



## **Time-space variation of the 2004-2006 micro-seismicity at La Fossa (Vulcano, Aeolian Islands, Italy)**

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We analyzed about 1000 micro-earthquakes occurring between January 2004 and December 2006 at La Fossa Crater area and related to processes of the geothermal system. Three episodes of increasing occurrence of these events accompanying geothermal and geochemical anomalies occurred during this time period. Inside this seismicity, six classes of events have been recognized by visual inspection, spectral and cross correlation analyses. Moreover the cross correlation allowed to recognize several families inside each class. We noted that events belonging to each class were not uniformly time distributed during the whole period; moreover a gradual time variation of the waveform of low-frequency events (one of the six classes) occurred during the anomalies time spans. The recent installation of further five broadband seismic stations allowed to locate these events with unprecedented resolution and to highlight a space distribution depending on the classes. We suggest that micro-seismicity at Vulcano is related to two different mechanisms affecting distinct rock volumes: fracturing processes of “poorly competent” materials and non-destructive sources linked to the dynamics of fluids.