16TH SOUTHERN AFRICA AND ISLANDS HYDROGRAPHIC COMMISSION (SAIHC) MEETING

NATIONAL REPORTS FROM PORTUGAL TO THE SAIHC16

Cape Town, South Africa

02th – 05th September 2019

INSTITUTO HIDROGRÁFICO
(IHPT)

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INTRODUCTION

This report describes the main technical activities and developments at the Instituto Hidrográfico (IHPT), the Portuguese Hydrographic Office, during the period from September 2018 to August 2019. It is elaborated in order to be presented to the 16th SAIHC Meeting in accordance with IHO Resolution 2/1997 as amended.

1- HYDROGRAPHIC OFFICE

a) Name of the institution: Instituto Hidrográfico (IHPT).

b) Description:

The IHPT is part of the Portuguese Navy and has the fundamental task of ensuring activities related to science and techniques of the sea, with a view to their military application, and to contribute to the country's development in science and protection of the marine environment.

The major activities of IHPT are in the areas of hydrographic surveying, cartography, safety of navigation, oceanography, geology and chemistry of the marine environment. The IHPT is also a State Laboratory and is the Portuguese Hydrographic Office.

It has 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 continually improving to meet customer needs.

Among those activities the training provided by the Hydrography and Oceanography School stands out, with FIG/IHO/ICA category A and B courses. It is an IHPT sector dedicated to the training of the Navy officers as well as civilian technicians, from Portugal and Portuguese-speaking African countries, as well as from other friendly nations.

The most relevant information is presented in Annex Alfa.

c) Submitted by: Commander João Paulo Delgado Vicente, Head of the Hydrographic Division (dt.hi.chf@hidrografico.pt).

2- SURVEYS

a) Coverage of new surveys

The main program of IHPT “Mapping of the Portuguese Sea” (http://www.hidrografico.pt/iprojeto/16) is in progress and long-term scientific campaigns are underway in the Madeira and Azores archipelagos. The aim of the program “Mapping

of the Portuguese Sea" is to characterize the seabed, in a perspective of a national hydrographic service, using a multidisciplinary approach (multibeam bathymetric surveys, geomorphological surveys and sedimentological and geochemical characterization), contributing to the increase of knowledge in the strategic areas of national interest and to promote technological development activities, sustainable exploitation of resources and scientific research associated with marine sciences.

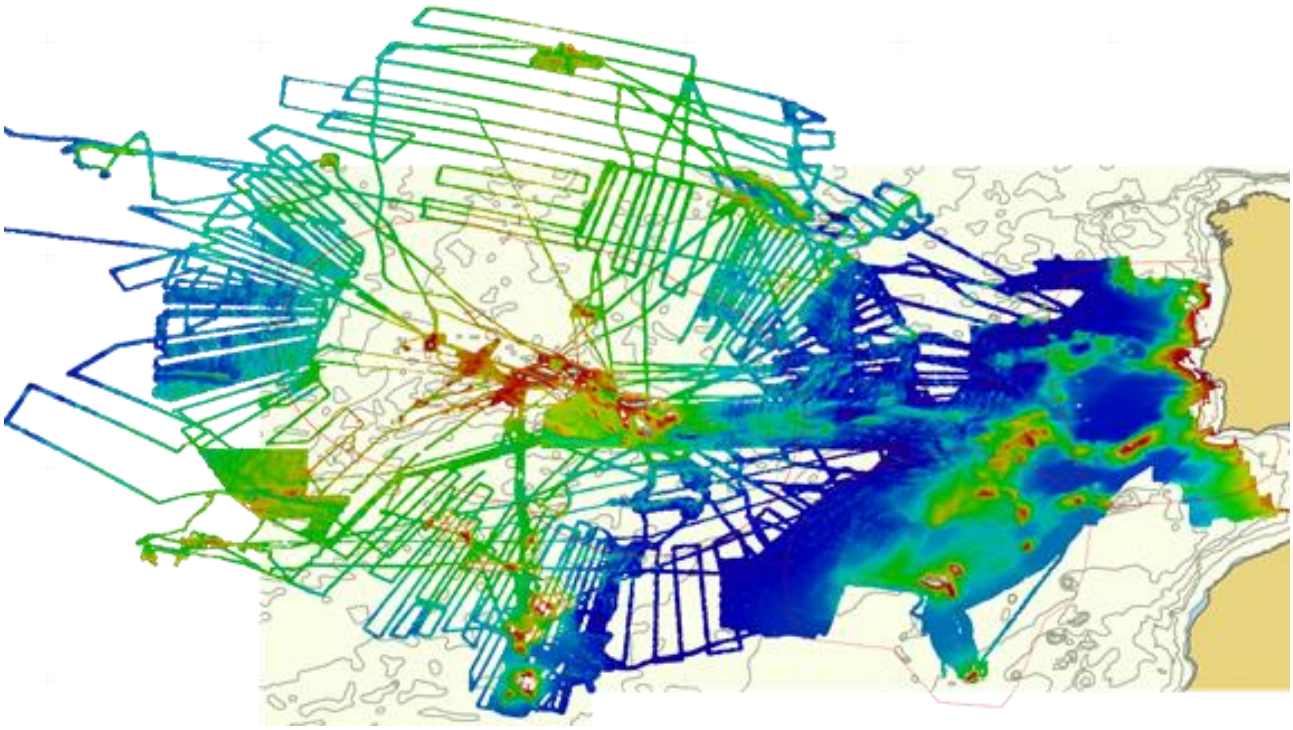


Figure 1 – Mapping of the Portuguese Sea program actual coverage (multibeam survey).

