2024

INSTITUTO HIDROGRÁFICO

http://www.hidrografico.pt/

PORTUGAL

National Report

This report describes the main technical activities and developments at Instituto Hidrográfico (IHPT), the Portuguese Hydrographic Office, during the period from August 2023 to September 2024. It was prepared to be presented at the 20th SAIHC Meeting in accordance with IHO Resolution 2/1997 as amended.

IHO International Hydrographic Organization

20th Southern Africa and Islands Hydrographic Commission (SAIHC)

Plenary meeting 17th – 19th September 2024

SOUTHERN AFRICAN & ISLANDS HYDROGRAPHIC COMMISSION

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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 promoting faster research and development activities and ultimately leading to a greater 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.

Detailed information to update IHO Publication P-5 has been submitted using the online system, by Engineer Paula Sanches, Technical Advisor for IHO matters and nautical cartography (paula.sanches@hidrografico.pt).

In SAIHC region, IHPT is the Primary Cartographic Authority (PCA) for Angola and Mozambique.

2- SURVEYS

a) Coverage of new surveys

New surveys in SAIHC region: NTR.

Portugal has focused its survey effort on the Portuguese maritime areas thus contributing to the goal of the long-term project SEAMAP 2030.

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.

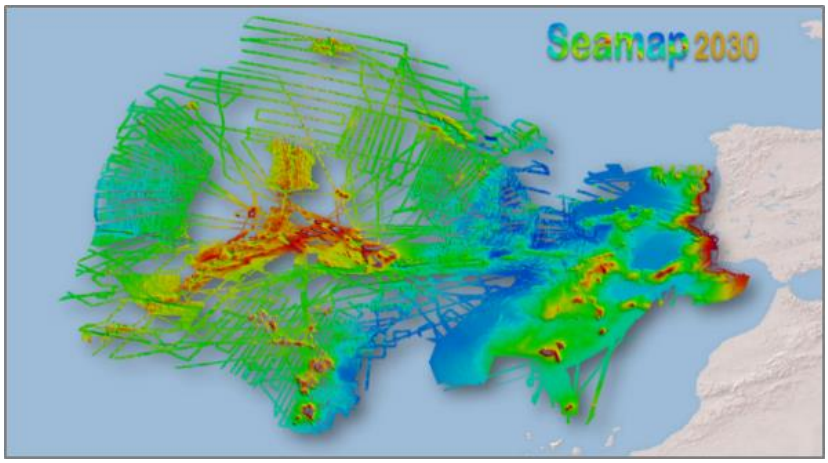

Figure 1 – SEAMAP 2030 actual coverage with multibeam survey.

b) New technologies and /or equipment

Portugal is using top of the shelf acoustic systems for hydrographic surveys.

New methodologies based, both on satellite and low flying vehicles imagery are also being used and under ongoing research. Portugal is also using third party surveys data, which is appropriately being checked for quality control.

