DATA MANAGEMENT PLAN

All of the data generated as part of the proposed project will be compiled and made available to the community through prompt online archiving (via BCO-DMO) and publication of complete and annotated datasets, in accordance with the Division of Ocean Sciences Sample and Data Policy. Our budget includes sufficient resources to support sharing and data mangement activities.

Data products generated

The proposed research will generate geochemical and isotopic data that are characterized as observational, experimental, and derived. The data are collected from sensors or instruments, and they are not of a sensitive nature. Major datasets will include the concentrations and C- and S-isotope compositions of sulfur phases in sediments, pore water, and particles; XAS spectra and deconvolution results; CTD profiles of water column characteristics; images and fluxes of sinking particles, radiocarbon ages, iron speciation results, and calculated rates of microbial sulfate reduction and organic S formation.

Most of the data above will be compiled in summary .csv tables for easy cross-platform sharing; all data will be reported in non-proprietary formats. Original data files from IRMS, ICP-MS, porewater analyses, XAS, and experimental sensors (e.g., O_2 concentrations) will be reported along with unique identifiers for both samples and calibration standard sets. All of the standardization information relevant for interpretation of the data produced in this study will be included in the files above to allow future cross-calibration with other datasets. Processed data will be reported with uncertainties related to internal and long-term standards. Sulfur isotope data are standardized to VCDT using IAEA-S1, IAEA-S2, and IAEA-S3, while carbon isotope data are standardized to VPDB using USGS-61, USGS-62, and USGS-63.

X-ray absorption spectroscopy data are fit to publicly-available standards that are collected on the same beam line as samples and under equivalent operating conditions; these spectra for deconvolution will be shared as part of processed XAS datasets.

Standard underway data will be collected and archived during the cruises, including multibeam bathymetry and acoustic backscatter data, ADCP, , and other standard navigation data, as available on the UNOLS global class platforms. These data will be archived and released through the *Rolling Deck to Repository portal* as soon as possible after each cruise leg.

Beyond analytical results, project data for archiving and preservation include sample inventories, digitized laboratory notebooks, digitized field deployment worksheets, and photos.

Prior to formal publication, the syllabus and activities developed for Earth 101A will be shared freely with the community via the NOISE Lab website.

Sample storage, preservation, and accessibility

The proposed analytical work is expected to consume most of the particle and porewater materials returned to UCSB for analysis, but a set of 16 sediment cores and spare material from the 'fluff' core is anticipated to be stored long-term at UCSB. These materials will be stored frozen (–20°), with freezer temperatures logged automatically at fifteen-minute intervals to ensure sample quality, for at least five years and will be made available to researchers on request.

Data storage, preservation and accessibility

Throughout the project, working electronic data will be preserved in three separate locations to guard against loss. In addition to original data files stored on the dedicated PC for each in-house instrument, working copies of all data are stored on cloud servers supported by UCSB (Box) and protected by standard digital security practices. Secondly, copies of primary analytical files and processed results are manually backed up by the Raven lab monthly to secure offline hard drives physically stored in the PI's office at UCSB. Finally, all original and processed files will be archived and made available to the community by prompt submittal to the *Biological and Chemical Oceanography Data Management Office (BCO-DMO) archive*. Metadata for BCO-DMO will be provided immediately at the beginning of the award period, and all data will be submitted *within two years after collection*.

Data management responsibilities

The ultimate responsibility for maintaining and backing up data lies with the PI, who will delegate aspects of data archiving efforts to the Laboratory Technician but will retain control over the offline data backup hard drive throughout.

Data distribution and public access

The *BCO-DMO archive* will serve as the primary means for sharing of the electronic data and metadata collected as part of this project, including original analytical files (exported as text) and relevant standards/calibrations. Fully processed datasets will also be available with DOIs in the Supplemental Material of preprints (made available via *ESSOAr* or *Earth ArXiv*). Finally, all publications arising from this work will be published open-access, as required by University of California guidelines. All authors will be identified by ORCID identifiers to clarify their associations with publications and datasets.

Data publication will be done in as timely a manner as possible, and all data collected as part of this project will be made available to the community within at most two years after collection.