

Byrd Polar & Climate Research Center Director Candidate Thursday, March 24, 2016

Tiny Fossils and the Big Ice Sheet

## **Dr. Reed Scherer**

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At a time when science journalists were writing of global cooling and a coming Ice Age, John Mercer suggested that a CO<sub>2</sub> enhanced greenhouse effect could lead to a "threat of disaster" from a retreating West Antarctic Ice Sheet (WAIS). He suggested that the WAIS had collapsed during the last interglacial, 120 ka ago (MIS-5e), providing confirmation of inherent marine ice sheet instability. Testing the past WAIS collapse hypothesis became a prime motivation of my dissertation, especially given that that the paleoceanographic community did not embrace the interpretation as readily as the glaciological community. Decades and a lot of data later it is abundantly evident that the WAIS does have a history of repeated advances and deep retreats, but the specific hypothesis regarding WAIS collapse during MIS-5e remains, confoundingly, unproven.

Diatoms have provided key insights into WAIS history and ice sheet processes. The ANDRILL program provided compelling diatom-based evidence of a history of the dynamic behavior of the WAIS over the last 5 Ma, and diatoms recovered from beneath the WAIS (WISSARD and earlier West Antarctic hot-water drilling programs) provide direct evidence of multiple marine events in the West Antarctic interior basins. In addition to providing biostratigraphic and paleoenvironmental data, diatoms preserved in glacial diamictons carry evidence of subglacial processes, allowing assessment of stratigraphic mixing and cumulative subglacial shear strains in deformed till.

It has become increasingly apparent that the threat that Mercer vividly described decades ago is actually not hyperbole. However, we continue to need new field data and modeling to narrow down specific mechanisms and, notably, rates of change. Moreover, these data are needed well before his concerns become self-evident.

## Thursday, March 24, 2016 Room 177 Scott Hall @ 12:00 noon

Byrd Polar & Climate Research Center 1090 Carmack Road (West Campus) Columbus, Ohio 43210

Everyone is welcome to attend!!