



## Using GRACE for land uplift investigations

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The Earth's gravity field mapped by the Gravity Recovery and Climate Experiment (GRACE) satellite mission shows variations due to the integral effect of mass variations in the atmosphere, hydrosphere and geosphere. It is provided in form of monthly solutions by several institutions, e. g. GFZ Potsdam, CSR Austin, Texas, JPL Pasadena, ITG Bonn and CNES Paris. During the GRACE standard processing of these analysis centres, oceanic and atmospheric contributions as well as tidal effects are reduced. The solutions of the analysis centres differ slightly, which is caused by the application of different reduction models and center-specific processing schemes.

We present our investigation of mass variations in the areas of glacial isostatic adjustment (GIA) in North America and Northern Europe from GRACE data provided by 5 different analysis centres. We discuss several filter techniques and their influence on the results. Furthermore, we analyze the results regarding their reliability, and investigate possible hydrologic signals with the help of different global hydrology models (e. g. WGHM, LaDWorld, GLDAS). In another step, we compare the uplift signal to geodynamic models determined with relative sea-level data.

Our results clearly show a GIA pattern in the GRACE-derived gravity-change signal which can be confirmed by independent geodynamic investigations. The maximum value of about  $15 \mu\text{Gal}/\text{yr}$ , the position of the uplift peak and the spatial extension of the uplift area fit well to former investigations. The part of hydrology in the rebound signal is small, and compared to results of geodynamic modelling we find a good agreement.