

## Data Management Plan

The PIs will adhere to the GEOTRACES data policy for submission of all data and sample metadata to the Biological and Chemical Oceanography Data Management Office (BCO-DMO) as soon as possible after generation of data: within two years of data collection or upon publication, whichever comes first. BCO-DMO will coordinate submission of the data to the National Oceanographic Data Center (NODC) to maintain long-term access to the data. Progress on and compliance with the data management plan will be addressed in annual and final reports. The past and proposed intercalibration activities will allow the data to be included in future GEOTRACES data products.

### 1) Types of data

This project will generate nitrate  $\delta^{15}\text{N}$  and  $\delta^{18}\text{O}$  data from both hydrocast- and underway-collected water samples during the US GEOTRACES GP17-OCE. The nitrate isotope analyses will be conducted in the laboratory of PI Sigman at Princeton University. For the nitrate isotopes, intercalibration will be through duplication of the 2 shelf superstations in the laboratory of Dr. Karen Casciotti at Stanford University. This builds on previous nitrate isotope intercalibration activities described in the Project Description. After intercalibration, data from separate laboratories will be submitted individually to BCO-DMO. Adherence to GEOTRACES sampling and analysis manuals (cookbooks) and the intercalibration will assure data quality throughout. Standard deviations for replicate analyses will be reported and any data falling outside our normal range of analytical precision will be flagged.

Through this project, we will also generate PN  $\delta^{15}\text{N}$ , TDN  $\delta^{15}\text{N}$ , bulk sedimentary  $\delta^{15}\text{N}$ , as well as diatom-bound  $\delta^{15}\text{N}$  data. These analyses will mainly be carried out in the laboratory of PI Xingchen Tony Wang at Boston College. Some duplicate samples will be analyzed at Princeton University as well, providing intercalibration and data quality control. Standard deviations for replicate analyses will be reported for all data.

### 2) Data and metadata standards

If this project is recommended for funding, the PIs will contact BCO-DMO to register the project and provide a list of sample types and metadata detailing the analytical techniques used during sample analysis.

A pre-cruise meeting will be coordinated by the GEOTRACES GP17-ANT Management team, where planned station locations and depth resolution of sampling will be decided. The PIs or the project's postdoc and graduate student will attend this pre-cruise planning meeting to ensure the project's integration with the full GEOTRACES program and compliance with data management.

During the cruise, an event list for the ODF rosette will be maintained by the GEOTRACES management team. We will utilize the GEOTRACES sample ID system, which assigns a unique number to every Niskin bottle (station/depth). These labels will be attached to sample bottles and used to track all measurements made from each bottle.

All data (for all sample types) will be organized in an in-house spreadsheet and databases and submitted to BCO-DMO when the dataset is complete.

### 3) Access and sharing

The PIs will follow GEOTRACES policy for data access and sharing. Data generated from a cruise and submitted to BCO-DMO will be password protected and available to registered users (other GEOTRACES PIs) prior to the public release date. Data shared with other cruise/process study participants will be considered proprietary material of the originating scientist and may not be used without their permission. For non-participating scientists, the data can be obtained only with the permission of the responsible participating scientist. After publication, or two years after data generation (whichever is sooner) the data will become publicly available to the oceanographic community. BCO-DMO will serve the data openly and will ensure long-term access by submission to NODC. The data will be released to GEOTRACES data products in keeping with previous IDPs.

### 4) Plans for archiving data and samples

Long-term data archiving through NODC was discussed above. Access to frozen seawater samples will be maintained through archiving at Princeton University. Sample archiving is not a standard practice for GEOTRACES. However, given the small volume requirements for nitrate isotope samples, we plan to archive aliquots of all samples that have been analyzed as part of this project. The samples will be stored frozen at  $-20^{\circ}\text{C}$  in a freezer in PI Sigman's lab at Princeton and provided upon request. The availability of these samples will be indicated within the metadata associated with the dataset in the BCO-DMO database. Unused PN samples and sediment samples after analyses will be stored in a freezer in PI Wang's lab at Boston College. These samples will be made available upon request, although the original samples will also be available through P. Lam and S. Severmann's labs.

Raw data and chromatographs will be archived on back-up hard drives. Processed and calibrated data will be archived in BCO-DMO.