Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02165, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02165
EGU General Assembly 2008

Resonances and GOCE orbit selection

J. Klokocnik (1), A. Bezdek (1), J. Kostelecky (2), R. Floberghagen (3), Ch. Gruber (1)

(1) Astron. Inst. Czech Acad. Sci., CZ - 251 65 Ondrejov (jklokocn@asu.cas.cz), (2) Research Institute of Geodesy, Topography and Cartography, CZ - 250 66 Zdiby 98 (kost@fsv.cvut.cz), (3) ESTEC/EOP-PGM, ESTEC-Keplerian 1, NL 2200 AG Noordwijk (Rune.Floberghagen@esa.int)

After the launch in May 2008, the GOCE satellite will - due to atmospheric drag and absence of drag-free actuation - fall freely in the atmosphere down to the mapping orbit altitude for the first measurement operation phase. This orbit decay phase has been analyzed for different solar activity and drag scenarios. Such analysis is of key interest to the GOCE mission analysis and to the definition of the overall gravity field mapping profile, in particular because the solar activity is expected to raise substantially during 2008. Baseline mission profiles defined during Phase A must therefore be revisited. After the first measurement operation phase lasting about two months, the eclipse period likely cause the satellite to be put into a higher orbit. After that, a second measurement operation phase of six months duration is planned. The relevant GOCE orbit choice is discussed from the viewpoint of orbit perturbations due to the gravity of the Earth, lunisolar perturbations and drag residuals with special emphasis to the 16/1 orbit resonance. The goal is to avoid any potentially unfavourable influence of the deep 16/1 resonance on scientific results, where the ultimate target would be to have the final ground track density very large and comparable to the along-track sampling distance of the GOCE gradiometer.