



Glacial Isostatic Adjustment over the Amundsen Sea Sector inferred by means of geodetic observations

Andreas Groh (1), Heiko Ewert (1), Mirko Scheinert (1), Mathias Fritsche (1), Axel Rülke (1,2), Andreas Richter (1), Ralf Rosenau (1), and Reinhard Dietrich (1)

(1) Technische Universität Dresden, Institut für Planetare Geodäsie, Germany (andreas.groh@tu-dresden.de), (2) Now at: Bundesamt für Kartographie und Geodäsie, Leipzig, Germany

Using GRACE-derived monthly gravity field solutions and campaign-wise laser altimetry data provided by ICESat, mean present-day changes of mass and volume over the Amundsen Sea Sector, West Antarctica, are derived. Since a priori a GIA model is not used to correct the observations the combination of both observational results allows to infer the mean GIA-induced mass change. This GIA-induced mass change is found to be significantly larger than predicted by current GIA models. In order to validate this finding, the inferred mean GIA-induced elevation change is compared to the uplift rates observed at three GPS sites. For this purpose, the observed uplift rates are corrected for elastic crustal deformations due to present-day ice-mass changes, which are derived from ICESat-observed high resolution surface height changes. Finally, the impact of the newly inferred GIA correction for the Amundsen Sea Sector on GRACE-derived present-day ice-mass change estimates and their corresponding sea-level contribution are discussed.