



NATIONAL REPORT

**TO THE 19th MEETING
OF THE MEDITERRANEAN AND BLACK
SEAS HYDROGRAPHIC COMMISSION
(MBSHC-19)**

**BATUMI, GEORGIA
30 JUNE - 2 JULY 2015**

**Instituto Hidrográfico de la Marina
Cádiz - España**

1. HYDROGRAPHIC SERVICE

Instituto Hidrográfico de la Marina (España). There haven't been relevant internal modifications in the organization of our Hydrographic Service since the last meeting. Our organization, mission and different kind of services offered can be found at <http://www.armada.mde.es/ihm>.

This report covers the period September 2013 - May 2015.

2. SURVEYS

2.1. Bathymetric coverage of new surveys

97% of Spanish Mediterranean coastal waters up to 200 m deep have already been surveyed. Current effort is focused on resurveying the older data areas.

For the period covered by the present report, Spanish Hydrographic Institute has conducted a total of six hydrographic surveys employing either Multibeam Echosounders (MBES) or interferometric Echosounders (Phase Differencing Bathymetric Sonars PDBS). These surveys were conducted by our hydrographic vessels in the Alboran Sea and southeast and eastern coast of Spain.



Figure 1. "Malaspina" class oceanic hydrographic vessel.



Figure 2. "Antares" class coastal hydrographic vessel.

Furthermore, it is important to highlight that this office has continued with the goal of carrying out hydrographic surveys of Ports and their approaching channels using surveying means that yield full bottom acoustic coverage in order to fulfil IHO S-44 standards for special order surveys. For this purpose, IHM employed small transportable hydrographic vessels fitted with MBES as well as small boats fitted with PDBS.



Figure 3. Small transportable hydrographic vessel.



Figure 4. Very shallow water PDBS operated from a boat.

Compiled bathymetric coverage conducted by Spanish navy survey ships from September 2013 to May 2015 is shown in figure bellow.

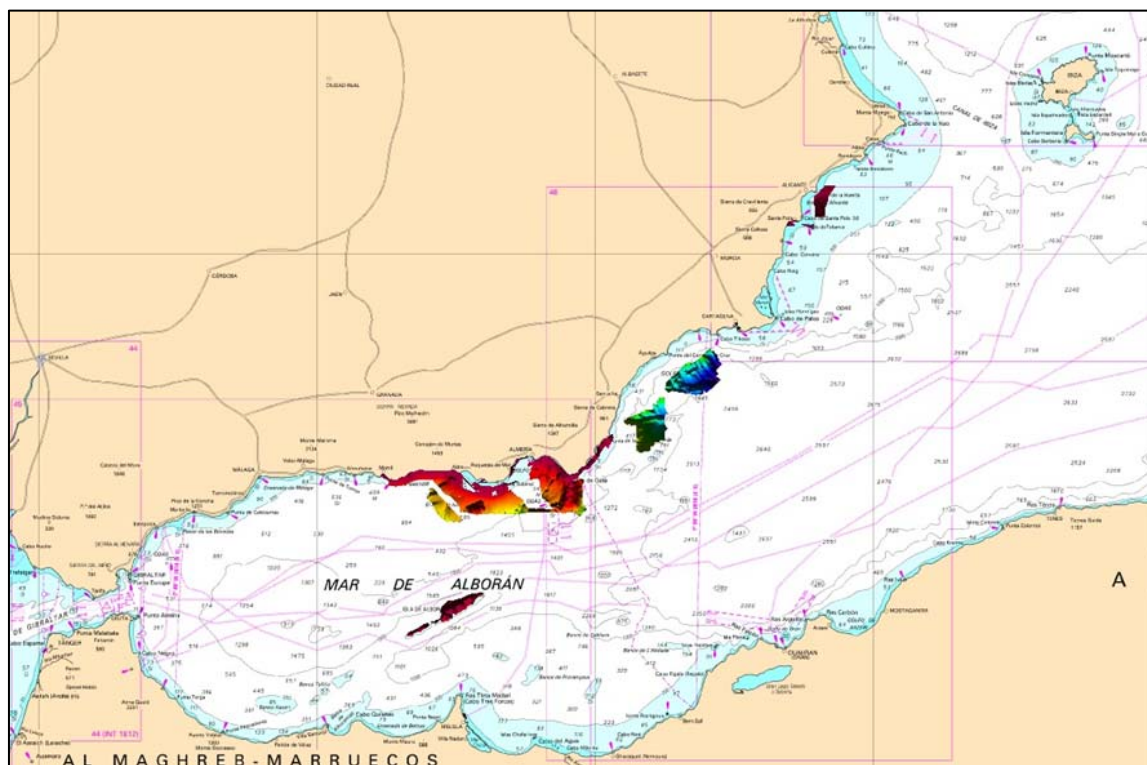


Figure 5. Compiled bathymetric coverage conducted by Spanish navy survey ships from September 2013 to May 2015

Next figure shows the compiled bathymetric coverage in the area of interest for the MBSHC.

