



**SPAIN**

**NATIONAL REPORT**

**TO THE 13<sup>th</sup> MEETING  
OF THE EASTERN ATLANTIC  
HYDROGRAPHIC COMMISSION  
(EAtHC)**

**CASABLANCA, MOROCCO  
16 - 18 SEPTEMBER 2014**

## 1. Hydrographic Service

Instituto Hidrográfico de la Marina (IHM). There have not been any relevant modifications in the organization of our Hydrographic Service since the last meeting in 2012.

Information on the IHM mission, structure and assets can be found in the web site <http://www.armada.mde.es/ihm>.

This report covers the period from November 2012 to August 2014.

## 2. SURVEYS

### 2.1. Coverage of new surveys

In order to update our bathymetry and our national nautical chart scheme covering the Atlantic Ocean, the IHM has planned and carried out a total of eighteen hydrographic campaigns in the last two years. These surveys were performed with our hydrographic vessels both in the north and west coasts of the Iberian Peninsula: eight of them were carried out in the Gulf of Cadiz (west of the Strait of Gibraltar), and ten in the North Coast.



Figure 1. "Tofño" oceanic hydrographic vessel



Figure 2. "Antares" class coastal hydrographic vessel

The IHM continued with its plan to survey all main harbours as well as their approaching channels by using detection means that yield full bottom

coverage. For this purpose, the IHM employs transportable hydrographic launches carrying shallow water hull mounted multibeam echosounders, as well as hydrographic boats fitted with bathymetric interferometric sensors for very shallow waters. From early 2014, a deployable boat has been incorporated to the transportable assets, to conduct expeditionary and opportunity surveys in very shallow waters.



*Figure 3. Transportable hydrographic launch*



*Figure 4. Deployable expeditionary hydrographic boat for very shallow waters*



*Figure 5. Very shallow water bathymetry system operated from a boat*

Besides the surveys carried out to update our national nautical chart scheme, two campaigns were performed in the last two years as part of the Spanish Exclusive Economic Zone (EEZ) bathymetric survey plan, one in the north of the Iberian Peninsula, and another in the Canary Islands. The IHM has carried out this type of surveys since 1995. The Spanish Navy Oceanographic Research Vessel "Hespérides" is available one month every year for this purpose, and hydrographers from the IHM are deployed for those campaigns.



*Figure 6. Spanish Navy oceanographic research vessel "Hespérides"*

At present, the hydrographic coverage of the Spanish EEZ in the Atlantic Ocean is approximately 60%.

Figures 7, 8, and 9 show coverage and quality of the hitherto collected bathymetric data in the areas of interest for the EAtHC. The areas show coverage of charts belonging to the Spanish nautical chart scheme.

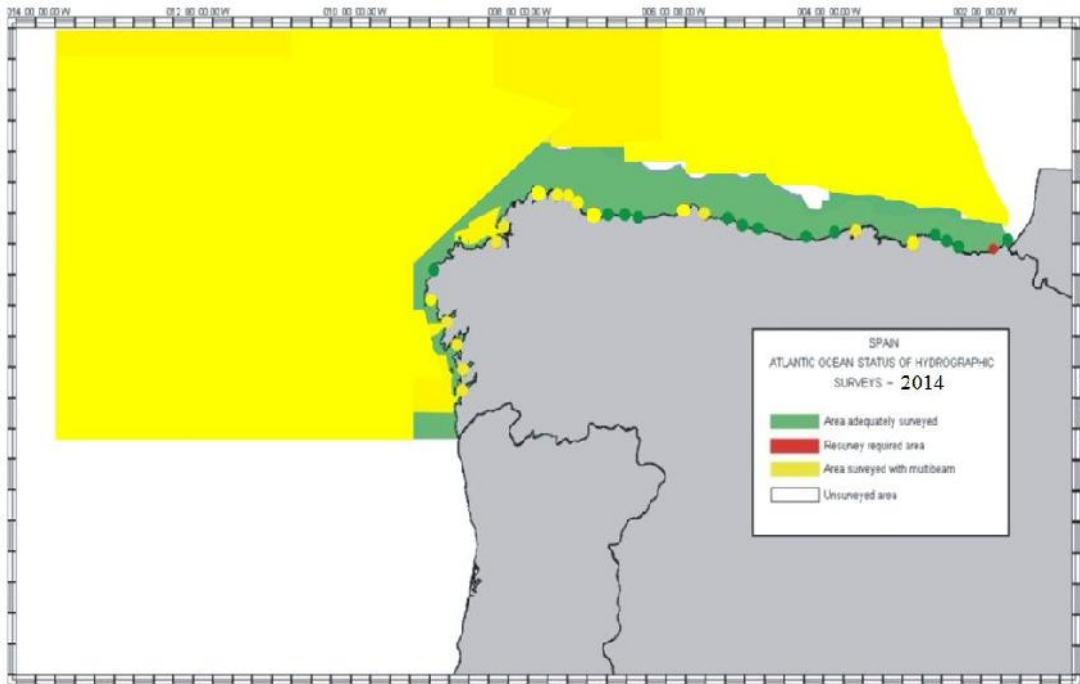


Figure 7. Status of hydrographic surveys N and NW of the Iberian Peninsula, until September 2014

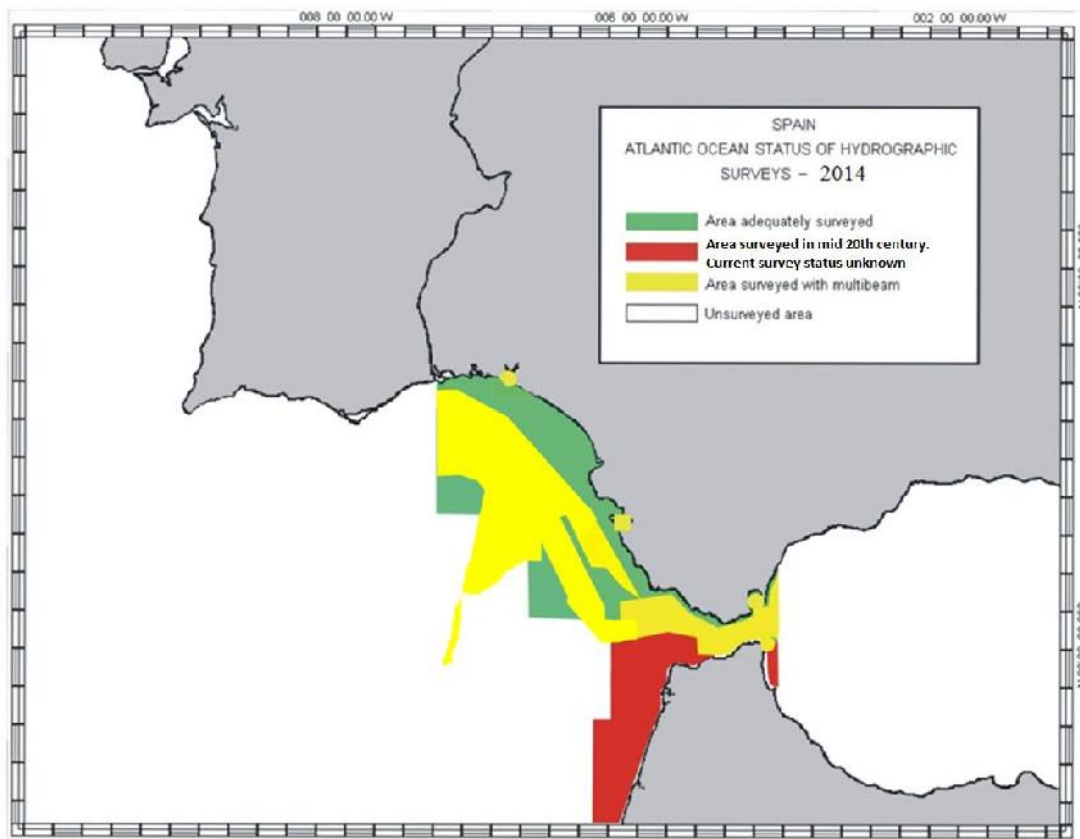


Figure 8. Status of hydrographic surveys S and SW of the Iberian Peninsula, until September 2014