b) New technologies and /or equipment

Since 2015, IHPT has been performing some studies in Satellite Derived Bathymetry (SDB), from multispectral satellite images for shallow-waters, using Landsat 8 and Sentinel-2A images. More recently, SDB studies have been developed using SAR (Synthetic Aperture Radar) imagery. The goal of assessing bathymetry through SDB methodologies is not to directly produce nautical charts, but rather to evaluate the amount of changes since the last survey. Besides SDB methodology being a cost-effective tool to support nautical chart production workflow in terms of field reconnaissance and hydrographic surveys planning, it is also a valid tool to retrieve updated bathymetry along coast that could be used as input for running oceanographic coastal drift models, among other wide range of coastal applications.

In 2018, IHPT has started a new challenge in this area which aim is to process images acquired by unmanned aerial vehicles (UAVs).

Relatively to the use of crowd-sourced bathymetry, this method is not implemented yet in IHPT and, consequently, there is nothing to report.

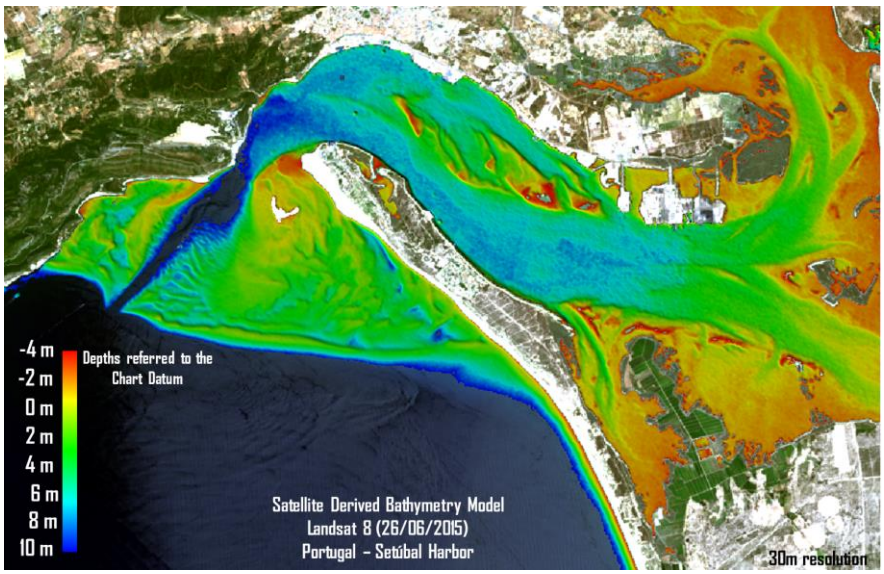


Figure 2 – Example of a SDB model retrieved from Landsat 8 (Setubal harbour).

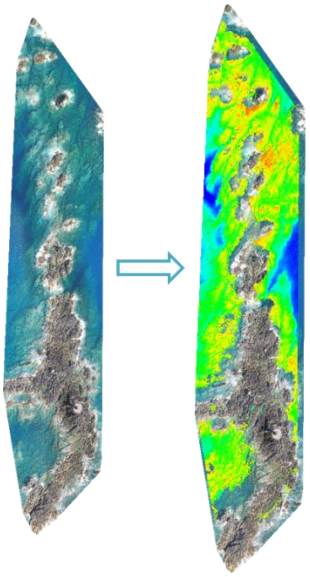


Figure 3 – Example of a SDB model retrieved from UAV imagery (Formigas islet – Azores).

c) New ships: nothing to report (NTR).

d) Problems encountered:

During the period of this report no surveys were executed by IHPT on the SAIHC region, mainly, due to the lack of financing, necessary for its realization.

3- NEW CHARTS & UPDATES

IHPT produces Nautical paper Charts (NC) and Electronic Navigational Charts (ENC) in vector format. Regarding Nautical Charts production in the areas of Portuguese responsibility, both nationally and international, production programs were created to insure the coverage of these areas with “New Charts”, “New Editions” and “Updates” when necessary.

The cartographic production based on a single source Database is a main goal already in progress. Efforts are being made to make the full transition from the old method to this one as fast as possible.

Presently, IHPT provides 100% of the national Nautical Charts using a Print-on-Demand system. All Portuguese charts are continuously updated according to the published “Notices to Mariners” and include QR Code for direct access.

IHPT also produces NC and ENC, including some charts of the International Portfolio (INT), for African Portuguese speaking countries, with IHPT being the “Primary Charting Authority” for Cape Verde.

In the SAIHC area a Protocol of Exchange and Cooperation between the Hydrographic Institute of Portugal (IH) and the National Institute of Hydrography and Navigation of Mozambique (INAHINA) was established in 2017. As a part of its implementation, a technical meeting took place between November 12th and November 26th of 2018, and another technical meeting took place between May 21 and June 02, 2019 at IHPT. These actions had as main objectives the scheduling and implementation of activities related to the production of nautical charts of the International serie.

a) Electronic Navigational Chart

The Portuguese ENC national portfolio is composed by 98 cells organized in 6 Usage Band.

