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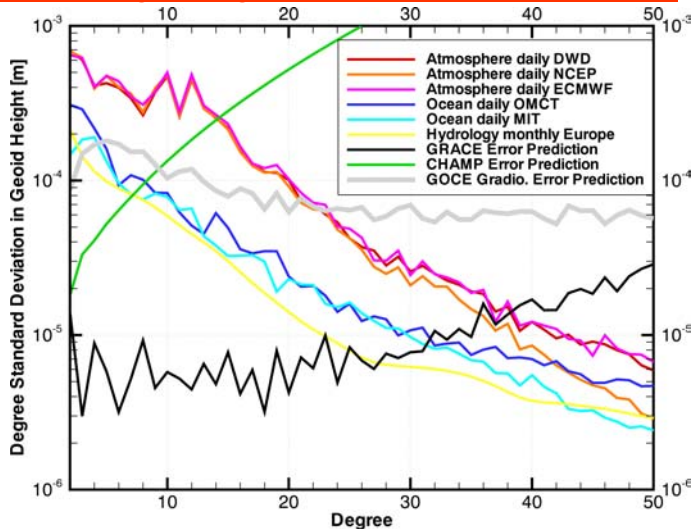
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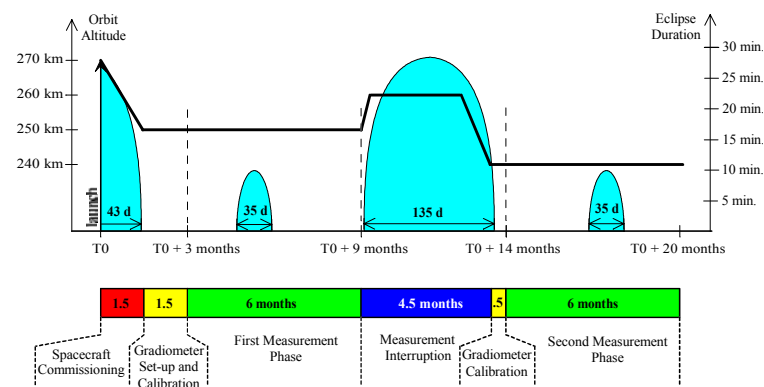
Abstract:

The GOCE gradiometry and high-low satellite-to-satellite tracking mission will provide observations for two measurement observation phases separated by five months. During the mission it will be decided by the project if a third measurement phase, again separated by five months from the previous one, will be flown. The so-called hibernation phase of five months in between the measurement phases is required due to the orbit characteristics and the power consumption requirements (long eclipse seasons). This means, that even by using GOCE data from all measurement phases we will determine a mean seasonal gravity field, if no correction is applied taking into account the seasonal gravity field variations. As a second effect the short term mass variations from the atmosphere and the oceans alias directly into the observations and could affect the quality of the resulting mean gravity field solutions significantly. For this reason, within ESA's GOCE gravity field processing system, a de-aliasing concept has been developed and is currently under implementation. This concept includes short term mass variations and as far as possible also seasonal effects taking into account results from the GRACE mission. The paper investigates the sensitivity of the GOCE mission to different sources of mass variations and provides an overview of the GOCE de-aliasing concept.

Sensitivity Analysis Short-Term Variations:

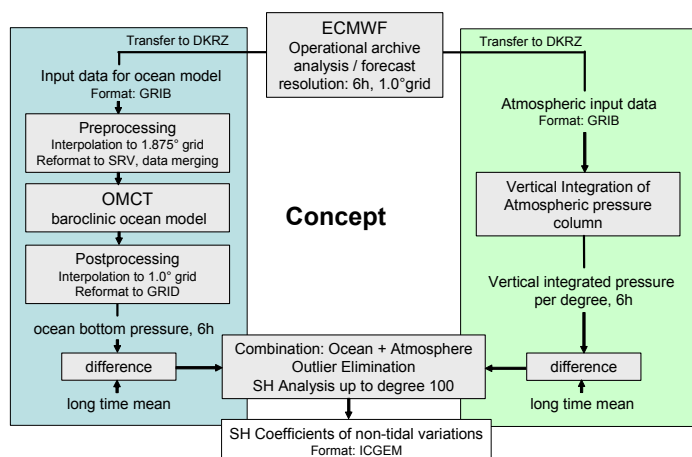


Mission Phases:

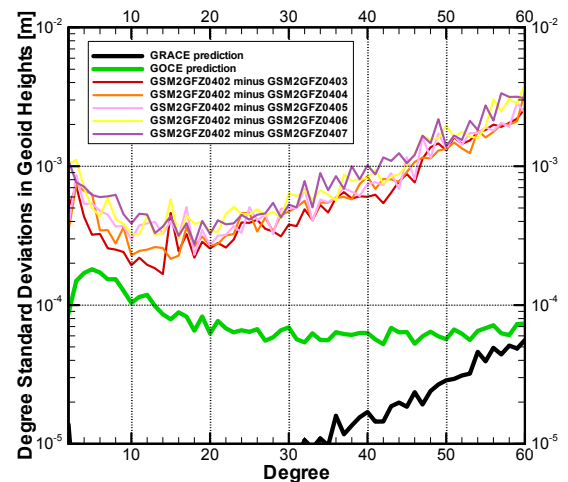


A third measurement phase of 6 months will be decided during the mission. In case this 3rd measurement phase will be flown again a measurement interruption of 5 months will be in between.

Atmosphere-Ocean De-aliasing Concept:



Seasonal Variations from GRACE Solutions:



Conclusions:

- GOCE gradiometer and high-low SST is sensitive to atmospheric mass variations.
- Ocean mass variations play probably no role in gradiometry, but for high-low SST analysis.
- Short-term mass variations and their effect on gravity gradients are estimated from ECMWF atmospheric fields and the Hamburg Ocean Model for Circulation and Tides (OMCT).
- Due to mission profile GOCE gravity field solutions will be biased by the season of observations. GRACE monthly gravity field models might support seasonal de-aliasing (to be investigated).