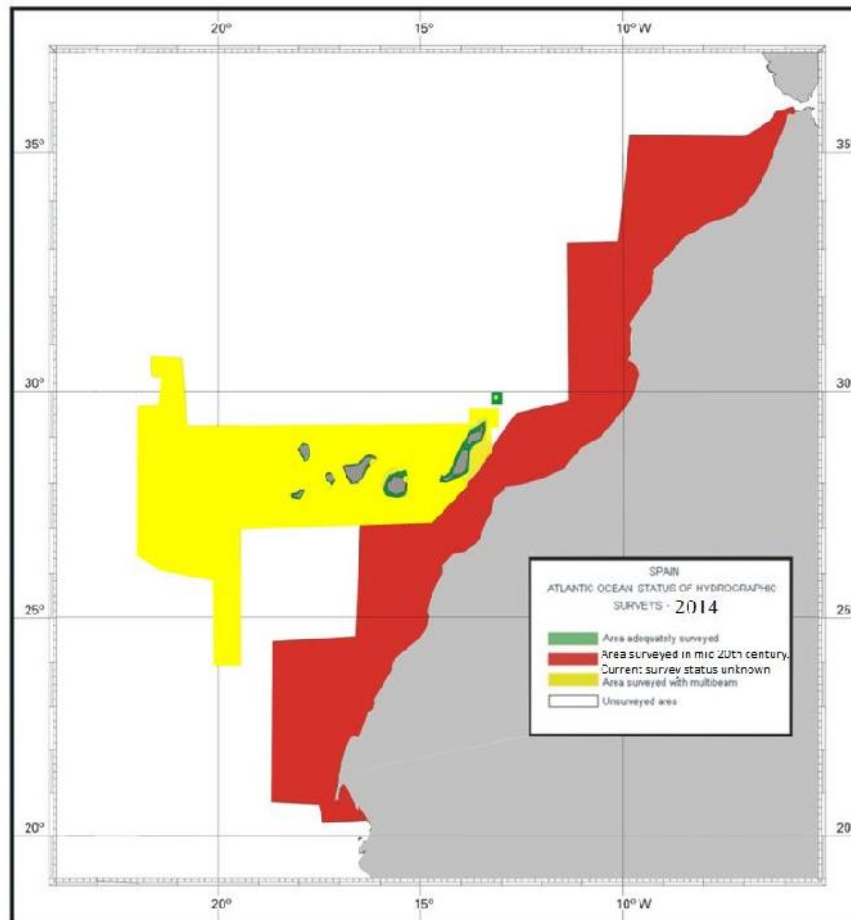


Figure 9. Status of hydrographic surveys, Canary Islands and NW Africa until September 2014

## **Survey planning**

All the surveys have been planned taking into account the type and purpose of each navigational area, in accordance with the IHO S-44 publication (4<sup>th</sup> and 5<sup>th</sup> editions). This requirement makes us assign specific surveys to our ships depending upon their hydrographic capability, equipment and endurance. The standards for hydrographic surveys set out in the IHO S-44 publication are the base for a series of “Hydrographic Permanent Instructions” of the IHM, which are internal directives for hydrographic surveys.

## **2.2. New technologies and / or equipment**

The IHM started an equipment acquisition programme in 2010, supported by the Spanish Navy, which has resulted in a significant hydrographic capacity improvement.

### **2.2.1. Echosounders**

Both the oceanic hydrographic vessels “Tofiño” and “Malaspina” are fitted with single beam and multibeam echosounders. The multibeam echosounders are designed for depths ranging from 100 to 5000 meters.

The “Tofiño” is also fitted with a shallow water multibeam echosounder, which, in combination with the other one, allows full bottom coverage surveys from shallow depths down to 5000 meters.

On the other hand, the coastal hydrographic vessel “Antares” is fitted with a multibeam echosounder, which allows full bottom coverage from shallow depths down to 400 meters.

The IHM is also operating two portable bathymetric interferometric systems for very shallow waters ranging from 0 – 100 meters. These sensors can be deployed from small boats, thus allowing full bottom coverage in areas very close to the coast, where for a larger ship it would not be safe to operate. With this capacity, the requirements for IHO special order an 1a order surveys can be met.

### **2.2.2. Bottom mapping sonars**

A very fine resolution portable sidescan sonar is available with the capability of operating alongside a magnetometer. This sonar can be deployed from either a hydrographic vessel or from one of the hydrographic launches.

In addition, three portable sidescan sonars for very shallow water are available which can be operated from hydrographic launches or boats. In combination with echosounders, these sidescan sonars will enable IHO special order surveys.

Finally, in order to have more assets available to carry out hydrographic surveys, as well as to optimize the use of public resources by different administrations, some agreements and arrangements are either signed or in the process of being signed between the Spanish Navy and several State agencies with competences in the marine environment, which operate ships with multibeam echosounders. These agreements will consider the use of those ships to obtain bathymetric data according with IHO standards, to feed the IHM database. Several campaigns have already been carried out, in which hydrographers from the IHM have carried out surveys on board some of those ships.

### 2.3. New Ships

The “Rigel”, an Antares class coastal hydrographic vessel was decommissioned in 2013. The “Antares” is therefore the only coastal hydrographic vessel available and it will need to be replaced in the near future. There are currently two projects under development to build newer coastal vessels, but due to the current economic situation it is not known when the building of those vessels will take place.

### 2.4. Problems encountered

NTR.

## 3. NEW CHARTS & UPDATES

### 3.1. ENCs

#### 3.1.1. Production

Until July 5, 2014, the IHM has produced 104 ENC's within the area of the EAtHC (out of a total of 206 published for all areas). Table 1 and 2 show the distribution according to their navigational purpose (usage band):

Purpose 2 General	Purpose 3 Coastal	Purpose 4 Approach	Purpose 5 Harbour
4	11	38	51

Table 1. Distribution of ENC production in the EAtHC until July 2014

EAtHC ENC Production until July 5, 2014					
Purpose	Planned	Published	Pending	% Published	% Pending
2	4	4	0	100%	0%
3	11	11	0	100%	0%
4	38	38	0	100%	0%
5	94	51	43	54,26%	45,74%
<b>Total</b>	<b>147</b>	<b>104</b>	<b>43</b>	<b>70,75%</b>	<b>29,25%</b>

Table 2. Distribution of ENC production and percentage in the EAtHC area

From September 2012 to July 2014, 32 new ENC's (13 Purpose 4, and 19 Purpose 5), 22 new editions and 466 updates have been produced within the EAtHC area. This shows the increasing workload associated with maintaining and updating the ENC catalog, which slows the production of new ENC's.

