

Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08509, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08509
EGU General Assembly 2008
© Author(s) 2008



PASSEQ 2006-2008 (Passive Seismic Experiment in TESZ) - first results from receiver functions

PASSEQ Working Group

contact: mwilde@igf.fuw.edu.pl, Wolfram.Geissler@awi.de

(* PASSEQ Working Group:

E. Brueckl, J. Cyziene, R. England, E. Gaczynski, W. Geissler, M. Grad, S. Gregersen, A. Guterch, W. Hanka, E. Hegedus, B. Heuer, R. Keller, R. Kind, K. Klinge, K. Komminaho, E. Kozlovskaya, F. Krueger, T. Larsen, J. Lazauskiene, M. Majdanski, J. Malek, G. Motuza, O. Novotny, R. Pietrasiak, T. Plenefisch, J. Plomerova, S. Sliampa, C. Snelson, P. Sroda, M. Swieczak, T. Tiira, P. Voss, P. Wiejacz, M. Wilde-Piorko

The Teisseyre-Tornquist Zone (TTZ) as part of the Transeuropean Suture Zone (TESZ) is one of the most prominent suture zones in Europe separating the young Palaeozoic platform from the much older Precambrian East European craton. The TTZ is visible as a major crustal/lithospheric-scale structure in seismic, magnetic, and gravity fields as well as in heat flow studies. The knowledge of deep structure of the TESZ is very important for the understanding of various tectonic processes in Europe. The PASSEQ 2006-2008 - passive seismic experiment target many questions that remain about the geodynamical evolution of central Europe. The main goal of PASSEQ is the detailed investigation of this contact zone between lithospheres of very different thickness and age down to the mantle transition zone, including mapping of upper mantle seismic velocity variations and discontinuities (Moho, lithosphere-asthenosphere boundary LAB, mantle transition zone) using travel-time tomography, SKS splitting, surface wave, and receiver function studies.

We think the TTZ is a proper place to study the physical properties and composition of adjacent contrasting lithosphere blocks as well as the interaction of mantle flow and lithosphere topography in detail. Therefore, more than 150 temporary broadband

and short-period seismic stations from various institutions in Europe and the USA are installed along a 1100 km long and approximately 300 km wide array spanning from Bavaria/Germany in the south-west, through Poland, to Lithuania in the north-east for the time period 2006 to 2008. The configuration of the seismic network is a compromise between the needs of the different seismic methods. A dense central profile allows the use of modern passive 2-D imaging techniques. The distribution of broad-band sensor is designed for surface wave and receiver function studies of the upper mantle down to the mantle transition zone in a wide frequency band and will allow the estimation of 3-D models.

Analysing data from the PASSEQ temporary seismic network we hope to get new constraints on the existence and depth of the lithosphere-asthenosphere boundary in central and eastern Europe, the sharpness of the TTZ (TESZ) in the lower lithosphere, interrelations between mantle anisotropy and topography of the LAB, thermal properties of the mantle transition zone. The experiment will also enhance the knowledge of seismic properties of the lower crust and hopefully will shed new light on the tectonic history (amalgamation) of terranes in the TESZ. The new data analysis will add significantly to previous studies of the lithospheric structure of TESZ area. We present the field experiment, data examples, and first preliminary results from receiver function analysis.