DATA MANAGEMENT PLAN

1. Products of Research: Data collected from this project will include (1) continuous oceanographic measurements from the 2 SeapHOx sensors including pH, conductivity, temperature, PAR (light), and O2; and discrete seawater measurements (pH, DIC, ALK, nutrients). Metadata from all data collected and selected data graphs will be made publicly available on the project website throughout the course of the project. This project will also include (2) Images from microscopy observations and numerical values from live-cell imaging and biochemical experiments. Digital pictures and spreadsheets will be properly labeled and stored in hard drives; other data will be initially recorded in laboratory notebooks following standard data log protocols (date, name of the researcher conducting the experiments, material and methods, results), and digitalized in a timely manner.

Data will be managed through the Biological & Chemical Oceanography Data Management Office (BCO-DMO) and a R-sync of the data will be backed up the BCO-DMO site every 24 hours. We have already started building a data management plan with Cyndy Chandler at BCO-DMO and the lead PIs will work closely with the BCO-DMO team to ensure the best possible data management plan is established. BCO-DMO will submit the final version of the data to the National Oceanographic Data Center (NODC) for permanent archive to ensure long-term availability of the data.

2. Data Storage and Preservation: Data will initially be stored on a 20 TB RAID array at SIO with hot swappable hard drives, then stored on the BCO-DMO site, and stored in the UCSD data repository to support preservation and re-use of the project's data. Following consultation with the Director of the UCSD Research Data Curation Program, we intend to deposit our data and metadata in the UCSD research data repository (http://rci/services/data-curation.html). We will submit all data and metadata necessary for making our results understandable and usable by others. Upon completion of the project, we will transfer project data and supporting resources to the UCSD research data program, where the project data will be stored, backed up, preserved (replicated to three geographically remote sites), and made accessible indefinitely (unless otherwise specified) to other researchers.

3. Data Formats and Metadata: Data from the project’s instrument array will be saved as daily, comma delimited DAT files with all metadata made publicly available and metadata standards developed in consultation with the BCO-DMO office. DAT files will be used because they are a standard format that can be used on a variety of database and software programs including Microsoft excel. Metadata will be documented on the BCO-DMO site. We will use metadata standards developed for widespread usage and will include lat, long, time (month, day, yr., hour, sec), depth, and deployment details.

4. Data Dissemination & Policies for Data Sharing and Public Access: All data will be made publicly available through the BCO-DMO site and our own project website following publication and after the embargo period for respective journal publications. After the project is completed all data will be made publicly available on the open access BCO-DMO repository and the UCSD data repository within 2 years of project completion to allow sufficient time to prepare manuscripts. Elements of the accumulated data such as data volumes and data descriptions can be further parsed for public display on the project's website. Web hosting services will be provided by the San Diego Supercomputer Center on the UCSD campus, including 24/7 monitoring and support and nightly tape backups of databases, scripts, and web presentation pages.

5. Roles and Responsibilities: The data management will be the responsibility of lead PI David Kline and co-PI Martin Tresguerres, and both will work with Cyndy Chandler of BCO-DMO to ensure that the data management plan is followed and for regular monitoring to ensure data quality. Adherence to the data management plan can be checked and demonstrated by checking the project's metadata and sample data on the BCO-DMO, UCSD data archive, and on the project's website. Data will be made openly available to all collaborators and responsibility for the data will be transferred to BCO-DMO, UCSD data archive, and the NODC archive following completion of the project.