



Permanent deployment of a 12-channel seismic array on S. Miguel Island (Azores)

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Emergent seismic signals in volcanic environments such as volcanic tremor and long period events can not be located using classical arrival time schemes. Their source location and associated process can only be unveiled by an implementation of specific monitoring techniques, *e.g.* seismic arrays. Between April and July 2003, this monitoring technique was successfully implemented on S. Miguel Island (Azores archipelago) on the area of Fogo and Furnas volcanoes, in collaboration with Instituto Andaluz de Geofísica (Spain), during a seismic campaign of the *e-Ruption* project. The seismic data registered by the arrays enabled to detect a divergence in the slowness vector and a larger ray parameter in one of the arrays with respect to the others, suggesting lateral velocity heterogeneity.

As the result of these previous experiences, a new project was developed to deploy a permanent seismic array in the same area in order to monitor the ongoing seismovolcanic activity. Two major tasks were performed: (1) the improvement of the seismic instrumentation; and (2) the implementation of a permanent infrastructure to deploy the instruments. In this work we describe the methodology used in the field deployment of the seismic array. The installation of the array involved (1) the site selection on the region between Fogo and Furnas volcanoes, taking into account the epicentral locations within seismic swarms occurring since 2002, morphology and geology, noise sources and the safety of equipment; (2) the building of infrastructures, involving excavation of holes for emplacement of seismometers vaults, and trenches for cabling connections, and a shelter for the data acquisition system, batteries, radio and GPS antennas and solar panels; (3) deployment of the equipment and testing. Maintenance needs concerning energy and data collection were also considered. Waveforms of seismic events registered during the first months of operation are also presented.