

New 3D gravity modeling in the Carpathian–Pannonian basin region

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Abstract: New results related to the thickness of the sedimentary cover of the European platform and new study and analysis of the densities of the sediments in the Carpathian-Pannonian region result in the re-construction of the former density models. Based on these new models the 3D gravity effects of the sediments in the Pannonian Basin, the Carpathian Molassic Foredeep and the Outer Carpathian Flysch zone were calculated. The largest gravity effect (up to -85 mGal) comes from the sediments of Outer Carpathians Flysch and cover of the European platform. Maximum gravity effects of the Pannonian and Transylvanian basin sediments and Carpathian Molassic Foredeep are lower (up to -55 mGal). It was found out that the gravity effects of the sediments in the Eastern and Southern Carpathians still do not reach the amplitudes of the Carpathian gravity minimum. The results indicate that the Carpathian gravity minimum in these parts of Carpathians belt must be explained not only by gravity effect of low density sediments but also by additional gravity effects of some other deep-seated crustal (and/or uppermost part of the upper mantle?) density anomalous bodies. Contrary in the Eastern and Southern Carpathians, the amplitude of the Carpathian gravity minimum was

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exceeded by gravity effect of the sediments of the Outer Carpathian Flysch in the Western Carpathians and Eastern Carpathians junction.

Key words: 3D modeling, gravity, density, sediments, Carpathian-Pannonian region