Searching for paleoclimate archives on the East Antarctic margin: Sabrina Seafloor Survey 2017.

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Abstract

The response of the East Antarctic Ice Sheet to climate change is one of the largest uncertainties in predicting the future of sea levels. In recent years, some data sets have detected rapid thinning of the Totten glacier, which occupies a trough that extends deep into the East Antarctic interior. Rapid retreat of the Totten could see draw down of some of the thickest ice in Antarctica and a related acceleration in sea level rise. The Sabrina Seafloor Survey was aimed at retrieving paleoclimate records from the continental slope seaward of the Totten Glacier that would illuminate the interactions between this part of the ice sheet and the Southern Ocean over multiple glacial cycles. In January-March 2017, we used the Australian Marine National Facility RV *Investigator* to systematically map the area with multibeam echo sounder, sub-bottom profiler and seismic reflection systems in order to understand the depositional environments before selecting sampling sites. In the survey area, we covered about 48,000 km^3 and identified many large sediment ridges composed of canyon overbank deposits suitable for coring. Six long piston cores and 11 Kasten cores were collected. Samples were also taken for studies of phytoplankton DNA, marine viruses, and aerosols. Sea floor video for benthic habitat mapping were acquired on the shelf edge and upper slope.

Keywords: East Antarctica, Sabrina Coast.

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