



## **Infrasonic radiation of May 13, 2008 eruption at Mt. Etna: source modelling and monitoring implication**

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The period May 8-16, 2008 was characterised at Mt. Etna by intense and spectacular volcanic activity, which affected two of the four summit craters, the North East Crater, the South East Crater (hereafter NEC and SEC, respectively), and an eruptive fissure (EF) opened east of the summit area on May 13. The study of infrasonic signals allowed to follow the evolution of the eruptive processes and gave accurate information about eruption onset and location, and dynamics of the explosive processes. Three families of events with different features were detected: NEC, SEC and EF events. The first family is composed of transients lasting up to 10 seconds, characterised by frequency between 1 and 2 Hz, low values of peak-to-peak amplitude and source location constrained at NEC. The second one shows shorter duration (about 2 seconds), larger peak-to-peak amplitude and higher frequency. Finally, in the third one the events exhibit very short duration (about 1 second), frequencies mostly ranging between 2.5 and 4 Hz and higher peak-to-peak amplitude. The source mechanism of these events was investigated and showed different source mechanism for these events. NEC events were interpreted as due whether to resonance of fluids (magma or gas) in a conduit closed at both ends, or to Helmholtz resonator, while SEC and EF events to oscillations of Strombolian gas bubbles before they burst. Finally, the source parameters, such as bubble radius and conduit length, were constrained.