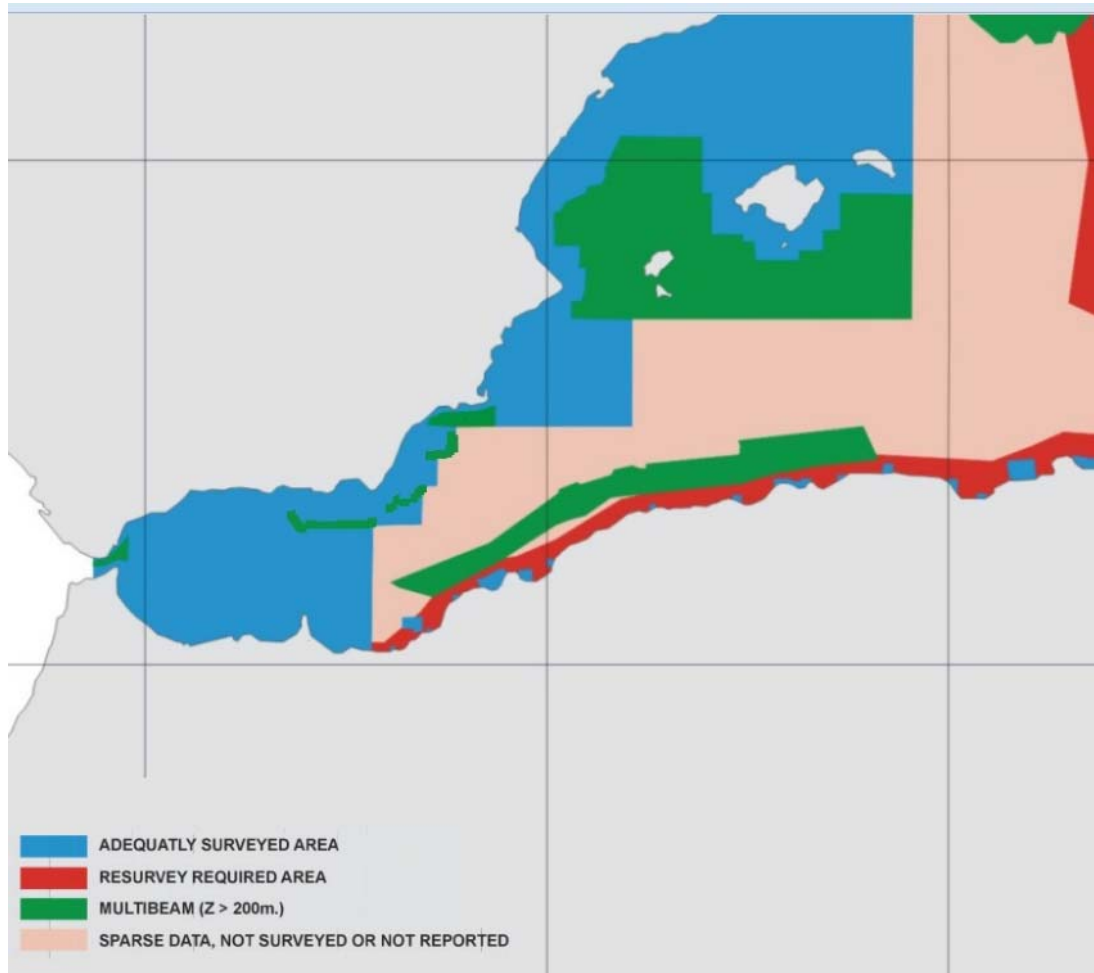


Figure 6. Hydrographic surveys from September 2013 to May 2015

Survey planning

Surveys have been planned by taking into account the type and purpose of each navigational area, in accordance with the IHO S-44 publication (5th edition). This requirement directs us to assign specific surveys to the right asset (Hydrographic Vessel, Transportable Vessel or Boat) depending on her hydrographic capability, equipment and endurance.

2.2. New technologies and/or equipment

2.2.1. Cartographic production

The production of the first charts started with the acquisition of the CARIS HPD production system, prioritizing the gradual migration of cartographic production to this new system.

At the same time, a print on demand system (POD) is being established to print charts, after the purchase of the required computer equipment.

2.2.2. Echosounders

Four years ago IHM initiated an Equipment Acquisition Program, financed by the Spanish Navy, which has resulted in a significant hydrographic capacity improvement. In order to work in shallow waters new MBES (EM-3002) and PDBS (Geoswath 500 and 250) have been acquired and installed in our Hydrographic Flotilla.

In summary, our Hydrographic Flotilla is currently fitted as follows:

- Every Oceangoing Hydrographic Vessel, “Tofiño” and “Malaspina”, is equipped with two hull-mounted MBES (for shallow and for deep waters) and each one of them carries on board two Small Hydrographic Boats to cover very shallow waters.
- Coastal Hydrographic Vessel “Antares” is fitted with a MBES in order to work in shallow Spanish coastal waters. However, Coastal Hydrographic Vessel “Rigel” has been decommissioned after more than 48 years of service conducting more than 150 hydrographic surveys.
- Three Transportable Small Hydrographic Vessels and boats have either MBES or PDBS in order to conduct Special Order Surveys.

Furthermore, new equipment (hardware and software) has been upgraded and improved with the goal of handling and processing all the acquired data.

2.2.2.1 Bottom Mapping Sonars

The newly acquired PDES are developing new advanced capabilities for shallow water surveys. PDES provides a wider swath-width compared to MBES. Furthermore, PDES provides both and simultaneously co-registered high-resolution side scan sonar imagery and three-dimensional bathymetry. This advanced capability allows the hydrographer to detect, explore and identify submerged features during the survey. In addition, this imagery provides an important help during data processing.

2.3. New Vessels

As indicated before, Coastal Hydrographic Vessel “Rigel” has been decommissioned and Coastal Hydrographic Vessel “Antares” is about to end her last operational life time. As a consequence, Coastal Hydrographic Vessels are planned to be commissioned in the near future, but no specific dates have been set yet. Specific Projects for new vessels have been developed by the Spanish Navy Staff. However, current financial situation is delaying the construction of the vessels.

2.4. Problems encountered

NTR.

3. NEW CHARTS AND UPDATES

3.1 ENC

To date, IHM has produced 118 ENCs within the area of the MBSHC (out of a total of 229 published for all areas).

Since the last MBSHC meeting, IHM has produced 39 new ENCs, 17 new ENC editions and 314 ENC update's. This shows the increasing workload associated with maintaining and updating the ENC catalog, which slows the production of new ENCs.

