



Crustal deformation monitoring of active volcanic rift segments in the Reykjanes Peninsula, Iceland.

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The objectives are to characterize and to model at different time scales the dynamics of an array of oblique spreading rift segments in the Reykjanes Peninsula (Iceland). We realized a first combined geodetic and seismological campaign from April to August 2005. The aim is to locate the active faults that accommodate the oblique spreading and the dormant volcanic centers, in order to show the relation between the volcanic activity, the micro-seismicity and the crustal deformation of the rift segments. Since 2005, the LGRMP, the ESGT, the EOST, are involved in this investigation with the help of the IMO (Icelandic Meteorological Office, Iceland), and the University of Iceland.

The experiment consisted in monitoring the small co-seismic or post seismic displacements over the segments on Reykjanes. A laser tacheometer was used for four small geodetic networks (100 x 100 m) across faults. At the same time, a dense network (30 x 50 km) of 18 3-components short-period seismic stations recording continuously was set up along the rift in addition to the permanent network SIL.

We first present the seismological and geodetic experiment. Then, we focus in this presentation on the seismological results of the campaign. About 900 seismic events were located and inverted. We applied the double difference tomography method to the local earthquake data to characterize the underground structure of Reykjanes Volcanic Zone. We discuss the location in 4D of these events comparing to the main tectonic structures.