Geophysical Research Abstracts
Vol. 19, EGU2017-6541, 2017
EGU General Assembly 2017

Optimal Geoid Modelling to determine the Mean Ocean Circulation – Project Overview and early Results

Thomas Fecher (1), Per Knudsen (2), Srinivas Bettadpur (3), Thomas Gruber (1), Nikolai Maximenko (4), Nadege Pie (3), Frank Siegismund (5), and Detlef Stammer (5)

(1) Technical University of Munich, Institute of Astronomical and Physical Geodesy, Munich, Germany (fecher@tum.de), (2) DTU SPACE, Technical University of Denmark, Kgs. Lyngby, Denmark, (3) Center of Space Research, Austin, Texas, USA, (4) International Pacific Research Center, University of Hawaii, Honolulu, Hawaii, USA, (5) Institut für Meereskunde, Universität Hamburg, Hamburg, Germany

The ESA project GOCE-OGMOC (Optimal Geoid Modelling based on GOCE and GRACE third-party mission data and merging with altimetric sea surface data to optimally determine Ocean Circulation) examines the influence of the satellite missions GRACE and in particular GOCE in ocean modelling applications. The project goal is an improved processing of satellite and ground data for the preparation and combination of gravity and altimetry data on the way to an optimal MDT solution.
Explicitly, the two main objectives are (i) to enhance the GRACE error modelling and optimally combine GOCE and GRACE [and optionally terrestrial/altimetric data] and (ii) to integrate the optimal Earth gravity field model with MSS and drifter information to derive a state-of-the art MDT including an error assessment.
The main work packages referring to (i) are the characterization of geoid model errors, the identification of GRACE error sources, the revision of GRACE error models, the optimization of weighting schemes for the participating data sets and finally the estimation of an optimally combined gravity field model. In this context, also the leakage of terrestrial data into coastal regions shall be investigated, as leakage is not only a problem for the gravity field model itself, but is also mirrored in a derived MDT solution. Related to (ii) the tasks are the revision of MSS error covariances, the assessment of the mean circulation using drifter data sets and the computation of an optimal geodetic MDT as well as a so called state-of-the-art MDT, which combines the geodetic MDT with drifter mean circulation data.
This paper presents an overview over the project results with focus on the geodetic results part.