DATA MANAGEMENT PLAN

All data generated by this project will be made available to the public through the web site of the Georgia Coastal Ecosystems LTER program (GCE-LTER; gce-lter.marsci.uga.edu), and will conform to LTER Network standards for metadata and data access (www.lternet.edu/policies/data-access). Finalized data sets will be assigned a unique digital object identifier (DOI) for citation and registered in multiple national data clearinghouses, including the LTER Network Data Portal (portal.lternet.edu), DataOne (www.dataone.org) and BCO-DMO (www.bco-dmo.org).

Types of Data, Samples, Physical Collections, Software.
The project will generate data sets from quarterly surveys at GCE long-term marsh monitoring sites and the SALTEx experiment site, including plant diversity and production, pore-water chemistry, marsh surface elevation using SETs, and greenhouse gas fluxes at the SALTEx site. Aerial 4-band photographic imagery will also be collected, and a GIS habitat map will be developed for the study area. No plant or animal collections will be retained from the proposed work, and no new software will be developed.

Standards to be used for Data and Metadata Form and Content
Tabular data will be documented and quality checked using GCE-LTER data submission templates and post-processing software, then archived in multiple delimited text and binary file formats optimized for common software applications (e.g. CSV text, MATLAB). Non-tabular data (e.g. sensor logs, GIS files, imagery) will be documented, quality checked and archived in native file formats for applicable software (e.g. ESRI ArcGIS shapefiles). Standardized metadata will be provided for all data sets in both plain text and Ecological Metadata Language (EML) XML formats (gce-lter.marsci.uga.edu/public/data/eml_metadata.htm) through the GCE-LTER Data Catalog (http://gce-lter.marsci.uga.edu/public/app/data_search.asp), and regularly synchronized to the LTER Network Data Portal and DateONE.

Policies for Access and Sharing
This project will conform to LTER Network standards for data access and sharing (www.lternet.edu/policies/data-access). Metadata will be available immediately after data are archived, and data files will be openly and freely available on the web within two years from date of collection. Finalized data sets will be versioned to indicate changes since initial release, and a change notification service will be provided to users on request. Primary (raw) data will also be archived along with the finalized data, and links to web-accessible files will be provided in the data set metadata.

Policies and Provisions for Re-use, Re-distribution, and the Production of Derivatives
Primary and derived data packages uploaded to the LTER Network Data Portal will be publicly available under a Creative Commons CC-BY license, allowing unlimited re-use and re-distribution but requiring attribution to data set creators (creativecommons.org/licenses/by/2.0/).

Plans for Archiving Data, Samples and Other Research Products, and for Preservation of Access
Short term: Log files from electronic instruments and other digital data will be uploaded to the GCE-LTER Information Management Office on an ongoing basis for post-processing and archival. Manually-collected field data will be recorded on paper forms and transcribed into Microsoft Excel spreadsheets for submission. Paper log sheets will also be digitized and archived along with the data for review and reference during data analysis. Data on field computers at Sapelo Island are automatically synchronized to UGA in real time using WebDrive software, providing immediate redundancy and backup. No physical sample collections are planned.

Long term: We will work with the information managers of the GCE-LTER program to perform data quality control and archive finalized data and metadata in the GCE Data Catalog, which will provide web-based data access and EML metadata conforming to LTER network best practices. GCE-LTER will also provide web hosting for primary (raw) data and other supporting files used to generate finalized data products. Dr. Merryl Alber is the lead Project Director of the GCE-LTER, and will ensure required staff time is committed to data curation.

The GCE-LTER information system is housed in the Dept. of Marine Sciences at the University of Georgia. The system includes three dedicated, fault-tolerant servers collectively providing 14 TB of secure hard disk storage, as well as a 24 TB LTO tape library for backing up these systems. Raw data, processed data, version-controlled distributable data products and other digital resources are organized in a data file management system that is mirrored between servers and backed up daily. Backup files are mirrored to redundant hard disks in multiple buildings at UGA and are copied to magnetic tape weekly and stored off-site to protect against data loss. The GCE program has developed relational databases to manage data submissions, data set metadata, geographic information, bibliographic citations, personnel information, taxonomic records, data access logs and project administration information. These databases are tightly integrated based on shared keys and referential integrity constraints, and provide comprehensive information for automatic metadata creation and dynamic web applications.

Metadata are automatically synchronized from the GCE Data Catalog with the LTER Network and DataONE to provide broader access. GIS vector and raster data and other non-tabular data (imagery, genomics files) are managed as files in native domain-specific formats and distributed through the GCE Data Catalog as well.