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## Evaluating short-term hydro-meteorological fluxes in global atmospheric reanalyses using daily GRACE data

**Viviana Wöhnke**<sup>1</sup>, Annette Eicker<sup>1</sup>, Laura Jensen<sup>1</sup>, Andreas Kvas<sup>2</sup>, Torsten Mayer-Gürr<sup>2</sup>, and Henryk Dobslaw<sup>3</sup>

<sup>1</sup>HafenCity University Hamburg, Geodesy and Geoinformatics, Germany (viviana.woehnke@hcu-hamburg.de)

<sup>2</sup>Graz University of Technology, Austria

<sup>3</sup>Helmholtz Centre Potsdam, German Research Centre for Geosciences (GFZ), Potsdam, Germany

Changes in terrestrial water storage as observed by the satellite gravity mission GRACE represent a new and completely independent data set for constraining the net flux deficit of precipitation (P), evapotranspiration (E), and lateral runoff (R) in atmospheric reanalyses.

In this study we use daily GRACE gravity field changes to investigate high-frequency hydro-meteorological fluxes over the continents. Band-pass filtered water fluxes are derived from GRACE water storage time series by first applying a numerical differentiation filter and subsequent high-pass filtering to isolate fluxes at periods between 5 and 30 days.

We can show that on these time scales GRACE is able to identify quality differences between different reanalyses, e.g. the improvements in the latest reanalysis ERA5 of the European Centre for Medium-Range Weather Forecasts (ECWMF) over its direct predecessor ERA-Interim. We will therefore use GRACE as an evaluation tool to compare hydro-meteorological fluxes in various global atmospheric reanalyses, such as ERA5(-Land), ERA-Interim, Merra2, JRA-55, or NCEP.