Navigational purpose	Projected	Published
1 - Overview	0	0
2 - General	1	1
3 - Coastal	11	11
4 - Approach	45	45
5 - Harbour	99	61
6 - Berthing	0	0
<u>Total</u>	156	118

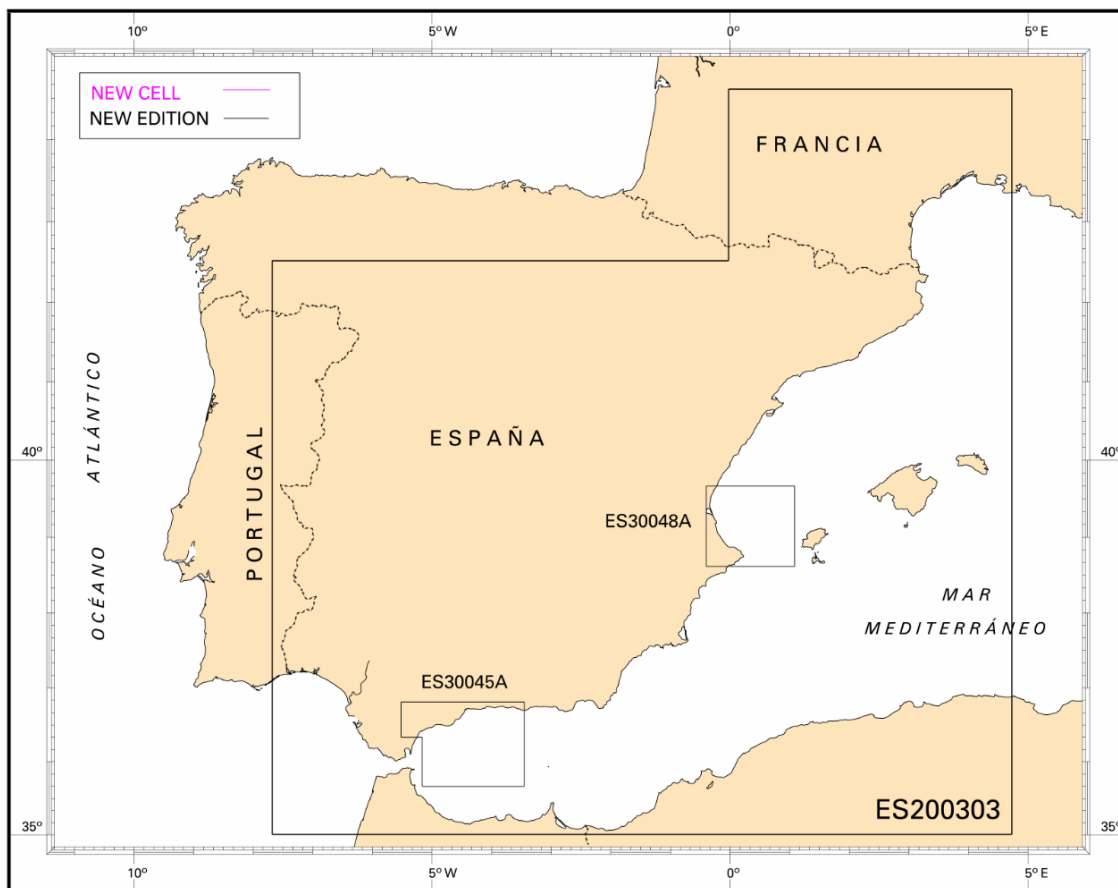


Figure 7. Navigational purpose 2 and 3 ENC production in the MBSHC 2013-2015

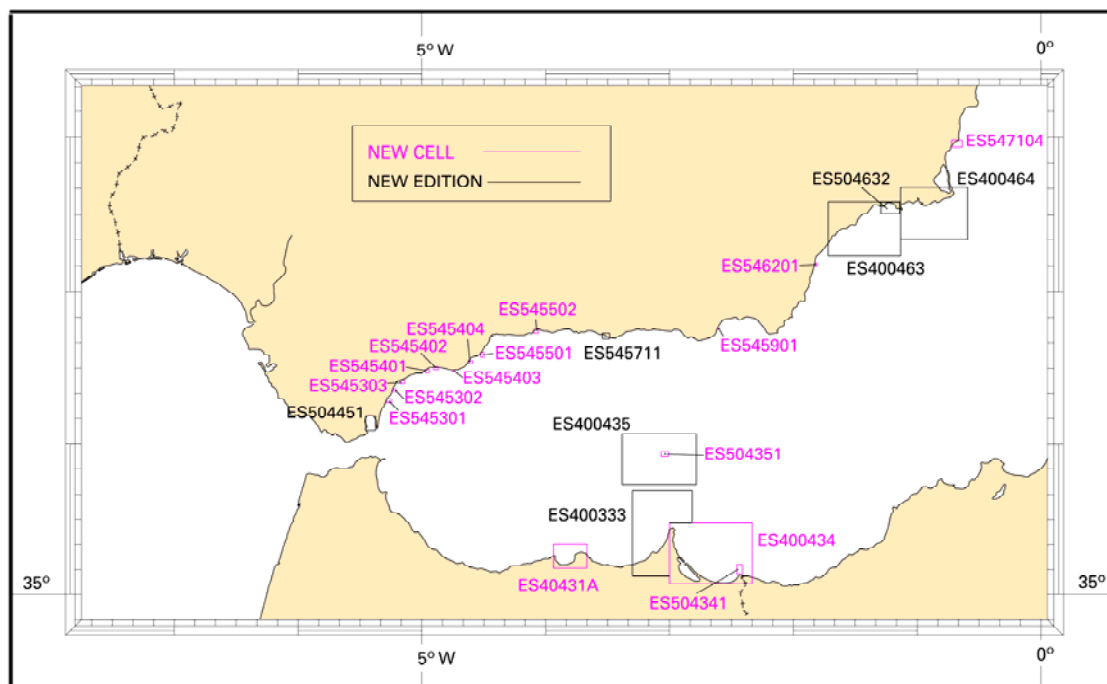


Figure 8. Navigational purpose 4 and 5 ENC production in the MBSHC 2013-2015 part1

