

Thu_210_CR-4_702

A New Grounding-line Proximal Sedimentary Record from Inner Pine Island Bay

Victoria Afanasyeva^{1,2} (afanasyeva.vk@gmail.com), Gerhard Kuhn³, Claus-Dieter Hillenbrand⁴, Johann Philipp Klages³, Witold Szczuciński⁵, Thomas Frederichs⁶, German Leitchenkov^{1,2}

¹*VNII Okeangeologia, St. Petersburg, Russian Federation*, ²*St. Petersburg State University, St. Petersburg, Russian Federation*, ³*Alfred Wegener Institute Helmholtz Center for Polar and Marine Research, Bremerhaven, Germany*, ⁴*British Antarctic Survey, Cambridge, United Kingdom*, ⁵*Adam Mickiewicz University in Poznan, Poznan, Poland*, ⁶*Bremen University, Bremen, Germany*

Pine Island Glacier (PIG) is one of the fastest changing ice streams of the West Antarctic Ice Sheet. Its ice shelf underwent major calving events throughout recent years. The main factor for the considerable mass loss of PIG is sub-ice shelf melting caused by the advection of warm deep water into Pine Island Bay on the shelf of the southeastern Amundsen Sea Embayment (ASE). Unique ice conditions during expedition PS104 with RV "Polarstern" to the ASE in February-March 2017 allowed to recover a 7.59 m-gravity core in an area that had been covered by the PIG ice shelf until 2015. The sediment core PS104_008-2 was taken at a water depth of 698 m near the eastern margin of the ice shelf. The new sedimentological data from the core will provide insights into sub-ice shelf environmental conditions and the Holocene history of meltwater plume deposition and oceanic ice-shelf melting. We will present results of our new multi-proxy study, including down-core lithological changes, grain size distribution and excess ²¹⁰Pb data. Occasional occurrence of calcareous benthic foraminifera shells in the lower part of the core will allow the application of radiocarbon dating. Coupled with the excess ²¹⁰Pb data, the AMS ¹⁴C ages will provide constraints on sub-ice shelf sediment accumulation rates and the discharge rates of subglacial meltwater plumes.