



New seismic data of the Mesozoic rifting of NW Africa, West Iberia and Galicia Interior Basin.

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We present seismic data collected in summer 2018 of the structure of the opening of the central Atlantic in NW Africa, and the west Iberia Mesozoic rift basins and rifted margins. We obtained crustal-scale seismic images collected with a large tuned source and a 6-km-long streamer, and new coincident wide-angle seismic data with ~10-km-spaced OBSs. Our cross-sections were collected in transects in regions where previous work from the 1980 to mid 1990's collected some of the most emblematic geophysical cross-sections. New images of the Galicia Interior Basin (GIB) display prominent thinning at the basin center with an asymmetric tectonic and crustal structure, indicating that extension stopped when the basin was in the latest phase before break up. The basin is characterized by large-scale normal faults that are laterally bounded by transfer fault structures. New V_p models from the Iberia abyssal plain indicate that the crustal structure is more complex than models with lower resolution –widely used in geological interpretations– have inferred. The new data preliminarily supports that the exhumed mantle may contain magmatic bodies and that continental break up may have occurred before mantle exhumation. Comparison of observations from Iberia and Tagus Abyssal Plains display the transition from exhumed mantle to the oceanic crust across the J-anomaly ridge, providing data of on the interaction between magma and tectonics. Seismic images from NW Africa display a rather different structure, with upper Triassic evaporite-diapirs extruding from fault-blocks of highly-extended possibly continental crust, with Early Jurassic (drilled) synrift deposits in tilted blocks. Here, a rather abrupt continental slope is followed by a deep-water basin underlain by perhaps as much as 100 km of highly-extended continental crust.