

S-wave splitting observed at records of local micro-earthquakes in Reykjanes Peninsula, Island

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We analyse waveforms of local earthquakes that occurred at the Reykjanes Peninsula region in the SW Iceland in the period of the 2013 to 2016. The earthquakes are monitored by the REYKJANET local network, operated by the WEBNET group of the Institute of Geophysics in Prague. The REYKJANET network was built up in summer 2013 with the assistance of colleagues from several institutions (IMO, Uppsala University, MIT, Reykjavik University and ISOR) and consists of 10 three-component broad-band seismic stations.

Reykjanes Peninsula is geologically young territory with high tectonic as well as volcanic activity. The area is in an extensional regime of the Mid-Atlantic Ridge, with systems of strike-slip faults, close to active volcanoes. Seismic anisotropy and inhomogeneity of the Earth crust are quite pronounced. We study properties of primary as well secondary phases in seismograms, the presence of regular as well irregular seismic waves, and other interesting wave phenomena. One of them is a detailed study of the S-wave splitting, which indicates weak and spatially dependent seismic anisotropy in the upper crust. The split S waves mostly correlate with the regional stress regime in the area. The spatial variation of anisotropy probably reflects the rock anisotropy and tectonic settings of the region as well as small-scale variations of tectonic stress.