Geophysical Research Abstracts
Vol. 13, EGU2011-2096, 2011
EGU General Assembly 2011

Investigation of explosive activity along an eruptive fissure by infrasound: 2008 Mt. Etna eruption

Andrea Cannata (1), Mariangela Sciotto (2), Letizia Spampinato (1), and Laura Spina (2)

(1) Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Catania, Italy (cannata@ct.ingv.it), (2) Dipartimento di Scienze Geologiche, Università di Catania, Italy

On 13 May 2008 an eruptive fissure opened on Mount Etna's eastern flank feeding both explosive activity and lava effusion from multiple vents for about 14 months. During the investigated May-September 2008 eruptive period, infrasound recordings from a 4 station-sparse network allowed tracking of the explosive activity in terms of location and dynamics. In order to locate the infrasound signals, at first the events generated by the eruptive vents were selected by using both spectral features and time delays between pairs of stations. Then, to get accurate locations a composite method based on the semblance and brightness functions was developed. This enabled the study of the co-existence of more than one explosive source and/or source migration along the eruptive fissure. In particular, our results permitted us to discriminate between the number of active vents and their location along the fissure even when due to poor weather conditions it was not possible to reach the eruptive scenario to carry out direct observations. The eruptive activity in fact was characterised by variations in the number of active vents according to the overall intensity of the eruptive event. In detail, the very first days of the eruption (13-14 May) were fed by up to 5-4 active vents opened along a roughly 200 m long segment of the eruptive fissure. Successively, the infrasound sources clustered in a smaller portion of the eruptive fissure, where two active vents were active until the end of June when about 100 m upwards a third vent opened. It is worth noting that the infrasound events radiated by this last vent were generally characterised by amplitudes and frequencies lower than events from the previous two, suggesting different source characteristics.