Tables 3 and 4 show the new ENC/editions published since September 2012, within the EAtHC area.



NEW EDITIONS FROM 01/09/2012 TO 05/07/2014		
NUMBER	TITLE	ED.
ES201080	Golfo de Vizcaya	3
ES201082	De Casablanca a cabo Yubi	2
ES201083	De cabo Yubi a ras Timiris	2
ES30040A	De Santoña a Gijón	2
ES30040B	De Gijón a punta de Estaca de Bares	2
ES30041A	De punta de Estaca de Bares a cabo Finisterre	4
ES30041B	De cabo Finisterre a río Miño	3
ES30060A	Islas de Lanzarote y Fuerteventura	3
ES30061A	Islas de Gran Canaria y Tenerife	2
ES400404	Aproches de Gijón	5
ES400405	Aproches de Avilés	3
ES400416	Aproches de las rías de Pontevedra y Vigo	4
ES400442	Aproches de Sanlúcar de Barrameda	2
ES400445	Aproches de Algeciras	6
ES400604	Aproches de Gran Tarajal	3
ES400610	Aproches de la isla de Gran Canaria. Zona norte	4
ES400616	Aproches de la isla de La Palma	2
ES504421	Broa de Sanlúcar de Barrameda	2
ES504431	Puertos de Rota, Base Naval y El Puerto de Santa María	4
ES506010	Puerto de Arrecife	2
ES506120	Puerto de Santa Cruz de Tenerife	3
ES560302	Puerto de Gran Tarajal	2

Table 3. New ENC editions produced since September 2012

NEW ENCs FROM 01/09/2012 TO 05/07/2014			
NUMBER	TITLE	ED.	DATE
ES400402	Aproches de San Vicente de la Barquera	1	30/11/2013
ES400403	Aproches de Ribadesella	1	30/11/2013
ES400406	Aproches de Luarca	1	30/11/2013
ES400407	Aproches de Ribadeo	1	30/11/2013
ES400411	Aproches de Cedeira	1	30/11/2013
ES400413	Aproches de Laxe	1	21/12/2013
ES400417	Aproches de A Guarda	1	06/04/2013
ES400440	Aproches de Ayamonte	1	06/04/2013
ES400602	Aproches de la isla de Fuerteventura. Zona oeste	1	02/02/2014
ES400603	Aproches de la isla de Fuerteventura. Zona sur	1	02/02/2014
ES400605	Aproches de Puerto del Rosario	1	02/02/2014
ES400611	Aproches de la isla de Gran Canaria. Zona sur	1	02/02/2014
ES400613	Aproches de Granadilla	1	09/02/2013
ES503931	Puertos de Mundaka y Bermeo	1	21/06/2014
ES503942	Ría de Santoña	1	29/03/2014
ES504071	Puerto de Ribadeo	1	12/04/2014
ES504131	Ría de Corme y Laxe	1	24/08/2013
ES504422	Río Guadalquivir. Del caño de Enríquez al caño de San Carlos	1	08/03/2014
ES504423	Río Guadalquivir. Del caño de San Carlos al caño de la Lisa	1	08/03/2014
ES504424	Río Guadalquivir. Del Caño de la Lisa a la Huerta del Rincón	1	08/03/2014
ES504425	Río Guadalquivir. De la Huerta del Rincón al puente de San Telmo	1	08/03/2014
ES504437	Arsenal de La Carraca	1	08/03/2014
ES539401	Puerto de Castro Urdiales	1	12/04/2014
ES540402	Puerto de Luanco	1	05/07/2014



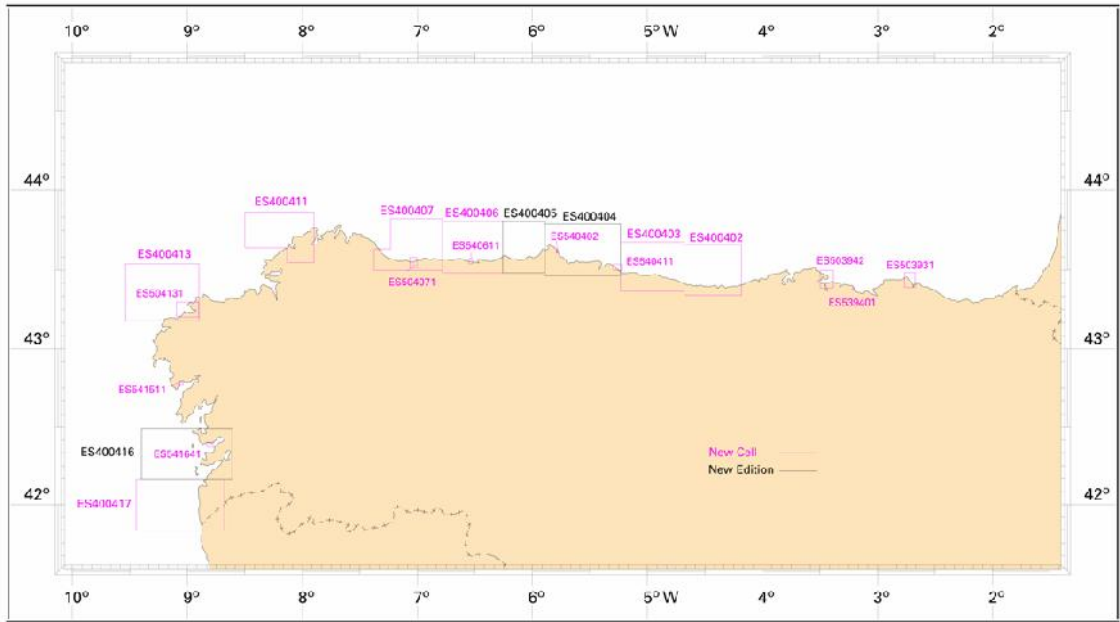


Figure 11. New ENC cells and editions produced in North of Spain since September 2012 (purposes 4 and 5)

