GEOTRACES travel support request for May 6-8 workshop.

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Results from a 2013 Nature Communications paper demonstrated that incorporation of iron into biogenic silica may represent a substantial for iron loss from coastal Antarctic seas (Ingall et al., 2013). The results of our initial study on the incorporation of iron into diatoms were only achievable through the application of synchrotron-based analyses. With the high spatial resolution (ca. 300 nm) and sensitivity of synchrotron-based analyses, we directly evaluated the iron quota associated only with the siliceous parts of diatoms. Additionally, synchrotron based approaches yielded insights into iron dynamics by characterizing the chemical form and oxidization state of iron in diatoms and other iron containing particles. We are currently following up on this study with a series of samples collected along a transect of the Pacific sector of the Southern Ocean as part of the CLIVAR program. In our latest studies, we are examining the uptake of iron and other ecologically important metals such as zinc by diatoms. Our current synchrotron studies and potential studies along both proposed GEOTRACES transects will greatly benefit from the vast number of measurements of the chemical and physical properties of the water collected routinely as part of the CLIVAR and proposed GEOTRACES programs. These measurements provide the necessary context for studying the trace metal biogeochemistry of diatom frustules in a much more comprehensive fashion than our initial study. Both proposed GEOTRACES cruise tracks would permit collection of diatoms over a much broader range of oceanographic conditions from the shelf region to well beyond the polar front that would help to address many unanswered questions generated from our current studies. Obviously, participation in this meeting would allow me to develop collaborations and align my research goals with those of the GEOTRACES program.