



Geodetic observations to estimate ice mass changes and GIA in Antarctica

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Observations provided by the gravity field mission GRACE and by the laser altimeter mission ICESat provide valuable information about present-day changes of mass and surface height of the Antarctic ice sheet, respectively. We present our analysis of the GRACE data as well as of the ICESat data for an estimation of the overall mass and volume change of the Antarctic ice sheet. In addition, the regional pattern of changes in the most dynamic regions will be presented.

The sensitivity of the results with respect to the effect of solid earth deformations caused by glacial isostatic adjustment (GIA) will be discussed. This includes both the elastic deformation caused by present-day ice mass changes and the viscous effect caused by changes of the ice load in the past. A comparison of GIA models with vertical crustal movements observed by GPS will be performed.

Finally, the overall error budget of our approach will be discussed.