



Sediment features at the grounding zone and beneath Ekström Ice Shelf, East Antarctica, imaged using on-ice vibroseis.

Emma C. Smith (1), Olaf Eisen (1), Coen Hofstede (1), Astrid Lambrecht (2), and Christoph Mayer (2)

(1) Alfred-Wegener-Institut (AWI), Glaciology, Bremerhaven, Germany (emma.smith@awi.de), (2) Commission for Geodesy and Glaciology, Bavarian Academy of Sciences and Humanities, Munich, Germany

The grounding zone, where an ice sheet becomes a floating ice shelf, is known to be a key threshold region for ice flow and stability. A better understanding of ice dynamics and sediment transport across such zones will improve knowledge about contemporary and palaeo ice flow, as well as past ice extent. Here we present a set of seismic reflection profiles crossing the grounding zone and continuing to the shelf edge of Ekström Ice Shelf, East Antarctica. Using an on-ice vibroseis source combined with a snowstreamer we have imaged a range of sub-glacial and sub-shelf sedimentary and geomorphological features; from layered sediment deposits to elongated flow features. The acoustic properties of the features as well as their morphology allow us to draw conclusions as to their material properties and origin. These results will eventually be integrated with numerical models of ice dynamics to quantify past and present interactions between ice and the solid Earth in East Antarctica; leading to a better understanding of future contributions of this region to sea-level rise.