DATA MANAGEMENT PLAN

Two years of field measurements and two small, supporting experiments will be conducted over three years. Prior to beginning fieldwork and experiments, the PIs will meet to develop a science implementation plan that will detail timelines, procedures, and sampling strategies.

In year 1 Fall, field work will be conducted at the Plum Island Estuary (PIE) LTER (Rowley, MA) to collect benthic microalgae for the first supporting experiment (triple oxygen isotope culturing experiment), and to identify sites for the *in situ* flux incubations, which will be conducted the following spring, summer, and fall. All data from the sampling and reconnaissance event will be recorded. Upon returning to WHOI, the collected benthic microalgae will be used in an experiment to determine oxygen fractionation factors. All data from the experiment will be recorded in laboratory notebooks and later digitized to PDF format.

In the first field season (4/1/13 to 10/1/13), fieldwork will be conducted in fertilized and ambient nutrient tidal creeks at the PIE LTER. This work will build on current infrastructure associated with the TIDE project. During each sampling trip, light and dark sediment and water column flux incubations will be conducted in 4 tidal creeks. Samples and data generated during the flux incubations include dissolved oxygen (DO) and inorganic carbon (DIC) concentrations, triple oxygen isotope (TOI) samples, and light and temperature measurements (recorded with data loggers). In addition, samples for dissolved inorganic nutrients (nitrogen and phosphorus) will be collected during each sampling trip to characterize the trophic state of each site. Once per season, sediment samples will be collected for benthic chlorophyll levels, total organic carbon (TOC) and nitrogen (TN) concentrations, bulk stable carbon isotope signatures ($\delta^{13}C$), and biomarker analyses (FA, PLFA, CSIA). Suspended particulate organic matter (OM) will also be collected for TOC, TN, $\delta^{13}C$, and biomarker analyses. All field data and laboratory sample processing information will be recorded in notebooks and later digitized to PDF format.

In the second field season (4/1/14 to 10/1/14), flux incubations will be conducted in a fertilized tidal creek with marsh edge slumping. Additional flux incubations will be conducted in an unenriched tidal creek with slumping in the summer. Samples and data generated during the flux incubations include DO and DIC concentrations, TOI samples, and light and temperature measurements. Dissolved inorganic nutrient samples will be collected during each sampling trip to characterize habitat trophic state. Once per season and in each tidal creek, sediment samples will be collected for benthic chlorophyll levels, TOC and TN concentrations, bulk $\delta^{13}C$ signature, and biomarker analyses (FA, PLFA, CSIA). Suspended particulate OM will also be collected for TOC, TN, $\delta^{13}C$, and biomarker analyses. All field data and laboratory sample processing information will be recorded in notebooks and later digitized to PDF format.

In year 2 spring/summer major OM sources (e.g., saltmarsh grass, benthic microalgae, creek bed sediments, and phytoplankton) will be collected and transported to WHOI for use in the second supporting experiment, which will be to determine the carbon fractionation factors between OM sources and bacterial PLFAs. All data from this experiment including light, temperature, and DO measurements, biomarker composition, and results from CSIA will be recorded in laboratory notebooks and later digitized.

Inventories and data information will be kept on the computers of the PIs, who have procedures in place to regularly back up their data. All chemical and biological data generated through this project will be managed by the Biological and Chemical Oceanography Data Management Office (BCO-DMO); data will be available online from the BCO-DMO system

(http://bco-dmo.org/data/). BCO-DMO will also archive all the data they manage at the appropriate national archive facility, such as NODC. Additionally, all laboratory/field notebooks will be scanned and stored electronically, along with other information relevant to the collection, processing, and analysis of the samples. These documents will be also available upon request after all data are open to public.

We will hold a project meeting after the Fall year 2 sampling to allow for progress reports and presentations to begin to synthesize the generated data and facilitate manuscript preparation. We believe the most direct method of disseminating results is via publication. Manuscripts will be prepared promptly, and we will make an effort to select open access journals where appropriate. When available, relevant datasets will be published as online appendixes.

Some of our analytical practices are destructive, but for the samples for which it is appropriate (e.g., freeze-dried samples, total lipid extracts), we will store aliquots of samples and make them available to other researchers upon request, after publication of data derived from these samples.