GNET detected an anomalous "spike" in ice loss in Greenland during the 2010 melting season - DTU Orbit (09/12/2018)

The Greenland GPS Network (GNET) uses GPS geodesy to measure the displacement of bedrock exposed near the margins of the Greenland Ice Sheet. The amplitudes of the observed vertical velocities indicate that over most of coastal Greenland these displacements are dominated by the solid earth's instantaneous elastic response to contemporary losses in ice mass. Superimposed on longer term trends, an anomalous ‘pulse’ of uplift accumulated at many GNET stations during a ~5 month period in 2010, and we will show that this anomalous uplift is spatially correlated with the 2010 melting day anomaly (Tedesco et al., 2011). This result confirms the ability of GPS networks in Greenland, Antarctica and elsewhere to directly sense ice mass changes at sub-annual as well as longer timescales. GNET and similar GPS networks can therefore mitigate the loss of ice mass measurements following the anticipated termination of the GRACE satellite mission. This result also suggests that ice mass varies over a range of time scales, rather like sea level.

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