ling of the Pannonian subbasins indicate a remarkable difference between the central Pannonian basins (Danube B. and Alfeld B.) and the surrounding peripheral basins (Vienna B., Styrian B. and East Slovakian B.), spatially coinciding with the location of the recent weak lithosphere of the Central Pannonian Basin. This hints at a possible causal relation, indicating that the thermal anomaly inducing the weak lithosphere in the Pannonian Basin is of Pannonian age. Future directions of this research should include higher horizontal resolution, incorporation of inherited weakness zones and dynamic assessment of strain rate.

Statistical verification of teleseismic body-wave tomography robustness: features of the Vrancea subduction zone

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We present an approach to statistical analysis of earth models derived from observed data with the standard ACH method. The ACH method is one of the most robust seismic tomography techniques. It is used to invert teleseismic travel-time residuals for velocity variations beneath a receiver array. The teleseismic delay time data observed between 1992 and 1997 from the Romanian National Seismic Network, which is collected and digitally stored at the National Institute of Earth Physics (NIEP) in Bucharest, presents a new opportunity for the global understanding of the structure and processes within the lithosphere-asthenosphere system of the Vrancea zone situated at the southeastern Carpathian Arc. Although in some cases the data are incomplete in terms of station distribution, the inversion method is still useful for pointing out some striking features. In spite of some problems arising from the data this approach of a currently developed computer algorithm, which is not a strict straightforward way of interpretation, gives additional information for resolving vertical structures, a well known weakness of tomographic inversions using ray methods.

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.