



The February-April 2013 paroxysmal activity at the New South-East crater of Mt. Etna observed by infrasound, seismic, radiometric and plume SO₂ flux and FTIR data

Letizia Spampinato, Mariangela Scotto, Tommaso Caltabiano, Andrea Cannata, Alessandro La Spina, Eugenio Privitera, and Giuseppe Salerno

Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Catania, Italy (cannata@ct.ingv.it)

Between January 2011 and April 2013, Mt. Etna's eruptive activity has been localised in three of its four summit craters. The activity has consisted of episodic intra-crater lava flow and strombolian activity from Bocca Nuova and Voragine, and paroxysms from the New South-East (NSEC) summit craters, respectively. Eruptions from NSEC were characterised by initial increasing strombolian activity and lava flow output, passing to short-lasting lava fountaining. In this study we focus on seismic, infrasound, radiometric, and plume SO₂ and HCl flux data simultaneously collected by the INGV monitoring networks between May 2012 and April 2013. The multiparametric approach allowed us characterising the NSEC eruptive activity at both daily and monthly time scale. In particular, whilst the seismic, infrasound and radiometric signals illuminated on the energy and features of the six paroxysmal events fed by NSEC, the SO₂ and the HCl fluxes shed light on the likely mechanisms triggering the eruptive phenomena observed at the surface. In detail, we propose that the paroxysms' sequence represented the climax of a waxing-waning phase of SO₂ and HCl degassing that had started at least since August 2012, and that eventually ended in June 2013. In this view, the February-April 2013 eruptive activity reflects the phase of release of a volatile-rich batch of magma that had stored in the volcano shallow plumbing system at least four months before.