

Data Management Plan

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), the NSF Division of Ocean Sciences Sample and Data Policy (NSF 17-037) and the IODP Sample, Data and Obligations Policy (<https://www.iodp.org/top-resources/program-documents/policies-and-guidelines/519-iodp-sample-data-and-obligations-policy-implementation-guidelines-may-2018-for-expeditions-starting-october-2018-and-later/file>).

Pre-cruise Planning: No cruises are proposed and no new physical samples will be collected. The project involves generation of data from sediments that were collected during previous sampling expeditions: piston cores from R/V El Puma cruise, 2014 (PI: Teske), pushcores from cruise AT37-06 of R/V *Atlantis* in 2016 (Chief Scientist: Teske), drill cores from IODP Leg 385 (Co-chief scientist: Teske). Data generated from this project will be linked to relevant cruises records in the Biological and Chemical Oceanography Data Management Office (BCO-DMO) repository and to the IODP Expedition bibliography.

Description of Data Types:

Observational Datasets: Data generated from sediments will include bulk geochemical parameters: Total Organic Carbon (TOC), C/N ratio, $\delta^{13}\text{C}$ values and $\Delta^{14}\text{C}$ values. In addition, concentrations, $\delta^{13}\text{C}$ values and $\Delta^{14}\text{C}$ values of multiple biomarker classes will be generated. File types: Excel files. Repository: Biological and Chemical Oceanography Data Management Office (BCO-DMO)

Experimental Datasets: Data generated from bioreactor incubations will include bulk geochemical parameters after incubations: TOC, C/N ratio, $\delta^{13}\text{C}$ values and $\Delta^{14}\text{C}$ values from sediment, concentration, $\delta^{13}\text{C}$ values and $\Delta^{14}\text{C}$ values from dissolved organic carbon (DOC), $\delta^{13}\text{C}$ values and $\Delta^{14}\text{C}$ values and production rate of respired CO_2 , and concentrations of total phospholipids, $\delta^{13}\text{C}$ values and $\Delta^{14}\text{C}$ values. FT-ICR-MS data from DOC in incubation slurries will also be generated. File types: Excel files. Repository: BCO-DMO and World Data Center PANGAEA

Standards to be used for data/metadata format and content: All data will be formatted and packaged according to the FAIR Guiding Principles for scientific data and stewardship: Findable, Accessible, Interoperable and Re-usable. Cleaned, quality controlled, and publish-ready excel files, along with required metadata prepared in accordance with BCO-DMO conventions, will be entered into the established NSF-sponsored BCO-DMO data repository and the World Data Center PANGAEA, a member of the World Data System (WDS) of the International Science Council (ISC). Metadata will include detailed descriptions of collection and analysis procedures. The PI and graduate students will follow the Data Management Best Practices Guide provided by the BCO-DMO (<https://www.bco-dmo.org/data-management-best-practices-guide-0>) for optimally structuring and documenting data.

Data Storage and Access during the Project: The investigators will store project data on laboratory computers and personal computers that are backed up by the University's cloud backup platform, Code42 CrashPlan. Collaboration will be facilitated by UD's Google Apps service, UD Dropbox and Zoom Pro, and data and documents will be shared through a UD-sponsored Google Shared Drive.

Mechanisms and Policies for Access, Sharing, Re-use and Re-distribution: Data sets produced by the investigators will be uploaded to the BCO-DMO repository within two years from the date of collection in compliance with the NSF OCE Sample and Data Policy. Bioreactor incubation data will be uploaded to PANGAEA within two years of data generation. Within the two-year window, data collected as part of

this project will be embargoed until acceptance of a manuscript describing such data. Access to data will be open and unfettered without use restrictions thereafter. Data will be released to the public domain under the Creative Commons CC0 1.0 “No Rights Reserved” waiver. Each dataset is provided its own unique Digital Object Identifier (DOI) by BCO-DMO, which is registered by DataCite and resolvable through DataCite, to facilitate citation and re-use.

Plans for Archiving: Long-term preservation and stewardship of data collected in the proposed project will be accomplished through permanent archival in the National Centers for Environmental Information (NCEI), a designated Federal National Data Center, and in the Data Observation Network for Earth (DataONE) repository (<https://www.dataone.org/>), which provides open, persistent, robust, and secure access to well-described and easily discovered Earth observational data. BCO-DMO will ensure that project data are submitted to the NCEI. Data will be shared to DataONE by the BCO-DMO and PANGAEA member nodes. The PI will work with BCO-DMO and PANGAEA to ensure data are archived appropriately and that proper and complete documentation are archived along with the data.