Christoph
Dahle
GFZ Helmholtz Centre for Geosciences
Roman Sulzbach, GFZ Helmholtz Centre for Geosciences
Markus Hauk, GFZ Helmholtz Centre for Geosciences
Torsten Mayer-Gürr, Graz University of Technology, Institute of Geodesy
Oral

When performing gravity field determination with GRACE-like missions, the consideration of an ocean tide background model is inevitable. Several state-of-the-art ocean tide models are available containing a large number of tidal constituents. However, the exact number of individual constituents differs from model to model. To account for ocean tide signals over the entire tidal spectrum, admittance is usually applied. As admittance theory is non-trivial and requires quite some expert-knowledge about ocean tides, its implementation is prone to errors and may lead to different results amongst gravity field processing centers even when using the same ocean tide background model. To facilitate a user-friendly and model-independent framework for tidal corrections, a unified approach has been developed (https://www.tugraz.at/institute/ifg/downloads/ocean-tides).

Using GFZ's GRACE/GRACE-FO gravity field processing chain as an example, this presentation provides an overview on how this new approach can help to choose the best possible ocean tide background model when planning a new release of monthly gravity field models. Additionally, the effect of considering minor tides, either by applying an extended admittance or directly taken from models, is systematically assessed. One major conclusion is, that the best gravity field results are obtained when using a mix of different ocean tide models together with admittance for numerous unmodelled tidal waves. Such a strategy will also be used for the upcoming GFZ RL07 Level-2 time series.
Presentation file
dahle-christoph-tides.pdf
Meeting homepage
GRACE-FO 2025 Science Team Meeting
Download to PDF