Mozambique has allowed the co-production of INT charts in accordance with the IHO standards and specifications.

Concerns/challenges:

- Fill the gaps for INT chart folio for Angola and Mozambique;
- Establishment of a formal process for NtM in Mozambique (Portugal is working with Mozambique on this issue);
- ENC production capability in Mozambique (S-57 and/or S-101).

IHPT sees the implementation of the S-100 as a major challenge, particularly concerning the production of S-101 ENCs as well as the establishment of S-101 ENCs schemes and the way during the transition period.

## 4- NEW PUBLICATIONS AND UPDATES

### a) New Publications

Since the last meeting, IHPT published the Annual Group of Notices to Mariners (2023), as well as the Monthly Group of Notices to Mariners (Figure 2).

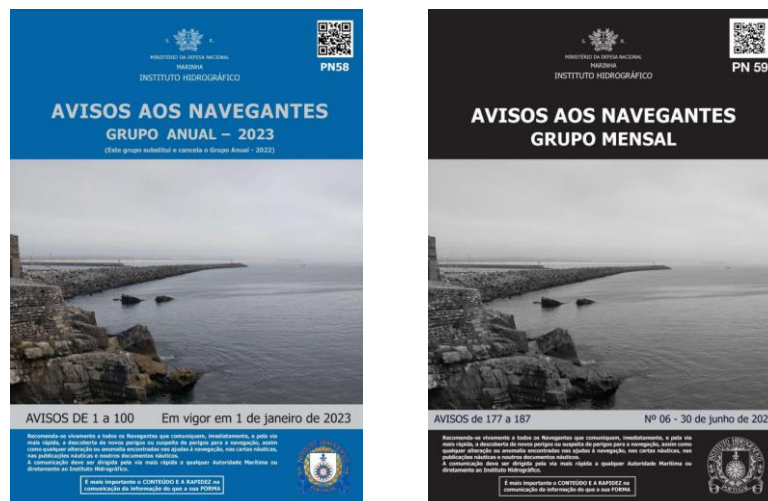


Figure 2 – Portuguese Group of Notices to Mariners: Annual (left) and Monthly (right).

Annually, IHPT publishes the Tide Tables for the main harbors of Portugal, including the Azores and Madeira Archipelagos (VOL I). Also Annually, IHPT publishes the Tide Tables for the African Portuguese Speaking Countries (VOL II) which, in the SAIHC region, includes the main harbors of Angola and Mozambique. The VOL II of the Tide Tables 2023 was published on August 12 of 2022. Those publications, are free for download and made available in:

[https://loja.hidrografico.pt/sdm\\_downloads/tabela-mares-vol-ii-2023/](https://loja.hidrografico.pt/sdm_downloads/tabela-mares-vol-ii-2023/)

<https://loja.hidrografico.pt/produto/tabela-de-mares-vol-ii-2023/>

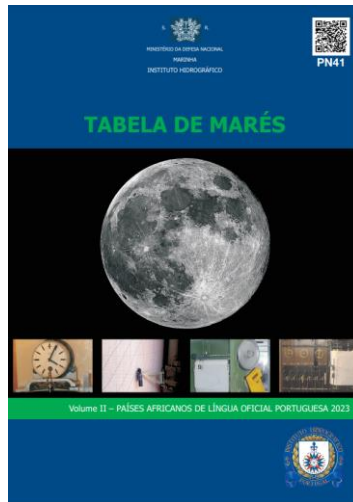


Figure 3 - Tide table for the African Portuguese Speaking Countries.

## b) Updated publications

Since May 2022, the “Charts and Nautical Publications Catalogue” is freely available online in PDF format to be consulted or downloaded. It is kept up to date. The link to this publication is as follows: <https://loja.hidrografico.pt/?product=catalogo-de-cartas-e-publicacoes-nauticas-digital>.

The nautical and electronic navigational chart catalogue is also published as a web feature service in “Hidrográfico Plus” marine spatial data infrastructure (<https://geomar.hidrografico.pt/>).

