

Data Management Plan – Fitzsimmons and Till

1. Data Policy Compliance

As investigators participating in a U.S. GEOTRACES cruise we will comply with the International GEOTRACES data policy which, in turn, is compliant with NSF Data policies. The GEOTRACES policy, which largely follows those developed for other large-scale hydrographic programs (WOCE, CLIVAR) requires the collection and submission of all data resulting from the cruise including underway systems, instrument deployments, and the analytical determinations on water samples and particulate material collected during the cruise. Also required is the reporting of all appropriate meta-data (data describing methods and protocols). Data will be submitted in a timely manner to the Biological and Chemical Oceanography Data Management Office (<http://www.bco-dmo.org>) at WHOI, who will then submit it to the GEOTRACES International Data Assembly Centre (GDAC) that is at the British Oceanographic Data Centre in Liverpool, UK, who will be ultimately responsible for the permanent archiving of all GEOTRACES data sets and their distribution. Major policy requirements that largely follow those developed for other large scale hydrographic programs such as WOCE and CLIVAR include: Metadata should be delivered as soon as created, from the planning stage onwards, and should be made publicly available immediately; Shipboard data should be submitted within 1 month of collection, or end of cruise; Cruise or project reports should be submitted within 6 months of the cruise end; Final data, following NSF policy, should be submitted within 2 years of cruise completion.

Major policy requirements most relevant to this *non-management* proposal include:

- Metadata should be delivered as soon as created, from the planning stage onwards, and should be made publicly available immediately.
- Final data, following NSF policy, should be submitted as soon as possible and not later than within 2 years of cruise completion.

2. Pre-Cruise Planning

BCO-DMO have already agreed to partner with the U.S. PMT GEOTRACES project management team for all aspects of data-management, as with all other U.S. GEOTRACES cruises, and PIs Fitzsimmons and Till will liaise with them regularly throughout the planning process. If funded for this project, the PIs will participate in a pre-cruise planning workshop at which we expect the final number, types, and locations of stations will be finalized. This will allow us to plan for the total number and types of samples to be collected and allow us to contribute to a preliminary database that will include sample sizes, units in which results for each parameter will be reported, and anticipated date of data submission.

3. Shipboard Data Management

To facilitate the data management process and to ensure complete reporting of required meta-data, BCO-DMO, in conjunction with the International GEOTRACES Data Management committee have produced a series of templates that, working with the Cruise PI's, we will use extensively for the PMT cruise. Standardized GEOTRACES log sheets capture all necessary information pertaining to discrete sample acquisition and sub-sampling for each over-the-side sampling system. All sampling events will be recorded on these paper logs (scanned into PDF

documents) and also in a digital event log, all of which will be archived by BCO-DMO.

Our seawater sampling will use the GEOTRACES trace metal-clean system which comprises a 24 x 12L GO-Flo carousel, Kevlar cable, winch, and clean-lab van. The cruise PIs, working with the team from Scripps Institution of Oceanography's Ocean Data Facility (ODF), will be responsible for establishing and monitoring GO-Flo integrity and performance using shipboard hydrographic measurements. We will oversee the archival of all appropriate operational metadata.

At sea, it is anticipated that these data will be made available via an interactive shipboard database system to all cruise participants. Post-cruise, these same data will be made available, in partnership with BCO-DMO, via a password protected web-based server accessible by all cruise participants and other individuals at the discretion of the data generator and the PIs.

4. Post-cruise Data Management

Soon after the completion of the cruise, the Project Management Team PI's will provide the BCO-DMO data-center with a complete copy of the underway and shipboard data set from the cruise including all associated metadata. From this project, that will include all sampling metadata and sample collection and shipboard processing logs specific to this project (see *Shipboard Data Management*). As soon as additional lab-generated trace metal data are available we will work with the Project Management Team PI's to make the data available to collaborators on the PMT GEOTRACES project (e.g. via a dedicated password protected web-site to be established by them and BCO-DMO) to enable earliest possible inter-comparison with complementary underway (e.g. hydrographic) and laboratory-generated (e.g. complementary dissolved and particulate TEI) data sets.

5. Long-term Archiving and Data Accessibility

All data from this U.S. GEOTRACES project will be submitted to the BCO-DMO Data Management Office, who will forward them to the GEOTRACES International Data Assembly Centre at BODC (UK). GDAC/BODC are responsible for the permanent archiving and distribution of all international GEOTRACES data sets. In keeping with NSF policy, all data from this project will be submitted within 2 years of completion of the cruise.