



Ice sheets mass balance from GRACE and corresponding contribution to sea level change

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We have analysed GRACE geoid data provided by Biancale et al. (2005) at 10-day interval from mid-2002 to mid-2005. These 10-day geoids have been inverted using the generalized least-squares inverse method developed by Ramillien et al. (2004). The solutions over the Greenland and Antarctica ice sheets represent the time-variable ice mass change. Here we focus on the trends which are clearly visible on the ice mass time series of both Greenland and Antarctica. Over Greenland, the GRACE data indicate significant ice mass loss over the period of analysis, of about -60 cub km/yr after accounting for glacial isostatic adjustment. Mapping the ice mass change shows decreasing mass over most of the Greenland ice sheet. Over Antarctica, the trend map shows two distinct behaviours, with significant mass loss in the region of Amundsen glaciers, West Antarctica, and mass increase over most of the East Antarctica ice sheet. These results from GRACE are in good qualitative agreement with recent published results from remote sensing observations. We estimated the net contribution to sea level change of each ice sheet. Sea level change values of ~ 0.1 mm/yr and -0.2 mm/yr are found for Greenland and Antarctica respectively over the considered time span.