Models of crustal structure in western part of Romania using joint inversion of Green functions and receiver funtions

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A joint inversion method of receiver function and Rayleigh wave dispersion is employed in order to derive the 1D seismic velocity models for several seismic station locations in western part of Romania. The study use new data emerged from permanent network of broadband stations in Romania, as well as data from temporary networks established during the joint projects with European partners in the last decades. Such a joint project between University of Leeds, UK and National Institute for Earth Physics, Romania (South Carpathian Project), deployed 33 broadband seismic stations autonomously operated in an area covering the western part of the country and which continuously provided data for two years (2009-2011).

The results show a thin crust for stations located in the eastern part of Pannonian Basin (28-30 km). In the Apuseni Mountains the Moho discontinuity can be found between 31 to 33 km depth. The stations within the Southern Carpathians are characterized by deeper crustal depths of about 31-36 km. 2D models of the variation of the seismic velocity in depth are developed along 3 lines crossing the western part of Romania. The Moho boundary coincide generally with the isoline of seismic transverse velocity of about 3.75 km/s.

Keywords: ambient seismic noise, receiver function method, crustal structure, models of seismic velocity in depth.