

THE SPANISH CONTINENTAL SELF AND UPPER CONTINENTAL SLOPE CARTOGRAPHY

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Abstract

It is being carried out a systematic study of the Spanish Continental Shelf and Slope seafloor characteristics (ESPACE project) with multibeam (EM-3000D), very high resolution seismic profiles (TOPAS), sediment samples and video-TV record. The work methodology and standards have been designed from a Geographic Information System (G.I.S.) point of view, to help the management and interpretation of data. The main result has been the first Systematic Cartographic Series about this area with very high resolution information. This Cartographic Series consists of 171 sheets at 1:50.000, with land and marine information. Each sheet is made up of 3 series: a) description of the marine environment, b) management of the marine environment and c) 3D models and geomorphology. At this moment have been published 7 sheets at SE of Spain. This work presents the first cartographic results of ESPACE project, that help to know and to characterize the geomorphological, lithological features, etc. as well as to help marine activities in this area.

Keywords : *Swath Mapping, Geomorphology, Alboran Sea.*

Since 1999 the Instituto Español de Oceanografía (IEO) and Secretaría General de Pesca Marítima (SGPM) has been carried a systematic study of the Spanish Continental Shelf-and-Slope seafloor characteristics with the ESPACE project [1], with the objective of having appropriate information with high precision to carry out a good management of this area that has a great economic importance, as well as to know possible natural risk zones and the recent variation with human activities or climatic change.

Between 2000 and 2005 the SE and part of NE Continental shelf and upper continental slope of Spain has been explored at 100 %, from -8 m to 160, with multibeam echosounder (EM3000 dual) to collect the bathymetric and backscatter data, as well as with seismic of high-resolution (TOPAS PS-040) and has been collected sediment samples, photo and T.V. submarine, to investigate the stratigraphy, geomorphology, thickness of the recent sedimentary deposits, phanerogames meadows, etc. A specific methodology [2] has been designed from the collecting, organization and management of the data to the incorporation in a Geographic Information System (G.I.S.) [3], being defined the name of the files in each moment the acceptable tolerances in the treatment and the output formats adapted for its integration in the G.I.S.

Main results

a) The design of a high resolution cartographic marine project, from the point of view of their administration and handling with GIS, it has implied to define a detailed work methodology and standards from the planning of the marine survey, to data acquisition, processing, management, organization and presentation.

b) The development of a working methodology that allows comparing phenomena and characteristics in the time and the space.

c) Generation of a high quality and standardized database of the seafloor of the Spanish continental shelf and slope, organized in the Marine G.I.S. (S.G.P.M. - I.E.O.)

d) To elaborate a thematic cartography about the Spanish continental shelf and upper slope, in which are integrated the characteristics of the terrestrial and marine environment. This cartography plan consists of 171 sheets, in WGS84 reference system and UTM projection, each one presents 3 series: Serie A. (Descriptive of the marine environment, scale 1:50.000). This map shows 2 meters-equidistant isobaths, textural classification of the seabed and a schematic bionomic cartography. On land show the recent quaternary deposits classified by sedimentary environment, topography equidistant 100 meters, beaches, hydrography, administrative limits, the situation of lighthouses, highway and urban nucleus (Figure 1). Serie B. (Management of the marinated environment, scale 1:50.000). This map show 5 meters equidistant isobaths, to aggregated textural classification of the seabed, seagrass meadows classified by species, fishing areas, Marinate you Reserve, LICs (Comunitary Interest Sites), Natural protected Sites, artificial reefs, devices of traffic separation, anthropogenic elements (jetties, pipelines, cables, dredged areas, shipwreck, etc.). The situation of lighthouses and beaches, land topography equidistant 100 me-

ters, the recent quaternary deposits classified by sedimentary environment, hydrography, highway, administrative limits and urban nucleus are shown. Serie C. (Models and geomorphology), it presents 3 maps to scale 1:100.000, geomorphology, model of illumination or 2.5D and slopes, and 4 figures of 3D- view.

e) This cartography will help at all sectors with interests in these areas and allow to have an element of great help for the integral management of the coastal area and continental shelf and show the variety of the relief, the superficial geology, different types of sediments, and sedimentary bedforms generated, etc..

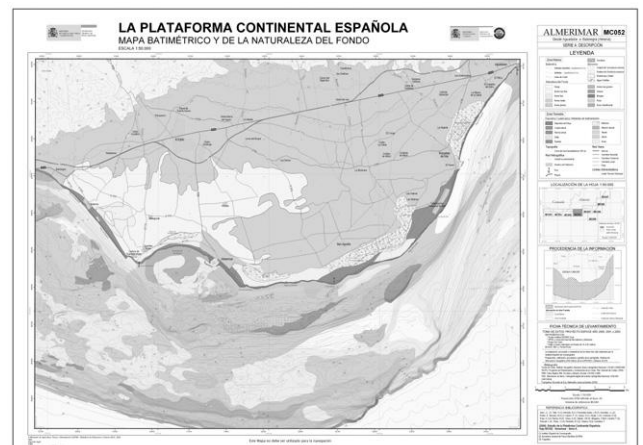


Fig. 1. Example of sheet MC052, Serie A (Description of the marine environment)

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