

NEW EVIDENCES ON THE STRUCTURE OF TENERIFE (CANARY ISLANDS) FROM AEROMAGNETIC DATA: IMPLICATIONS FOR THE GROWTH OF OCEAN ISLAND VOLCANOES

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Tenerife is the largest of the Canary Islands, a volcanic archipelago located in the eastern central Atlantic. The central part of the island is occupied by a huge caldera, known as Las Cañadas, inside of which the Teide-Pico Viejo stratovolcanic system developed. The highest point of the island, the Teide peak, reaches 3718 m above sea level and about 7000 m from the seafloor, which makes Tenerife the third highest ocean volcano on Earth. The interest on this island was especially renewed in 2004, when the increase of seismic activity led some volcanologists think of a possible eruption after almost a century of quiescence. In 2006 a new aeromagnetic survey of Tenerife was carried out with the aim of sampling the magnetic signature of the island with unprecedented detail. In this work we present some 3D magnetic models of Tenerife obtained from this new data set through an inverse approach especially adapted to the characteristics of volcanic environments. The shallow structure shows strong correlations with available magnetic polarity data. In addition, areas affected by giant landslides seem to be related to a characteristic magnetization pattern. The deep inner structure reveals an E-W elongated intrusive body emplaced beneath the northern half of the island as the source responsible for most of the magnetic signal of the island. These results cast new light on the inner structure of Tenerife, in particular, and on the early phases of growth of volcanic islands, in general.

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