Since last SAIHC meeting Portugal produced, for national waters, the following:

ENC	EDITION	SCALE
PORTUGAL		
PT 324205 “Cabo de Sines à Ponta da Piedade	6	90 000
PT 426405 “Peniche, Nazaré e Ilhas Berlengas”	2	45 000
PT 446401 “Ilha das Flores e Ilha do Corvo”	4	45 000
PT 548501 “Porto da Casa”	3	4 000
PT 548502 “Porto de Santa Cruz das Flores”	3	8 000
PT 548503 “Porto das Lajes das Flores”	3	4 000

Since the last SAIHC meeting, Portugal didn´t produce ENC cells in SAIHC Region and issued updates to the PT271101 cell only.

Schemes for the ENC cells that were planned and edited or published by IHPT for the SAIHC region can be found in Annex Bravo (Angola) and Annex Charlie (Mozambique).

ENC	STATUS	UPDATES
ANGOLA		
PT 271101	Published	Yes
MOZAMBIQUE		
PT 586310	Schemed/Planed	-
PT 486402		
PT 586402		
PT 586401		

IHPT produced for African Portuguese speaking countries, not SAIHC members, the following:

Geographic Area	Usage Band	Nº of Cells
Along coast of ANGOLA	2	1
Cape Verde	3	1
Cape Verde	4	2
Cape Verde	5	12
São Tomé and Principe	4	1
São Tomé and Principe	5	1

b) ENC Distribution method

IHPT is a member and participates actively in the works of the International Centre for ENC (IC-ENC), including their Technical Experts Working Group.

All Portuguese ENC are distributed by IC-ENC RENC.

c) RNCs: NTR

d) INT Chart

The Portuguese national portfolio is composed by 75 NC, 34 of which are INT. An effort is continuously made to keep them updated.

Since the last SAIHC meeting, IHPT did not produce any Nautical Chart of the region. However, IHPT is involved in the production of the following Nautical Chart:

- INT7661 (Aproximações a Nacala): First INT chart version. A chart scheme revision and the 1st Quality Control were made during the march 2019 technical meeting;

- INT 7631 (Aproximações à Beira). A chart scheme revision was made during the march 2019 technical meeting;
- INT 7632 (Porto da Beira) A chart scheme revision was made during the march 2019 technical meeting;
- INT 7583 (Approaches to Port of Maputo. A - Port of Maputo). Mozambique and Portugal are involved on the production of the first INT chart version. A situational revision was made during the November 2018 technical meeting. Portugal and Mozambique keep contact for exchange of information. At this time, Portugal is awaiting data from Mozambique.

INT	STATUS	
MOZAMBIQUE		
7661 “Aproximações a Nacala”	Schemed/Planed	
7662 “Porto de Nacala”		
7641 “Aproximações a Quelimane. A – Porto de Quelimane”		
7631 “Aproximações à Beira”		
7632 “Porto da Beira”		
7583 “Aproximações a Maputo. A - Porto de Maputo”		

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

INT	STATUS	UPDATES
ANGOLA		
2089 “Gamba to Luanda”	Published	Yes
2050 “Luanda to Baía dos Tigres”		
2814 “Point Tchitembo to Cabeça da Cobra”		
2550 “Cabeça da Cobra to Cabo Ledo”		
2560 “Cabo Ledo to Lobito”		
2570 “Lobito to Ponta Grossa”		
2580 “Ponta Grossa to Foz do Cunene”		

Schemes for the INT Charts, planned and edited by IHPT for SAIHC region, can be found in Annex Bravo (Angola) and Annex Charlie (Mozambique).

IHPT also produces INT charts for African Portuguese speaking countries, not SAIHC members. The following charts are planned to be published this year:

INT	STATUS	EDITION
Cape Verde		
1960 “Arquipélago de Cabo Verde”	Planed 2019	1ª
1965 “Aproximações ao Mindelo”		2ª

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 serie.

The existing nautical paper chart portfolio aims to meet the specific needs of mariners, lying grouped according to their purpose. It was planned taking into consideration that the number of charts should be as minimal as possible; should comply with the navigation safety principles and, be in accordance with the requisites of the International Hydrographic Organization (IHO).

The Portuguese national NC portfolio is composed by 75 charts.

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

In addition to the Nautical Charts and the Electronic Navigational Charts, some charts for other purposes are also produced, for instance: rivers charts, charts for fisheries, charts for yachting, sedimentological charts and special charts for training purposes. All those charts are in accordance with IHO specifications and were very well accepted by the users.

Douro River

In 2015 IHPT has started the participation, as a partner, in the Douro's Inland Waterway 2020 project. The main objective is to assure the Douro River is a safe waterway with good trading routes in order to contribute for the European Transport Purposes for 2020. IHPT activities in this project are related with the hydrographic surveys and the production of Nautical Charts and Inland Electronic Navigational Charts of all Portuguese sections of the Douro River, which comprises about 210 Km, has five locks and very intense tourist navigation, important for the regional and country economy.

