

## **Data Management Plan**

I fully acknowledge the need and importance to share and make all data generated from this project available to the scientific community on both short and long time scales. I have been in contact with Cyndy Chandler at the Biological and Chemical Oceanography Data Management Office (BCO-DMO) and discussed the most appropriate way to facilitate the access, distribution, and archiving of the different datasets generated from this particular project. An overview of the types of datasets I anticipate to generate from the field and mesocosm experiments is listed in Table 1. In summary, all data will be submitted to BCO-DMO. All data will be listed with direct links to the data within the project summary of BCO-DMO data repository available online.

During the course of the project, data generated from mesocosm and field experiments will be recorded in waterproof notebooks and transferred to digital spreadsheets at the earliest convenience. Digital files will be temporarily archived on a project specific *dropbox* account (<http://www.dropbox.com>) and automatically backed-up on a Time Capsule available in the Andersson laboratory. This will ensure that any electronic files are saved at three different locations instantaneously when internet connection is or becomes available (i.e., the computer that generated or updated the files, *dropbox*, and the Time Capsule). Data generated from analytical instruments that are automatically recorded electronically will be saved in the same manner on the *dropbox* account. Quality control and quality assurance (QCQA) will be conducted in succession as data are assembled on the *dropbox* server. Meta-data files following the guidelines of BCO-DMO will be created from the onset of data collection to ensure that the format and structure are in accordance with the guidelines for subsequent submission to BCO-DMO. Specific datasets used in publications within the duration of the project will be assigned doi index numbers and published concurrent with journal publication dates. All data will be submitted to BCO-DMO no later than 12 month of the termination of the project.

All measurements and also calculated parameters (e.g., CO<sub>2</sub> system parameters; Table 1) that are recorded as part of this project will be managed by BCO-DMO and will be available online from the BCO-DMO data system (<http://bcodmo.org/data/>). BCO-DMO will also archive all the data they manage at the appropriate national archive facility, such as CDIAC, NODC, or OBIS. BCO-DMO has assured that they will take responsibility for this important step of the archiving process.

### **Biological and Chemical Oceanography Data Management Office (BCO-DMO)**

The Biological and Chemical Oceanography Data Management Office (BCO-DMO) was created in late 2006 to serve PIs funded by the NSF Geosciences Directorate (GEO) Division of Ocean Sciences (OCE) Biological and Chemical Oceanography Sections and (with augmented funding in 2010) Office of Polar Programs (OPP) Antarctic Sciences (ANT). BCO-DMO manages and serves oceanographic biogeochemical, ecological, and companion physical data and information developed in the course of scientific research and contributed by the originating investigators. The BCO-DMO data system facilitates data stewardship, dissemination, and storage on short and intermediate time-frames.

# Table 1. Data management plan

Expected Data Inventory for NSF CAREER: Biogeochemical modification of seawater CO2 chemistry in near-shore environments						
Data Type	Quantities Measured/Calculated	Depth Range	Horizontal	RESOLUTION		Data System
				Vertical	Time	
<b>Field experiments in BDA, HI, CA</b>						
Environmental and Chemical Data						
Meteorological (weather stations in BDA, HI & CA)						
	wind speed	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	wind direction	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	air temperature	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	air pressure	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	humidity	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	precipitation	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	PAR	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	UV	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
Environmental data from sensors						
	<i>SBE16plus</i> Temperature	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	Salinity	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	Oxygen	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	Chlorophyll a	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	Turbidity	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	PAR	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	<i>Seaphox</i> Temperature	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	Salinity	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	Oxygen	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	pH	btm	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
	<i>AquaDopp</i> currents, x, y, z direction, velocity	btm-sfc	TBD	TBD	5-15 min	BCO-DMO, NODC, CDIAC
Carbonate system chemistry (bottle samples)						
	TA	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC, CDIAC
	DIC	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC, CDIAC
	pH (calculated)	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC, CDIAC
	pCO2 (calculated)	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC, CDIAC
	CO2, HCO3-, CO32- (calculated)	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC, CDIAC
	CaCO3 saturation state (calculated)	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC, CDIAC
Macronutrients (bottle samples)						
	nitrate + nitrite	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC
	ammonium	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC
	silicate	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC
	orthophosphate	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC
Other (bottle samples)						
	POC	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC
	DOC	0 - btm	TBD	TBD	1-4 h	BCO-DMO, NODC
Biological/biogeochemical data						
	Benthic community composition	btm	TBD	N/A	one time	BCO-DMO, NODC
	Net organic carbon production	depth integrated	TBD	TBD	1-4 h	BCO-DMO, NODC
	Net ecosystem calcification	depth integrated	TBD	TBD	1-4 h	BCO-DMO, NODC
<b>Mesocosm experiments</b>						
Meteorological (weather stations in BDA, HI & CA)						
	wind speed	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	wind direction	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	air temperature	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	air pressure	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	humidity	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	precipitation	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	PAR	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
	UV	Surface	BDA, HI & CA	Surface	1 h	BCO-DMO, NODC
Environmental data						
	Temperature	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	Salinity	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	Oxygen	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	Chlorophyll a	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	Turbidity	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	PAR	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	pH	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	Residence time/flow rate	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
Carbonate system chemistry (bottle samples)						
	TA	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	DIC	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	pH (calculated)	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	pCO2 (calculated)	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	CO2, HCO3-, CO32- (calculated)	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
	CaCO3 saturation state (calculated)	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC, CDIAC
Macronutrients (bottle samples)						
	nitrate + nitrite	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC
	ammonium	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC
	silicate	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC
	orthophosphate	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC
Other (bottle samples)						
	POC	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC
	DOC	0 - btm	N/A	middepth	1-4 h	BCO-DMO, NODC
<b>Biological/biogeochemical data</b>						
	Benthic community composition	btm	TBD	N/A	one time	BCO-DMO, NODC
	Net organic carbon production	depth integrated	TBD	TBD	1-4 h	BCO-DMO, NODC
	Net ecosystem calcification	depth integrated	TBD	TBD	1-4 h	BCO-DMO, NODC