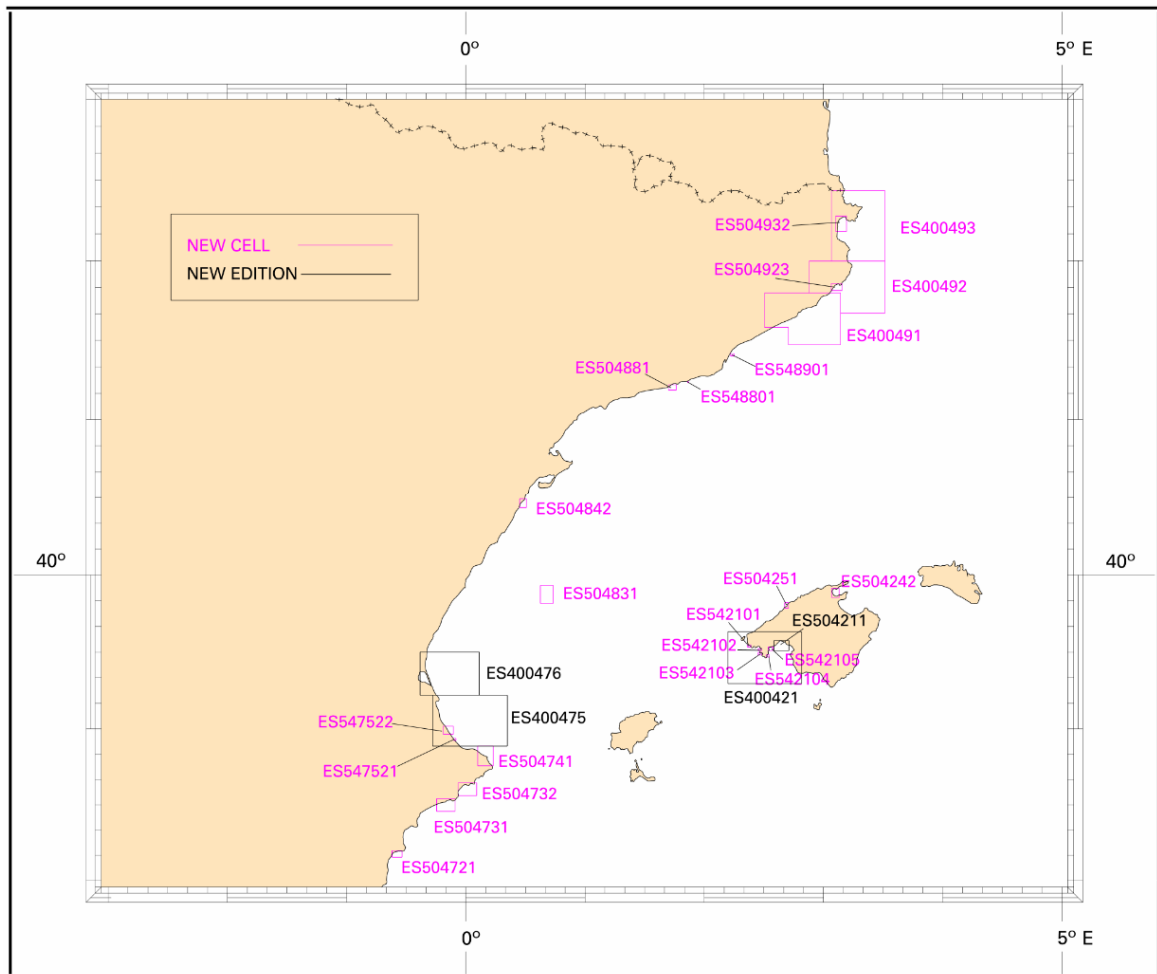


Figure 9. Navigational purpose 4 and 5 ENC production in the MBSHC 2013-2015 part2

The aim of this Project, expanded with 43 ENCs in January 2014, is to provide purpose 5 coverage, to other ports such as leisure and fishing harbors, in addition to main ports which are already covered, before 2017.

3.2 ENC distribution method.

Spain is a member of the International Center for ENC (www.ic-enc.org/) RENC. All Spanish ENCs are distributed by IC-RENC, which carries out validations and consistency checks before distribution. There is close collaboration in development with this RENC, especially regarding the optimization of production and validation processes.

3.3. RNCs.

NQR.

3.4. International Charts.

The next table shows INT charts made since the last MBSCH Conference:

INT No	National No	Title	Edition
46	3106	De cabo de Gata a cabo de las Huertas y de Cabo Milona a Cabo Ivi.	III Oct 2013

The next table shows INT charts projected for the second semester of 2014, and 2015.

