

Data Management Plan.

This data management plan is offered to comply with NSF policy/requirements for dissemination and sharing of results obtained through the proposed research.

I. Data Policy Compliance

These studies of subsurface sediments will generate a broad suite of geochemical and process oriented data that will be managed by the Principal Investigator and project staff, including a Research Professional, a Post Doc and a Ph.D. student. PI Joye has worked extensively on carbon cycling in sediments and has previous experience working in Guaymas Basin. Below, we provide specifics on our data management strategy.

II. Types of data generated

This project will generate sediment geochemical and process oriented data from sites in the Guaymas Basin, Gulf of California. The project will generate data describing pore fluid concentrations geochemical parameters and low molecular weight organic compounds. Additional data describing sediment characteristics, e.g. porosity, bulk organic content, concentrations of electron acceptors (e.g. sulfate, metal oxides, etc.) will be collected as part of routine IODP sediment processing and the data made available in support of our work. In all, we expect to generate ~600 pore fluid and sediment samples (see below) and roughly 1,800 microbial activity samples sub-sampled from whole round cores).

The specific types of data we will generate include:

- A. *Biogeochemical Data*: We will measure pore fluid concentrations of hydrogen and low molecular weight organic compounds, including volatile fatty acids, alcohols, and methylated amines. We will also quantify concentrations of methane and dissolved inorganic carbon as well as their stable carbon isotopic signatures. Methods are given in the Project Description.
- B. *Activity Measurements*: Achieving our objectives requires that we constrain patterns of LMW organic carbon transformation rates. We will quantify methane production rates from ^{14}C -labeled H_2/CO_2 , acetate, and methanol, and methylamines. In the same set of samples, we will also measure the oxidation rates of LMW organic compounds (methanol, acetate, methylamine) to CO_2 , acetogenesis rates from H_2/CO_2 , syntrophic methanogenesis, or the assimilation rates of ^{14}C -carbon substrates into biomass. We will use stable isotope probing to assess how the active component of the microbial population changes as a function of substrate availability and thermal regime. Methods are given in the Project Description.

III. Data and metadata standards

- A. *Biogeochemical Data*. Data and metadata for these analyses will be submitted to BCO-DMO. Metadata will include detailed information on data collection (method of collection, position, platform, site characteristics, weather conditions) and analytical techniques. (instrumentation used, calibration data and date, standards and blanks used, QA/QC protocols, etc).
- B. *Activity Data*: Metadata will include detailed information on data collection (method of collection, position, platform, site characteristics, weather conditions) and analytical

techniques (instrumentation used, calibration data and date, standards and blanks used, QA/QC protocols, etc).

IV. Policies for accessing/sharing and provisions for data protection

We anticipate that our work will attract interest from a broad range of scientists and we will make our data accessible to others as soon as possible. The main avenue for sharing our data and results will be through publication in scientific journals and presentations at conferences, but we will make our data widely available to other researchers to minimize duplication of effort. To accomplish this, we will upload these data to BCO-DMO to assure optimal data availability. Data will be freely downloadable from these sources within two years of collection. This initial embargo period will allow the PI, post doc, and graduate student(s) to explore the data set to generate original publications before making the data publicly accessible. We will work closely with BCM-DMO to maximize the legacy of our observations.

V. Policies and provisions for Re-Use and Re-distribution.

Once our final, quality-checked data are uploaded to BCO-DMO and our own websites, no permission restrictions will exist. We anticipate that the primary users of these data will be researchers working on carbon cycling in sediments and/or in hydrothermal systems. Downloadable data and metadata will be freely accessible to anyone who is interested.

VI. Archiving plans and preservation of access

Many of our sampling and analytical activities are destructive in nature, preventing reasonable archiving of many of our field samples. Samples will be archived, when possible, and made available to other PIs, upon request. We plan to keep all data for 10 years past the lifetime of the project. Since the data occupy a relatively small amount of space relative to our computing capabilities, the long-term preservation will be easily accomplished by keeping several copies of the data on local computers at the university.