Currently, the nautical cartography of the river is published: 7 chart with a total of 58 sheets.

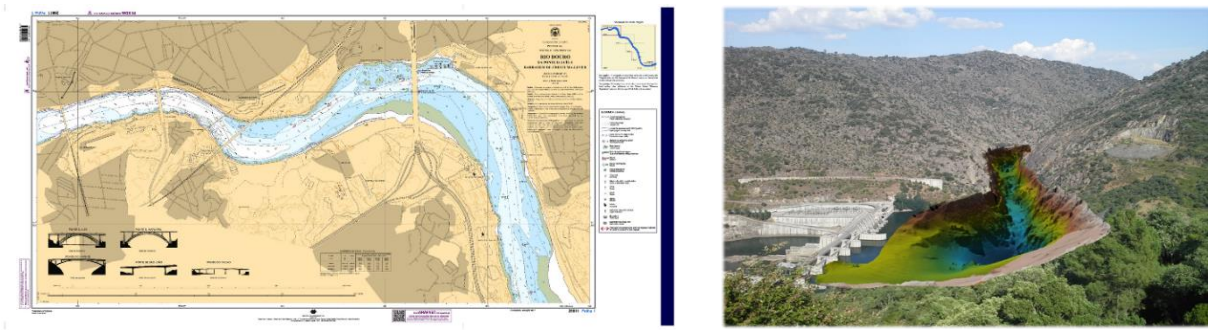


Figure 4 – Nautical chart and DTM, from Douro River.

Guadiana River

Since May 2017, IHPT is participating in a POCTEP INTERREG V-A 2014-2020 project entitled “Guadiana: Navigable Natural Heritage”. The project aims to produce the official hydrographic cartography of the Guadiana River, between Vila Real de Santo Antonio and Pomarão. The hydrographic works took place between October 2017 and May 2018.

Currently, the nautical cartography of the river is under construction for publication at the end of 2019.

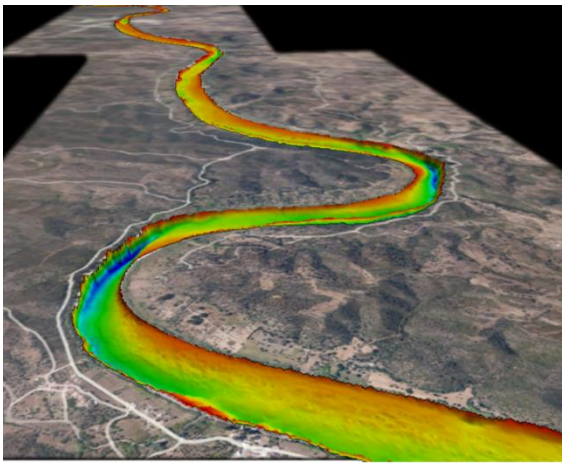


Figure 5 – DTM, from Guadiana River.

g) Problems encountered: NTR.

4- NEW PUBLICATIONS AND UPDATES

a) New Publications

IHPT published the Annual Group of Notices to Mariners (2019), as well as, every month, the Monthly Group of Notices to Mariners.

In addition to the Tide Tables for the main harbours of Continental Portugal and Azores and Madeira Archipelagos, IHPT also publishes annually the Tide Table (Volume II) - African Portuguese Speaking Countries and Macau which contains tide information for the following harbours in the SAIHC region:

- Soyo, Angola;
- Luanda, Angola;
- Lobito, Angola;
- Namibe, Angola;
- Maputo, Mozambique;
- Inhambane, Mozambique;
- Beira, Mozambique;
- Chinde, Mozambique;
- Ponta Tangalane, Mozambique;
- Pebane, Mozambique;
- Angoche, Mozambique;
- Ilha de Moçambique, Mozambique;

- Nacala, Mozambique;
- Pemba, Mozambique;
- Mocímboa da Praia, Mozambique.

b) Updated publications: NTR.

c) Means of delivery, e.g. paper, digital: Both.

d) Problems encountered: NTR.

5- MARITIME SAFETY INFORMATION

a) Existing infrastructure for transmission

IHPT is the national coordinator for the Maritime Safety Information and the navigational warnings are transmitted by COMAR that provides a 24h service, in cooperation with the NAVAREA II coordinator.

NAVTEX broadcast is made both in English and Portuguese and it is transmitted from Penalva Station (near Lisbon), São Miguel Island (in the Azores Archipelago) and from Porto Santo Island (in the Madeira Archipelago).

Monthly, IHPT publishes the Group of Notices to Mariners, containing all permanent, preliminary, and temporary warnings in force for the corresponding period. This information, covers all navigation charts and publications of Portugal, Angola, Cape Verde, Guinea-Bissau and São Tomé e Príncipe, and is also available on the web site (http://www.hidrografico.pt).

IHPT on-line application ANAVNET (http://www.anavnet.hidrografico.pt), provides either entire NtM publications, or single NtM affecting individual documents; allowing in any case consultation and printing, including entire correction pages of nautical publications and graphical annexes to paste on charts. Regarding Navigational Warnings, ANAVNET allows consultation of warnings broadcasted by any of the Portuguese NAVTEX stations (coastal and local warnings), both in Portuguese and English languages.

