DATA MANAGEMENT PLAN

1 Data Policy Compliance

The project investigators will comply with the data management and dissemination policies described in the *NSF Award and Administration Guide* (AAG, Chapter VI.D.4) and the *NSF Division of Ocean Sciences Sample and Data Policy.*

2 Pre-Cruise Planning

Pre-cruise planning will be coordinated among the PIs through email and phone. Detailed plans for the multicore and CTD will be agreed upon three months in advance of the first cruise. The sampling events will be recorded on paper logs and scanned into PDF documents.

3 Description of Data Types

Observational Datasets: **CTD:** CTD data collected using a SeaBird SBE CTD package; processing to be done using SeaBird's SeaSave software; data will include standard environmental measurements (such as pressure, temperature, salinity, fluorescence). File types: Raw (.con, .hdr, .hex, .bl) and processed and .cnv, .asc, .btl) ASCII files. Repository: BCO-DMO. **Event log:** Cruise scientific sampling event log; will include event numbers, start/end dates, times & locations of instrument deployments, as recorded on paper log sheets. File types: Excel file converted to .csv; scanned PDFs. Repository: BCO-DMO

Experimental Datasets: **Biogeochemical Data:** We will collect NO_3^-, NO_2^-, NH_4^+, DIC, N_2O, $^{15}N\text{-}N_2$, $^{15}NH_4^+$, ^{13}C-DIC, and ^{13}C-DOC concentrations in the inflowing and outflowing fluid in the reactors. Data will be generated from monitoring fluid chemistry inside reactors using oxygen and hydrogen sulfide probes. These data will be used to calculate reaction rates using the inverse model. File types: Excel file(s). Repository: BCO-DMO. **Models and their output:** Two types of models will be used, inverse and MEP. The inverse model will produce a time series of modeled solute concentrations (NO_3^-, NO_2^-, N_2O, $^{15}N\text{-}N_2$, $^{15}NH_4^+$, H_2S) and reaction rates for nitrate reduction, denitrification, and DNRA. The MEP model will also produce time series of solute concentrations and reaction rates, but also model biological structure in the form of biomass devoted to each reaction.

4 Data and Metadata Formats and Standards

Observational Data: Field observation data will be stored in flat ASCII files. Field data will include date, time, latitude, longitude, cast number, and depth, as appropriate. Quality flags will be assigned according to the ODS IODE Quality Flag scheme (IOC Manuals and Guides, 54, volume 3; http://www.iode.org/mg54_3). Metadata will be prepared in accordance with BCO-DMO conventions (i.e. using the BCO-DMO metadata forms) and will include detailed descriptions of collection and analysis procedures.

Experimental Data: Biogeochemical data will be stored in Excel files. Original modeling, source code, written in R and Fortran, will be stored and model outputs will be stored in .csv files.

5 Data Storage and Access During the Project

The investigators will store project data (including spreadsheets, ASCII files, images, and PDFs of scanned logs) on laboratory computers, external hard drives, and google drive that are backed

up by the University's central IT organization. Personal computers in all laboratories are backed up daily using Apple Time Machine to an onsite external hard drive.

6 Mechanisms and Policies for Access, Sharing, Re-Use, and Re-Distribution

All data and modeling source code will be made publicly available upon manuscript submission and accession numbers, project IDs and other digital object identifiers (DOIs) will be provided to BCO-DMO.

7 Plans for Archiving

We will work with the BCO-DMO to ensure that all biogeochemical and modeling data are appropriately archived. Additionally, we will archive all of the data on the University's tape-recorded permanent back up system.

8 Roles and Responsibilities

Rich will be the primary person responsible for ensuring compliance with the Data Management Plan. Rich will be responsible for the biogeochemical data collected during the incubations, such as oxygen and hydrogen sulfide measurements. Giblin will be responsible for biogeochemical data, including $^{15}N_2$, $^{15}NH_4^+$, and ^{13}C-DIC. Algar will be responsible for the model and modeling output data. All the PIs agree to share data with each other in an open and timely manor and adhere to appropriate data storage and backup policies.