The List of Lights is also freely available online, since April 2023, in a Geographic Information System (GIS) format, available on: <https://geomar.hidrografico.pt/>. The information and List of Lights for Angola and Mozambique will be soon available in this format.

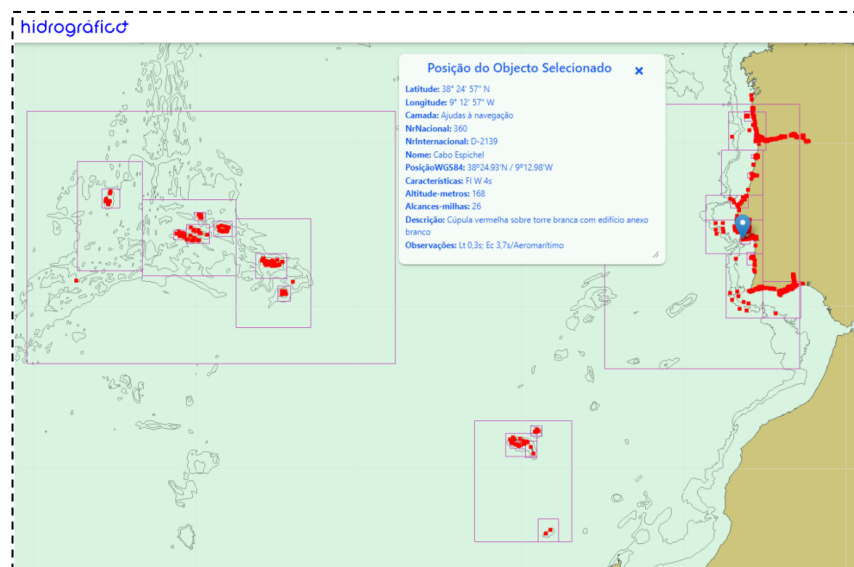


Figure 4 – List of Lights freely accessed in GIS format.



**c) Means of delivery, e.g. paper, digital**

Digital or paper, if requested.

**d) Challenges and achievements**

NTR

**5- MARITIME SAFETY INFORMATION**

**a) Existing infrastructure for transmission**

Notices to mariners (GMAN) are exclusively available under digital formats on IHPT website:

<https://geoanavnet.hidrografico.pt>

**b) Statistics on work of the National Coordinator**

NTR

**c) New infrastructure in accordance with GMDSS Master Plan**

No new information received from Angola and Mozambique. However, IHPT is making efforts to conduct an online Maritime Safety Information (MSI) training, in October 2023, for a 4 days period, as requested by IHSMA.

**d) Challenges and achievements**

To keep cooperating with Mozambique and Angola as requested in the future, by those agencies. Furthermore, during the 1<sup>st</sup> quarter of 2023, IHPT has been closely cooperating with INAHINA in the elaboration of their version of the Notice to Mariners (NtM).

IHPT has developed a new ANAVNET system ( <https://geoanavnet.hidrografico.pt> for the area of national responsibility), replacing the previous and obsolete web access to maritime safety information. This new platform, launched on April 2022, makes available all the Maritime Safety Information through the publication and diffusion of the notices to mariners, navigational warnings and meteorological warnings. All the information is now georeferenced for spatial analysis purposes.

**6- C-55**

The table with the latest information to update IHO Publication C-55 (Status of Hydrographic Surveying and Charting Worldwide) has been provided using the online system.

## 7- CAPACITY BUILDING

### a) Offer of and/or demand for Capacity Building

IHPT School of Hydrography and Oceanography (IHPT-EHO) (<https://www.hidrografico.pt/op/23>) dedicated to the training of Navy officers, petty officers and civilian technicians offers FIG/IHO/ICA category A and B courses in hydrography and nautical cartography (Table V).

### b) Training received, needed, offered

The last three years activity related to building capacity in the region is shown in the following Table V.

