



Beneath the ice streams of the West Antarctic Ice Sheet - seismic imaging of a sediment conveyor

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Basal sediments are important to ice stream flow in all phases of the system from the onset of streaming ice all the way to the grounding line. The surface and internal structure of ice streams is increasingly well documented, but our knowledge of the thickness and properties of the subglacial sediments remains poor. Here we present multi-channel seismic data acquired during the austral summer of 2002-2003 on Kamb and Bindschadler ice streams (formerly know as ice streams C and D respectively), West Antarctica. These high resolution seismic data image the sediments beneath the ice streams and reveal sedimentary structures consistent with a hypothesized sediment conveyor. These structures include small scale features in the upper ~ 50 m, which prograde downstream. We hypothesize that these deposits are deformation till and their geometry represents transport towards the grounding line. Underlying these structures in the onset region of Bindschadler Ice Stream are larger (km scale) prograding clinoforms, which we suggest result from either deposition at a paleo-grounding line, or are inherited structures, perhaps from a former continental margin.