Regarding Broadcast Stations (BS) from the national differential GPS network, the Continental Portugal component consists of two DGPS BS, with redundancy and integrity monitoring, located at Cape Carvoeiro and Sagres. There are also two BS in Azores Archipelago (Horta station) and in Madeira Archipelago (Porto Santo station).

Portugal has also three AIS coastal stations in Continental Portugal and in Azores and Madeira Archipelagos.

b) New infrastructure in accordance with GMDSS Master Plan: NTR.

c) Problems encountered: NTR.

6- C-55

An update of C-55 for Portugal, Portugal-Madeira and Portugal-Azores was sent to IHB this year.

7- CAPACITY BUILDING

a) Training received, needed, offered

In November 2018 the IHPT offered a two weeks Hydrography training to the INAHINA. The training was focused on MBES acquisition and processing, using the equipment and software available at INAHINA. IHPT also showed the availability for a new training in 2019/2020, fully practical also for MBES acquisition, and concurrently with a MBES survey in Mozambique.

IHPT School of Hydrography and Oceanography provides Specialization Courses in Hydrography (FIG/IHO Category A and B). During the period of this report 7 students (4 officers of the Portuguese Navy, 1 officer of the Royal Navy of Morocco, and 2 civilians (one form Italy and other from Brazil) concluded a Category A course. Also, a total of 6 students (4 sergeants of the Portuguese Navy and 2 Portuguese civilians) are still attending a Category B course.

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

In April 2017, during the 1st IHO Assembly, a bilateral cooperation agreement has been signed between IHPT and Mozambique's Hydrographic Office – INAHINA (National Institute of Hydrography and Navigation). This agreement is focused on technical cooperation and interchange in the domains of hydrography, nautical cartography and oceanography.

The Bilateral cooperation agreement was reviewed as planned and a technical cooperation for 2019 was established.

With respect to the hydrography and nautical cartography themes, INAHINA expects the assistance of IHPT for the acquisition and processing of MBES systems data and production of Electronic Navigational Charts.

IHPT expects the cooperation from INAHINA to achieve the compromises assumed by Portugal and Mozambique, respecting to the co-production of INT charts has listed in the Charts section of this report.

In March 2019, in a Military and Technical Cooperation action, an internship for 14 students from the Naval Academy of Angola took place in the EHO. The focus of this internship was safety of navigation, hydrography, nautical cartography, Oceanography, Marine Geology, Chemistry and Marine pollution and Geographical Information Systems.

In September 2018 one Royal Navy Officer from Morocco completed the FIG/IHO/ICA category A compliant, Hydrographic Technical Course.

Figure 6 – IHPT Hydrographic Course Students.

The IHPT signed, on 30th November 2017, a protocol with the Maritime and Port Agency of Cape Verde. This protocol came to formalize and reinforce the cooperation between the two countries in the hydrography and cartography.

In addition to updating Cape Verde cartography, this protocol will develop technical cooperation, institutional capacity building and training of technical staff of that country.

c) Description of requests to be considered by the IHO/CBSC

A MBES training course for INAHINA focused on practical aspects during survey should be considered, for completion of the MBES training.

8- OCEANOGRAPHIC ACTIVITIES

a) General

IHPT develops activity related to physical, geological and chemical oceanography, participating in national and European Union research projects in those fields, but, from September 2018 until August 2019 there is no oceanographic activities to be described in the SAIHC region.

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

From July 29th to August 2nd a training course about Discovering Operational Data Products and Services will take place in Kenya and Mozambique. This course will be ministered by one element of Oceanography Division.

The Linking Earth Observation data and Sustainable Development across the Atlantic is an activity that aims at fostering the incorporation of Earth Observation (EO) and related in situ data products in the work carried out by researchers and stakeholders of coastal ocean and nearshore areas related activities, with emphasis in the countries bordering the Central and Southern Atlantic, stimulating the development of new uses of EO data products and services, in alignment with the Sustainable Development Goals the UN 2030 Agenda. The action will involve a networking event gathering different actors - experts and new users of Earth Observation data - to discuss and discover the use of Earth Observation data in a diversity of topics related with the Environment, Ocean, Coast and Sustainable Development. This workshop will help to setup a new community with members of different scientific disciplines and economic activities across the Atlantic basin, which will routinely use Earth Observation data while promoting the philosophy underlying Sustainable Development Goals.

b) GEBCO/IBC's activities: NTR.

c) Tide gauge and other monitoring equipment network

The Monitoring and Operational Forecasting System of the Portuguese EEZ, MONIZEE, is a reinforcement of the permanent national infrastructures dedicated to the monitoring of the marine environment and coastal zones, as well as the capacity to forecast the oceanographic conditions in these areas.

In the framework of MONIZEE system, the Hydrographic Institute maintains presently in operation a set of networks for the monitoring of the coastal ocean offshore the Portuguese mainland. These include in-situ monitoring networks (multiparametric buoys, directional wave buoys, coastal tide gauges and coastal meteorological stations) – which measure different oceanographic and/or meteorological parameters at the geographical location of the measuring equipment – and remote monitoring networks (coastal HF radar stations) – measuring the oceanographic parameters of interest in areas distant from the location of the measuring equipment.

