# Collaborative Research: Do benthic feedbacks couple sulfur, nitrogen and carbon biogeochemistry during transient deoxygenation?

**Data Policy Compliance**

The proposed project will adhere to the NSF Division of Ocean Sciences Sample and Data Policy (NSF 17-037) with regard to data sharing and management.

**Pre-Cruise Planning**

Detailed cruise plans will be made at a later date.

**Description of Data Types**

We anticipate generating data from the following sources: 1) In-situ uptake/release rates of chemical solutes at the sediment-water interface using an ROV-deployed benthic chamber, 2) standard ROV based data streams, 3) data streams from AUV surveys, 4) bio/geochemical profiles from sediment cores, 5) hydrographic and water chemical properties from CTD casts, 6) ship-board microbial activity incubations made using fresh sediment cores, 7) microscopic studies of sediments and bacterial mats, 8) molecular studies of sediments and bacterial mats.

**Data and Metadata Formats and Standards**

Numerical data will be produced from bio/geochemical data (units: mol/L or mol/L/d). The output data file format will be Excel (.XLSX).
Visual data will be produced from CARD-FISH/DAPI microscopy (type: micrographs). The output data file format will be .TIFF and .JPG.
Molecular sequence data will be generated as FASTQ files, which will be used for bioinformatic analyses. Files resulting from these analyses will include single-copy gene and SSU rRNA alignments, phylogenetic trees, 16S amplicon sequences, metagenome-assembled genomes, and metatranscriptome reads all variably generated through a collection of third-party software.

**Data Storage and Access During the Project**

Field data and lab work will be collected in notebooks, which will be electronically archived.  All data will be entered into spreadsheets arranged by parameter with dates, location and units recorded.  Metadata describing

parameters measured, field methods, images and other descriptive data will be stored electronically and attached to all spreadsheets. Data will be stored on desktop computers and backed up on two dedicated hard drives. The PIs will share copies of all relevant data and derived products from this study via secured data exchange between UCLA and UCSB.

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

Data sets generated by the science party will be made available through the Biological and Chemical Oceanography Data Management Office (BCO-DMO, bco-dmo.org) within two years from the date of generation and in compliance with the NSF OCE Sample and Data Policy. The project investigators will work with BCO-DMO data managers to make project data discoverable and accessible online, and to obtain Digital Object Identifiers (DOIs). Genetic raw data as well as refined genomes will be uploaded to the NCBI SRA and BioProject databases, respectively. Per NSF guidelines, NCBI data will be uploaded to a publicly-accessible project repository hosted by BCO-DMO.

## Plans for Archiving

BCO-DMO will submit the data and metadata to the National Centers for Environmental Information (NCEI) for long-term archiving.   NCEI will provide public access, archiving, and discovery to the archival copy of the submitted data. Additionally, the Rolling Deck to Repository (R2R) program will provide rapidly available, standardized sampling documentation for expedition data, which will be archived in the National Ocean Data Center (NODC) and/or National Geophysical Data Center (NGDC) databases.  The standard data streams for ROV and AUV operations will be maintained at the National Deep Submergence Facility in accordance with NSF guidelines.

## Roles and Responsibilities

Tina Treude (UCLA) will be responsible for archiving benthic biogeochemical and microscopic data. Dave Valentine (UCSB) will be responsible for archiving water column and experimental biogeochemical data, and molecular data. Data generated by AUV and ROV will be automatically transmitted directly to appropriate repositories (R2R, NGDC).