Different representations of the time variable gravity field to reduce the aliasing problem in GRACE data analysis

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The satellite mission GRACE is used for the determination of the static gravity field and its temporal variations. Commonly those temporal variations are provided as a time series of monthly mean fields. It is well known those GRACE solutions are disturbed by high frequency temporal gravity field variations (aliasing problem). Several groups try to overcome this problem by increasing the sampling of the mean solutions (e.g. 10-days or weekly means). The drawback of this approach is the fact that the increased temporal resolution involves a loss in spatial resolution and accuracy.

In this talk other approaches to the modeling of the temporal gravity variations will be dicussed. One alternative is the smooth representation of the temporal variations by continous base functions such as splines. A further approach describes the process of GRACE data analysis in terms of a Kalman filter. First results will be presented.