Table I – IHPT new equipment/systems

TECHNOLOGY	SYSTEMS/EQUIPMENT	DESCRIPTION
AUV (autonomous underwater vehicle)	GraalTech X-300 (acquired)	Operable down to depths of 300 meters, and equipped with camera, sidescan sonar and conductivity, temperature and pressure sensors.
USV (Unmanned Surface Vehicle)	USV Otter Pro (in delivery process)	Unmanned platform designed to acquire bathymetric data in sheltered waters.
USV (Unmanned Surface Vehicle)	USV Otter X (in delivery process)	Unmanned platform designed to acquire bathymetric data in sheltered and coastal waters.
LiDAR	DJI Zenmuse L1 (acquired)	Tailored for integration onboard unmanned aerial systems. Mainly used for topographical surveys.
Glider	Alseamar SeaExplorer (acquired)	Designed to profile the water column down to depths of 1000 metres, acquiring data on conductivity, temperature, pressure, turbidity and chlorophyll-a.
Positioning and attitude system	Seapath OEM i350 / miniMRU 50	Provides the determination and integration of a vessel's position and attitude, essential for high-resolution mapping. Its small size and weight makes it suitable to be installed onboard small unmanned vehicles, with limited payload allowances.
Multibeam Sonar	Kongsberg EM2040C	Tailored for high-resolution bathymetry acquisition down to depths of 300 meters, from surface vessels.
Positioning and attitude system	Seapath 380 / MRU 5+	Provides the determination and integration of a vessel's position and attitude, essential for high-resolution mapping.
Multibeam Sonar	Kongsberg M3	Usable on small platforms (vessels of opportunity, USVs, ROVs). It allows the acquisition of high-resolution bathymetry down to depths of 70 meters. It can also assume the role of a forward-looking sonar or an acoustic camera.
Multibeam Sonar	Kongsberg M3 HF	Usable on small platforms (vessels of opportunity, USVs, ROVs). It allows the acquisition of high-resolution bathymetry at short distances from the seafloor. It has a depth rating of 4000 meters.
Multibeam Sonar	Kongsberg EM2040P (in delivery process)	Tailored for high-resolution bathymetry acquisition down to depths of 300 meters, from surface vessels.

c) New ships

IHPT has recently acquired, two modern new vessels (UAM Roaz and UAM Orca (Figure 2)), tailored for inshore and coastal mapping operations, that are being fitted for survey campaigns.

Figure 2 – Orca and Roaz new manned survey vessels.

d) Crowdsourced and satellite-derived bathymetry - national policy

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

e) A regular updated service of coastal bathymetry is an objective for the coming future. Challenges and achievements

NTR

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 the INT scheme. 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 portfolio has ninety-eight (98) cells organized in five (5) Usage Bands (UB).

Since the last SAIHC meeting, Portugal did not produced any ENC cell in the SAIHC Region.

Gaps: NTR

Overlaps: NTR

b) ENC Distribution method

All Portuguese ENCs are distributed through the RENC - IC-ENC.

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

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.

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

INT Number	NAC Number	Title		Scale	Edition	Status
ANGOLA						
-	-	-		-	-	-
MOZAMBIQUE						
7581	MZ 16201	Baía de Maputo		1/75 000	2ªED	-
7641	MZ 16402	Aproximações ao Porto de Quelimane (Porto de Quelimane)		1/30 000 (1/10 000)	2ªED – ABR2024	Produced
7661	MZ 16205	Aproximações a Nacala		1/50 000	2ªED	-
7620	MZ 13204	Cabo São Sebastião à Beira		1/300 000	1ªED	-

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

e) National paper charts

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 III.

Table III –Portuguese nautical charts portfolio in SAIHC Region

Country		NC (Portuguese folio)	INT	ENC	Old Folio (Portuguese folio)
PAL* SAIHC Region	Mozambique	**33**	**	**0**	**33**
	Angola	**46**	**6***	**2**	**38**
Overview		1	0	-	1
*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

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.

IHPT is currently focused in harmonizing Nautical Charts HPD database, to guarantee a smooth transition to S-101, and a new paper chart production workflow.

4- NEW PUBLICATIONS AND UPDATES

a) New Publications

Since the last meeting, IHPT published the Annual Group of Notices to Mariners (2024), as well as the Monthly Group of Notices to Mariners (Figure 3).

Figure 3 – 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/produto/tabela-de-mares-vol-ii-2023/

Figure 4 - 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/. It is also available in pdf format in https://loja.hidrografico.pt/sdm_downloads/pn35-lista-de-luzes-boias-balizas-e-sinais-de-nevoeiro-vol-i-portugal/ .