Table V –Activities and CB actions

Date	Actions/Activities	Place	Status
<b>On-the-Job Training</b>			
May 2019	PT-MZ Working meeting on the production of INT nautical charts	IHPT (Portugal)	Executed
2020/21	PT-MZ Working meeting on the production of INT nautical charts. Action cancelled due COVID-19.	Mozambique	Cancelled
2022	PT-MZ Working meeting on the production of INT nautical charts; NtM formal Procedures and Introduction to ENCs.	Mozambique	Executed
2021/2022	Hydrographic Survey – Equipment; data acquisition; data processing	Angola	Executed
2023	PT-MZ Working on creation/implementation of NtM formal Procedures	By correspondence	Ongoing
<b>CB Action</b>			
2021/2022	ENC Training for Mozambique (from 2021 P-25) Action postponed due COVID-19.	Mozambique	Pending
<b>Short and Long Courses</b>			
2022/2023	CAT B (Hydrographic Surveys and Nautical Cartography) <b>Two (2) Angolan Navy officers</b>	IHPT-EHO (Portugal)	Ongoing
2023/2024	CAT A (Hydrographic Surveys and Nautical Cartography)	IHPT-EHO (Portugal)	Starts September 2023
2023	Maritime Safety Information (MSI) training (4 days) <b>Requested by ISHMA</b>	VTC-IHPT	Planned

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.

**c) Status of national, bilateral, multilateral or regional development projects with a hydrographic component.**

One bilateral cooperation agreement with Mozambique and two with Angola is in force since 2017 and 2021, respectively, regarding hydrography, cartography, oceanography, R&D and Capacity Building (CB).

IHPT is in conversations with IHSMA for an MBES surveying action/activity by the last quarter of 2023.

In order to promote technical cooperation between the various entities in the countries of the Community of Portuguese Language Countries (CPLP) that have attributions in the area of Hydrography, IHPT organized a conference meeting, which took place in July 2022 in Lisbon.

This conference, the 1<sup>st</sup> HYDROGRAPHY CONFERENCE OF THE PORTUGUESE-SPEAKING COMMUNITY, comprised a formal opening session and two days of work to bring together the needs, difficulties and recommendations of the countries of this community. A 2<sup>nd</sup> Conference is planned to be held in 2024.



Figure 5 – 1<sup>st</sup> Hydrography Conference of the Portuguese-speaking Community.

**d) Definition of proposals and requests to the IHO CBSC**

The proposed ENC training for Mozambique cartographic technicians aiming the development of ENC production capability is pending, initially postponed, due to COVID-19.

**8- OCEANOGRAPHIC ACTIVITIES**

**a) General**

IHPT develops activities related to physical, geological and chemical oceanography, participating in national and European Union research projects in those fields.

As previously reported, a spotter buoy was launched on July 5, 2022 near Luanda Bay, Angola, and through satellite communications Iridium was sending data to INIPM<sup>1</sup> and IHPT, almost in real time (hourly), until October 2022, when it was unfortunately stolen with no possibility of being recovered.



Figure 6 - Sofar Spotter wave and SST buoy (yellow).

Accordingly with the bilateral cooperation agreement signed between IHPT and INAHINA, in the future, it is expected that IHPT and INAHINA will cooperate, in the SAIHC region, to build up capacities in oceanographic modelling, tides and currents data acquisition, oceanographic database administration and remote sensing applied for operational oceanography.

#### **b) GEBCO/IBC's activities**

IHPT provides bathymetric data to IHO DCDB and GEBCO through EMODNet, the European Marine Observation and Data Network. With this participation in European multidisciplinary projects, IHPT learns and keeps their alignment with the best procedures in the MSDI research developments.

Part of the work involves linking to national, regional or thematic data repositories in which lies the basic information and the creation of outreach products. Thematic groups have been set up to organize the data available from various sources, assess their quality, ensure that they are accompanied by metadata and provide such data through thematic web portals in the areas of bathymetry, geology, habitats, biology, chemistry, physical oceanography, and human activities.

The High Resolution Seabed Mapping (HRSM) project aims to create and maintain an operational service that provides free and open access to the seabed and coastal sea basin bathymetric models at the best resolution possible.

