



Gravimetric mass balance products for the Antarctic and Greenland ice sheet

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The ESA Climate Change Initiative (CCI) projects on the Antarctic Ice Sheet (AIS_cci) and the Greenland Ice Sheet (GIS_cci) provide Gravimetric Mass Balance (GMB) products based on satellite gravimetry data acquired by the GRACE (Gravity Recovery and Climate Experiment) mission. Monthly solutions produced at TU Graz are utilized to derive two different types of products for the period 2002 – 2016: (1) GMB basin products (i.e. time series of monthly mass changes for the entire ice sheets and selected drainage basins) and (2) GMB gridded products (e.g. mass balance estimates with a formal resolution of about 50km). While a regional integration approach is used by the AIS_cci project, the GMB products of the GIS_cci project are derived using a point mass inversion.

Here we present the final version of the ESA CCI GMB products, which are freely available through data portals hosted by the projects (data1.geo.tu-dresden.de/ais_gmb, products.esa-icesheets-cci.org/products/downloadlist/GMB). Since the initial product release in mid 2016, the applied processing strategies have been improved in order to further reduce GRACE errors and to enhance the separation of signals super-imposed to the ice mass changes. The differences between both processing strategies are investigated through the example of the GIS. Finally, mass balance estimates for both ice sheets as well as their corresponding contributions to global sea level rise are derived from the final GMB products.