



## **Regional gravity field modeling using radial basis functions: results from IAG's Joint Study Group JSG0.3 and real data GOCE applications**

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Traditionally, the gravity field of the Earth is modeled as a series expansion into globally defined spherical harmonic basis functions. However, it is well-known that spherical harmonic approaches have problems to properly represent data of heterogeneous density and quality. These and other deficiencies can be overcome using regional modeling approaches, which allow to more flexibly adjust the analysis procedure to the gravity field signal in certain geographical areas. Therefore, different sophisticated regional gravity field modeling approaches have been developed in recent years. In order to systematically compare the different approaches, the IAG ICCT Joint Study Group JSG0.3 "Comparison of Current Methodologies in Regional Gravity Field Modeling" has recently created synthetic test data sets.

In this presentation we will discuss and compare the results obtained from the test data sets using a parameterization by different types of radial basis functions as provided by the groups of the University of Bonn, the German Geodetic Research Institute (DGFI) and the Norwegian University of Life Sciences. Furthermore, we will present the improvements that can be obtained by regional processing techniques compared to global spherical harmonic modeling at the example of GOCE real data applications.