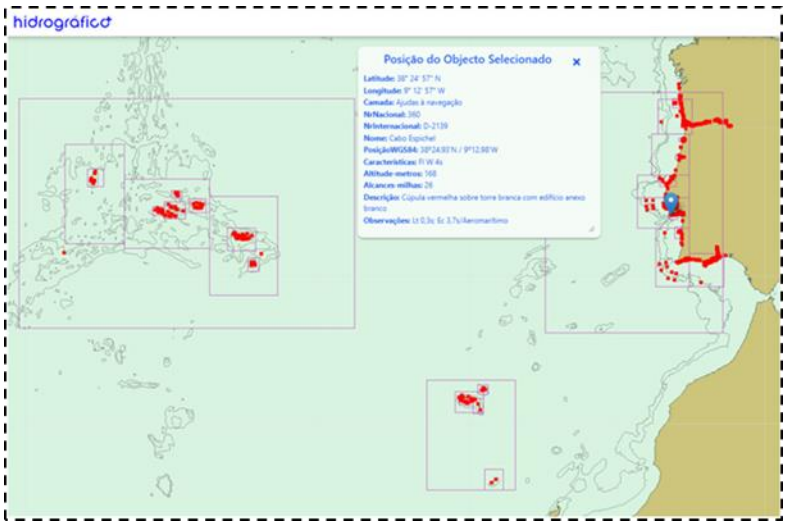

Figure 5 – List of Lights freely accessed in GIS format.

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 conducted an online Maritime Safety Information (MSI) training, in October 2023, for a 4 days period, as requested by IHSMA.

d) Challenges and achievements

IHPT is focused on maintaining the "Geoanavnet" platform with the functionalities related to the production/distribution of NtoM and Navigational Warnings.

To keep cooperating with Mozambique and Angola as requested in the future, by those agencies.

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 IV).

b) Training received, needed, offered

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

Table IV –Activities and CB actions

Date	Actions/Activities	Place	Status
On-the-Job Training			
2023	PT-MZ Working on creation/implementation of NtM formal Procedures	By correspondence	Close
CB Action			
2021-2024	ENC Training for Mozambique (from 2021 P-25) Action postponed due COVID-19.	Mozambique	Pending

Short and Long Courses			
2022/2023	CAT B (Hydrographic Surveys and Nautical Cartography) **Two (2) Angolan Technicians**	IHPT-EHO (Portugal)	Executed
2023/2024	CAT A (Hydrographic Surveys and Nautical Cartography)	IHPT-EHO (Portugal)	End September 2024
2023 (Dec)	Maritime Safety Information (MSI) training (4 days) **Requested by ISHMA**	VTC-IHPT	Executed
2023/2024	CAT A (Hydrographic Surveys and Nautical Cartography)	IHPT-EHO (Portugal)	Starts September 2024

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).

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, Cape Verde and CPLP are organizing the 2nd HYDROGRAPHY CONFERENCE OF THE PORTUGUESE-SPEAKING COMMUNITY, that will take place in November 2024, in São Vicente Island-Cape Verde. This conference will comprise several activities related to on job survey training, MSI courses among others.

The 1st one, was held in Lisbon, comprised a formal opening session and two days of work to bring together the needs, difficulties and recommendations of the countries of this 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 still 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.

Accordantly with the bilateral cooperation agreements, it is expected that, in the future, we can 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.

c) Tide gauge and other monitoring equipment network

NTR.

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

The Portuguese Hydrographic Institute (IHPT) is a data-driven organization. The IHPT Marine Spatial Data Infrastructure (MSDI) is designated by Hidrografico Plus and it is aligned with the IHO, UN-

GGIM, INSPIRE, ICES, and IODE principles in order to improve data and metadata management, as well as data discoverability and accessibility. The MSDI frontend is a centralized webGIS, where users can find and explore several marine and hydrographic datasets.

a) Status of MSDI

"Hidrografico Plus" MSDI integrates several components. This service-oriented architecture implements the MSDI functionalities, principles and pillars. Human and machine actors can access marine data through Open Geospatial Consortium (OGC) services and Application Programming Interfaces (API). The infrastructure presents a full integration between the geoportal and the metadata catalogue. This integration optimizes data access by the National Spatial Data Infrastructure (NSDI) and Infrastructure for Spatial Information in Europe (INSPIRE).