INT No	National No	Title	Edition
2A	160	Islas Británicas	II Sep 2012
7	300	Mar Mediterráneo y Mar Negro	II Mar 2002
4F	305	Mar de Liguria, mar Tirreno y estrecho de Sicilia	II Dec 2000
59	3116	De cabo San Sebastián a Fos-sur-Mer	I Apr 2004
42B	1814	De Aveiro a Peniche	I Mar 2006
418A	1871	Aproche al puerto de Leixoes y de la barra del río Duero	I Jan 2003

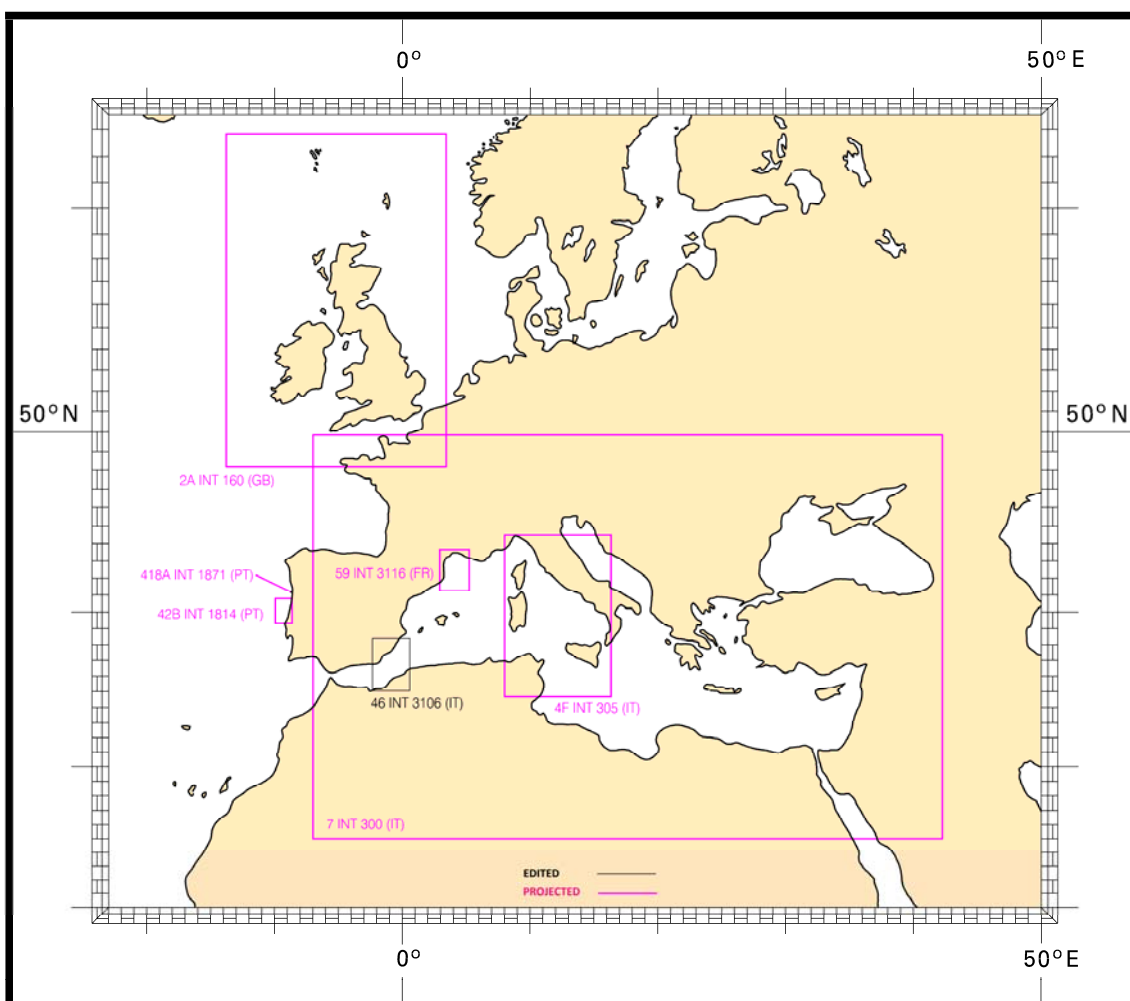


Figure 10. International navigational paper Charts projected and published in the MBSHC 2013-2015

Status of the production of international charts assigned to Spain.

Scale	Assigned	Produced
Small 5.000.000-1.000.000	1	1
Medium 350.0000-100.000	6	1(*)
Large 80.000-10.000	18	18
TOTAL	25	20

The boundaries of medium scale INT charts (3102, 3106, 3108, 3110 y 3112) are being modified to adjust to the boundaries of the corresponding national charts (45, 46, 47, 48 y 49).

They are scheduled to be processed as INT charts whenever a new edition of each one of the aforementioned charts.

3.5 National paper charts.

The next table shows national charts made since the last XVIII MBSCH Conference:

National No	Title	Edition
10	Europa sur occidental, costa norte occidental de África y archipiélagos de Azores, Madeira y Canarias.	I Dec 2013
39	De Isla de Re a Cabo Mayor	III Aug. 2014
433	De punta Betoya a Mar Chica	I Dec 2013
434	De Ras Tleta Madari (cabo Tres Forcas) a río Muluya e islas Chafarinas.	III Dec 2013
451	De punta Loma el Borcho a cabo Mazarí.	I Jun 2015
440A	Desembocadura del río Guadiana y ría de Isla Cristina	I May 2014
4451	Puerto de Algeciras.	X Dec 2013
4452	Puertos de La Línea y Gibraltar.	VI Dec 2013
4162	Puerto de Marín	V Dec 2014
4741	De Ensenada de Jávea al Puerto de Denia	IV May 2014
4752	Puertos de Gandía y Oliva.	I May 2014
4932	Puerto de Roses, Santa Margarita, Empuriabrava y San Pere de Pescador.	III Oct 2014
7002	Campamento Byers. Isla Livingstone, península Byers.	I Feb 2013