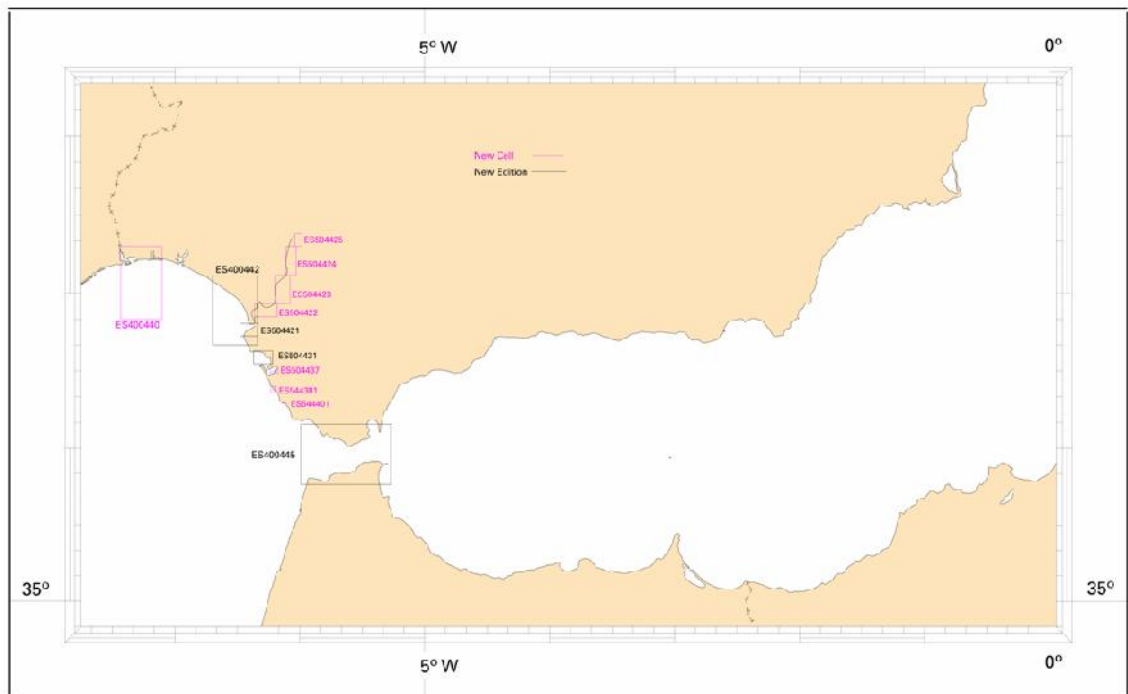


Figure 12. New ENC cells and editions produced in the South West of Spain since September 2012 (purposes 4 and 5)

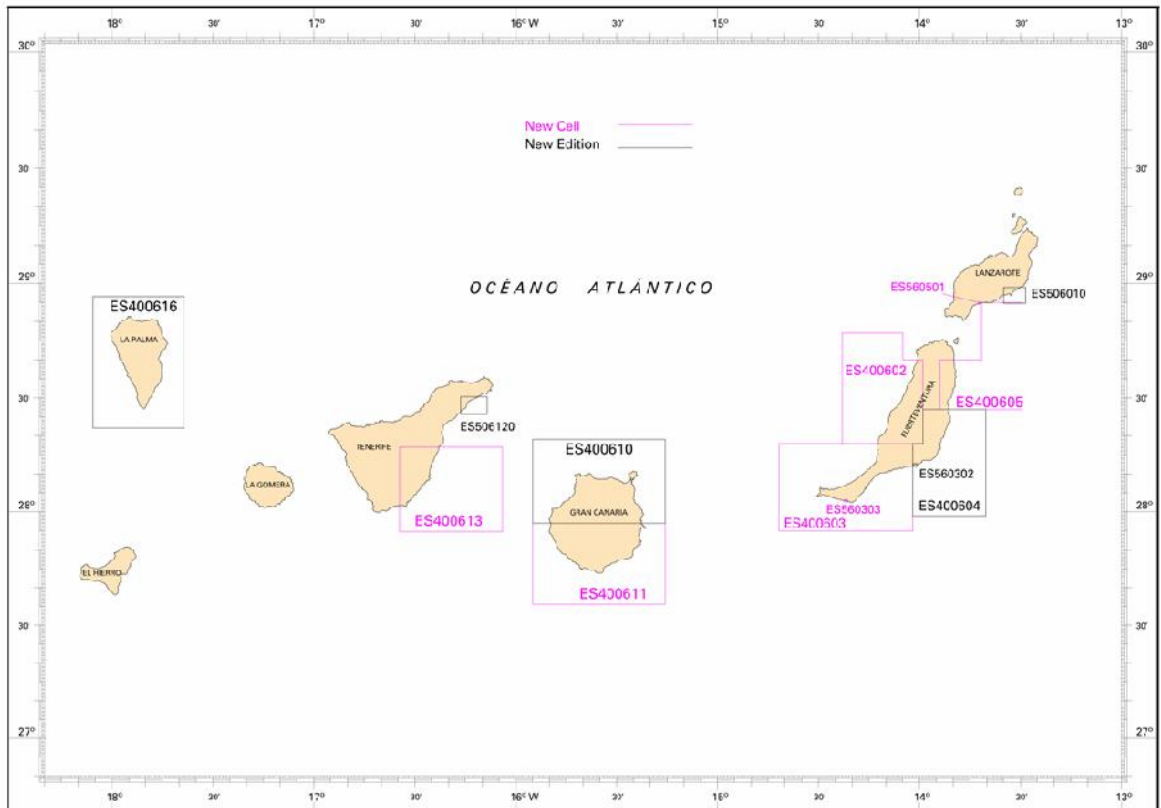


Figure 13. New ENC cells and editions produced in Canary Islands since September 2012 (purposes 4 and 5)

The ENC coverage for purpose 4 within the EAtHC area was completed in 2013.

In January 2014 a new ENC project for purpose 5 was issued, which implied 22 new cells. This new project completes the previous one with the coverage of some secondary ports (secondary fishing ports and some marinas).

Figure 14 and 15 show that Spanish ENC coverage for general, coastal and approach usage bands (purposes 2, 3 and 4) within the EAtHC area is complete.