The MSDI has been designed to support blue economy sectors such as sailors, fishery, aquaculture, renewal energy, etc. The data available has supported several scientific research projects and is harvested by several supra SDIs. The system architecture comprehends both proprietary and open-source technologies.

Notices to Mariners and Navigational Warnings are also available at Hidrografico Plus infrastructure, through a specific portal.

b) Relationship with the NSDI

IH data is currently available through OGC web services in the Portuguese NSDI (Sistema Nacional de Informação Geográfica (SNIG). SNIG maintains a centralized metadata catalogue with all national data providers and is linked to INSPIRE. The metadata is shared between the different infrastructures through automatic harvesting processes. This approach assures data access and findability for different clients.

c) Involvement in regional or global MSDI efforts

IHPT is part of the SNIG Working Group for a common effort in the INSPIRE implementation principles and provides geospatial data services to other portals like the Portuguese Sea Geoportal and data.gov.

IHPT is also involved with the Portuguese Institute for Sea and Atmosphere (IPMA) in the establishment of the Portuguese National Oceanographic Data Centre (NODC-PT), according with the guidelines from International Oceanographic Data and Information Exchange (IODE).

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 Union (EU) and the regional initiatives. IH combined the needs to implement the INSPIRE directive with the IHO and IMO principles and requirements to build up the "Hidrografico Plus" 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 and compliant with international data management best practices.

e) MSDI national portal

Currently there is no single portal considered to be the national MSDI. This encourages a federated approach, based on a network of marine data providers whose data catalogues can be seamlessly harvested by the national and supranational SDIs.

f) Best practices and lessons learned

The "Hidrografico Plus" MSDI follows the best practices and requirements from several sources: INSPIRE, IHO MSDIWG, OGC, and Intergovernmental Oceanographic Commission (IOC). The main lessons learned are the need to maintain a good human resources capacity building program and the internal competences and technical skills aligned with the MSDI principles and implementation models.

g) Challenges and achievements.

"Hidrografico Plus" 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 a state laboratory and a hydrographic office. Being a navy unit, IHPT also supports maritime operations. Hidrografico Plus has several developments aligned with IHO Strategic Plan:

- Transformation of the current data model of navigational warnings into S-124 (Goal 1);
- Development of specific products addressing the issue of orca interactions with vessels, to improve mariners' awareness and the safety of navigation (Goal 1);
- Digitalization of nautical publications like Sailing Directions and Aids to Navigation, including dissemination through mobile applications and new geospatial standards as OGC API Features (Goal 1) (Figure 6);

- Alignment with EU Open Data Directive and the availability of High Value Datasets (Goal 2);
- Publication of Electronic Navigational Charts (ENC) as Web Map Services (WMS) (Goal 2);
- Re-use of survey data, for instance, sound velocity profiles to monitor other ocean variables (Goal 2);
- Engagement in several international initiatives: SEABED 2030, EMODnet; BlueCloud, DITTO (Goal 3);
- Establishment of the Portuguese National Oceanographic Data Centre and accreditation by International Oceanographic Data and Information Exchange (IODE) (Goal 3).

The main challenges will be to keep the MSDI aligned with digital data strategies and policies at different levels. This digital environment requires fast adaptations and developments. Data harmonization and development of S-100 web based services will be a challenge.

