



## Geomorphology of the Iberian Continental Margin



Adolfo Maestro <sup>a,\*</sup>, Jerónimo López-Martínez <sup>b</sup>, Estefanía Llave <sup>a</sup>, Fernando Bohoyo <sup>a</sup>, Juan Acosta <sup>c</sup>, F. Javier Hernández-Molina <sup>d</sup>, Araceli Muñoz <sup>e</sup>, Gloria Jané <sup>a</sup>

<sup>a</sup> Instituto Geológico y Minero de España, La Calera 1, 28760 Tres Cantos, Madrid, Spain

<sup>b</sup> Departamento de Geología y Geoquímica, Universidad Autónoma de Madrid, 28049 Madrid, Spain

<sup>c</sup> Instituto Español de Oceanografía, Corazón de María 8, 28002 Madrid, Spain

<sup>d</sup> Departamento de Geociencias Marinas, Universidad de Vigo, 36200 Vigo, Pontevedra, Spain

<sup>e</sup> TRAGSA-SGM, Núñez de Balboa 117, 28006 Madrid, Spain

### ARTICLE INFO

#### Article history:

Received 31 October 2011

Received in revised form 30 August 2012

Accepted 30 August 2012

Available online 7 September 2012

#### Keywords:

Submarine geomorphology

Continental margin

Sedimentary processes

Tectonic activity

Iberian Peninsula

### ABSTRACT

The submarine features and processes around the Iberian Peninsula are the result of a complex and diverse geological and oceanographical setting. This paper presents an overview of the seafloor geomorphology of the Iberian Continental Margin and the adjacent abyssal plains. The study covers an area of approximately 2.3 million km<sup>2</sup>, including a 50 to 400 km wide band adjacent to the coastline. The main morphological characteristics of the seafloor features on the Iberian continental shelf, continental slope, continental rise and the surrounding abyssal plains are described. Individual seafloor features existing on the Iberian Margin have been classified into three main groups according to their origin: tectonic and/or volcanic, depositional and erosional. Major depositional and erosional features around the Iberian Margin developed in late Pleistocene–Holocene times and have been controlled by tectonic movements and eustatic fluctuations. The distribution of the geomorphological features is discussed in relation to their genetic processes and the evolution of the margin. The prevalence of one or several specific processes in certain areas reflects the dominant morphotectonic and oceanographic controlling factors. Sedimentary processes and the resulting depositional products are dominant on the Valencia–Catalán Margin and in the northern part of the Balearic Promontory. Strong tectonic control is observed in the geomorphology of the Betic and the Gulf of Cádiz margins. The role of bottom currents is especially evident throughout the Iberian Margin. The Galicia, Portuguese and Cantabrian margins show a predominance of erosional features and tectonically-controlled linear features related to faults.

© 2012 Elsevier B.V. All rights reserved.

### 1. Introduction

Geomorphological studies of areas situated close to the sea are more comprehensive when they analyse and integrate the morphological features of the terrestrial landscape and those of the surrounding seafloor. Such studies are very scarce compared to those addressing only the terrestrial landscape. There are nation-wide geomorphological maps at scales from 1:500,000 to 1:2,500,000 that include the submarine geomorphology, such as Japan (Mogi, 1979), Portugal (Brum-Ferreira, 1981), Mozambique (Bondyrev, 1983), Russia (Bashenina and Leontyev, 1989), Colombia (Centro de Investigaciones Oceanográficas e Hidrográficas de la República de Colombia, 1999), Spain (Martín-Serrano et al., 2005) and Ireland (Dorschel et al., 2010).

\* Corresponding author at: Instituto Geológico y Minero de España, c/La Calera 1, 28760 Tres Cantos, Madrid, Spain. Tel.: +34 917287260; fax: +34 917287202.

E-mail addresses: [a.maestro@igme.es](mailto:a.maestro@igme.es) (A. Maestro), [jeronimo.lopez@uam.es](mailto:jeronimo.lopez@uam.es) (J. López-Martínez), [e.llave@igme.es](mailto:e.llave@igme.es) (E. Llave), [f.bohoyo@igme.es](mailto:f.bohoyo@igme.es) (F. Bohoyo), [juan.acosta@md.ieo.es](mailto:juan.acosta@md.ieo.es) (J. Acosta), [fjhernan@uvigo.es](mailto:fjhernan@uvigo.es) (F.J. Hernández-Molina), [amur@tragsa.es](mailto:amur@tragsa.es) (A. Muñoz), [g.jane@igme.es](mailto:g.jane@igme.es) (G. Jané).

Although the development of submarine geomorphology started during the 1940s (Kennett, 1982), interest in understanding recent and present-day submarine processes has increased considerably in recent years, mainly for better managing and protecting the marine environment and its resources. Furthermore, the availability of vessels equipped with high-resolution technologies has significantly increased the opportunities for obtaining data on the geomorphology of the seafloor.

Because of its geographical location surrounded by the Mediterranean Sea and the Atlantic Ocean and its complex geological setting, the Iberian Margin is characterised by a highly diverse seafloor geomorphology. The complex geological history of Iberia, located between the African and European plates, is recorded by rocks ranging in age from Precambrian to Quaternary within a complex and diverse geological setting (Gibbons and Moreno, 2002; Vera, 2004; Dias et al., 2006). A series of major morphostructural units can be differentiated onland and in several sectors around the margin of the Iberian Peninsula (Fig. 1). The geomorphology of Iberia has been the subject of a number of thematic studies, as well as general overviews (e.g. Gutiérrez Elorza, 1994; Maestro et al., 2005; Martín-Serrano et al., 2005). However, the



Download English Version:

<https://daneshyari.com/en/article/4684850>

Download Persian Version:

<https://daneshyari.com/article/4684850>

[Daneshyari.com](https://daneshyari.com)