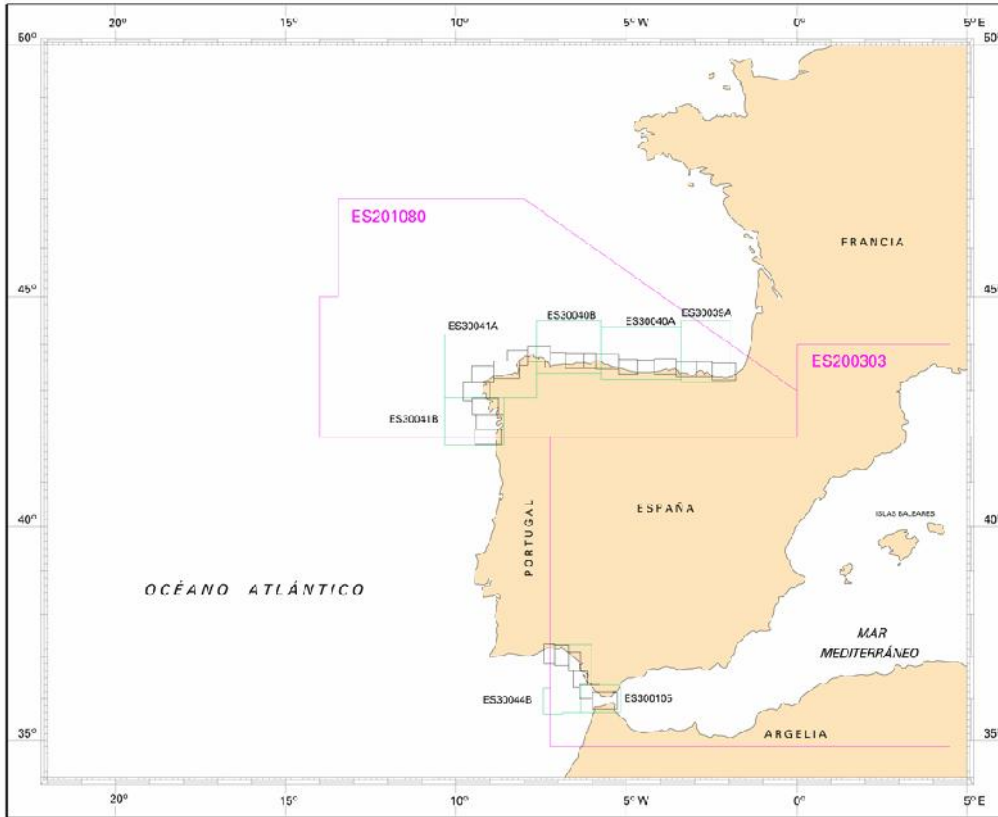


Figure 14. ENC purposes 2, 3 and 4 coverage for the Iberian Peninsula

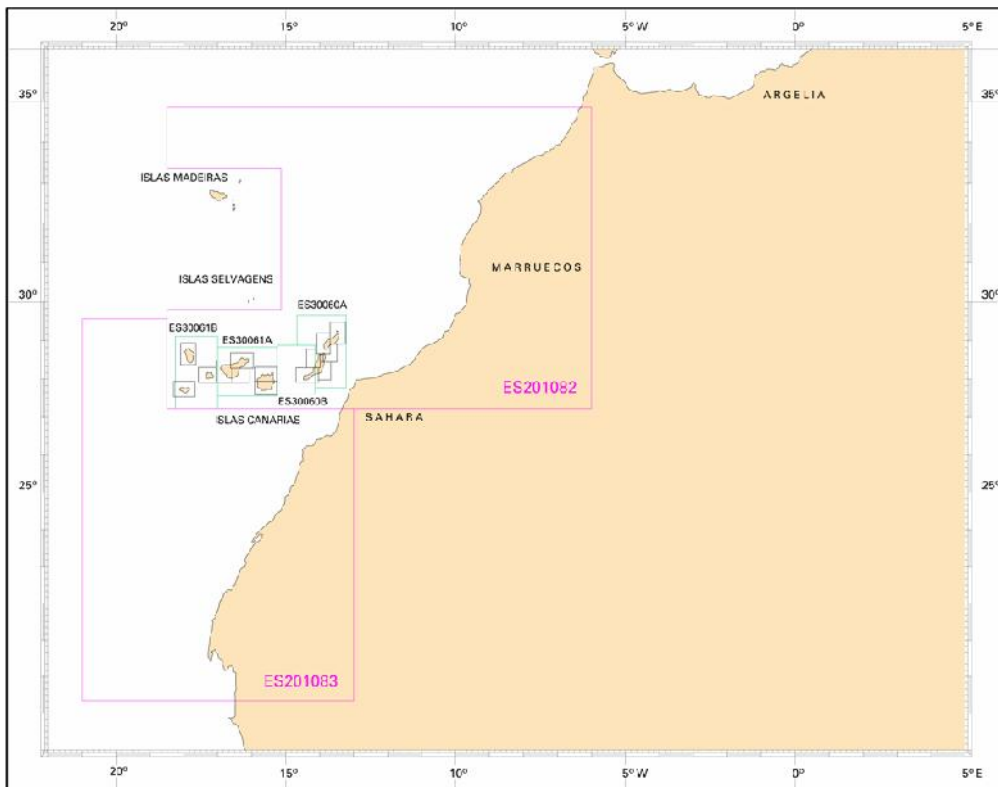


Figure 15. ENC purposes 2, 3 and 4 coverage for the Canary Islands

### 3.1.2. Cooperation

Under the cooperation with the IC-ENC and PRIMAR RENCs, the IHM continues to exchange all the ENC information needed with Portugal (IHPT) and France (SHOM) in order to comply with the IHO recommendations regarding horizontal and vertical consistency on the adjacent ENC's between neighboring countries.

### 3.2. ENC Distribution method

The IHM is a member of the IC-ENC RENC, which carries out ENC validation and consistency checking before distribution, and distributes the ENC's via its chain of Value Added Resellers (VARs).

### 3.3 RNCs

NTR.

### 3.4 INT paper charts

Table 2 shows the new INTernational paper charts/editions published since September 2012, within the EAthC area. These are either new charts (NC) or new editions (NE).

NUM (INT)	SCALE	TITLE
4431 (INT 1904)(NE)	1/12.500	Puertos de Rota, Base Naval y El Puerto de Santa María
41B (INT 1809) (NE)	1/200.000	De las islas Sisargas a río Miño
41A (INT 1808) (NE)	1/200.000	De punta da Estaca de Bares a cabo Finisterre

*Table 5. INTernational paper charts published since September 2012*

### 3.5 National paper charts

Since September 2012, a number of national paper charts have been published within the EAthC area. These are either new charts (NC) or new editions (NE). These charts are either produced from national data or adopted from charts produced by other Hydrographic Offices. All of them are shown in Table 6.

NUM	SCALE	TITLE
602 (NC)	1/60.000	De punta Tostón a punta de Amanay
603 (NC)	1/60.000	Península de Jandía
610 (NE)	1/60.000	De cabo Descojonado a la península de Gando
40 (NE)	1/350.000	De cabo de Ajo a cabo Ortegá
4451 (NE)	1/10.000	Puerto de Algeciras
4452 (NE)	1/10.000	Puertos de La Línea y Gibraltar
10 (NC)	1/3.500.000	Europa sur occidental, costa norte de África y archipiélagos de Azores, Madeira Canarias
420B (INT 1872 PT) (NC)	1/30.000	Aproches de Aveiro
440A (NC)	1/25.000	Desembocadura del río Guadiana y ría de isla Cristina

Table 6. National paper charts published since September 2012

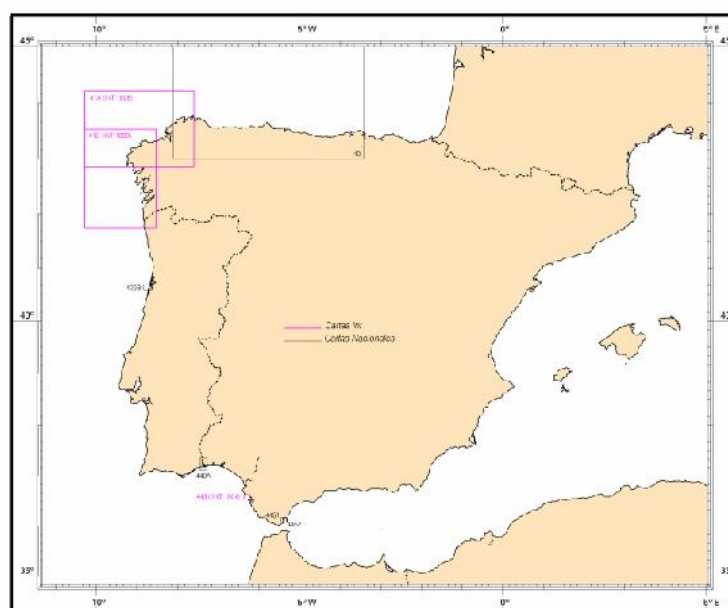


Figure 16. New INTERNATIONAL and national paper charts and editions published in the North and SW of the Iberian Peninsula since September 2012

