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# Regional gravity field modeling using radial basis functions: comparisons with spherical harmonic solutions within IAG's Joint Study Group JSG0.3

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Traditionally, the gravity field of the Earth is modeled globally as a series expansion in spherical harmonic basis functions. However, it is well-known that spherical harmonic approaches are not appropriate to represent data of heterogeneous density and quality. These and other deficiencies can be overcome using regional modeling approaches, which allow to adjust the analysis procedure to the gravity field signal in certain geographical areas.

Various regional gravity field modeling approaches have been developed in the last years. Main objectives of the IAG ICCTJoint Study Group JSG0.3 "Comparison of Current Methodologies in Regional Gravity Field Modeling" are, among others, to create a benchmark data set for comparative numerical studies, and to carry out numerical comparisons between different solution strategies for estimating the model parameters and to validate the results with other approaches (spherical harmonic models, least-squares collocation, etc.). In this contribution we use one of the created synthetic benchmark data sets to compare different regional solutions with a spherical harmonic solution.