

GRACE and GOCE data processing strategies

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GRACE gravity field models are computed every 10 days at CNES. The data processing model and the orbit parameterization that is used to obtain these models are described. The resulting GPS and KBR post-fit statistics are also presented, as well as orbit comparisons. The accelerometer calibration parameters are estimated in the precise orbit determination, but relative parameters are also calculated in an external procedure. A quasi-static combined gravity field model is obtained by accumulating all GRACE normal equations, combining them with normal equations of other satellites and surface data, and solving to degree and order 360 in case of the EIGEN models. The effect on the orbit of using temporal gravity fields versus static, or erroneous accelerometer calibration parameters, is evaluated.

The most recent GRACE combination model will be used as the a-priori model in the GOCE data processing chain, as implemented by the European GOCE Gravity Consortium (EGGC). Numerical simulations of the gravity field parameter recovery using the direct method, with satellite positions as pseudo observations (since in reality precise orbits will be computed by EGGC members and made available) instead of simulated GPS Satellite-to-Satellite (SST) tracking data, and with gravity gradients (SGG data), were done and are ongoing in the framework of the EGGC test and validation plan for GOCE mission data processing. This work shows the latest 30- and 60-day simulation results for the nominal and two higher altitudes, obtained with the CNES and GFZ software packages, GINS and EPOS, respectively. The coloured noise in the SGG data, which requires a filtering step in the processing, is based on recent and realistic gradiometer specifications.