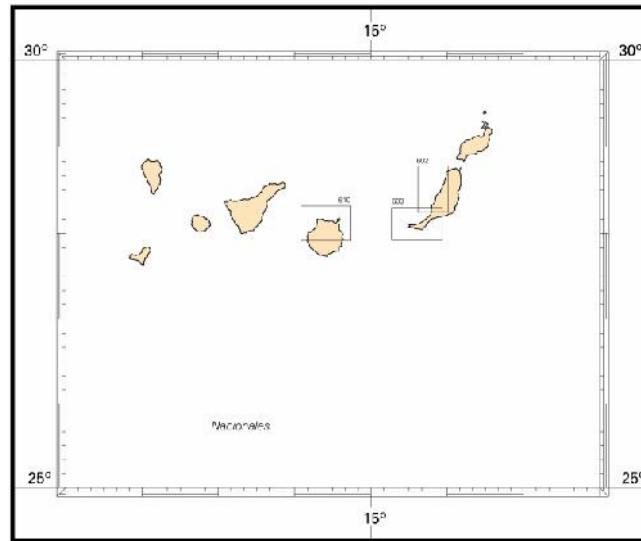


Figure 17. New national paper charts and editions published in the Canary Islands since September 2012

### 3.6. Other charts (leisure craft charts)

Table 7 shows the leisure craft charts published since September 2012 within the EAtHC area. These are new charts with a new format, to be used mainly by leisure / sports navigators.

NUM	SCALE	TITLE
D416	1/60.000	De península O Grove a cabo Silleiro

Table 7. Leisure craft charts published since September 2012

### 3.7. Problems encountered

Even though the IHM catalogue lists Spanish INT charts covering part of the western African coast, no systematic surveys have been carried out by the IHM in that area for decades, except for soundings of opportunity when vessels transit between the Iberian Peninsula and the Canary Islands. Therefore, no data are available for the IHM to publish up-to-date editions of the existing INT charts.

## 4. NEW PUBLICATIONS AND UPDATES

### 4.1. New publications

NTR.



## 4.2. Updated publications

- Catalog of Nautical Charts and Publication, 2013 Edition.
- *List of lights and fog signals, part I*, 2014 edition. Coasts of Spain and Portugal on the Atlantic Ocean, Africa West Coast from Cabo Espartel to Cape Verde (Senegal), Azores Islands, Madeira, Canary Islands and Cape Verde.
- *List of lights and fog signals, part II*, 2014 edition. Gibraltar Strait, Balearic Islands and Mediterranean coasts of Spain, Morocco and Algeria.
- *Sailing Directions num. 1*, 2014 edition. North Coast of Spain from Rio Bidasoa to Estaca de Bares.
- *Sailing Directions num. 4*, 2013 edition. From Cabo Espartel to Cabo verde, and Azores, Madeira, Selvagens, Canarias y Cabo Verde Islands.
- *Sailing Directions num. 2 volume I*, 2013 edition. North West Coast of Spain from Estaca de Bares to Rio Miño.
- *Sailing Directions num. 2 volume II*, 2014 edition. Coasts of Portugal and South West Spain, from Rio Miño to Trafalgar.
- *Maritime signaling, 2014 edition*.
- Radio Signals books, 2012 edition.

## 4.3. Means of delivery.

A digital version of the publication *List of Lights and Fog Signals* is currently available online (an interactive internet tool) in the following internet address:

[http://www.armada.mde.es/ihtm/Aplicaciones/LibroFaros/LF\\_jquery/index.html](http://www.armada.mde.es/ihtm/Aplicaciones/LibroFaros/LF_jquery/index.html)

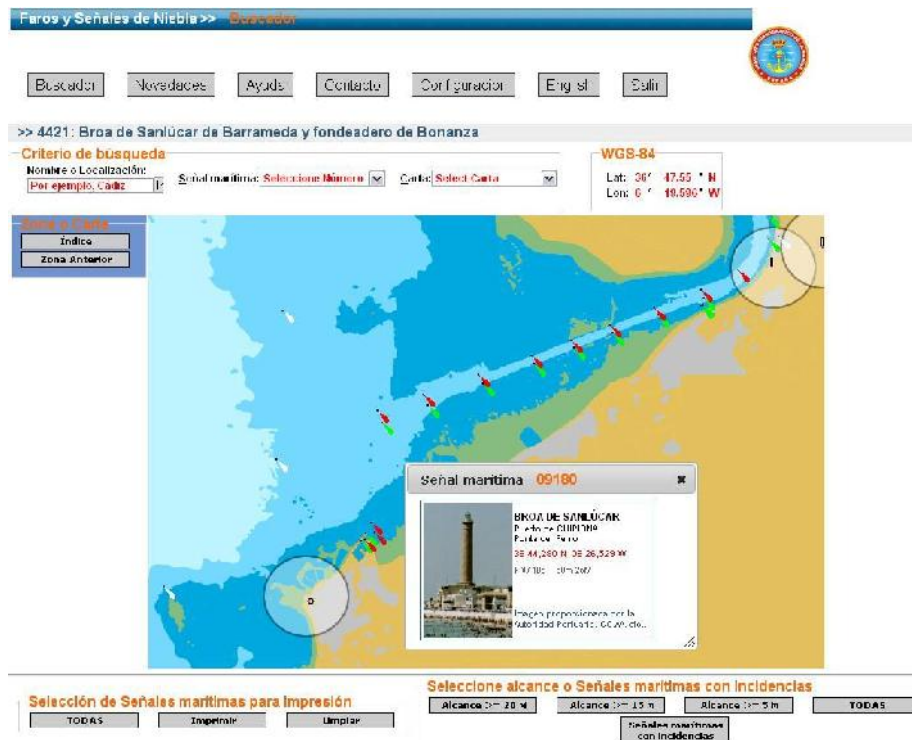


Figure 18. List of Lights and Fog Signals interactive tool

#### 4.4. Problems encountered.

NTR.

#### 5. MSI

Spain is NAVAREA III (Mediterranean and Black Sea) Coordinator.

##### 5.1. Existing Infrastructures for transmission

The current situation of the dissemination of Maritime Safety Information can be summarized as follows:

###### 5.1.1. Radio Navigational Warnings

Coordinator: SASEMAR (Spanish National Agency for Maritime Search and Rescue Operations, Ministry of Public Works) is the national Coordinator for coastal and local radio navigational warnings. The National Rescue Co-ordination Centre (CNCS) is located in Madrid.

Means: NAVTEX Stations.  
MF and VHF Stations.

There are three Spanish NAVTEX stations broadcasting in the NAVAREA II region: La Coruña (NW Iberian Peninsula), Tarifa (Strait of Gibraltar), and Las Palmas (Canary Islands). They broadcast in English and Spanish.

Any information considered by the IHM as relevant for vessels in transit to the NAVAREA II Region and French coastal waters, is submitted via FAX to SHOM (NAVAREA II Coordinator); likewise, SHOM and CECMED (Commander in Chief and District Commander Mediterranean French Naval) report any maritime safety information affecting Spanish coastal waters and NAVAREA III area of coverage. Thus, there is a fluid exchange of information between both Coordinators.

In addition, if the IHM has knowledge of any event affecting Maritime Safety in waters under jurisdiction of some other country within NAVAREA II region, both the relevant country and the NAVAREA II Coordinator are duly informed.

#### 5.1.2. SAR Organisation

Coordinator: SASEMAR through its National Centre (CNCS) and its Area, Regional and Local Centres.