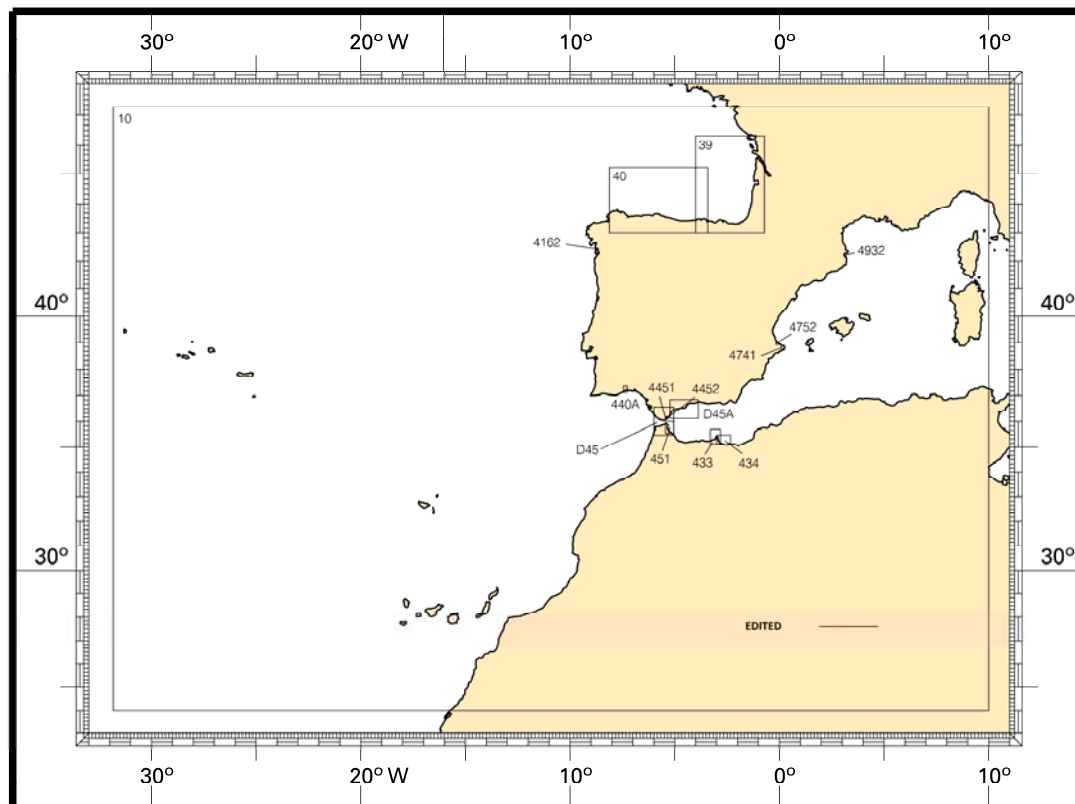


Figure 11. National navigational Paper Charts edited in the MBSHC 2013-2015 (1)

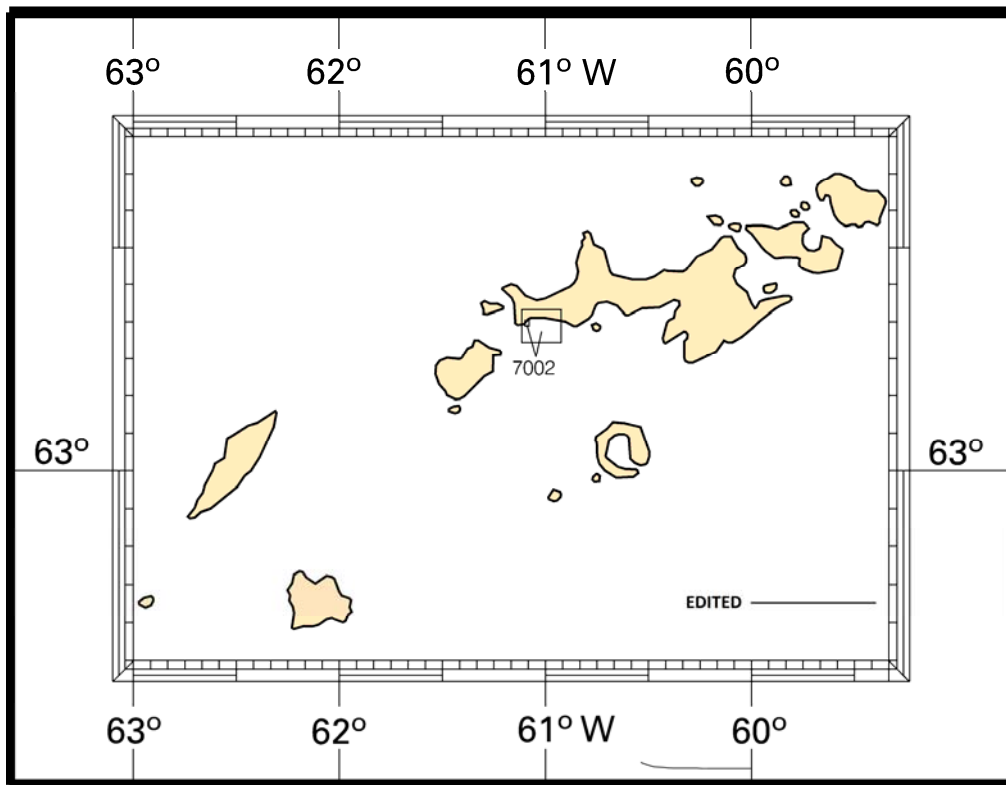


Figure 12. National navigational Paper Charts edited in the MBSHC 2013-2015 (2)

3.6 Other charts.

Leisure Charts.

Since the new format for leisure charts was implemented, 4 booklets of leisure charts, corresponding to charts D-45A, D-416, D-440 & D-443. Currently there is work in progress son two leisure charts in the Mediterranean sea area.

3.7 Issues encountered.

NQR.

4. NEW PUBLICATIONS AND UPDATES.

4.1 New publications.

NQR.

4.2 Updated publications.

4.2.1 Charts new editions:

- A new edition of the «*Catálogo de Cartas Náuticas y otras publicaciones*» (Catalogue of Nautical Charts and Publications) was published in the fourth quarter of 2014 and the second quarter of 2015.
- A new edition of the publication «*INT1, Símbolos, abreviaturas y términos usados en las cartas náuticas (5ª Edición)*» (Symbols, Abbreviations and Terms Used on Nautical Charts) is scheduled for the fourth quarter of 2015.