The Hydrographic Institute makes available to the general public some products containing the information obtained from this monitoring system (http://www.hidrografico.pt/iprojeto/3).

There is no IHPT oceanographic equipment installed on SAIHC region.

d) New equipment: NTR.

e) Problems encountered

The harmonic constants included on Volume II of Tide Table are not updated since 2001 for Cape Verde, 1953 for Guinea Bissau, 1960 for Sao Tome and Principe, 1973 for Angola, 2000 for Mozambique and 1985 for Macau. This lack of update is due to the absence on data published by the concerned national authorities.

9- OTHER ACTIVITIES

a) Participation in IHO Working Groups

A IHPT member has been nominated to the HSPT (Hydrographic Surveys Project Team) meeting regarding the special publication S-44 revision.

There were also two relevant designations: an IHPT member has been selected as IHO representative to the IBSC.

Participation on the Marine Spatial Data Infrastructures Working Group (MSDIWG) from OHI. Namely with contribution for the following activities of the 2018-2020 Working Plan:

- B.3 Identify wider user requirements for bathymetry data;
- D.2 Assess the suitability and shortcoming of standards in supporting data interoperability;
- E.1 Identify and report on the future trends affecting MSDI e.g. autonomous platforms, standards, big data, cloud, internet of things and artificial intelligence;
- G.1 Maintain IHO publication C-17 to reflect developments in ICT, Content, Standards and Governance of MSDI.

List of others IHPT WG members:

WG	Name	email
HSSC	João Vicente Paula Sanches Carlos Marques	dt.hi.chf@hidrografico.pt paula.sanches@hidrografico.pt videira.marques@hidrografico.pt
S-100	João Vicente Paula Sanches Ana Moura	dt.hi.chf@hidrografico.pt paula.sanches@hidrografico.pt ana.moura@hidrografico.pt
ENCWG	João Vicente Helena Julião Ana Moura	dt.hi.chf@hidrografico.pt helena.juliao@hidrografico.pt ana.moura@hidrografico.pt
MSDIWG	Paulo Nunes	antunes.nunes@hidrografico.pt
IBSC	Leonel Manteigas	pereira.manteigas@hidrografico.pt
CSBWG	Leonor Veiga	leonor.veiga@hidrografico.pt
GEBCO (proposal)	João Vicente Paula Sanches Carlos Marques	dt.hi.chf@hidrografico.pt paula.sanches@hidrografico.pt (SCUFN) videira.marques@hidrografico.pt

b) Meteorological data collection

NTR in SAIHC area.

c) Geospatial studies

NTR in SAIHC area.

d) Disaster prevention

NTR in SAIHC area.

e) Environmental protection

NTR in SAIHC area.

f) Astronomical observations

NTR.

g) Magnetic/Gravity surveys

NTR.

h) MSDI Progress:

IHPT has been developing and modernizing his MSDI (2018-2020) to implement the INSPIRE and MSDI best procedures to improve the data management, metadata creation, implement better data search services and optimized data access services. This will be based on a centralized web portal, which will focus on themes such as products, services, activities, means and data, with a user-oriented focus.

The operational forecast system for sea state “Qual é a tua Onda?” continues to be maintained, depicting sea state forecasts and other generic information to the public. This information system is available to the general public, on the IHPT web portal, organized into usability sectors, such as the surf community, recreational navigation and fisheries.

Notices to Mariners and Navigational Warnings issued by the IHPT are also available at IHPT Internet portal ANAVNET, as well as general information on the Portuguese Nautical Charts and Nautical Publications.

IHPT also supports IC-ENC by providing a world ENC availability catalogue (independent of maker or distributor) to support the mariners.

The IHPT participate in the Pan- European Infrastructure for Ocean & Marine Data Management (SeaDataNet) and European Marine Observation and Data Network (EMODnet). With this participation in European level 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 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 harmonised 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.

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

An upgraded version of the EMODnet DTM has been released in September 2018.

Figure 7 – EMODnet – Portal for Bathymetry (http://www.emodnet-bathymetry.eu).

i) International

In cooperation between IHPT and the IHM (Spanish Hydrographic Office), IHPT has had technical reunions regarding the determination of the difference between the Chart Datum from Portugal and Spain in the Minho River's mouth and a joint effort was made to simultaneously publish both new editions of the "Vila Real de Santo Antonio" and "Ayamonte" Nautical Charts in October 2018, both referring to the mouth of Guadiana River, the border of Portugal and Spain.

j) Use of risk to support survey and chart updating priorities

IHPT is developing a methodology for qualifying Hydrographic Risk in Remote and Common Areas. This will allow, through a large list of important criteria, an understanding of the evolution of bathymetry in each Nautical Chart area, and guide the planning for hydrographic surveys and chart updating.

k) Naval Meteorological and Oceanographic Center

In the past, the IHPT has developed state of the art and 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 activated the new GEOMETOC center of the PRT Navy, named CMETOC (Naval Meteorological and Oceanographic Center), and collocated at IHPT and under the direction of the IHPT General-Director.

