DATA MANAGEMENT PLAN

We will conform to NSF policy on the dissemination and sharing of research results by making data from this project freely available to the general public and to as many scientists and as possible (i.e., archive data at existing data centers and provide as much help as possible to inquiries).

1. **Data policy compliance**: We will share and archive data collected as part of this research project in compliance with NSF policy ([NSF11001](NSF11001)) and the Division of Ocean Science Sample and Data Policy ([NSF11060](NSF11060))--All data collected by projects funded through this solicitation will be freely and openly available to any interested investigator as soon as practical, but no later than 12 months following collection.

2. **Pre-cruise planning**: Four cruises are planned for April, July, and October of 2017 and January of 2018 to the Mississippi River plume and northern Gulf of Mexico. During these cruises, surface water underway data, and water column ocean biogeochemistry data will be collected (see Table 1). Detailed plans for station locations, instrument deployment, water sampling strategy and water sample allocation will be written up as a science implementation plan for the cruises and may be revised as is needed. Most of the measurements and model analysis in Table 1 have been done in the labs of all of the PIs and follow standard protocols and practices. The PIs listed in Table 1 will guide the activities of postdocs, students, or technicians responsible for data collection.

3. **During the cruise**: We will collect samples and data following a cruise implementation plan that we develop during the pre-cruise planning period. The actual sampling events will be recorded on paper logs (scanned into PDF documents) and in a digital event log. The chief scientist will use a check list and take notes of various issues to assure a proper implementation of the plan. These will be incorporated into the cruise report.

4. **Post-cruise**: We will follow analytical and data management protocols established during the pre-cruise planning period. Any deviations from these protocols will be justified and noted. Underway pCO_2 data will be calibrated, cleaned (i.e., remove records taken during periods of instrument calibration or malfunction), validated, run through QA/QC procedures and organized into a format that can be submitted to data centers as soon as possible after the cruise. Hand written notes (if not already done during the cruise) will be transferred to digital form as well.

5. **Submission of underway data.** Soon after the completion of the cruise, the original underway data will be contributed by the vessel operator to the UNOLS central data repository at http://www.rvdata.us/catalog/managed by the Rolling Deck to Repository (R2R) project. Also, R2R will ensure that the original underway measurements will be archived permanently at NODC and/or NGDC as appropriate for the data type.

6. **Submission of O_2, nutrient and CO_2 data.** We will submit O_2, nutrient, pCO_2, DIC, TA and pH data to the Carbon Dioxide Information Analysis Center (CDIAC) (http://cdiac.ornl.gov/) as we have done in the past as well as to BCO-DMO (see #7). We have worked closely with CDIAC's data manager Mr. Alex Kozyr over the past decade to curate CO_2-related data from projects in the South Atlantic Bight, the northern Gulf of Mexico and the western Arctic Ocean. In submitting data to CDIAC, proper data and metadata formats will be observed as required by CDIAC data submission protocol. The pCO_2 data will go through secondary data quality control and feed into the Surface Ocean CO_2 Atlas (SOCAT) project (where Cai is one of the team leaders for the coastal ocean).

7. **Routine hydrographic data** from CTD casts and chemical analyses will be deposited with and archived by the Biological and Chemical Oceanography Data Management Office (BCO-DMO) (http://bco-dmo.org/data/). Chemical data to be submitted will include concentrations of nutrients (NH_4^+, NO_3^- and NO_2^-, phosphate and silicate), DIC, TA and pH data as well as underway O_2/Ar and pCO_2 data (also to CDIAC). Experimental results will also be submitted to BCO-DMO. Proper data and metadata formats will be observed as required by the BCO-DMO data submission protocol. We

have discussed data submission requirements with BCO-DMO personnel at several occasions (OCB & AGU meetings) and followed up by emails. BCO-DMO will also submit all the data they manage to the appropriate national archive facility, such as NODC and NGDC. In addition, hydrographic and other oceanographic data and metadata from our research will also be supplied to the NODC. Project data and results will also be reported in peer-reviewed publications either as tabulated data in the publication or in supplementary data tables. Complete records of these data, including notebooks or computer files, archived samples, and results of statistical or other data analyses or models will be maintained by the PIs in their laboratories or offices for at least 5 years past the end date of this project.

8. **Submission of biogeochemical rate data and phytoplankton composition data.** Metabolic and benthic flux data as we all as phytoplankton composition data will be submitted to BCO-DMO.

9. **Submission of remote sensing data.** These data will be submitted to NASA SeaBASS and the NSF BCO-DMO.

10. **Data sharing among PIs.** Finally, we will encourage data sharing among PIs to promote prompt publication by responding to their requests for data as soon as is feasible. Co-authorships and acknowledgments will be discussed when the data are requested and revised as needed in light of contributions to subsequent data analyses and writing efforts.

Table 1. Data Responsibilities

Type	Data to be collected	PI or source
Underway/continuous	Position, date, time, meteorological	Ship operator/NDBC, Cai
Underway/continuous	T,S, fluorometry, transmissometry, DO, pH, $p\mathrm{CO_2}$ as well as $\mathrm{O_2/Ar}$	Cai
Water column (CTD)	T,S, pressure, pH, DO	Cai
Water column (discrete samples)	$\mathrm{O_2}$, Nutrients, DIC, alkalinity, $\mathrm{Ca^{2+}}$, pH, Winkler DO, dissolved nutrients, DIC-$\mathrm{C^{13}}$	Cai, Roberts
phytoplankton composition	Chlorophyll and phytoplankton composition	Lohrenz
Process studies	community respiration rates, & NCP, and *in situ* benthic flux data	Maiti & Lehrter
Deposition rates	Sediment deposition rates, radio isotope data	Maiti
In situ sensor package	T,S, DO, pH and $p\mathrm{CO_2}$	Cai
Remote sensing	Sea surface $p\mathrm{CO_2}$ via a remote sensing inverse model as well as other remote sensing imagery	Lohrenz