

## Data Sharing Requirements for Awards

The ocean science community has enjoyed an increase in funding for fundamental research that addresses responses to climate and environmental change. For many proposals the strongest broader impacts of the project may be the legacy of high quality observations that would be made available for use by others beyond the immediate investigator or project

NSF has a general policy that data and research products from awards must be openly shared. The Division of Ocean Sciences also has a specific data sharing policy that is sent to all awardees when a project is recommended for funding. This document is provided as an attachment. The Biological Oceanography Program is required to provide oversight for data compliance for projects we support. The Program will not recommend funding for projects that will be collecting significant amounts of environmental or biological data and lack a robust plan to share and archive these data.

Compliance with data sharing policies needs to be a priority consideration from the beginning of the project because when compliance is deferred to the end of project, the results are often inadequate. As part of our Program review for a possible funding recommendation we are asking for a Data Management Plan that will become part of the award jacket should our recommendations result in an award.

The following statements reiterate important points covered in the Division of Ocean Science Data and Sample Policy that we feel need emphasis and clarification:

- You have an obligation to provide both inventory metadata and primary data within specified time limits (section III, A). The data policy now specifies marine environmental data, but with increasing use of genomic based approaches (see section VI, D) there is a much wider range of data that should be reported and shared. Clearly, there are measurements and observations that are neither practical nor useful to regard as data to be openly shared. However, we do expect an adherence to the overall data sharing philosophy (section II) and a pragmatic approach to achieving these objectives.
- We expect you to address data sharing issues in annual and final reports (Section IV), and we will return reports not addressing progress with data compliance.
- The Biological and Chemical Oceanography Data Management Office (BCO-DMO) was created to serve PIs funded by the NSF Biological and Chemical Oceanography Sections as a location where marine biogeochemical, ecological and oceanographic data and information developed in the course of scientific research can easily be disseminated, protected, and stored on short and intermediate time-frames. We encourage use of this supported facility (this updates information in Appendix II, B and C in NSF 04-004).

The following are examples of the kinds of data you might be collecting as part of your project and some suggestions about how the data sharing requirements can be fulfilled.

1) Hydrographic and other oceanographic data from cruises and/or observatories. Metadata will be reported in UNOLS cruise report and posted on PI web site; final data will be supplied to NODC. Other standard oceanographic data such as phytoplankton primary productivity, HPLC pigments, etc can also be reported and submitted in a similar fashion. BCO-DMO should be contacted for these data.

BCO-DMO should be used for any ship-based projects and for any projects where an environmental data base will be created. This facility may also be a convenient repository for metadata for the project even if the primary data are more appropriately deposited elsewhere (see 2 and 3 below).

2) Genomic data should be deposited in NCBI data bases or other data repositories as appropriate. Program/project/cruise metadata tied to these databases should be provided to BCO-DMO so that there is a tie between the primary genomic data and the sampling program and/or any environmental data.

3) Some other primary data types may not be appropriate for BCO-DMO, but this facility may be appropriate for meta data about the project.

4) If there is no appropriate data management office or repository, you must still describe plans for data sharing using an institutional web site or other appropriate venue.

5) Some experimental data and observations may not be appropriate for sharing and may be of no practical use for other beyond providing supporting data for information that will be part of publications. If you do not think your study has any data that needs sharing or archiving, please explain.

We know that the data support requirements within ocean sciences are changing rapidly and we expect to expand support for data base activities as needed. Asking for this formal data management plan is one way we have of being able to assess this changing need. We thank you for taking the time to provide this information.

**Your Data Management Plan** – Please describe below the data to be collected as a part of your project and your plans for sharing and/or eventually archiving the data. If you have provided a data management plan in your proposal, please copy the existing text into this document and update or augment as needed.

### **RAPID: Larval abundance, behavior, and dispersal at deep-sea hydrothermal vents in the southern Mariana Trough**

Our project involves biological samples - physical collections of larvae and other zooplankton. We will preserve the majority of specimens collected with our two plankton pumps, and these specimens will be stored at our lab. Two sets of preserved voucher specimens will be prepared - for our lab at WHOI and for our collaborators' lab at JAMSTEC. Some of the preserved specimens may be sent to taxonomic experts in the U.S. and elsewhere for identification.

A list of all identified species will be provided to the Ocean Biogeographic Information System ([iobis.org](http://iobis.org)) and to ChEssBase. Identified species will be added to the online Photographic Identification Guide to Larvae at Hydrothermal Vents ([www.who.edu/vent-larval-id](http://www.who.edu/vent-larval-id)). Each species in the online guide will be linked to its listing in the OBIS and ChEssBase databases.

A subset of the specimens collected with our two plankton pumps will be used in behavioral experiments to visualize swimming behavior and metamorphosis. These data will be published in peer-reviewed manuscripts.

A subset of the specimens collected with our two plankton pumps will be provided to our Japanese collaborators for molecular genetic identification. These analyses are not funded through our project. Our collaborators plan to submit genetic sequence data from their work to the DNA Data Bank of Japan (DDBJ), which mutually exchanges information with GenBank in the USA.

Our project is relevant to the Ridge 2000 Program, and we will provide metadata for our physical collections to Ridge 2000, including cruise ID, time and date, position (lat/long and if available, xy coordinates with system origin), event/operation number, sampling procedures, and sample treatment.

Our project does not include zooplankton biomass data. Thus, we will not have any data to submit to National Data Centers. However, the Biological and Chemical Oceanography Data Management Office (BCO-DMO) currently has datasets associated with “Instrument: Large Volume Pumping System (battery-powered from McLane Labs).” We can contact the BCO-DMO to submit the larval concentrations obtained by our project either under this instrument type or under “Instrument: Zoo Pump” or “Instrument: Zooplankton Pump.”

Our project does not include the collection of environmental data. We expect to obtain environmental data relevant to our project from our Japanese collaborators.