



## **Rapid uplift in Greenland due to ongoing ice mass changes**

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We analyze data from  $\sim 10$  continuous Global Positioning System (GPS) receivers, all located along the edge of the Greenland ice sheet, to determine vertical uplift rates. The rapid unloading of ice from the southeastern sector of the Greenland ice sheet between 2001 and 2006 caused an elastic uplift of  $\sim 35$  mm at a GPS site in Kulusuk. Most of the uplift results from ice dynamic-induced volume losses on two nearby outlet glaciers. Volume loss from Helheim Glacier, calculated from sequential digital elevation models, contributes about  $\sim 16$  mm of the observed uplift, with an additional  $\sim 5$  mm from volume loss of Kangerdlugssuaq Glacier. The remaining uplift signal is attributed to significant melt-induced ice volume loss from the ice sheet margin along the southeast coast between 62 N and 66 N. We also analyze data from four continuous GPS receivers located between 0-150 km from the front of Greenland's Jakobshavn Isbr{æ} Glacier. The GPS stations were established in bedrock to determine vertical crustal motion due to unloading of ice from Jakobshavn Isbrae. Results suggest a net loss of  $\sim 20$  km<sup>3</sup> of ice between 2006 and 2007.