A harmonized EMODnet Digital Terrain Model (DTM) has been generated for European sea regions from selected bathymetric survey data sets, composite DTMs, Satellite Derive Bathymetry (SDB) data products, while gaps with no data coverage are completed by integrating the GEBCO Digital Bathymetry (see GEBCO Grid and IHO DCDB website).

IHPT has been collaborating with this project providing bathymetric data in the Atlantic, Azores and Madeira regions.

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<sup>1</sup> Instituto Nacional de Investigação Pesqueira e Marinha (National Institute of Fisheries and Marine Research)

**c) Tide gauge and other monitoring equipment network**

Although there is the knowledge of some observation points of a local tidal network that is controlled by the local authorities, there is no IHPT oceanographic equipment installed on SAIHC region.

**d) New equipment**

NTR

**e) Challenges and achievements:**

The harmonic constants included on Volume II of Tide Table are not updated since 1973 for Angola and 2000 for Maputo, Mozambique. This lack of update is due to the absence on data published by the concerned national authorities.

**9- SPATIAL DATA INFRASTRUCTURES**

As a marine data and knowledge producer, IHPT's internal data management processes are kept in line with the national, European and international geospatial data policies and information sharing legal requirements.

IHPT has established a Marine Spatial Data Infrastructure (MSDI) – “Hidrográfico+” (<https://geomar.hidrografico.pt>), which is aligned with the IHO, UN-GGIM, INSPIRE, IODE best practices and FAIR principles to improve data management, metadata creation, data findability and access services. In the geoportal users can find several marine and hydrographic datasets: environment observations at sea, forecasts, nautical charts and hydrographic information.

**a) Status of MSDI**

“Hidrográfico+” has open source components and a service oriented architecture, in line with the traditional MSDI functionalities, principles and pillars. Data can be accessed by humans and machines, through OGC services and custom APIs. The infrastructure presents a full integration between the geoportal and the metadata catalogue, which optimizes data access by the National SDI (SNIG Portal) – and European SDI (INSPIRE Geoportal).

Currently, new functionalities are being developed, for instance, an oceanogram service which provides marine data forecasts for specific locations, 4D visualization capabilities and a jupyter hub instance to share knowledge regarding case studies using “Hidrográfico+” available data.

One of the major development during the reference period was the implementation of a Web Map Service with all ENC coverage produced by IHPT. This gives to all users, namely the Marine Space Management Stakeholders a hydrographic basemap to support their special location activities.

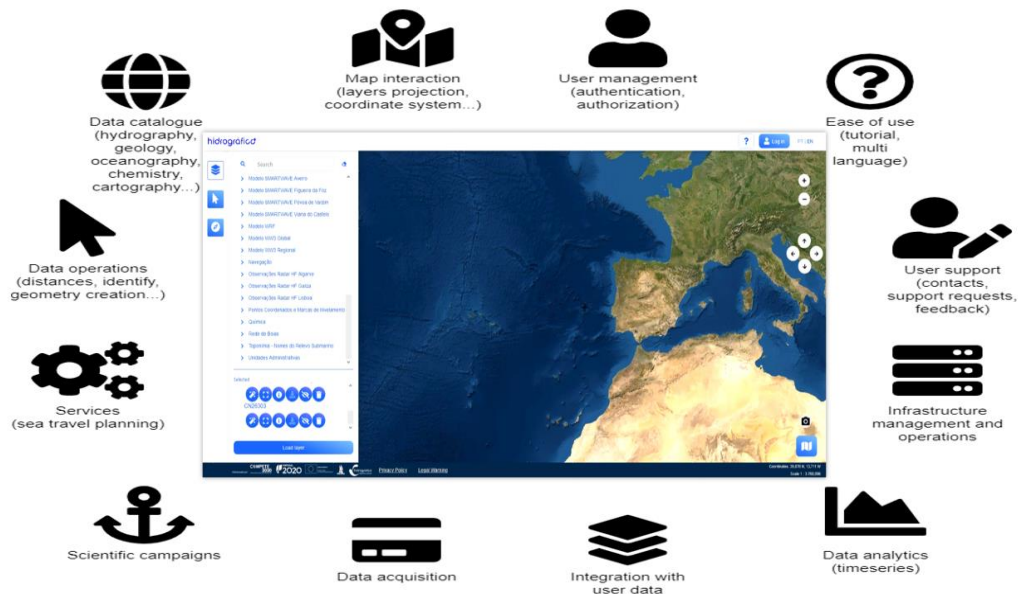


Figure 7 – “Hidrográfico+” MSDI functionalities and components.

