



Recalculation of regional and detailed gravity database from Slovak Republic and qualitative interpretation of new generation Bouguer anomaly map

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In this contribution results of the running project "Bouguer anomalies of new generation and the gravimetrical model of Western Carpathians (APVV-0194–10)" are presented. The existing homogenized regional database (212478 points) was enlarged by approximately 107 500 archive detailed gravity measurements. These added gravity values were measured since the year 1976 to the present, therefore they need to be unified and reprocessed. The improved positions of more than 8500 measured points were acquired by digitizing of archive maps (we recognized some local errors within particular data sets). Besides the local errors (due to the wrong positions, heights or gravity of measured points) we have found some areas of systematic errors probably due to the gravity measurement or processing errors. Some of them were confirmed and consequently corrected by field measurements within the frame of current project. Special attention is paid to the recalculation of the terrain corrections - we have used a new developed software as well as the latest version of digital terrain model of Slovakia DMR-3. Main improvement of the new terrain corrections evaluation algorithm is the possibility to calculate it in the real gravimeter position and involving of 3D polyhedral bodies approximation (accepting the spherical approximation of Earth's curvature). We have realized several tests by means of the introduction of non-standard distant relief effects introduction. A new complete Bouguer anomalies map was constructed and transformed by means of higher derivatives operators (tilt derivatives, TDX, theta-derivatives and the new TDXAS transformation), using the regularization approach. A new interesting regional lineament of probably neotectonic character was recognized in the new map of complete Bouguer anomalies and it was confirmed also by realized in-situ field measurements.