



## **Impact of glacial-isostatic adjustment on ice-mass balances in Greenland**

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To cross-validate regional mass balance estimates of the Greenland ice sheet (GrIS) using various measurement techniques requires improved regional estimates of the glacial-isostatic adjustment (GIA). Here, we assess the impact of GIA on GrIS mass change from Gravity Recovery and Climate Experiment (GRACE) satellite mission and evaluate the corresponding uncertainties. Newly available time series of bedrock displacement measured with Greenland GPS Network (GNET) show that forward models have considerably underestimated GIA in Greenland. In particular, uplift rates related to GIA are much greater in the northwest and southeast sectors of the GrIS. We reconstruct the evolution of the GrIS since Last-Glacial Maximum (LGM; ~21 thousand years ago), including the GNET GPS uplift rates and relative sea-level data. Correcting GRACE mass change with the new GPS-constrained GIA forward model results in significantly more mass loss (17 Gt/yr). The revised GRACE estimate for ice-mass loss amounts to -279 Gt/yr (2003-2015) for the entire GrIS.