Geophysical Research Abstracts
Vol. 19, EGU2017-13186-1, 2017
EGU General Assembly 2017

Time-variable gravity field and ocean mass change from SWARM data

Christina Lück (1), Roelof Rietbroek (1), Anno Löcher (1), Jürgen Kusche (1), Le Ren (2), and Steffen Schön (2)
(1) University of Bonn, Institute for Geodesy and Geoinformation, Bonn, Germany (lueck@geod.uni-bonn.de), (2) University of Hannover, Institut für Erdmessung, Hannover, Germany

Variations of ocean mass and bottom pressure changes are still not sufficiently understood on long time scales. The observation of these signals at the global scale has only become possible since the advent of the GRACE mission. Within the project “Consistent Ocean Mass Time Series from LEO Potential Field Missions” (CONTIM), we investigate how time series of gravity changes and ocean mass variations can be extended beyond and before the GRACE mission lifespan, making use of geodetic measurements of Low Earth Orbiters (LEO), and how these may be used for gap-filling of the GRACE time series.

Here, we use different kinematic orbits from SWARM, including orbits computed in this project, to estimate gravity fields of low spherical harmonic degree and order. We show how these fields compare to the more accurate GRACE solutions, and how the choice of non-conservative force modelling, solution parameterization, and other pre- and post-processing steps affect the solutions.