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Assessment of GOCE gradiometer data during low orbit mission phase

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Since March 2009 GOCE has been orbiting the Earth and made it possible to map the Earth's gravity with unprecedented accuracy. To reach this goal GOCE has been flying at a very low altitude of about 255 km. In the final mission phase GOCE's orbit height could be lowered by additional 31 km to further improve its sensitivity to the gravity field.
The purpose of this contribution is to analyse the low orbit GOCE gradiometer data, now measured in an even rougher environment due to increased drag forces acting on the satellite. Thereby, data acquired at different orbit heights is compared against each other. The data is assessed in the frequency and spatial domain with regards to the gradiometer performance, sensitivity improvements concerning the Earth's gravity signal, the performance of the drag-free and attitude control system as well as a potential degradation in near-polar areas related to the coupling with common mode signals. Finally, the impact of the increased signal content (due to the orbit lowering) and the data quality in the final mission phase on the gravity field solution shall be evaluated.