

Preliminary map of the lithospheric thickness in the Pannonian-Carpathian basin region obtained by means of 2D integrated modelling

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Abstract: A unique method of 2D integrated modelling that combines interpretation of surface heat flow, gravity and topography (local isostasy) was used for the calculation of the lithospheric thickness along nine geotranssects passing through the Pannonian-Carpathian basin region. Based on the obtained results, a new map of lithospheric thickness has been created for the area. The map indicates a new phenomenon of the lithosphere thickness in the studied area. In central and eastern part of the Western Carpathians, a lithospheric root (up to 150 km) can be observed. This feature is not observed beneath the western segment of the Western Carpathians (transitional zone with the Bohemian Massif). Strong lithospheric thickening (up to 240 km) can be observed along the whole Eastern Carpathians, whereas the maximum thickness (260 km) was modeled for the seismic zone Vrancea. The thickening of the lithosphere in these areas has not been suggested in the former interpretations. The new results coincide better with the newest ideas of the structure and tectonic development of the Carpathian-Pannonian basin region.

Key words: integrated modelling, gravity, heat flow, topography, Carpathians, Pannonian basin, lithospheric thickness

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