## b) Relationship with the NSDI

IHPT data is available through Open Geospatial Consortium (OGC) web services in the Portuguese National Spatial Data Infrastructure (NSDI) – Sistema Nacional de Informação Geográfica (SNIG): <https://snig.dgterritorio.gov.pt/>. SNIG maintains a centralized metadata catalogue with all national data providers and it is linked to the EU INSPIRE Portal. The metadata is shared between the different infrastructures through automatic harvesting processes. This approach assures data access for different clients.

## c) Involvement in regional or global MSDI efforts

IHPT works in the SNIG Working Groups for a common effort in the INSPIRE implementation principles and provides geospatial data services to other marine data portals like the Marine Spatial Data Portal – Geoportal do Mar Português: (<https://webgis.dgrm.mm.gov.pt/portal/apps/webappviewer/index.html?id=df8accb510bc4f33963d9b03bf3674b8>).

## d) National implementation of the Shared Data Principles – including any national data policy and impact on marine data.

Several Portuguese organizations have been implementing the common European directives and orientations such as INSPIRE, Marine Directive Framework, the European Strategy for Data Policy and the Directive on open data and the re-use of public sector information, also known as the ‘Open Data Directive’ (Directive (EU) 2019/1024).

The main driver in the SDI and MSDI has been the European community and the regional initiatives. SNIG follows the INSPIRE directive and the Implementation Working Groups. IHPT combined

the need to implement the INSPIRE directive with the IHO and IMO principles and requirements to build up the “Hidrográfico+” MSDI capable of serving multiple users, needs and uses. Portugal does not have a national common marine data policy. However, data producers and providers have their own organizational data policies aligned with national and European legislation compliant with international data management best practices.

The “Hidrográfico+” platform currently delivers open data, for visualization, and download. Some of the data is not available for download, as in the future a paid access will be required for downloading that data.

Since November 2022 IHPT and Portuguese Institute for Sea and Atmosphere (IPMA) <https://www.ipma.pt/pt/index.html> started the implementation of a federated National Oceanographic Data Centre (NODC). This initiative intends to push forward the national oceanographic data availability and potentiate the data value for Blue Economy and Marine Knowledge.

#### **e) MSDI national portal**

No single portal was identified yet as MSDI national portal, and maybe the best approach for the implementation of MSDI federate principles is to implement a network of geospatial services and aggregated metadata access points like SNIG and INSPIRE portals.

#### **f) Best practices and lessons learned**

The “Hidrográfico+” MSDI follows the best practices and requirements identified from several recognized institutions/organizations: INSPIRE (<https://inspire.ec.europa.eu/>), IHO MSDIWG (<https://iho.int/en/body-of-knowledge>), OGC (<https://www.ogc.org/>) and IOC OceanBestPractices (<https://repository.oceanbestpractices.org/handle/11329/139>), among others. The main lessons learned are the need to maintain a good human resources capacity building program and to maintain the internal competences and technical skills aligned with the MSDI principles and implementation models.

#### **g) Challenges and achievements.**

“Hidrográfico+” MSDI components are used to support internal technical and scientific geospatial data management processes and to feed external clients with near real time data. This MSDI supports the organization mission as marine national laboratory and hydrographic chart authority. Being a navy unit, it supports maritime operations that are extremely dependent of geospatial data.

This MSDI implements all identified requirements needed for interoperability. For sure it potentiates the access to IHPT blue geospatial data. In this way, IHPT manages one infrastructure ready to be used in the Open Data Directive umbrella and aligned with INSPIRE requirements. This is one of the IHPT contributions for Ocean Decade sustainable development goals and for national blue

economy development.

