

New insights of the compressional-wave velocity structure in the Vrancea subduction zone from teleseismic relative travel-time residuals

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A new 3-D model of the velocity-depth structure for the Vrancea subduction zone was calculated by inverting teleseismic P-wave travel-time residuals. This work is a part of the latest results for designing the Seismic Tomography Experiment of the Collaborative Research Center 461 of the Deutsche Forschungsgemeinschaft in 1999.

For the data selection we used the digital teleseismic data from events recorded between 1992 and 1997 at permanent stations belonging to the Romanian National Seismic Network. The data are stored and catalogued at the National Institute for Earth Physics (NIEP) in Bucharest. After a

critical extraction the final set of data contained 13 seismic stations covering the Vrancea region. The digital data consist of short-period ($T = 1$ s) velocity recordings sampled with 50 Hz and limited by analogue filters to 12.5 Hz. Data selection criteria were, i.e. the epicentral distance; only events with epicentral distance between 25 and 99 were used, and a minimum amount of five stations recording the same event was demanded. In the first step the P-wave arrival times were picked and hypocentral parameters were taken from IDC and NEIC bulletins. Our preliminary model contains a set of 604 observations from 94 events. Within the model 572 blocks in 8 layers were observed and 306 blocks were adapted by the inversion algorithm.

The solution we present has some striking features, which are not only robust against numerical noise and disturbances, but also support the geodynamic model developed by Sperner et al.