



Validation of the GOCE Level 2 gravity gradients by upward continuation: software testing and preliminary results for Norway

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The GOCE satellite gradiometry mission represents an important tool for improved knowledge of the Earth's gravity field. Since launch measurement phases and calibration processes have been performed successfully. Moreover, results in the form of Level 1b and Level 2 data have been made available by the European Space Agency. It is expected that especially Level 2 data will be exploited in many scientific disciplines studying our planet by different approaches and for different purposes. An important task is to validate Level 2 data.

In general, validation comprises mathematical methods to compare data products derived from measurements with existing independent data. In this way, one can make sure that the measurement process, error estimation and calibration have been performed correctly. Several mathematical methods have been proposed for validation of Level 2 data products of the GOCE satellite gradiometry mission depending on products tested.

In this contribution upward continuation of existing terrestrial gravity measurements is considered. For this purpose new computational software has been developed. Its numerical precision has been tested by a synthetic Earth gravity model. In a next step upward continuation has been performed using terrestrial gravity data in Norway. Computed gravity gradients have been compared directly with those included in Level 2 data products.