CMETOC is operated by 13 people, distributed in four thematic areas (Oceanography, Meteorology, Geospatial Information and Mine Warfare Data Center), which guarantee the daily GEOMETOC operational support to the Portuguese Navy Fleet and Force.

10- CONCLUSIONS

a) Areas of significant achievement

During this period the IHPT has surveyed a relevant area in western Azores, an area of great interest for Portugal, as it still has a large area poorly surveyed, contributing as one more step to the Mapping of the Portuguese Sea.

IHPT and INAHINA are cooperating in nautical charts co-production, with the first draft of chart INT 7661 “Aproximações a Nacala” already finalized.

IHPT has is also working on Cape Verde and Guiné Bissau Nautical Charts, updating the existing ones, and preparing the publication new INT charts.

b) Areas of particular concern

All unsurveyed or poorly surveyed areas in Portugal are a major concern for the IHPT. At this time Azores area is the major concern, and efforts are being made to map the whole Azores area.

Logistics and transportation are still the major concern for any partnership or support actions IHPT can be involved in.

It would be of major interest that further capacity building actions could be taken into consideration in Mozambique in order to continue the development of full hydrographic and cartographic capabilities and improve the communication between both parts.

c) Any other matters of interest to the SAIHC

15th SAIHC CONFERENCE ACTION ITEMS

After the 15th SAIHC Conference, and hoping to correspond to its Action Items, IHPT has developed the following activities:

- Item No. 1: IHPT sees as a great value to maintain the Capacity Building activities in Mozambique, in order to solidify the acquired knowledge;
- Item No. 2: IHPT provides bathymetric data to IHO DCDB through EMODNet. A dataset of bathymetric data based on IHPT ENC cells PT221101, PT233101 and PT241101 has been delivered to IHO Data Centre for Digital Bathymetry;
- Item No. 5: IHPT is working on a paper for inland cartography.
- Item No. 7: C-55 and P-5 have been updated accordingly.
- Item No 22: IHPT has commented as requested.

ANNEX A

HYDROGRAPHIC OFFICE GENERAL INFORMATION

PORTUGAL (PORTUGUESE REPUBLIC)

