

# Revision of Bouguer gravity anomalies map of Slovak Republic and interpretation of their enhanced higher derivatives

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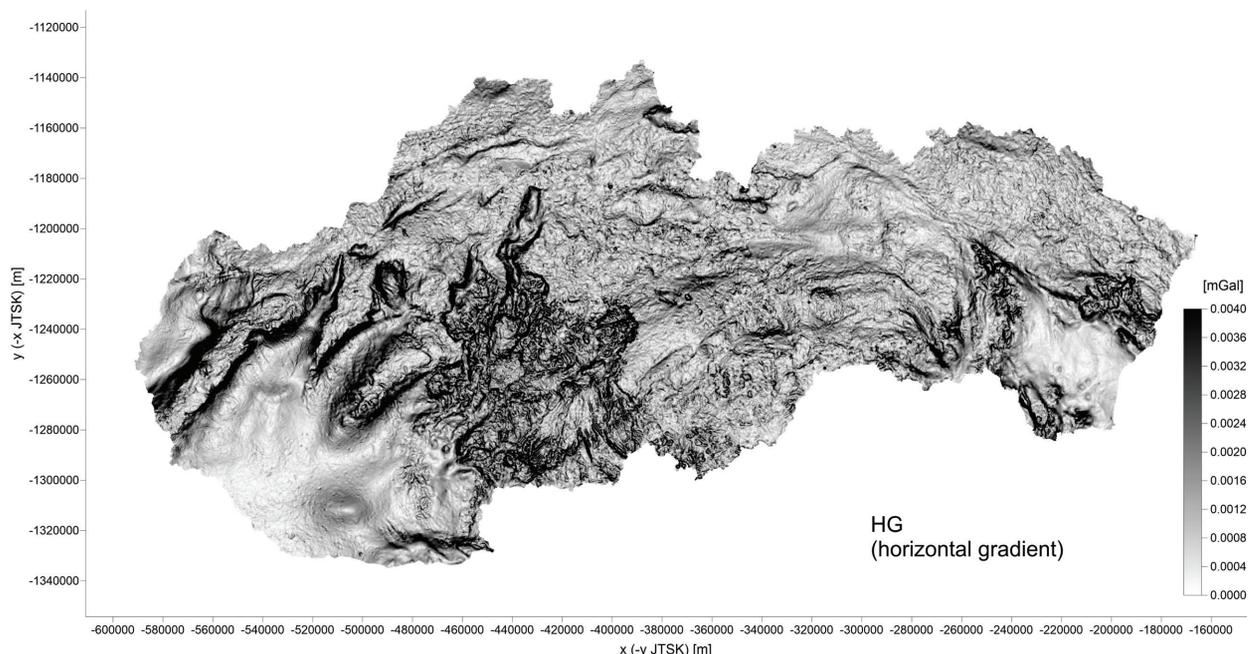
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This contribution deals with the revision and enrichment of the present gravimetric database of the Slovak Republic in the frame of the project APVV-0194-10 “Bouguer anomalies of new generation and the gravimetric model of Western Carpathians”. The output of this process is a new version of the complete Bouguer anomaly (CBA) map on our territory. Thanks to the taking into account of more accurate terrain corrections, this field has significantly higher quality and higher resolution capabilities. The excellent features of this map will allow us to re-evaluate and improve the qualitative interpretation of the gravity field in the research of the structural and tectonic geology of the Western Carpathian lithosphere. In the contribution we also

analyse the field of the new CBA based on the properties of various transformed fields - in particular the horizontal gradient, which by its local maximums define important density boundaries in the lateral direction (Fig. 1). Numerical derivatives in both lateral directions have been calculated by means of the concept of regularized derivatives evaluation. All original and new transformed maps make a significant contribution to improving the geological interpretation of the CBA field. Except for the horizontal gradient field, we are also interested in a new special transformation of TDXAS, which in an excellent way separates various detected anomalies of gravity field and improves their lateral delimitation and interpretation.



**Fig. 1.** Map of total horizontal gradient amplitudes, calculated from the complete Bouguer anomalies map of Slovak Republic (correction density:  $2670 \text{ kg.m}^{-3}$ ).