

## Data Management Plan

### Data Generation Activities

Four different data sets will be collected.

(1) CTD tow and cast metadata (ID, start/end date/time and locations; Excel files), and CTD digital data (salinity, temperature, depth, optical backscatter, ORP; Excel files (~100 MB)) during all CTD tows and casts. We estimate 5 CTD tows (~80 km long), 5 cross axis tows (~5kkm long) and 20-30 CTD casts.

(2) CTD water sample chemistry (Excel files) (~50 MB). We anticipate data sets for Fe, Mn, Al, ligands, siderophores, pH, nutrients, and  $^3\text{He}$ . For Fe and Mn we will examine the concentrations of dissolved, total, colloidal (truly soluble), ligand bound, and particulate chemistry while Al will be determined for dissolved, total, and particulate fractions.

(3) Ship based EM302 multibeam data during transits and in between CTD and AUV operations (~1 TB).

(4) AUV data (~1TB) will be collected on ~7 survey tracks and 7 grid surveys: (a) Water column sensor data collected during all dive operations will comprise CTD, optical backscatter and ORP in situ sensor data, recorded at 1Hz and merged with the processed navigation data. The data are typically generated in a flat text or ascii format that can be readily imported into standard software for processing and analysis by the scientific team (Matlab, Excel, Kaleidagraph etc). (b) High resolution multibeam data are processed by the AUV team on board ship and provided to the science team in three key formats: xyz point clouds, gridded data files, and working map images for immediate interpretation "on the fly." (c) Sidescan data will be processed by the AUV team using proprietary software to generate navigated mosaics of backscatter intensity co-registered with the multibeam bathymetry to generate the equivalent of down-looking black and white "aerial photography" that can be draped over the underlying AUV-derived multibeam bathymetric surveys. Both 100kHz and 400kHz frequency surveys will be possible according to survey types (whether flown at high altitude coincident with multibeam mapping or at low altitude coincident with seafloor photographic surveys). (d) Down-looking still photographs will be collected during AUV grid surveys when flying at altitudes of 5 mab. Individual photographs will be time stamped for cross-correlation with their navigated position and orientation.

### Data Submission to National databases

Data retention will be provided in perpetuity by the national data centers. The PI and Co-PIs will be responsible for data entry and will ensure archives are maintained through the course of their careers. Data will be entered as follows:(1) CTD metadata and digital data to National Oceanographic Data Center (NODC) w/in 1 yr; (2) CTD water sample chemistry (BCO-DMO and Marine Geoscience Data System data bases) w/in 24 months of analysis; (3) AUV dive metadata, still imagery to NDSF data archive as soon as possible w/in 12mo. (4) Bathymetry will be submitted to the National Centers for Environmental Information and Marine Geoscience Data System w/in 1 yr;

<b>Deliverable</b>	<b>Personnel</b>
Metadata for CTD/AUV-	German/Baker
CTD plume survey results	Baker/Walker
Plume geochemistry results	Resing/Bundy/Sedwick
<sup>3</sup> He geochemistry	Lupton/Baumberger/technician
H <sub>2</sub> and CH <sub>4</sub>	Resing
Ligand concentrations and characterization	Bundy/graduate Student
Particulate Matter Chemistry	Buck
Total/ dissolved and Soluble/colloidal chemistry	Sedwick
AUV plume survey results	German/Walker
AUV high-resolution bathymetry	AUV Team/ German
Ship EM302 bathymetry	Rolling Deck to repository by Ship res-techs