DATA MANAGEMENT

I. Types of data generated

This project will generate water column geochemical, physical, biological and biooptical data from sites in the Amazon Plume and offshore waters of the Western Tropical North Atlantic. Our track on each cruise will depend on hydrographic, weather, and other conditions, but we anticipate sampling at least 20 stations, many with multiple CTD casts. In all, we expect to generate on the order of 200 water column samples from each cruise (10 stations, with 18 to 20 depths sampled at each station). The specific types of data we will generate include:

A. *Hydrographic Data*: We will obtain standard hydrographic, chemical, and optical data from the CTD (routine C, T, D, O_2, chlorophyll fluorescence, and beam attenuation).

B. *Biogeochemical Data:* We will measure nutrient concentrations (NO_3, NO_2, PO_4, NH_4, $Si(OH)_4$) in discrete samples from the CTD/rosette as well as in experimental incubations designed to test the mechanisms of nutrient transport and mobilization in the Plume. We will collect particulate organic matter for measurement of its elemental (C & N) and stable carbon and nitrogen isotopic composition. We will use a MOCNESS to sample zooplankton at depth for elemental and isotopic characterization. Methods for these analyses are given in the Project Description

C. *Biological Data*: We characterize phytoplankton and zooplankton abundance using standard proxies (chl a, PN, PC, and zooplankton biomass). We will carry out nutrient amendment experiments to assess the nature and degree of nutrient limitation. At selected depths extending from the surface through the deep water column, we will determine rates of N_2- and CO_2-fixation, and will use isotopic approaches to track the movement of these elements from phytoplankton into the zooplankton food web. Methods for these measurements are given in the Project Description.

D. *Radioisotopic Data:* We will measure dissolved naturally-occurring radium isotope (^{223}Ra, ^{224}Ra, ^{226}Ra, and ^{228}Ra) activities in surface waters and from selected depths at all sample sites to constrain mixing dynamics between the Plume and surrounding water masses. These data will also allow us to constrain the time or 'age' of each water parcel since it was last in the estuary. Methods for these measurements are given in the Project Description.

E. *Biooptical Data* We will measure the in-water light field as well as phytoplankton community structure using HPLC and spectrofluorometric techniques. This data will be submitted to the NASA SeaBASS Bio-optical database because that archive is already set up to handle this type of data.

II. Data and metadata standards

A. *Hydrographic Data.* Data and metadata for these analyses will be submitted to BCO-DMO. Both raw and processed CTD data will be uploaded with relevant metadata components and all analyzed data fields. Metadata will include detailed information on data collection (method of collection, position, platform, site characteristics, weather conditions) and analytical techniques. (instrumentation used, calibration data and date, standards and blanks used, QA/QC protocols, etc).

B. *Biogeochemical Data*. Data and metadata for these analyses will be submitted to BCO-DMO. Metadata will include detailed information on data collection (method of collection, position, platform, site characteristics, weather conditions) and analytical techniques. (instrumentation used, calibration data and date, standards and blanks used, QA/QC protocols, etc).

C. *Biological Data*: Data and metadata for plankton abundance and activity will be submitted to BCO-DMO along with the biogeochemical data as described above. Metadata will include detailed information on data collection (method of collection, position, platform, site characteristics, weather conditions) and analytical techniques. (instrumentation used, calibration data and date, standards and blanks used, QA/QC protocols, etc).

D. *Radioisotopic Data:* Data and metadata for these analyses will be submitted to BCO-DMO. Metadata will include detailed information on data collection (method of collection, position, platform, site characteristics, weather conditions) and analytical techniques. (instrumentation used, calibration data and date, standards and blanks used, QA/QC protocols, etc).

E. *Biooptical Data:* The bio-optical data will be collected following protocols established by the NASA community for these types of measurements.

III. Policies for accessing/sharing and provisions for data protection

We anticipate that our work will attract interest from a broad range of scientists and we will work to make our data accessible to others as soon as possible. The main avenue for sharing our data and results will be through publication in scientific journals and presentations at conferences, but we will make our data widely available to other researchers to minimize duplication of effort. To accomplish this, we will upload these data to BCO-DMO, SeaBASS, as well as our own server for best data availability. Data will be freely downloadable from these sources within two years of collection. This initial embargo period will allow PIs and graduate students to explore the data set for original publication before opening it up for wider use. We will work closely with BCM-DMO and SeaBASS to maximize the legacy of our observations.

IV. Policies and provisions for Re-Use and Re-distribution.

Once our final, quality-checked data are uploaded to BCO-DMO and our own websites, no permission restrictions will exist. We anticipate that the primary users of these data will be researchers working on nutrient cycling and land-sea interactions. Downloadable data and metadata will be freely accessible to anyone who is interested.

V. Archiving plans and preservation of access

Many of our sampling and analytical activities are destructive in nature, preventing reasonable archiving of many of our field samples. In some cases, we can preserve portions of filters after subsampling, and portions of our ground zooplankton samples often remain after elemental and isotopic analysis. These filters and zooplankton samples are maintained in a sample library in J. Montoya's lab at Georgia Tech and we routinely make them available to colleagues on request. Radium samples collected on Mn fibers will be preserved in a repository in R. Peterson's lab.

We plan to keep other data for 10 years past the lifetime of the project. Since the data occupy a relatively small amount of space relative to our computing capabilities, the long-term preservation will be easily accomplished by keeping several copies of the data on local computers at Georgia Tech.