



## **Asymmetric mass balance patterns over three ice rises in the Fimbul Ice Shelf, East Antarctica**

Joel Brown, Kenichi Matsuoka, Elisabeth Isaksson, and Jack Kohler  
Norwegian Polar Institute, Tromsø, Norway (joel.brown@npolar.no)

Mass balance of the Antarctic Ice Sheet largely depends on the changing dynamics of the ice shelf which is part of an inter-connected ice/ocean system at the coast. Ice rises, grounded ice features surrounded by ice shelf, play key roles in this system. Elucidating past and future stability of ice rises, then, increases our knowledge of the system and our ability to assess ice shelf stability. Here, we present a suite of ground-based data collected with radar, repeated GPS measurements, snow stakes, and firn cores over the past three years on three ice rises in the vicinity of Fimbul Ice Shelf, East Antarctica. These three ice rises are located within  $\sim 200$  km of each other but have different distances from the outlet of a fast outlet glacier (Jutulstraumen) and have distinct ice and bed topography. Preliminary results from this ongoing study indicate that (1) there is a large spatial variability of accumulation and surface snow density over the ice rises, (2) ice-flow speed across the flow divide is asymmetric, and (3) resultant mass balance is spatially complex. The magnitude and spatial pattern of these features are variable over the three ice rises, implying that these ice rises potentially have different responses to changes in the ice shelf, ocean, and atmosphere. Since these ice rises have a similar climatic regime, their differences may hint at past ice shelf dynamics.