Volatile content in melt inclusions of Vulcanello's explosive activity: Implications for the last 1000 years of activity at Vulcano Island (Aeolian Archipelago, Italy)

R. FUSILLO [1] *, F.DI TRAGLIA [1], A.GIONCADA [1], M. PISTOLESI [1], M.ROSI [1] AND P.J. WALLACE [2]

[1] Dipartimento Scienze della Terra, Università di Pisa, Via Santa Maria 53, 56126, Pisa. Italy (*correspondence: Raffaella.Fusillo@bristol.ac.uk); present address: School of of Earth Sciences, University of Bristol, Wills Memorial Building, Queen's Road, BS8 1RJ, Bristol. United Kingdom

[2]Department of of Geological Sciences, University of Oregon, Eugene, OR 97403-1272. United States

We analysed major element and volatile (H_2O, CO_2, S, F, Cl) concentrations in olivine-hosted melt inclusions(MIs) from tephra of Vulcanello's explosive activity in order to estimate magma chamber depth. We also investigated possible petrological links with the last 1000 years of La Fossa Cone activity.

Major element compositions of MIs range from 52 to 62 wt% SiO_2, and olivine host compositions are Fo_{65-70}. Water concentrations in the MIs are variable (0.2 -1.4wt% H_2O), while CO_2 concentration is below 50 ppm for all the samples. Halogens concentration ranges from 0.1 wt% to 0.4 wt%, while S content ranges from 0.02 to 0.04 wt%.

The results showed a very shallow magma chamber (≤1 km) beneath the Vulcanello centre, as already hypothesized for la Fossa Cone [1]; major elements, S and Cl concentrations in MIs from Vulcanello's tephra are in fact comparable with those from the products of the contemporaneous activity from La Fossa Cone .[2, 3].

From stratigraphic evidences [3] and MI data we hypothesize that Vulcanello and La Fossa Cone activity was fed by the same magma reservoir. We provide new data on the magmatic evolution of the last 1000 years of Vulcano's activity [4]. Our hypothesis has also implications in regard to the assessment of volcanic hazard of a resurgent volcano as La Fossa Cone.

[1] Clocchiatti *et al* (1994)*Bull.Volc*.**56,** 466-486. [2] Gioncada *et al* (1998) *Bull.Volc* .**60**, 286-306. [3] Di Traglia *et al* (2013) *Geomorphology,acc.for pub*.[4] De Astis *et al* (1997) *J.Geophys.Res*.**102**,8021-8050

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