



## 1 A seismic survey at Colima volcano (Mexico)

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In the framework of the FIRB project # 2-13-3-46-23 aimed to study high risk explosive volcanoes, a seismic survey on Colima volcano was carried out by the Osservatorio Vesuviano – INGV, the Observatorio Vulcanológico of Colima University and the Instituto Andaluz de Geofísica – Universidad de Granada, from November 2005 to May 2006.

During the survey a large data set was recorded by:

1. 4 3-component Lennartz LE-3D/20s broadband seismometers of the INGV- Osservatorio Vesuviano Mobile Network;
2. 12 seismometers of the permanent Network (REd Sismica de COLIMA, RESCO) managed by the Observatorio Vulcanológico de Colima
3. A seismic array composed by 10 Mark L25 seismometers installed by the Instituto Andaluz de Geofísica (IAG, Universidad de Granada, Spain).

The seismicity recorded during the survey is mainly composed by low frequency volcanic earthquakes (LP), volcanic tremor, local and regional earthquakes. A prelimi-

nary classification of the signals was obtained on the basis of the distribution of the arrival times at the different stations and of the spectral properties.

The LP earthquakes have been located by using a 3D search algorithm, indicating shallow hypocentral depths, mainly clustered in the first 3 km. Polarization analysis shows that the radial component of the motion clearly points towards the source.

Moreover, the data-set of LP signals has been used for:

1. a detailed spectral analysis and the search of signals with similar properties (families);
2. the study of the characteristics of the seismic wavefield related to the volcanic explosive activity;
3. the determination of the quality factors and characteristic frequencies (and their temporal variations), in order to infer the properties of the fluids involved in the dynamic process;
4. the moment tensor inversion to understand the dynamics of the seismovolcanic sources.