



Structural results for La Palma island using 3D gravity inversion

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A recent gravity survey composed of 317 benchmarks all over the island of La Palma (Canary Islands) is used, in combination with satellite data for regional aspects, to obtain results about structural properties of the island connected with the tectonic environment and local volcanism. To that end, a non-linear three-dimensional gravity inversion approach is considered and modified to take account of the density increase with depth. The inversion scheme provides, in a non subjective form, the geometry of the anomalous bodies constructed in a random growth process with respect to an exponentially stratified background. The main resulting feature of the inversion model is a large central body with high density, interpreted as corresponding to the older basalt complex (ca. 4.0 to 3.0 Ma) which comprises a Pliocene seamount sequence and a plutonic complex and outcrops under Caldera de Taburiente. For deep sections (about 6000 m b.s.l.), the positive main body shows a very regular SW limit with azimuth N115°E. The southern half of the island, mostly the Cumbre Vieja series (125 ka to present), is characterized by elongated minima distributed according to the rift structure. The shallower minima are located above the ridge with a NS alignment. Deeper minima are detected at a depth of about 2000 m b.s.l. under the western slope of Cumbre Vieja, and distributed according to en-echelon portions with azimuth N130°E. They are interpreted as associable to a slow active process of dislocation.