CROSS-SECTION MEASUREMENT OF THE 1991-93 ERUPTION LAVA TUBE

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Abstract

An electromagnetic survey on Etna was performed in June 1992, to study the features of the lava tube feeding the lava flows in Valle del Bove.
Measurements were carried out along profiles established on a smoothed area above the lava tube at 2000 m a.s.l. Ground probing radar, very low frequency electromagnetic inductive and magnetometric techniques were employed. The aim of the experiment was to measure the cross sectional area of melt in lava tube. The interpretation of electromagnetic data furnishes a lava tube geometry in agreement with volcanological evidences. The model proposed was performed on the base of a "calculated" magnetization. It presents a completely demagnetized body, about 9 m^2 in cross sectional area, located at 2 m depth. The body centre coincides with the VLF cross-over and is laterally marked by two GPR diffraction points located on the buried channel upper corners, between the melt and the host rock.
The experiment result suggests that electromagnetic surveys could be useful for monitoring the temporal evolution of lava tubes.