



A new Bouguer gravity map of Austria

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All gravity data available in Austria acquired within the past 50 years by different institutions have been reprocessed and homogenized in order to compile a new and accurate Bouguer gravity map of the Eastern Alps. Reprocessing was based on modern methods of terrain correction procedures and a DTM with 50 m spacing in order to get accurate corrections even in high mountainous areas. The DTM and digital cadastre also helped to correct the station coordinates that in older data sets have been extracted from topographic maps. The final data set consists of 54000 stations with an average station distance of less than 3 km even in the mountains. Additionally, gravity data was processed by applying a 2D density model for calculating the mass corrections in order to investigate the errors introduced by assuming constant density in the standard processing. The Bouguer gravity is based on orthometric heights rather than ellipsoidal ones; therefore the geophysical indirect effect is estimated. Finally, a stripped gravity map is shown to enhance the near surface sources. The new homogenized gravity data set refers to the absolute gravity datum and provides a base of the Austrian Geoid solution. Therefore, it is an important contribution to the Austrian geodetic reference frame.