Means: NAVTEX stations and communication stations at SASEMAR Centres, as well as coastal MF and VHF stations.

## 5.2. New infrastructure in accordance with GMDSS Master Plan

NTR.

## 5.3. Problems encountered.

NTR.

## 6. C-55

### 6.1. SPAIN. CHARTING REGION G

Information valid as of 5 July 2014.

#### 6.1.1. HYDROGRAPHIC SURVEYING

Survey coverage, where:

A = percentage which is adequately surveyed.

B = percentage which requires re-survey at larger scale or to modern standards.

C = percentage which has never been systematically surveyed.

	<b>A</b>	<b>B</b>	<b>C</b>
<b>Dephts &lt; 200 m</b>	94	6	0
<b>Dephts &gt; 200 m</b>	60	0	40

### 6.1.2. NAUTICAL CHARTING

Status of nautical charting within the limits of the EEZ

A = percentage covered by INT series, or a paper chart series meeting the standards in M-4.

B = percentage covered by Raster Navigational Charts (RNCs) meeting the standards in S-61.

C = percentage covered by ENCs meeting the standards in S-57.

<b>Purpose/ scale</b>	<b>A</b>	<b>B</b>	<b>C</b>
Offshore passage/ Small	100	0	100
Landfall and Coastal passage/ Medium	100	0	100
Approches and Ports/ Large	100	0	64

Regarding to ENC large scale coverage it is important to notice that the current percentage (64%) has been calculated over the new ENC production project, which aims to cover all national main and secondary ports.

### 6.1.3. MARITIME SAFETY INFORMATION (MSI).

#### NAVIGATIONAL INFORMATION (S-53)

<b>SERVICE</b>	<b>Yes</b>	<b>No</b>	<b>Partial</b>	<b>Notes</b>
<b>LOCAL WARNINGS</b>	X			
<b>COASTAL WARNINGS</b>	X			
<b>NAVAREA WARNINGS</b>	X			Via NAVAREA II Coordinator
<b>PORT INFORMATION</b>	X			Agreements with all Port Authorities

## GMDSS IMPLEMENTATION (IMO Publication 970–GMDSS Manual)

SERVICE	Yes	No	Partial	Notes
Master Plan	X			
Area A1	X			
Area A2	X			
Area A3	X			
NAVTEX	X			
SafetyNET	X			For NAVAREA Warnings only.

**6.2. SPAIN. CANARY ISLANDS, CHARTING REGION G**

Information valid as of 5 July 2014.

**6.2.1. HYDROGRAPHIC SURVEYING**

A = percentage which is adequately surveyed.

B = percentage which requires re-survey at larger scale or to modern standards.

C = percentage which has never been systematically surveyed.

	A	B	C
Depths < 200 m	95	5	0
Depths > 200 m	50	0	50

**6.2.2. NAUTICAL CHARTING**

Status of nautical charting within the limits of the EEZ

A = percentage covered by INT series, or a paper chart series meeting the standards in M-4.

B = percentage covered by Raster Navigational Charts (RNCs) meeting the standards in S-61.

C = percentage covered by ENC's meeting the standards in S-57.

<b>Purpose/ scale</b>	<b>A</b>	<b>B</b>	<b>C</b>
Offshore passage/ Small	100	0	100
Landfall and Coastal passage/ Medium	100	0	100
Approches and Ports/ Large	100	0	75

Regarding to ENC large scale coverage it is important to notice that the current percentage (75%) has been calculated over the new ENC production project, which aims to cover all national main and secondary ports.

### 6.2.3. MARITIME SAFETY INFORMATION (MSI).

#### NAVIGATIONAL INFORMATION (S-53)

<b>SERVICE</b>	<b>Yes</b>	<b>No</b>	<b>Partial</b>	<b>Notes</b>
<b>LOCAL WARNINGS</b>	X			
<b>COASTAL WARNINGS</b>	X			
<b>NAVAREA WARNINGS</b>	X			Vía NAVAREA II Coordinator
<b>PORT INFORMATION</b>	X			Agreements with all Port Authorities

#### GMDSS IMPLEMENTATION (IMO Publication 970–GMDSS Manual)

<b>SERVICE</b>	<b>Yes</b>	<b>No</b>	<b>Partial</b>	<b>Notes</b>
<b>Master Plan</b>	X			
<b>Area A1</b>	X			
<b>Area A2</b>	X			
<b>Area A3</b>	X			
<b>NAVTEX</b>	X			
<b>SafetyNET</b>	X			Vía NAVAREA II Coordinator

## **7. Capacity Building**

### **7.1. Offer of and/or demand for Capacity Building**

The Spanish Hydrographic School, located within the premises of the IHM, offers both hydrographic surveyor Category A and B courses. These courses are 10-month long and are taught in Spanish. Minimum academic enrolling requirements should be fulfilled.

On 25<sup>th</sup> April 2013 the Specialization Programmes in Hydrography & Oceanography for Naval Officers (Category A) and for Petty Officers (Category B) were revalidated and recognized by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers.

The following is a list of the students who have attended these courses in the last three academic years:

#### Category A course:

Academic year 2013-2014

2 Officers from the Spanish Navy  
1 Officer from Argentina  
1 Officer from Peru

Academic year 2012-2013

2 Officers from the Spanish Navy

Academic year 2011-2012

2 Officers from the Spanish Navy  
1 Officer from Guatemala

#### Category B course:

Academic year 2013-2014

3 Petty Officers from the Spanish Navy

Academic year 2012 - 2013

2 Petty Officers from the Spanish Navy

Academic year 2011-2012

1 Petty Officer from the Spanish Navy  
1 Petty Officer from the Dominican Republic

To date, all the students who take the forementioned courses are military personnel. The attendance of non-Spanish students is offered through a *Collaboration Agreement with regard to military training*, signed between the Spanish Ministry of Defence and other countries. This agreement provides grants for the attendance to the abovementioned courses.

The point of contact for these matters is generally the Defence Attaché to the corresponding Spanish Embassy.

## **7.2. Training received, needed, offered**

A Spanish Navy officer from the IHM was selected for the Nippon Foundation / GEBCO training program in Ocean Bathymetry at the University of New Hampshire, USA, from August 2013 to August 2014. Upon completion, he will continue his career at the IHM in the hydrography department.

Another Spanish Navy officer from the IHM was selected for the IHO – Nippon Foundation CHART (Cartography, Hydrography and Related Training) Project. She will attend the course at the UKHO – Taunton (UK) from September to December 2014. Upon completion, she will continue her career at the IHM in the cartography department.

## **7.3. Status of national, bilateral, multilateral or regional development projects with hydrographic component. (In progress, planned, under evaluation or study)**

Since the date of the last meeting, several cooperation events have been carried out between the IHM and the Instituto Hidrografico of Portugal (IHPT), under the framework of the existing bilateral agreement between the two offices:

- Joint Survey campaign in the mouth of the Guadiana River in October/November 2013, to test available multibeam and interferometric echosounders and share operation procedures.
- Joint Survey campaign in the estuary of the Tajo River (Lisbon) in May 2014, to share and compare survey procedures and results.

## **7.4. Definition of bids to IHOCBC**

NTR.



## **8. Oceanographic activities**

### **8.1. General**

An upgraded IHM database is under construction and is being populated by tidal data collected from all national harbours. Users will be able to access this database in the future via the Internet.

