



## **Dike propagation within active central volcanic edifices:**

V. Acocella (1), M. Neri (2), and R. Sulpizio (3)

(1) Università Roma Tre, Dipartimento Scienze Geologiche, Roma, Italy (acocella@uniroma3.it, +39 06 5488 8201), (2) Istituto Nazionale di Geofisica e Vulcanologia, Catania, Italy (neri@ct.ingv.it), (3) CIRISIVU, c/o Dip. Geomineralogico, Bari, Italy (sulpizio@dst.unipi.it)

Dikes within stratovolcanoes are commonly expected to have radial patterns. However, other patterns may also be found, due to regional stresses, magmatic reservoirs, topographic variations. Here we investigate dike patterns within volcanic edifices, by studying dike and fissure complexes at Somma-Vesuvius and Etna (Italy) and using analogue models. At the surface, the dikes and fissures show a radial configuration. At depths of tens to several hundreds of m, in areas exposed by erosion, tangential and oblique dikes are also present. Analogue models indicate that dikes approaching the flanks of cones, regardless of their initial orientation, reorient to become radial (parallel to the maximum gravitational stress). This reorientation is a significant process in shallow magma migration and may also control the emplacement of dike-fed fissures reaching the lower slopes of the volcano.