On the downward continuation of gravitational gradients

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In the frame of ESA's GOCE+ project, we investigate possibilities for downward continuation of observed gravitational gradients from spaceborne altitude to a mean reference sphere near the ground. The downward continued gradients shall be applied in geophysical modelling over two test areas (African continent and the Reykjanes ridge). Several downward continuation methods were tested and results were compared to gradients derived from GOCE-only models. Based on these tests, two methods were identified as possible for continuing GOCE data. One of the methods is based on an iterative spherical Poisson integral while the second use the reciprocal Poisson integral kernel. Obtained results will be presented and particular problems regarding downward continuation of spaceborne gravitational gradients will be discussed.