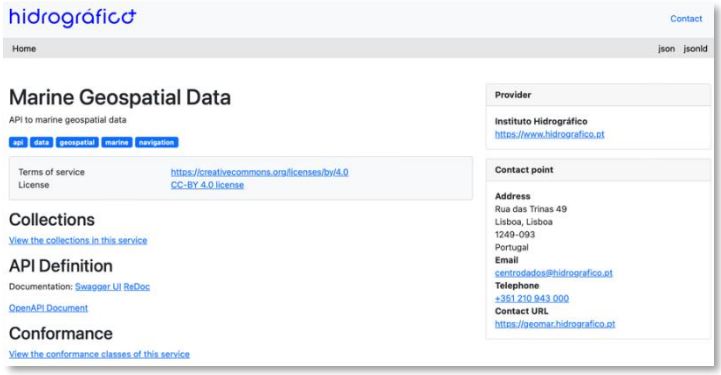

Figure 6 – OGC API Features web portal.

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.

b) Risk assessment

NTR.

c) Policy matters.

NTR.

11- OTHER ACTIVITIES

a) Participation in IHO Meetings

The detail of IHPT involvement in other IHO activities/working groups is listed in the table hereafter. Due to its primary charting responsibilities, Portugal, represented by IHPT, is a member of EAtHC and Associated Member of SAIHC.

Table V – IHPT representation on IHO committees and working groups

	Description	**IHPT representation**
Council	IHO Council	RAdm Ramalho Marreiros; Engª Paula Sanches
EAtHC	Eastern Atlantic Hydrographic Commission	RAdm Ramalho Marreiros; Capt João Vicente; Cmdr Carlos Marques; Engª Paula Sanches
SAIHC	Southern African and Islands Hydrographic Commission	RAdm Ramalho Marreiros; Capt João Vicente; Cmdr Carlos Marques; Engª Paula Sanches
HSSC	Hydrographic Services and Standards Committee	Cmdr Carlos Marques; Eng.ª Paula Sanches
IRCC	Inter-Regional Coordination Committee	Engª Paula Sanches
IENWG	IHO-European Union Working Group	Cmdr Telmo Dias; Cmdr Carlos Marques; Eng.ª Leonor Veiga
CBWG	Capacity Building Working Group	Engª Paula Sanches
MSDI	Marine Spatial Data Infrastructure Working Group	Cmdr Telmo Dias
S100WG	S-100 Working Group	Eng.ª Paula Sanches Cmdr Carlos Marques
S101PT	S-101 Project Team	Eng.ª Paula Sanches; Engª Ana Moura;
TWCWG	Tidal, Water Level and Currents Working Group	LtCmdr Luís Melo
SCUFN	GEBCO Sub-Committee on Undersea Feature Names	Eng.ª Paula Sanches
WENDWG	Worldwide ENC Database Working Group	Eng.ª Paula Sanches
DQWG	Data Quality Working Group	Eng.ª Paula Sanches
HSWG	Hydrographic Surveys Working Group	Cmdr Carlos Marques (HSWG Secretary)
CSBWG	Crowdsource bathymetry Working Group	Eng.ª Leonor Veiga
ABLOS	OHI - Advisory Board on the Law Of the Sea (ABLOS)	Cmdr Carlos Marques
ENCWG	ENC Standards Maintenance Working Group	Engª Paula Sanches; Engª Ana Moura; Helena Julião
NCWG	Nautical Cartography Working Group (NCWG)	Engª Paula Sanches; Engª Ana Moura

At the IHPT, the World Hydrography Day 2024 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.

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

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

Engagement with the International organization CPLP (Community of Portuguese Language Countries) formed by the Portuguese-speaking countries. IHPT, Cape Verde and CPLP are organizing the 2nd HYDROGRAPHY CONFERENCE OF THE PORTUGUESE-SPEAKING COMMUNITY, that will take place in November 2024, in São Vicente Island-Cape Verde (see item 7c)).

IHPT is engaged with UN Decade via National Ocean Decade Committee, IOC/COI-UNESCO via a National Committee (CP-COI) including contributions to GOOS and GLOSS systems, among others.

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.

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

NTR.

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 ENCs.

c) Any other matters of interest to the SAIHC

NTR.