Geophysical Research Abstracts
Vol. 12, EGU2010-4205, 2010
EGU General Assembly 2010

Two Methods for the Validation of GOCE Gradients

Phillip Brieden and Jürgen Müller
Leibniz Universität Hannover, Institute of Geodesy, Hannover, Germany (brieden@ife.uni-hannover.de)

The first ESA Earth Explorer Core mission GOCE (Gravity Field and Steady-State Ocean Circulation Explorer) entered the operational measurement phase in September 2009. Before gravity field processing, the quality of the GOCE gradients has to be assessed. Here, two procedures are presented, the mutual comparison and analysis of observed gradients in satellite track cross-overs and the application of terrestrial gravity data which are upward continued and transformed into reference gradients for the GOCE observations.
The cross-over (XO) approach is an independent relative validation method, i.e., a procedure using GOCE data only. XO analysis allows checking the gravity gradients at the accuracy level expected for GOCE. The developed analysis module is now applied during the measurement phase of GOCE, where finally quality reports will be provided.
For external calibration and validation, regional gravity field data over well surveyed areas (in Europe) can be upward continued to gradients at GOCE altitude, serving as reference gradients for the GOCE data. Those reference gradients in the GOCE observation frame can then be used for investigating the quality of the measured gradients.
The basic concept of the two approaches will briefly be reviewed and first numerical results based on real GOCE data will be presented, provided that our GOCE results will have been authorized by the responsible ESA bodies until April 2010.