Geophysical Research Abstracts
Vol. 19, EGU2017-14730-1, 2017
EGU General Assembly 2017

ITSG-Grace2016 data preprocessing methodologies revisited: impact of using Level-1A data products

Beate Klinger and Torsten Mayer-Gürr
Institute of Geodesy, Graz University of Technology, Graz, Austria (beate.klinger@tugraz.at)

For the ITSG-Grace2016 release, the gravity field recovery is based on the use of official GRACE (Gravity Recovery and Climate Experiment) Level-1B data products, generated by the Jet Propulsion Laboratory (JPL). Before gravity field recovery, the Level-1B instrument data are preprocessed. This data preprocessing step includes the combination of Level-1B star camera (SCA1B) and angular acceleration (ACC1B) data for an improved attitude determination (sensor fusion), instrument data screening and ACC1B data calibration.

Based on a Level-1A test dataset, provided for individual month throughout the GRACE period by the Center of Space Research at the University of Texas at Austin (UTCSR), the impact of using Level-1A instead of Level-1B data products within the ITSG-Grace2016 processing chain is analyzed. We discuss (1) the attitude determination through an optimal combination of SCA1A and ACC1A data using our sensor fusion approach, (2) the impact of the new attitude product on temporal gravity field solutions, and (3) possible benefits of using Level-1A data for instrument data screening and calibration.

As the GRACE mission is currently reaching its end-of-life, the presented work aims not only at a better understanding of GRACE science data to reduce the impact of possible error sources on the gravity field recovery, but it also aims at preparing Level-1A data handling capabilities for the GRACE Follow-On mission.