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# The August-December 2006 eruption at Mt. Etna volcano

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Mt. Etna volcano in Sicily (Italy) is one of the most monitored basaltic volcanoes in the world due to recurrent eruptions that may involve both its summit and the flanks. Routine monitoring carried out by the INGV-Sezione di Catania permits following the evolution of volcanic events for surveillance purposes. Monitoring activities, however, also enable collecting precious data that may improve the comprehension of eruptive mechanisms and so better approach on-coming eruptions. Recently, the Southeast Crater, a 3300 m high crater located on the summit of Etna, renewed its eruptive activity. A short paroxysmal eruption (July 2006) preceded a period of more prolonged explosive-effusive activity occurring between 31 August and 15 December 2006. This eruption was characterised up to the end of November by a sequence of paroxysmal episodes (lasting from hours to days) with increasing intensity in time. The paroxysms showed strong Strombolian activity alternating with short periods of lava fountaining. This activity resulted in poor to moderate ash fallout over the volcano slopes and up to the inhabited towns of the Etnean area, causing potential danger to air traffic and the frequent closure of the Fontanarossa International Airport of Catania. During the last 20 days of eruption, the explosive style markedly changed following the formation of a pit-vent on the east flank of the cone. Here ash venting episodes, lasting 1-4 days and punctuated by low Strombolian explosions, preceded the end of the eruption. The study of seismic data was essential both to infer the evolution of eruptive phenomena and better comprehend eruptive dynamics. We applied different analytical techniques to the seismic tremor recordings (localisation of the source, spectral and polarisation analysis), while we were able to interpret short- and long-term fluctuation of tremor amplitude with impending events. Furthermore, during periods without any visibility the seismic signals allowed inferring the prevalent style (effusive to explosive) and intensity of activity according to previously observed eruptive activity. A preliminary

analysis of seismic data and the lack of significant earthquakes recorded during the eruption, suggests that erupted magma was stored in the summit portion of the volcanic edifice prior to the beginning of the eruption.