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# Investigating the effect of different terrain modeling techniques on the computation of local gravity anomalies

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Gravity reductions and gravity anomalies express important tools for the analysis and interpretation of real gravity measurements at all spatial scales. Simple geometries of planar or spherical slabs for the topographic masses underlying the computation point down to a reference height surface produce the traditional definition of simple Bouguer anomalies. However, especially for gravity measurements obtained from local gravity surveys stretching up to only a few tens of kilometers, a detailed consideration of the deviations of the surface topographic relief from the ideal slab geometry is required and necessary in order to obtain the so-called refined Bouguer anomalies. The present contribution examines the further refinement of these computations depending on the exact geometric representation of the topographic surface and the corresponding masses defining the terrain correction quantity. Using as input data 328 surface gravity observations and a 20 km x 15 km Digital Terrain Model with a 50 m x 50 m spatial resolution of a steep terrain area in the Bavarian Alps different sets of gravity anomalies were computed from different geometrical and mathematical approximations of the topographic masses and its corresponding gravitational effect. Right rectangular prisms, polyhedrons, bilinear surfaces, mass-line and mass-prism FFT representations of the terrain effect have been implemented for the evaluation of refined Bouguer gravity anomalies over the 20 km x 15 km region and the computed grids have been compared both against each other as well as with respect to the topographic height.