



The feeding system of volcanoes imaged by magnetic data: The case of 1704-1705 Tenerife historical eruptions.

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In late 1704 and early 1705 a triple eruption occurred on the southern side of the Pedro-Gil dorsal in Tenerife, giving rise to three eruptive fissures aligned along the NE rift (Siete Fuentes, Fasnía and Arafo). A great amount of seismic activity, related to rock fracturing because of rising magma, preceded the eruption.

Despite the eruptive fissures of Arafo and Fasnía show a perfect alignment, Siete Fuentes emission centers seem to be displaced to the northwest, although the direction of this fissure is similar to the others. Some magnetic profiles have been carried out in order to detect and image the shallow feeding system geometry of these eruptive phases. The main goal of this work is to determine the position and the geometry of the eruption's feeding system by studying the magnetic anomalies produced by the cooled magmatic intrusions.

The preliminary studies, in the profiles carried out between Fasnía and Siete Fuentes, show two main magnetic anomalies probably related to the position of dykes related to these eruptive phases. We interpreted these magnetic anomalies as an evidence for a branched shallow feeding system. Besides, the shapes of these anomalies indicate that the assumed dykes of this feeding system have a subvertical dip and a strike following the general trend of the NE rift dykes. Although these branches may be connected at depth, this connection is deeper than a few hundreds meters, and is not inferrable from the data collected for this study. This preliminary study highlights the complexity of the feeding system of basaltic effusive eruptions in Tenerife as well as in other volcanic islands.