A recent test for the space wise approach based on GOCE simulated data of Mission Operational Phase 1

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The space-wise approach is a multi-step collocation procedure, developed in the framework of the GOCE HPF (High Level Processing Facility) data processing, for the estimation of the spherical harmonic coefficients of the Earth's gravitational field and their error covariance matrix. The final solution of this approach is based on both the satellite tracking data derived from the on-board GPS receiver and the gravity gradients observed by the on-board gradiometer. In particular, the low frequency part of the gravitational potential is estimated from kinematic orbits by means of the energy conservation approach, and error estimates are obtained by propagating the error variances of the orbit positions. The high frequency part is then estimated by processing the along-track gravitational potential together with the observed gravity gradients according to an iterative scheme.

A full space-wise solution will be presented, based on a 60 days GOCE test data scenario for Mission Operational Phase 1, starting 3 September 2009 (as the satellite comes out of the long eclipse season), with mean measurement altitude at 263 km. The computations are performed using a cluster of 12 dual-processor servers (quad-core at 2.33 GHz, 16GB of RAM).