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Sørensen, Louise Sandberg; Barletta, Valentina Roberta; Forsberg, René

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Monthly solutions of ice sheet mass balance at basin scale – and their associated uncertainties.

L. Sandberg Sørensen, V. R. Barletta, and R. Forsberg
DTU Space, National Space Institute, Geodynamics, Copenhagen, Denmark (slss@space.dtu.dk)

There are still discrepancies in published ice sheet mass balance results, even between ones based on the same data sets. It can be difficult to conclude from where the discrepancies arise, and it is therefore important to cross calibrate methods, data and models in order to determine the uncertainty associated with these.

We present mass change time series at basin scale for both Greenland and Antarctica, derived from GRACE data. We use two independent methods, several different data sets to derive mass changes associated with appropriate error bars. Then for each basin we show the GIA correction on trends with its uncertainties. The first method applied is based on a mass inversion, while the second one uses integration over a representation given in water equivalent. We find good agreement between the resulting mass changes based on the two independent methods, especially in the behaviour of time series.

We compare our GRACE derived regional estimates with independent mass change results based on altimetry data from NASA's Ice Cloud and land Elevation Satellite.