DATA MANAGEMENT PLAN

Types of data

This project will collect field data on nitrogen species, Fe, Mn, H_2S, sulfate and ancillary water quality parameters (salinity, pH, dissolved oxygen, temperature, redox potential) in porewater, Mn- and Fe-oxides and extractable NH_4^+ from sediments, and groundwater discharge rates. Experimental data on nitrogen transformation reactions in laboratory and field incubations as well as microbial data of microbial communities will be collected. Rate data includes denitrification, anammox, oxic nitrification, and anoxic nitrification all derived primarily from isotope tracer incubations. Microbial data includes gene abundance and expression.

Data and metadata standards

All data will be stored in both raw and edited formats. Field notebooks will be stored and organized at the individual research sites. Data entry into Microsoft Excel/Access software will be checked using both manual and automated techniques. Field data will be geographically referenced using hand-held GPS units. GPS data will be differentially corrected and stored as NAD83 UTM coordinates. We will follow the best management practices for metadata and data outlined by the Biological and Chemical Oceanography Data Management Office (BCO-DMO), which are available on line (http://www.bco-dmo.org/files/bcodmo/BCO-DMO_Guidelines.pdf). Measurements will be collated on spreadsheets and where possible converted to data formats compatible with Ocean Data View (odv.awi.de). The data will be available electronically to all researchers involved in the project, through a shared "Drop Box" among PIs.

Data archiving

For this proposal Song will be responsible for coordinating data submission for the geochemical, microbial, and rate data with BCO-DMO (*Biological & Chemical Oceanography Data Management Office*) at Woods Hole. If the project is funded, as a first step we will submit a data inventory form to the data archive. Metadata for each of type of experiment and measurement will be collated into a single file. Once per year, when annual reports are submitted, the data specific to this project (including new data and any updates/corrections of previously submitted data) will be provided to the BCO-DMO. Upon completion of the project, the *final* data will be archived with BCO-DMO.

All data will be retained for at least three years beyond the award period, as required by NSF guidelines. For short- and long-term storage of raw data, images, and data files, as well as their derivative products and downstream analysis and work, the data will be backed up in lab repositories of the data generator. All the data are backed up in near real time using TimeMachine at VIMS, which has an institutional long-term storage.

Data sharing

All data produced as part of this project are intended for publication in peer reviewed journals and/or will be made available to the public without reservations, restrictions, or limitations. Presentations and peer-reviewed publications resulting from the proposed work will be documented on the respective web sites of the PIs. Archived primary data will become available to interested parties at BCO-DMO upon completion of the project as specified to NSF.