A technical arrangement is in the process of being implemented between the IHM, the Instituto Hidrografico of Portugal (IHPT), and the Spanish ports authority public agency *Puertos del Estado*, to establish an oceanic observation network in the Iberian Peninsula, mainly focused on tides and currents.

### **8.2. GEBCO/IBC's activities**

NTR.

### **8.3. Tide gauge network**

Five radar tide gauges were acquired by the IHM in 2012, fitted with meteorological sensors and real time transmission capability, which will be deployed as long-term stations at locations not covered by the current national tide gauge network. Once these gauges are deployed, their data will be shared with the other national institutions which take part in the national network.

Information regarding to the Spanish tide gauge network can be found at the following IHO web link:

[http://www.iho-ohi.net/mtg\\_docs/com\\_wg/IHOTC/IHOTC\\_Misc/TideGaugeInventory.pdf](http://www.iho-ohi.net/mtg_docs/com_wg/IHOTC/IHOTC_Misc/TideGaugeInventory.pdf)

### **8.4. Problems encountered**

NTR.

## **9. Other activities**

### **9.1. Participation in IHO Working Groups**

The IHM takes part in several committees and working groups of the IHO:

- Hydrographic Services and Standards Committee (HSSC)
- Standardization of Nautical Publications Working Group (SNPWG)
- Chart Standardization and Paper Chart Working Group (CSPCWG)
- Tidal and Water Level Working Group (TWLWG)

- Surface Current Working Group (SCWG)
- Marine Spatial Data Infrastructure Working Group (MSDIWG)
- World-Wide Navigational Warning Service Sub-Committee (WWNWS)
- Hydrographic Dictionary Working Group (HDWG)
- Finance Committee (FC)
- Hydrographic Commission on Antarctica (HCA)
- East Atlantic Hydrographic Commission (EAtHC)
- Mediterranean and Black Sea Hydrographic Commission (MBSHC)

## 9.2. Meteorological data collection

The recently acquired tide gauges integrate meteorological sensors, whose records can be transmitted in real time to the IHM.

## 9.3. MSDI Progress

The IHM participates in a working group in the framework of the Spain's Spatial Data Infrastructure framework, which aims to integrate via the Internet all data, metadata, services and any other geographical information produced in Spain, so that all potential users be able to locate, identify, select, and access such resources through the SDI geoportal <http://www.idee.es>. No information from the IHM is available yet in this geoportal. Nevertheless, a new geoportal built by IHM is ready to be released for public use, and will be part of the national one.

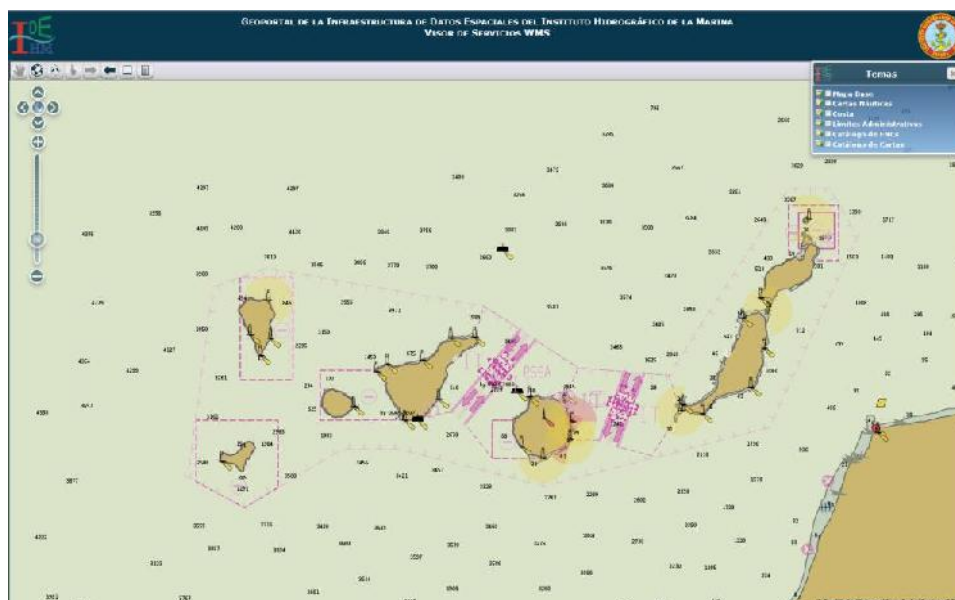


Figure 19. IHM geoportal internet viewer

The IHM geoportal will be comprised of an internet viewer and a number of services, such as Web Map Service (WMS) and Web Feature Service (WFS). The information which can be displayed is obtained from the ENC database, therefore it is continuously updated.

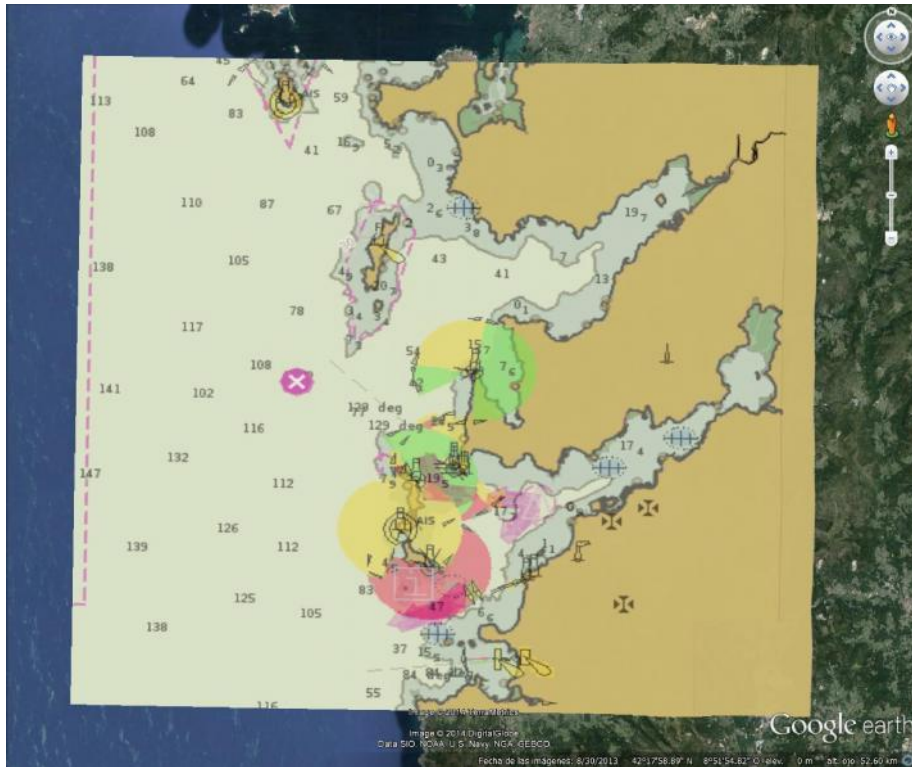


Figure 20. IHM Web Map Service (WMS) running on Google Earth

The potential users of this geoportal are, among others, the IHM departments (internal use), maritime administration agencies (port authorities, search and rescue..), Naval forces, other hydrographic services, IHO cartographic coordinators, RENCs, etc....