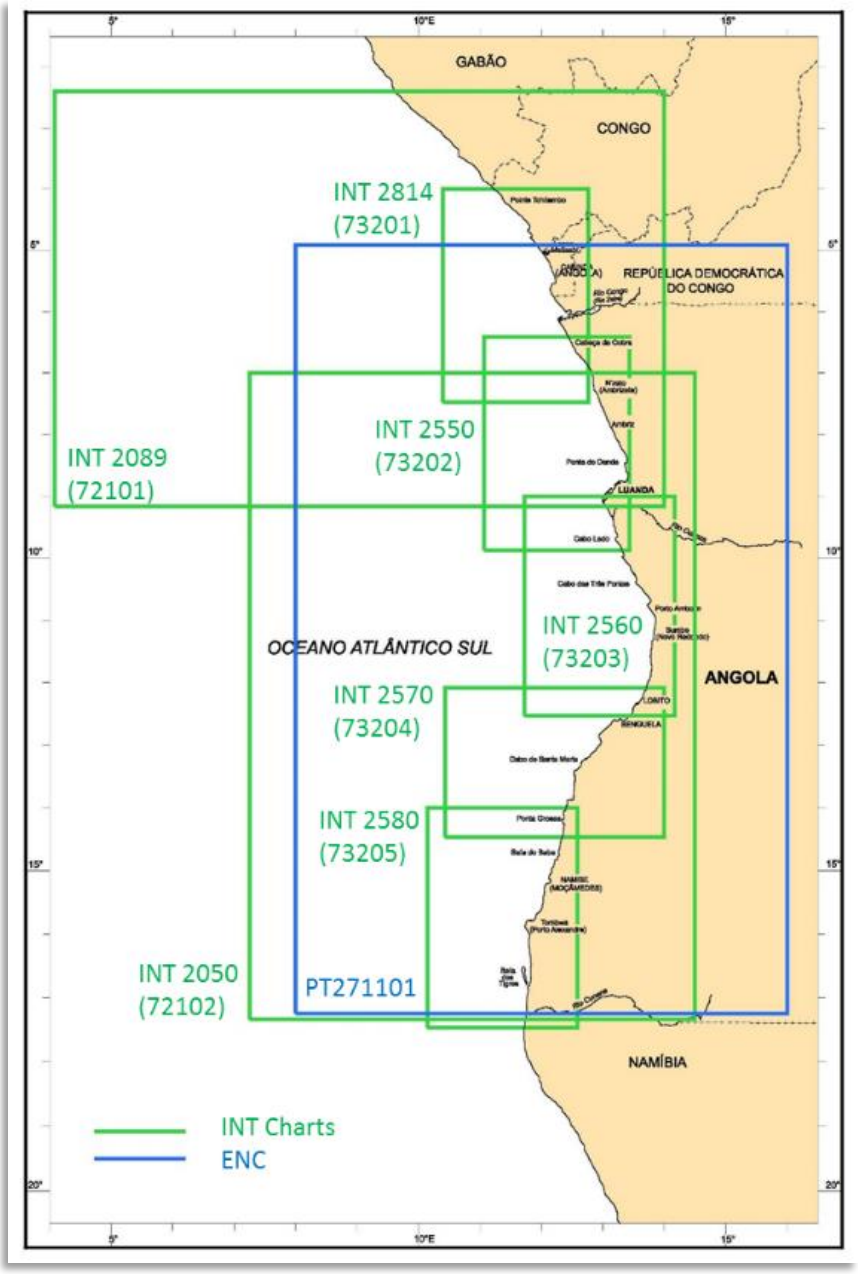
INSTITUTO HIDROGRAFICO **Rua das Trinas – 49** **1249-093 LISBOA**	
Department of which the Hydrographic Office is part *Ministère dont dépend le Service Hydrographique Ministerio del que depende el Servicio Hidrográfico*	Ministry of National Defence – Navy.
Principal functions of the H.O. - *Attributions principales du S.H.* *Principales funciones del S.H.*	Hydrographic Surveys, Nautical Paper Charts and Electronic Navigational Charts, Sailing Directions, Lights and Radio Signals Lists, Notices to Mariners (monthly), Immediate Navigational Warnings, Tide Tables, Tidal Currents, Magnetic Compass Certification and Adjustment. Aids to Navigation Plans. DGPS, AIS projects, Oceanography, and Provision of geophysical and environmental information for scientific and defence issues.
National day - *Fête nationale – Fiesta nacional*	10th June
Telephone : **Fax :** **E-mails :** **WEB site:**	+ 351 21 094 3000 + 351 21 094 3299 dirgeral@hidrografico.pt dirtecnica@hidrografico.pt hidrografia@hidrografico.pt http://www.hidrografico.pt
Date of establishment and Relevant National Legislation – ***Date de fondation et législation nationale concernée*** *– Fecha de establecimiento y Leyes nacionales dereferencia*	22 September 1960 • Territorial Sea: Law n° 34/2006 • Baseline: Laws n° 2130/66 and 495/85 • EEZ: Laws nº 34/2006, n° 119/78 and n° 52/85
Name and rank of the Director or Head - *Nom et grade du directeur –* *Apellidos y graduación del Director*	Rear-admiral Carlos Manuel da Costa Ventura Soares, Director-General
Tonnage *– Tonelaje*	2016 = 9 946 565 tons
Total Budget *- Budget total – Presupuesto Total*	9 million Euros
Staff employed - *Effectifs* **–** *Plantilla*	For details, consult the WEB site: http://www.hidrografico.pt
N° of charts published - *Nombres de cartes publiées –* *N° de cartas publicadas*	210 charts, from which **75** of them represent Portuguese waters. 117 ENC, from which **98** of them represent Portuguese waters.
N° of INT charts published – *Nombres de cartes INT publiées - N° de cartas INT publicadas.* **N° of ENC cells published –** *Nombres de cellules ENC publiées - N° de células ENC publicadas.*	44, from which **34** of them represent Portuguese waters. 117, from which 98 of them represent Portuguese waters.
Type of publications produced (e.g. Tide Tables, Sailing Directions, List of Lights etc.) – *Type de publications produites (par ex: Tables des marées, Instructions nautiques, Livres des Feux, etc. - Tipo de publicaciones producidas (por ej: Tablas de mareas, Derroteros,Libros de Faros etc.)*	- Catalogue of Charts and Nautical Publications; - Catalogue of Nautical Charts of Portugal; - INT1 "Symbols, Abbreviations and Terms used in Charts"; - Tide Tables – Volume I – Portugal; - Tide Tables – Volume II – African Portuguese Speaking Countries; - List of Radio Aids and Services; - List of Lights, buoys, beacons and fog signals – Volume I – Portugal; - List of Lights buoys, beacons and fog signals – Volume II – Angola, Moçambique, São Tomé and Guiné Bissau; - List of Lights buoys, beacons and fog signals – Volume III – Cape Verde Archipelago - Sailing Directions – Continental Portugal – Volumes I to III; - Sailing Directions – Azores Archipelago – Volumes I to II; - Sailing Directions – Madeira Archipelago; - Sailing Directions - Angola and São Tomé e Principe Ports Pilot; - Sailing Directions - Cabo Verde – Volumes I to V; - Sailing Directions (Pleasure Craft) – Continental Portugal

	(Portuguese/English).		
Surveying vessels/ Aircraft – *Bâtiments hydrographiques/aéronefs – Buques hidrográficos/ Aeronaves*	Displacement	Date Launched	Crew
D. CARLOS I	2285	1989	35
ALMIRANTE GAGO COUTINHO	2285	1985	35
ANDRÓMEDA	245	1985	13
AURIGA	245	1987	13
ATLANTA	38.7	1981	3
FISÁLIA	38.7	1981	3
Other information of interest – *Autres informations utiles - Otra información de interés.*	IHPT School of Hydrography and Oceanography provides Hydrography and Oceanography FIG/IHO/ICA category A and B courses.		

ANNEX B

IHPT CHART SCHEMES FOR THE SAIHC REGION (PUBLISHED INT CHARTS AND ENC CELLS)

ANGOLA



ANNEX C

IHPT CHART SCHEMES FOR THE SAIHC REGION (PLANNED AND PUBLISHED INT CHARTS AND ENC CELLS)

MOZAMBIQUE