

## A NEW DIATOM PRESERVATION PROXY AND RECORD OF PRESERVATIONAL CHANGES IN THE AMUNDSEN SEA.

Jonathan Warnock

Northern Illinois University, Department of Geology and Environmental Geosciences, Dekalb, IL 60115

As oceans warm and acidify, it is of increasing interest how marine biota will react to climactic changes. The diatom response to these changes is of particular interest. Looking at previous climate warmings provides a baseline for predicting changes of the near and distant future. However, in assessing diatom abundance in past oceans, there currently exists no proxy for changes in the rate of silica recycling in the surface waters. That is to say, when reconstructing diatomaceous primary productivity levels, we assume constant preservation of frustules. Here I present a fully quantitative proxy of diatom preservation for the Southern Ocean, a key location for nutrient transport, opal deposition, and deep water formation. Cleaned valves of culture-grown *Fragilariopsis kerguelensis* have been dissolved under controlled conditions. The proxy compares dissolution induced changes in frustule morphology to silica added to the dissolution medium. This creates a link between average silica loss and morphological change. This proxy has been applied ~400ka of sediment from a core from the Amundsen Sea (PS58-254). Evaluations of diatom preservation show a shift to better preservation at Marine Isotope Stage (MIS) 8. This is tentatively tied to a shift in the polar front and diatom growth conditions. In general, we see only a very weak correlation between glacial/interglacial cycling and preservation.

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