

Flow measurements of ice sheets in Arctic region by differential SAR interferometry

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Rapid ice sheet mass losses from ice sheets have been found in Greenland and the Canadian Arctic Archipelago on and after 2000 from the observations by the satellite gravity mission GRACE (Svendsen et al. 2012, Gardner et al. 2011). It is considered to be one of the causes that flow rate of ice sheet and ice stream was accelerated and ice mass outflow into the sea increased.

We aim to measure flow rates of ice sheet and ice streams in the Arctic region by applying differential Synthetic Aperture Radar (SAR) interferometry (DInSAR) with a digital elevation model ASTER GDEM to satellite SAR data. In addition, we intend to explore whether changes in the flow rate happen or not.

We obtained displacement maps along line of sight direction for 46 days of three regions in north eastern Greenland and Ellesmere Island of northern Canadian Arctic Archipelago observed by ALOS/PALSAR by applying differential SAR interferometry. We will show the obtained displacement maps in the presentation, and will also intend to discuss changes in the flow rates by applying three or four pass interferometry.

Keywords: Differential SAR interferometry, flow, ice sheet, Arctic region