



Reawakening of seismic swarm activity in the volcanic Congro region of Sao Miguel island (Azores, Portugal)

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In November 2002 the historical focus of Azorean seismicity in the volcanic Congro region between Fogo and Furnas volcanoes on Sao Miguel island (Azores) reawoke to higher activity again. This seismicity occurred in spatiotemporally clustered swarms along the northeastern flank of Fogo volcano. The question arose whether this was a pure tectonic swarm given the fact that the events happened along the main plate tectonic boundary in the region, the Terceira Rift, or if in fact magma causing a near-future eruption was the driving force of this process. So in the framework of the european VOLUME project we analysed the waveforms of these swarms and performed a cross-correlation of first arrivals for P and S waves registered up to the end of the year 2004 and relocated the events using a double-difference approach. We found 7 swarms, 3 of which are made up by more than 140 events each, and which have been active throughout the entire time span with distinct activity maxima in April and November 2003 and January and October 2004. Correlation values rise up to values close to 1 and the events can be relocated to three subparallel features in depth levels from 5 to 10 km close to the border of a major tectonic graben which is believed to be the expression of the rifting plate boundary on the island. An according eruption never occurred and the waveforms despite their similarity show no important low frequency content, so that a volcanic origin remains unclear. Seismicity on Sao Miguel remains on higher levels than usual and future developments will help to uncover the source of these events.