



Crustal structure of the Transylvanian Basin and South Carpathian mountains, Romania, from receiver function analysis

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The seismic crustal structure of the Transylvanian Basin and the western part of the South Carpathian Mountains, Romania, is presently poorly understood. The South Carpathian Project (SCP) in Romania is a collaboration between the University of Leeds, UK and the National Institute of Earth Physics (NIEP), Romania, which aims to determine the lithospheric structure and geodynamical evolution of the South Carpathian Orogen using a dense, temporary network of broad-band seismographs. Alongside the 12 existing permanent broadband stations run by NIEP in this region, 33 broadband seismic stations provided by SEIS-UK were installed in July 2009 to operate autonomously for two years. We use converted Ps receiver functions to investigate the crustal structure variation across the South Carpathian Mountains along two profile lines (NW-SE) crossing the major tectonic units of the Transylvanian Basin and South Carpathian Orogen to the Moesian platform.. The aim of the study is to determine crustal thickness variations from the Moho depth measurements, the nature of the Moho discontinuity, and to detect if possible shallower crustal discontinuities, in the region. The receiver functions (RF) are calculated in time domain by iterative deconvolution. A bandpass filter of 0.05 -0.8 Hz was applied before calculating the RFs. The width of the Gaussian filter used in time domain was 0.1 sec. We migrated the RFs from the time domain to depth. The preliminary results show a thin crust for the Banat region of the Pannonian basin (28-30 km) and a thicker crust for the Southern Carpathian Mountains (~35km). Data collected from two stations located in the Apuseni Mountains suggests the Moho discontinuity is replaced by a transition zone extending between 36 and 40 km depth.