



## **Rapid dynamic thinning on Upernavik Icestream, West Greenland**

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The main outlet glaciers in Greenland have more than doubled their contribution to global sea level rise over the last decade. Several studies have shown increase in ice discharge from the main outlet glaciers (notably Kangerdlugssuaq (KG) and Helheim glaciers (HG) in Southeast Greenland, and Jakobshavn Isbræ (JI) in West Greenland) as a result of significant accelerations in flow speed. The situation across Greenland continues to evolve. Evidence from GRACE (Velicogna, 2009), GPS (Khan, 2010) and ICESat (Pritchard, 2009) suggest that there is an ongoing northward migration of increasing ice loss. Here, we focus on Upernavik Icestream, Northwest Greenland, and show that dynamic thinning on short timescales has been dominating the region at least twice between 1985 and 2010. We map changes on Upernavik Icestream during 2003-2009 using high-resolution ICESat (Ice, Cloud and land Elevation Satellite) laser altimetry data supplemented with altimeter surveys from NASA's Airborne Topographic Mapper (ATM). To assess thinning prior to 2003, we analyze 1985 aerial photos and derived a 2x2 m grid digital elevation model (DEM).