



Monitoring high energetic Strombolian activity at Stromboli volcano (Aeolian Islands, Italy): the example of the 9 January 2005 explosive event

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Stromboli is well known for its persistent volcanic activity. This typically consists of passive degassing and intermittent Strombolian explosions spanning from mild to moderate to high energetic, these latter producing ash and lapilli thrown to a height > 150 m above the craters, and which may fall outside the crater rims on the volcano slopes. This range of eruptive activity has been poorly investigated in the past, and only recently integration of daily visual monitoring, and compositional and textural analysis of routinely sampled products has allowed us to put further constraints to the eruptive style of the volcano (Internal Report UFVG2005/52). The 9 January event in 2005, recorded by a permanent video-camera system maintained on Stromboli by INGV-Catania, was characterized by a violent explosion followed by short-term (tens of seconds) fire fountain activity from two distinct vents in the central area of the crater terrace (Internal Report UFVG2005/002). Pyroclastics discharged during the event comprised coarse material and ash. Major element content measured in glassy ground-mass by SEM-EDS (Internal report UFVG2005/008) reported that the composition of the collected scoria samples is intermediate between that of high porphyritic (HP) material generated by typical Strombolian activity and low porphyritic (LP) pumices discharged only during less common paroxysmal events. Optical and scanning electron microscopy, as well as X-ray computed microtomography, have been used for qualitative inspection of scoria textures and for 3D reconstruction and quantification of vesicles and crystals (INGV-CT General Internal Report, 1st semester 2005), respectively. Preliminary results indicate that the size, shape and distribution of vesicles is in between that of a typical Strombolian scoria and golden pumice, and that the crystal content is low, confirming that both compositional and textural investigation testifies to a 'hybrid' nature of the analyzed scoria. The described multidisciplinary

approach allows us to investigate the range of eruptive styles of the volcano by linking the explosive activity to the related emitted products. This approach is complementary to other geochemical and geophysical techniques for the monitoring of the general eruptive dynamics of the volcano.

Internal Report UFVG2005/002, Report on Stromboli eruptive activity, week 03-09 January 2005, A. Cristaldi and M. Coltelli
Internal Report UFVG2005/008, Report of Stromboli scoria glass composition in the period October 2004-January 2005, R.A. Corsaro and L. Miraglia
Internal Report UFVG2005/52 Characterization of explosive products erupted from Stromboli in the period July-December 2004, D. Andronico, S. Caruso, R. Corsaro, A. Cristaldi, P. Del Carlo, L. Miraglia.
INGV-CT General Internal report, Ist Semester 2005, Textural characterization of Stromboli scoria in the period January-June 2005, M. Polacci, p. 41-42