Results from IAG's Joint Study Group JSG0.3 on the Comparison of Current Methodologies in Regional Gravity Field Modeling

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For the period 2011-2015, the International Association of Geodesy (IAG) has established under the roof of its Inter-Commission Committee on Theory (ICCT) a Joint Study Group (JSG0.3) on the Comparison of Current Methodologies in Regional Gravity Field Modeling. The main objectives of JSG0.3 are (1) to collect information of available methodologies and strategies for regional modelling, (2) to analyze the collected information in order to find specific properties of the different approaches and to find, why certain strategies have been chosen, (3) to create a benchmark data set for comparative numerical studies, (4) to carry out numerical comparisons between different solution strategies for estimating the model parameters and to validate the results with other approaches, and (5) to quantify and interpret the differences of the comparisons with a focus on detection, explanation and treatment of inconsistencies and possible instabilities of the different approaches.

Meanwhile the group has provided a set of synthetic gravity field observations representing data from terrestrial, airborne and satellite sensors. This benchmark data set is publicly available (http://jsg03.dgfi.badw.de) and free to all interested researchers to test and validate their modelling procedures. The aim of the present contribution is to analyze and compare results from different methodologies employing local basis functions of wavelet and spline type as well as reduced point mass modeling and the classical collocation approach following the above mentioned objectives of JSG0.3.