



Status of the fifth generation GOCE time-wise Earth gravity field model

Torsten Mayer-Guerr (1), Jan Martin Brockmann (2), Ina Krasbutter (2), Eduard Höck (1), Norbert Zehentner (1), Roland Pail (3), and Wolf-Dieter Schuh (2)

(1) TU Graz, Institute of Theoretical Geodesy and Satellite Geodesy, (2) University of Bonn, Institute of Geodesy and Geoinformation, (3) TU Munich, Institute of Astronomical and Physical Geodesy

Since the launch of the European Space Agency's (ESA) Gravity field and Ocean Circulation Explorer (GOCE) satellite in 2009, four releases of the so called time-wise gravity field models were computed within the ESA funded High-level Processing Facility (HPF). The observations are the gravity gradients measured by the gradiometer and the satellite orbit determined via GPS. These gravity field models were released as a set of spherical harmonic coefficients and a corresponding full variance covariance matrix. As a lot of effort is put into the modeling of the original observation errors, these covariance matrix realistically presents the errors of the gravity field models.

The fifth generation called TIM5 is in preparation. The new solution will consider the GOCE data from the complete lifetime. This includes also data from lower orbit phases, which provides higher sensitivity, especially for the detailed structures of the gravity field. To account for the higher sensitivity the complete data set has been reprocessed. The preprocessing was needed as the spatial resolution is increased from maximum degree/order 250 to degree/order 280 in terms of spherical harmonic coefficients. This means additional 16,000 parameters were estimated.

Within this presentation first results of the new model TIM5 are presented.