

## Data Management Plan (Luther and Tebo)

**Data collection, standards and retention.** All field data will be sent to the Biological and Chemical Oceanography Data Management Office (BCO-DMO), which requires all field data to be submitted two years after each field program ends. For previous EPR and Lau Basin studies supported by MGG, we have provided meta- and derived data to MGDS through the RIDGE2000 Program Data Portal, which is using our compliance as an example for others to follow for their data submissions. All field data will contain time, depth, biological substrate (as necessary), XY and lat/lon stamps followed by the concentration of each chemical species with normal statistical procedures to calculate averages and statistics such as the relative standard deviation for replicate measurements. The methods with their detection limits are also provided. All this information allows others to access the data and use it for data integration purposes, and our data has been accessed often based on information provided by MGDS.

Data from laboratory experiments such as Mn(III) formation and stability studies will be made available upon publication in the referred literature, and some journals permit data table placement into supporting information. Kinetic experiments will be treated using standard chemical kinetic theory. Because we will perform temperature studies, we will be able to calculate the energy of activation using Arrhenius plots ( $\ln k$  vs  $T^{-1}$ ) and the entropy of activation using Eyring plots [ $\ln(k/T)$  vs  $T^{-1}$ ]. These data permit the determination of electron transfer reactions as inner sphere or outer sphere. If the reaction is inner sphere, then the reaction is a surface controlled reaction (see Luther and Popp, 2002).

We expect to publish all data in peer reviewed journals.

**Resources and Facilities for Data Storage and Preservation:** The PIs will be responsible for long term data storage and archiving of data produced in each laboratory. Currently this is carried out by writing electronic data files to USB external hard drives and/or DVDs. In addition, the lead PI's office and laboratory computers are part of a Retrospect automated backup network that archives data on a weekly basis. Hard copy data and original laboratory notebooks are maintained in each laboratory. Samples are stored in freezers in the PI's laboratory space.

**Data Sharing, Public Access and Intellectual Property Protection:** All data related to publications will be disseminated according to the relevant journal policies and BCO-DMO policies. Significant intellectual property is not expected to be developed by this project, but if it does, standard procedures for intellectual property protection and patent filing will be followed with the guidance and assistance of the UD Office of Economic Innovation and Partnership or OHSU Technology Transfer Office. Typically, protected data and/or resources can be made available after negotiation of licensing or a material transfer agreement.

Scientifically interesting organisms isolated as part of our work will be maintained in frozen or other stored culture collections in the laboratory. Organisms on which we publish will be deposited to the American Type Culture Collection (ATCC <http://www.atcc.org/>), and/or the DSMZ (<https://www.dsmz.de/>) and we will provide those organisms to other researchers upon request. Sequence data for phylogenetic identification of the organisms will be deposited in Genbank (<http://www.ncbi.nlm.nih.gov/genbank/>).

**Rights, Obligations, Roles and Responsibilities:** The PIs hold the ultimate responsibility for the retention and dissemination of data. The roles and responsibilities of the project participants are to provide this data to the PI compliant to the standards outlined in the first section above.

Luther, III, G. W. and J. I. Popp. 2002. Kinetics of the abiotic reduction of polymeric manganese dioxide by nitrite: an anaerobic nitrification reaction. *Aquatic Geochemistry*, Vol. 8, 15-36.