



Seismic Images of the Crust across the northern Beata Ridge (NE Caribbean)

Diana Nuñez (1), Diego Córdoba (1), Antonio Pazos (2), José Martín-Dávila (2), Andrés Carbó (3), José Luis Granja-Bruña (3), Juan Payero (4), and Mario Octavio Cotilla (1)

(1) University Complutense of Madrid, Department of Geophysics, Madrid, Spain (dianane@fis.ucm.es), (2) Real Instituto y Observatorio de la Armada, San Fernando (Cádiz), Spain, (3) University Complutense of Madrid, Department of Geodynamics, Madrid, Spain, (4) Universidad Nacional Autónoma de México, Institute of Geophysics, México

The Beata Ridge is a NE-SW trending structure located in the interior of the Caribbean plate, between the extended Colombian and Venezuelan basins. The northern part of the ridge is ~100 km-wide and emerged (Sierra de Bahoruco in the southern Hispaniola Island) and the southern part is ~3500 km-wide and > 4000 m below sea level. It has been suggested that northern part of the ridge is colliding with the E-W trending island arc. In summary, the Hispaniola island arc is being impacted by collision with the Bahamas Bank in the north and by collision with the Beata Ridge in the south. This collision processes jointly with the main E-W component of left-lateral strike-slip have yielded the basin and range physiography observed in the Hispaniola island. To study the macro-structure of the Beata Ridge has likely the key to understand the controversial origin and evolution of the Caribbean plate.

A recent combined onshore-offshore CARIBE NORTE survey has been carried out in the Dominican Republic region to study the subduction and collision processes in this area. The marine geophysical cruise aboard the Spanish R/V Hespérides was carried out in spring of 2009. The cruise collected multibeam bathymetry, gravity, magnetic, high-resolution seismic and three-channel seismic reflection data. In the frame of that experiment, a wide angle seismic profile was carried out across the Beata Ridge along a near NW-SE trending line of 200 km length. A set of 5 OBS were anchored along that transect on both sides of the Beata Ridge and 2 seismic land stations at the Beata and Alto Velo Islands, recorded continuously the airgun shots provided by the R/V Hespérides. Processing of the whole dataset is still ongoing, but available results, improve significantly spatial P-wave velocity variations in the upper and middle crust on both sides of the Beata Ridge. In this work, the more recent results from wide angle seismic data across the Beata Ridge are presented.