ACTIVE TECTONICS, CRUSTAL STRUCTURE AND AFFINITY OF THE BASEMENT DOMAINS OFFSHORE SW IBERIA. REGIONAL GEODYNAMIC IMPLICATIONS OF THE AFRICA-EURASIA PLATE BOUNDARY

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We present a new classification of geological domains at the Africa-Eurasia plate boundary off SW Iberia, together with a regional geodynamic reconstruction spanning from the Mesozoic extension to the Neogene-to-present-day convergence. It is based on seismic velocity and density models along two regional wide-angle seismic transects, combined with previously available information. The seismic velocity and density structure at the Seine Abyssal Plain (SAP) and the internal Gulf of Cádiz (GC) indicates the presence of a highly heterogeneous oceanic crust, whereas in the Horseshoe and Tagus abyssal plains, the basement structure resembles that of exhumed mantle sections identified in the Northern Atlantic margin. The integration of all this new information allows defining the presence of 3 oceanic domains off SW Iberia: (1) the SAP domain, generated during the first stages of slow seafloor spreading in the NE Central Atlantic (Early Jurassic); (2) the GC domain, made of oceanic crust generated in the Alpine-Tethys spreading system between Iberia and Africa, which was coeval with the formation of the SAP domain and lasted up to the North Atlantic continental break-up (Late Jurassic); and (3) the Gorringle Bank (GB) domain, mainly made of rocks exhumed from the mantle with little synchronous magmatism, which formed during the first stages of North Atlantic opening. Our models suggest that the SAP and GC domains are separated by the Lineament South strike-slip fault, whereas the GC and GB domains appear to be limited by a deep thrust fault located at the center of the Horseshoe Abyssal Plain. The formation and evolution of these 3 domains during the Mesozoic is key to understand the sequence of events that occurred during the first stages of opening of the Northern Atlantic.

SEISMOGENIC SOURCE OF THE 1919 TORREMENDO EARTHQUAKE

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The 10th September 1919 Torremendo (Jacarilla) earthquake is one of the most significant events occurred in the eastern Betic Cordillera during the instrumental period. It consists of two main shocks with an estimated magnitude varying between M= 4.8 to 5.5, according to different authors. These earthquakes caused moderate damages in several towns in the Bajo Segura region (Alicante province, SE Spain). Intensity maps show two main zones with high values: in Torremendo town (VII-VIII) and in some towns located in the Segura valley (VII). Epicentral location is controversial. Several studies locate the epicenter very close to the surface trace of the Bajo Segura Fault (BSF). The BSF is an E-W reverse blind fault, dipping 30-45° to the South. Considering its geometry and the maximum intensity (VII-VIII) in Torremendo town, located ~ 8 km south of the Bajo Segura fault trace, we agree with studies which locate the epicenter around Torremendo. The second high intensity zone, located in the Segura valley, is related with the site effect produced by poorly consolidated Holocene deposits of the Segura River. In the region, the Bajo Segura Fault is divided in two main splays: the Bajo Segura s.s. and Torremendo faults. If we consider dips between 30 and 45°, and a minimum depth for a M~5 earthquake, the most probable seismogenic source may be the Bajo Segura s.s. splay.

THE 2011 MW 5.2 LORCA EARTHQUAKE AS A CASE STUDY TO INVESTIGATE THE GROUND MOTION VARIABILITY RELATED TO THE SOURCE MODEL

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Near-field recordings are very sensitive to the spatiotemporal details of the rupture process while far-field signals show the signature of the overall "point-source" earthquake mechanism. Near- and far-field recording ranges are dependent on the event magnitude and modulate the variability of the ground motion. This study investigates the ground motion and