4.2.2 Nautical publications

- *Catalog of Nautical Charts and other publications*, 2015 edition.
- IHO S-4 associated publication *INT 1 – Symbols, Abbreviations and Terms use on Charts (Spanish version)*, 4th edition 2011.
- *List of lights and fog signals, part I* 2015 edition.
Atlantic Spain and Portugal coast and occidental Africa coast from Espartel Cape to Verde Cape (Senegal) and Azores, Madeira, Canarias and Verde Cape islands.
- *List of lights and fog signals, part II* 2015 edition.
Gibraltar Strait, Balearic Islands and Mediterranean coasts of Spain, Morocco and Algeria.
- *Sailing Directions num. 3 vol.I* 2015 edition. North and South Coasts of the Strait of Gibraltar, and Eastern Coast of Spain from Punta Europa to the French border.
- *Sailing Directions num. 1* 2015 edition. North Coasts of Spain, from Bidasoa river to Estaca de Bares Cape.
- *Supplement num. 2 (2015) to Sailing Directions num. 3, vol.II* 2010 edition. Balearic Islands and North coasts of Morocco and Algeria.
- *Radiosignals book* 2015 edition.

4.3. Means of delivery

A digital version of the publication *List of Lights and Fog Signals* is currently available online, which is an interactive application, in the following internet address:

http://www.armada.mde.es/ihm/Aplicaciones/LibroFaros/LF_jquery/index.html

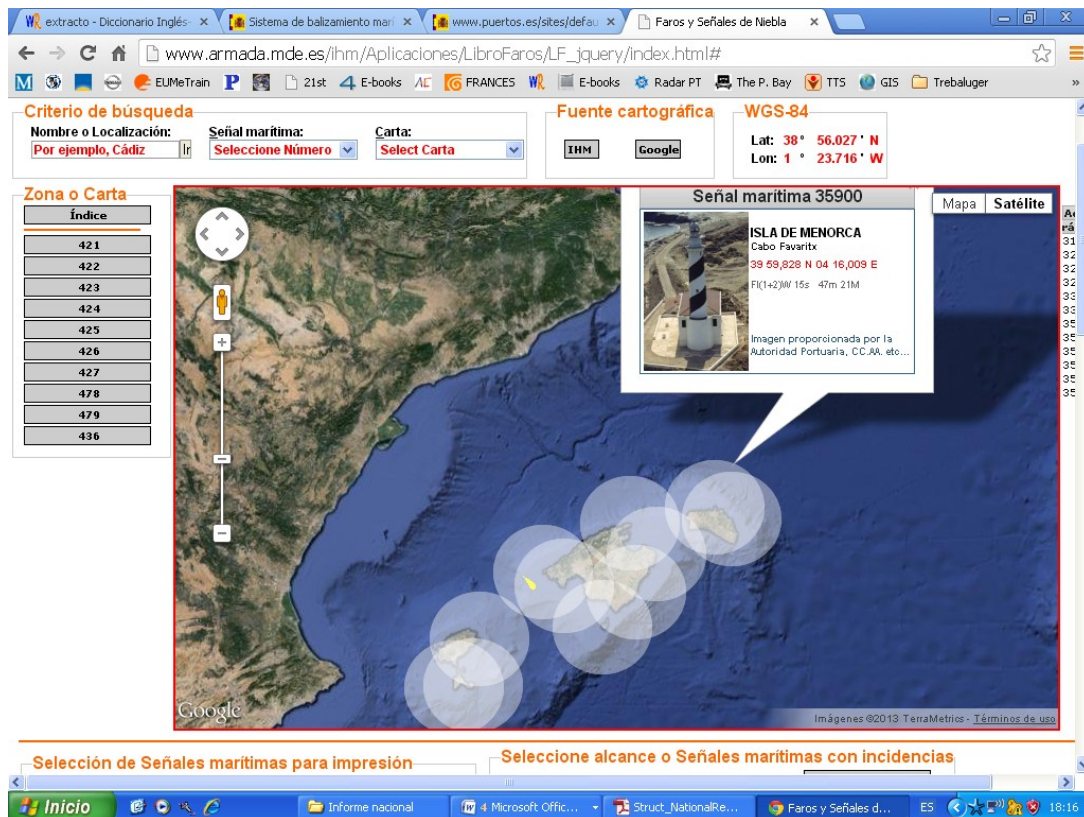


Figure 13. Screenshot of the List of Lights and Fog Signals interactive tool

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. Coastal Navigational Warnings in Spanish Coasts

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.

IHM liaises with SASEMAR about coastal warnings. ABERTIS company supports the net between SASEMAR, coastal stations and IHM. 5 NAVAREA III Navigational Warnings.

Coordinator: IHM. NAVAREA III warnings are broadcast via SAFETYNET through Burum Land Earth Station and AOR-E Satellite over the whole region.

A total of 24 NAVTEX Stations , most of them broadcasting also at 490 KHZ in local language, cover the Mediterranean and Black Seas, except the coastal area of Lybia. This area is covered by SAFETYNET.

IHM liaises with SHOM exchanging everyday NAVAREA warnings originated in each region that are relevant for each coordinator. In addition, all updated NAVAREA III and II warnings are disseminated through the IHM digital application GESNAV on a daily basis.

IHM publishes the Notice to Mariners bulletin weekly which include the NAVAREA warnings in force.

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. S-55.

6.1. Spain. Cartographic Region F.

6.1.1 Hydrographic Surveing

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.

	A	B	C
Dephts < 200 m	97	3	0
Dephts > 200 m	46	8	49

6.1.2 Cartographic production

Status of cartographic production within the Spanish EEZ.

