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Improved regional geoid solution based on radial basis parametrization

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In this investigation several methodological developments for an improved Austrian geoid solution are presented. In a first step the well known remove procedure is adapted to achieve consistently reduced observations. A major issue of the reduction is the combination of a global satellite-only gravityfield model with the topographic reduction. As observables only gravity anomalies are used so far. This step should minimize the inconsitencies between the pure gravimetric geoid and the GPS/leveling observations.

In a second step the regional geoid is computed using a least squares approach (Gauss-Markov model) with parametrization as Radial Basis Functions (RBF). Compared to the Least Squares Collocation (LSC) the RBF is able to handle an inhomogenous input data distribution. Another advantage is that gravity input datasets with different qualities can be weighted using Variance Component Estimation (VCE). Further there is a focus on the spatial arrangement of the RBF's because a sufficient distribution of the base functions is essential for the quality of the results. An introduction to this topics will be given in the presentation.