“Hidrográfico+” is rapidly becoming a consolidated platform of geographic ocean data, by making easily available, the value of the data produced by IHPT, to a number of different community of users, and also by integrating into a network of other geospatial European initiatives, where all those stakeholders can work together for the benefit of all.

The MSDI development still a continuous development process. Digital era is still rising multiple challenges for hydrographic offices. For sure new requirements for digital data should show up soon. .

The main challenges are maintaining the MSDI aligned with digital data strategies at different levels. This is a digital environment with a continuous evolution, which requires a rapid adaptation to new clients and stakeholders. Data harmonization and development of S-100 based web services will be for sure a challenge in the future.

## **10- INNOVATION**

### **a) Use of new technologies**

Considering the use of new technologies for hydrographic surveys, Portugal has put new work power to developing and using current satellite technology for the acquisition of bathymetric information. In house software development allowed the use of satellite images to bring in new survey techniques. Multispectral satellite images are now being tested and used for bathymetry where this approach is considered viable and needed. Following this implementation, new tasks have been set up, to develop a similar technique using remotely acquired imaging from low flying vehicles such as unmanned aerial vehicles.

Portugal is currently working on Horizon2020 European Project “4S - Satellite Seafloor Survey Suite” focused on using new techniques for having Bathymetry and Seafloor Classification from remotely acquired multispectral images throughout a web service.

Furthermore, other methods are being developed, such as using the wave field inversion for calculating depth and thus achieving another bathymetric survey technique. Considering the development of these methods using new technologies, Portugal is currently working on two European projects focused specifically on these purposes.

IHPT is also a “beta-tester” for the brand new ESA products.

### **b) Risk assessment**

IHPT is conducting Risk Assessment of some of the waterways in order to identify areas of improvement for the safety of navigation, as well as for every maritime signaling projects aids to navigations implementation. These assessments are performed in accordance with the recommendations and guidelines of IALA.



**c) Policy matters.**

NTR.

**11- OTHER ACTIVITIES**

**a) Participation in IHO Meetings**

Portugal participated in the IHO Assembly (A3).

Due to its primary charting responsibilities, Portugal, represented by IHPT, is a member of EAthC and Associated Member of SAIHC.

The detail of IHPT involvement in other IHO activities/working groups is listed in the table hereafter.

Table VI – IHPT representation on IHO committees and working groups

	Description	IHPT representation
Council		RAdm Ramalho Marreiros
EAtHC	Eastern Atlantic Hydrographic Commission	RAdm Ramalho Marreiros; CDR João Vicente; CDR Carlos Marques; Eng <sup>a</sup> Paula Sanches
SAIHC	Southern African and Islands Hydrographic Commission	RAdm Ramalho Marreiros; CDR João Vicente; CDR Carlos Marques; Eng <sup>a</sup> Paula Sanches
HSSC	Hydrographic Services and Standards Committee	CDR João Vicente; CDR Carlos Marques; Eng <sup>a</sup> Paula Sanches
IENWG13	IHO-European Union Working Group	CDR Paulo Nunes; CDR João Vicente; CDR Carlos Marques; Eng <sup>a</sup> Leonor Veiga
CBWG	Capacity Building Working Group	CDR João Vicente
MSDI	Marine Spatial Data Infrastructure Working Group	LCDR Telmo Dias
S100WG	S-100 Working Group	Eng <sup>a</sup> Paula Sanches
S101PT	S-101 Project Team	Eng <sup>a</sup> Paula Sanches; CDR Carlos Marques
SCUFN	GEBCO Sub-Committee on Undersea Feature Names	Eng <sup>a</sup> Paula Sanches
WENDWG	Worldwide ENC Database Working Group	Eng <sup>a</sup> Paula Sanches
DQWG	Data Quality Working Group	Eng <sup>a</sup> Paula Sanches
HSWG	Hydrographic Surveys Working Group	CDR João Vicente; CDR Carlos Marques (HSWG Secretary)
CSBWG	Crowdsource bathymetry Workin Group	Eng <sup>a</sup> Leonor Veiga
ABLOS	OHI - Advisory Board on the Law Of the Sea (ABLOS)	CDR Carlos Marques
ENCWG	ENC Standards Maintenance Working Group	Eng <sup>a</sup> Paula Sanches; Eng <sup>a</sup> Ana Moura; Helena Julião
NCWG	Nautical Cartography Working Group (NCWG)	Eng <sup>a</sup> Paula Sanches

At the IHPT, the World Hydrography Day was celebrated through a session chaired by the Director-General Rear-admiral João Paulo Ramalho Marreiros, who gave a brief address alluding to this day, followed by several presentations.

