



Variation in morphology with serial dissolution of common Southern Ocean diatoms

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Diatoms play a key role in silica cycling in nearly all environments capable of biological activity, and the sedimentary record of diatom production is altered by variable preservation over space and time. Diatom frustule preservation is poorly understood, and no test currently exists for determining the amount of silica leached from a water column or sedimentary diatom sample. In order to understand the morphologic changes that diatom frustules undergo as it dissolves and to link those changes to quantities of silica lost, laboratory experiments must be carried out on fresh diatoms.

This study presents the initial results from serial dissolution experiments of Southern Ocean diatoms taken from culture. *Fragilariaopsis kerguelensis*, *Fragilariaopsis nana*, *Proboscia alata*, and *Pseudo-nitzschia subcurvata* were completely dissolved in NaOH. Morphologic changes were monitored with SEM from samples taken at intervals during the dissolution process, and silica in solution was measured via absorbence spectroscopy. Percent silica lost is compared to changes in morphology in order to link the physical state of fossil diatoms to the amount of silica lost to solution, thus illuminating changes in silica cycling over time and linking diatom preservation and productivity.