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The flow dynamics of Southeast Greenland Glaciers using satellite Radar imagery

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Airborne laser survey have shown that ice thickness at Greenland's margins has been changing for at least the last decade and can reach a rate of 15 ma^{-1} (Abdalati *et al.*, 2001; Krabill *et al.*, 2000). The increased melt associated with global warming is insufficient to explain these rates of ice thinning, when a steady state is assumed (e.g., Bamber *et al.*, 2000).

A possible explanation could be the process of dynamic thinning (Krabill *et al*., 1999) but there have been made only a few observations to confirm this (e.g., Thomas *et al*., 2003). In this study we examine the issue of dynamic thinning, using the example of Southeast Greenland, where the coastal ice has been thinning with rates of 1.5 ma^{-1} during the last decade (Abdalati *et al.*, 2001). For our research, we collected pairs of ERS SAR data for the 1990's with a repeat pass period of 35 days. To estimate ice velocities from these data the technique of interferometry cannot be used as no coherence occur between these pairs of data. Instead, the technique of intensity tracking is used (e.g., Lucchitta *et al* (1995)). The available data enabled us to derive annual velocity fields, covering the period of 1992 and 1995 – 1998. In addition, during 1995 and 1996, data for every satellite cycle allowed the inter annual velocities to be measured.

We will present the flow dynamics of the Southeast Greenland glaciers for the period of 1992 – 1998, hereby we will focus on the velocity changes and their ability to explain the observed thinning. Helheim glacier, for example, shows interesting velocity variations, although they do not indicate a dramatic speed-up.

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