A = percentage covered by INT chart series, or paper charts complying with S-4 regulations.

B = percentage covered by raster charts (RNCs) complying with S-61 regulations.

C = percentage covered in accordance with S-57 regulations.

Purpose / Scale	A	B	C
Offshore passage / Small	100	0	100
Landfall and Coastal passage/ Medium	100	0	100
Approaches and Ports / Large	100	0	75

6.1.3 Maritime Safety Information(MSI)

NAVIGATIONAL INFORMATION (S-53)

SERVICE	Yes	No	Partial	Notes
LOCAL WARNINGS	X			
COASTAL WARNINGS	X			
NAVAREA WARNINGS	X			
PORT INFORMATIO	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.

7. CAPACITY BUILDING

7.1 Offer of and/or demand for Capacity Building

Spanish Hydrographic School, located within the premises of IHM, offers both Category A and B IHO/FIG/ICA hydrography courses. These courses have been reviewed and re-approved in 2013 from the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. They are 10 month long and are taught in Spanish language. Minimum academic enrolling requirements are needed.

The following is a list of the students who have attended these courses in the last three academic years, and those who will start this current one:

Category A course:

Academic year 2014-2015

- 2 Officers from the Spanish Navy
- 1 Officer from Argelia

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

Academic year 2010-2011

- 2 Officers from the Spanish Navy
- 1 Officer from Argentina
- 1 Officer from Honduras

Academic year 2009-2010

- 4 Officers from the Spanish Navy
- 1 Officer from the Dominican Republic
- 1 Officer from Morocco
- 1 Officer from Tunisia

Category B course:

Academic year 2014-2015

- 3 Petty Officers from the Spanish Navy

Academic year 2013-2014

- 3 Petty Officers from the Spanish Navy

Academic year 2012-2013

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

Academic year 2011-2012

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

Academic year 2010-2011

- 2 Petty Officers from the Spanish Navy
- 1 Petty Officer from the Dominican Republic

Academic year 2009-2010

- 1 Petty officer from the Spanish Navy.

For the time being, all the students 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 requests, requirements, offers.

Two members of the ENC Office staff attended the First Course on ENC Validation 2015 (“IC-ENC ENC Validation Training Course”) at the IC-ENC facilities in Taunton from 2nd to 13th February 2015.

One officer attended the 6th Course on Marine Cartography and Data Evaluation (Category B) at the United Kingdom Hydrographic Office, Taunton, United Kingdom, from September 1st to December 12th 2014, under the IHO Project "CHART" OHI - NIPPON FOUNDATION”.

The 2015 Project OHI - NIPPON FOUNDATION” de la OHI” is currently selecting candidates for the 7th Course on Marine Cartography and Data Evaluation (Category B) at the United Kingdom Hydrographic Office, Taunton, United Kingdom, from September 7th to December 18th 2015. One member of the staff of the IHM HPD CARIS Cartographic Production Office has applied for this course.

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

Bilateral agreement in progress with Algeria.

7.4 Definition of bids to IHOCBC

NTR.

8. OCEANOGRAPHIC ACTIVITIES

8.1 General

The main effort of the Oceanographic Section has been focused on making real time tide data available to IHM Hydrographic Commissions, following two approaches:

Building a WEB interface for remote access to tide data. This interface will provide access not only to IHM stations, but also to stations which belong to other organizations which have entered into arrangements to share tide data.

Purchasing real time data acquisition systems, both for new and existing stations.

8.2 GEBCO/IBC's activities

NTR.

8.3 Tide gauge network

This IHM has purchased 10 new tidal stations fitted with Valeport radar technology, capable of real time data transmission via GPRS modem.

These stations will be deployed by hydrographic commissions alongside fixed stations from IHM and collaborating organizations, so that IHM bathymetric works may include near-real-time tide data (near real time).

8.4 New equipment

During the last two years, the following Oceanographic equipment has been purchased:

- 10 tide stations fitted with Valeport VRS 20 radar.
- 4 tide stations fitted with Valeport TideMaster tide sensor.
- 20 real time data transmission systems via GPRS modem.
- 1 NORTEK Doppler current meter fitted with the AWAC wave meter.

8.5 Problems encountered

NTR.

9. OTHER ACTIVITIES

9.1 Participation in IHO Working Groups

IHM takes part in several working groups of the IHO:

- Definition and Length of Coastline Working Group.
- Tides, Water Level and Currents WG (TWLCWG).
- Nautical Charts Working Group (NCWG).
- Nautical Information Provision Working Group (NIPWG).
- World Wide Navigational warning Service Sub-Committee (WWNWS).
- Marine Spatial data Infrastructure WG (MSDIWG).
- World Wide Navigational Warning Service Sub Committee (WWNWS SC).
- Marine Spatial Data Infrastructure Working Group (MSDIWG).
- IHO-EU Network Working Group (IHO-EU NWG).

IHM takes part in several working groups of the NATO:

- Geospatial Maritime Working Group (GMWG).
- AML Co-Production (Additional Military Layers).
- Military Oceanography WG.

9.2 Meteorological data collection

NTR

9.3 Geospatial studies

NTR

9.4 Disaster prevention

NTR

9.5 Environmental protection

NTR

9.6 Astronomical observations

NTR

9.7 Magnetic/Gravity surveys

NTR

9.8 MSDI Progress

Within SDI's, this IHM is a participant in the GT-IDEE (Working Group on Infrastructure of Spatial Data of Spain), tasked with the integration via internet of geographic data, metadata, services and information produced in Spain, to help users locate, identify, select and access such resources via the IDEE geoportal (<http://www.idee.es>).

Also, the Spanish Central Archive of Cartography (Instituto Geográfico Nacional) has been provided with digital information, including the Spanish coastline at scale 1:50000.