Data Management Plan: CAREER:

Mechanisms of bioturbation and ecosystem engineering by benthic infauna

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) and the *NSF Division of Ocean Sciences Sample and Data Policy* as well as the Dauphin Island Sea Lab data management policies (https://www.disl.org/research/data-management-center).

Description of Data Types. The project will produce several observational and experimental datasets, described in the list below. Observational data will be collected at three sites in the northern Gulf of Mexico during years 2-4 of the project. In addition, mesocosm experiments will be conducted at the Dauphin Island Sea Lab.

Observational Datasets:
1. **HOBO sensors will be deployed to collect time series of oxygen and temperature.** File types: Raw data will be processed and saved as .csv ASCII files. Repository: BCO-DMO and DISL.
2. **Event log:** Sampling event log; will include Event or Sample ID numbers, dates, times & locations and samples collected. Will be recorded on paper log sheets. Log sheets will be scanned PDFs. Repository: BCO-DMO.
3. **Macrofauna sampling logs:** Species identified for each sample ID will be recorded by hand on log sheets. Information from log will be transferred into an Excel spreadsheet. File types: PDF files of scanned log sheets; Excel files of sampling logs. Repository: BCO-DMO and DISL.
4. **Geotechnical properties of field sediments:** Most measurements will be done on cores brought back to the lab, and data will be entered into an Excel spreadsheet. File types: Excel files of data, including sample location, porosity, and grain size, as well as other geotechnical measurements. Repository: BCO-DMO, DISL, and/or supplementary data of publications.

Experimental Datasets:
1. **Bioturbation data:** Images of luminophores will be taken and analyzed to obtain vertical profiles and horizontal dispersion. Images will be saved in batches and uploaded to DISL's data management system. Numerical data will be recorded in excel spreadsheets. Repository: BCO-DMO and DISL.
2. **Mesocosm experiments:** Datasets will include data on the sediment and faunal type treatments, biomass and identities of all macrofauna added to mesocosms (determined before start of experiment), bioturbation and geotechnical properties data (see above). File types: Excel file(s). Repository: BCO-DMO and DISL.
3. **Ant farm experiments:** Assays will generate video and images of macrofauna, numerical data of burrowing movements and descriptions of observed macrofaunal behaviors. Dataset will include times of observations, identity of observed macrofauna, and associated files and descriptions of behaviors. File types: Excel files, images, videos. Repository: BCO-DMO and DISL.

Data and Metadata Formats and Standards. Field observation and experimental data will be stored in ASCII files, which can be read easily by different software packages. Field data will include date, time, latitude, longitude, core number, in situ measurement, and depth, as appropriate. Quality flags will be assigned according to the ODS IODE Quality Flag scheme (IOC Manuals and Guides, 54, volume 3; http://www.iode.org/mg54_3). Metadata will be prepared in accordance with BCO-DMO conventions (i.e. using the BCO-DMO metadata forms) and will include detailed descriptions of collection and analysis procedures.

Data Storage and Access During the Project. The investigators will store project data (including spreadsheets, ASCII files, images, and PDFs of scanned logs) on computers that are backed up continually on dropbox or google drive, and data will also be backed up weekly on a server in the laboratory.

Mechanisms and Policies for Access, Sharing, Re-Use, and Re-Distribution. Data sets produced by the science party will be made available through the BCO-DMO data system within two-years from the date of collection. The project investigators will work with BCO-DMO data managers to make project data available online in compliance with the NSF OCE Sample and Data Policy. Data, samples, and other information collected under this project can be made publically available without restriction once submitted to the public repositories. Data produced by this project may be of interest to biological and geological oceanographers. We will adhere to and promote the standards, policies, and provisions for data and metadata submission, access, re-use, distribution, and ownership as prescribed by the BCO-DMO Terms of Use (http://www.bco-dmo.org/terms-use).

Plans for Archiving. The PIs will work with BCO-DMO to ensure data are archived appropriately and that proper and complete documentation are archived along with the data and will ensure that project data are submitted to the appropriate national data archive. Data will also be archived through the DISL data management center, per DISL policy.

Roles and Responsibilities. The PI, K. Dorgan, will coordinate the overall data management and sharing process and will submit the project data and metadata to the Biological and Chemical Oceanography Data Management Office (BCO-DMO) who will be responsible for forwarding these data and metadata to the appropriate national archive. Either the PI or the technician will also submit project data and metadata to the DISL Data management center.