



Greenland ice sheet mass change from GRACE by inversion methods

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The GRACE mission gravity field change data provides an estimate of mass loss of the Greenland ice sheet. Results from different groups using the same data, but different methods, have given very large variations in the estimated mass loss rates. We use a new method for direct inversion of the ice mass changes for different monthly spherical harmonic GRACE fields, and get mass loss rates which are in the order of 135 cubic-km of ice per year, lower than most recent published values. The biggest mass loss is seen over the surging glaciers of south-east Greenland. The overall observed GRACE 2002-6 mass change shows a reasonable agreement with mass loss estimated glaciological models and temperature changes from NCEP models, with some indications of recent acceleration of the ice sheet melting.