



## **Evidence for tectonic differentiation in the southeastern Poland derived from 2-D and 3-D seismic velocity models of CELEBRATION'2000 project**

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The area of SE Poland is characterized by complex geological structure and encompasses several tectonic units with contrasting properties: from the Precambrian East European Craton, through the Palaeozoic units of the Trans-European Suture Zone to the Mesozoic/Cenozoic Carpathian orogen. The region has been covered by a dense network of deep seismic profiles during the CELEBRATION 2000 experiment. The results of 2-D modelling along main seismic lines have already been published. Here, we present 2-D raytracing velocity models of regional wide-angle refraction profiles (CEL11, CEL13, CEL14 and part of CEL05) crossing main tectonic units of the area, as well as 3-D models of crustal velocity and Moho depth. The 3-D models were obtained by tomographic modelling of in-line and off-line recordings of the Pg and PmP phases using two independent inversion methods - JIVE3D by Hobro (2003) and inversion of wide-angle reflected arrivals by Zelt et al. (1996). The first approach allows for simultaneous inversion of all used phases, while the second one bases on resolving of the crustal velocity structure and subsequent inversion of the reflected (PmP) phase using previously obtained background velocity and with Moho parameterized as a "floating reflector". The results of all methods are generally consistent in terms of the large-scale structure and reveal significant lateral variations both of the crustal velocity and of the Moho depth. The variations correlate with tectonic unit boundaries. In 2-D models, the depth to the Moho boundary (27-53 km) and the upper mantle velocities (7.9-8.4 km/s) vary strongly along CEL11, CEL14 and CEL05 profiles (Carpathians, Malopolska Block). In contrast, Moho depth (ca. 42 km) and sub-Moho velocity (8.2 km/s) are quite stable along CEL13 profile (EEC). In the 3-D inversion models, the

crustal thickness varies from 30 km beneath MaÅĆopolska block in the SW to 45-50 km beneath the East European Craton.