Portugal also contributed to THE INTERNATIONAL HYDROGRAPHIC REVIEW volume 28, with the article “PORTUGAL’S CARTOGRAPHIC RESPONSIBILITY IN AFRICA”.

**b) Meteorological data collection**

NTR.

**c) Geospatial studies**

NTR.

**d) Preparation for responses to disasters**

Regarding disaster response, IHPT has set up a multidisciplinary team within its many scientific/marine science capabilities (such as hydrography, physical oceanography, marine geology, chemistry and pollution and Data center) combined with the expertise in marine technology and ocean engineering.

The purpose of this team, the *Equipa Hidrográfica de Intervenção Rápida* (Quick Response Hydrographic Team) is to support the national emergency coordinator in case of a natural or manmade disaster or emergency and also in Portuguese Naval Operations.

**e) Environmental protection**

NTR.

**f) Engagement with the Maritime Administration**

NTR.

**g) Aids to Navigation matters.**

IHPT participate every year in the IALA AtoN Requirements and Management (ARM) committee meeting, held at IALA Headquarters (France), where work is being done to create documents, standards, recommendations, guidelines and manuals regarding navigational requirements, information services and portrayal and risk management issues. Is quite important that SAIHC countries members be present in these meetings and contribute with their governmental and national guidance.

**h) Magnetic/Gravity surveys**

NTR.

**i) International engagements**

One bilateral cooperation agreement with Mozambique is in force since 2017. Mozambique may count with the cooperation of IHPT for the acquisition and processing of MBES systems data and production of Electronic Navigational Charts. IHPT depends on Mozambique to assign minimum qualified personnel and a proper organizational structure to achieve the compromises regarding the co-production of INT charts.

A bilateral agreement with Angola is in force since 2021. With this agreement it is expected a more effectiveness hydrography and cartography activities in Angola.

**j) Others - Naval Meteorological and Oceanographic Center**

IHPT has developed state of the art tools and operational systems in the field of meteorological and oceanographic forecast, in-situ ocean observation networks and remote sensing techniques, along the Portuguese margin and coastal areas.

In November 2017, IHPT set up a GEOMETOC center of the PRT Navy, named CGEOMETOC (Naval Geospatial, Meteorological and Oceanographic Center), under the direction of IHPT's Director-general.

**12- FINAL CONSIDERATIONS**

IHPT supports any initiative aimed at improving hydrographic knowledge and navigation safety, for the benefit of cartographic authorities and updating of the nautical documentation of this region.

**a) Areas of significant achievement**

1<sup>st</sup> HYDROGRAPHY CONFERENCE, with a Hydrographic Awareness Seminar included, promoted by IHPT on issues related to Hydrography for the countries belonging to the Portuguese Speaking Community (CPLP).

IHPT and Mozambique are cooperating on nautical charts co-production and for implementation of a new formal procedure for NtM.

IHPT and IHSMA are cooperating in hydrographic surveys in Angola harbors.

**b) Areas of particular concern**

Travel and accommodation expenses keep being the major concerns for any partnership or support actions IHPT can be involved in Mozambique and Angola.

It would be of major interest that further capacity building actions could be taken into consideration:

- In Mozambique, to continue the development of full cartographic capabilities;
- In Angola, to improve data acquisition and the development of hydrographic capabilities, to make possible the production of up-to-date nautical charts and ENC's.

The proposed ENC training for Mozambique cartographic technicians aiming the development of ENC production capability is pending, initially postponed, due to COVID-19.

**c) Any other matters of interest to the SAIHC**

NTR.