Geophysical Research Abstracts, Vol. 9, 06526, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06526

Understanding extension within a convergent orogen: initial results on seismic structure from the Carpathian Basins Project

G. Stuart (1), G. Houseman (1), E. Hegedüs (2), E. Brückl (3), S. Radovanovic (4), U. Achauer (5), A. Brisbourne (6), A. Horleston (6), D. Hawthorn (6), P. Lorinczi (1), B. Dando (1), G. Falus (2), A. Kovács (2), I. Török (2), H. Hausmann (3), W. Loderer (3), V. Kovacevic (4), S. Petrovic (4), D. Valcic (4)

(1) School of Earth and Environment, University of Leeds, Leeds, LS2 9JT, UK (graham@earth.leeds.ac.uk), (2) Eötvös Loránd Geophysical Institute, 1145 Budapest, XIV. ker. Columbus u. 17-23, Hungary, (3) Institute of Geodesy and Geophysics, TU-Wien, A-1040, Vienna, Austria, (4) Seismological Survey of Serbia, 11000 Beograd, Park Tasmajdan, Serbia, (5) Institut de Physique du Globe, Université de Strasbourg, Strasbourg, France, (6) SEIS-UK, University of Leicester, University Road, Leicester, LE1 7RH, UK

As part of the Carpathian Basins Project (CBP) we are studying the seismic structure of the crust and upper mantle beneath a group of Miocene-age extensional basins, of which the Pannonian Basin is the largest, within the arc of the Alpine-Carpathian Mountain Ranges. Analysis of the subsidence history of the Pannonian Basin shows that its mantle lithosphere has undergone a much greater degree of extension than the overlying crust. We will use our seismic models to test competing theories of how the continental lithosphere evolved in the region.

We have deployed a 46-element seismic network, 450 km x 80 km, oriented in a NW-SE direction, crossing the Vienna and western Pannonian Basins in Austria, Hungary and Serbia. The network will run for 14 months from early May 2006. The stations are broadband to 30s and spaced at $\sim$30 km along 3 parallel lines, which are 40 km apart. The principal object of this network is to use P and S-wave teleseismic tomography to image the upper mantle. Receiver functions and previous controlled source experiments will be used to control the crustal structure. We have also installed a more broadly distributed regional broadband array of 10 instruments (broadband to 120 sec) for 2 years from September 2005, spaced at $\sim$100km within Hungary, Croatia and

Serbia to augment the data available from permanent broadband networks in central Europe. We will use this array to study surface wave dispersion to image variations in lithospheric structure within the basins and surrounding mountains.

The initial results of an interpretation of crustal structure, derived from receiver functions, and mantle structure, derived from seismic anisotropy (SKS-splitting), will be presented for the 46-element network.