



## **Seismic activity at Mt. Etna from July 2005 to January 2006: evidence of a deep magmatic intrusion leading to the 2006 eruption**

Ornella Cocina (1), Graziella Barberi (1), Elisabetta Giampiccolo (1), Vincenzo Milluzzo (2), Carla Musumeci (1), Simona Sicali (1), and Domenico Patanè (1)

(1) Istituto Nazionale di Geofisica e Vulcanologia - Sezione di Catania, Italy (cocina@ct.ingv.it), (2) Eni S.P.A. - Divisione Exploration & Production, San Donato Milanese, Milano, Italy

In the present study we analyzed the seismicity recorded at Mt. Etna from July 2005 to January 2006. During this period, the 40 seismic stations of the permanent network run by INGV were integrated with 20 temporary broadband stations. This allowed us to improve the quality of the hypocentral locations (i.e. lower hypocentral errors and lower azimuthal gap) and to locate the earthquakes for which an insufficient number of P and S readings from permanent stations was available. Most of the analyzed seismicity was characterized by low energy content, representing  $M_l < 2$  events the 80% of the whole dataset, and was mainly located in the eastern and southern sectors of the volcano. The computation of 3D hypocentral locations and relative fault plane solutions allowed us to make some hypotheses on the relation between seismicity and recent Mt. Etna eruptions. In particular, the analysis of a seismic swarm (depth between 10 and 15 km) occurred on January, 8 2006 along the southern Rift of the volcano, was correlated with a deep magmatic intrusion leading to the July 2006 eruption. The occurrence of seismicity along this structural trend some months before the eruption was also evidenced for 2001, 2002-2003 and 2008 eruptions.