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Gravity gradient grids at GOCE satellite altitude for lithospheric modelling

Johannes Bouman (1), Jörg Ebbing (2), Josef Sebera (3), Martin Fuchs (1), Verena Lieb (1), Nils Holzrichter (2), Pavel Novak (3), and Roger Haagmans (4)

(1) DGFI-TUM, Munich, Germany (bouman@dgfi.badw.de), (2) Christian-Albrechts-University Kiel, Germany, (3) University of West Bohemia, Czech Republic, (4) ESA-ESTEC, Noordwijk, Netherlands

We explore how GOCE gravity gradient data can improve modeling of the Earth's lithosphere and thereby contribute to a better understanding of the Earth's dynamic processes. We study the use of gravity gradient grids to provide improved information about the lithosphere and upper mantle in the well-surveyed North-East Atlantic Margin. In particular, we present the computation of gravity gradient grids at GOCE satellite altitude combining GOCE with GRACE gravity information. It is shown that regional solutions based on a tesseroid approach may contain more signal content than global gravity field models do. The patchwork of regional grids is presented as well as the subsequent error reduction through iterative downward and upward continuation using the Poisson integral equation. The promises and pitfalls are discussed of using grids at nominal altitude of 255 km and a lower altitude of 225 km for lithospheric modeling.