

Data Management Plan

The data management procedures in this project will adhere to and are guided by the requirements of the Division of Ocean Sciences Sample and Data Policy as described in document NSF 17-037 (<https://www.nsf.gov/pubs/2017/nsf17037/nsf17037.jsp>)

Data and sample collection

Field studies:

The data collection at Choctawhatchee Bay includes Sonar images associated with GPS data and depth profiles, flow velocity profiles, PAR light profiles. Dataflow data including conductivity, temperature, pH, oxygen, and chlorophyll, Eddy Covariance instrument data including oxygen, temperature and flow velocity data.

The sample collection at Choctawhatchee Bay includes and sediment samples collected with push cores, pore water samples collected with pore water suction samplers, and water column samples collected with 1L glass bottles.

Lab studies:

The data collection in the lab includes temperature and oxygen readings.

The sample collection in the lab includes time series of water samples and sediment samples.

Analyses

Field data and samples:

Sonar images will be evaluated for megaripple dimensions and their changes over time. Depth profiles will be analyzed for their change between years. Flow velocity profiles will be used to calculate shear at the sediment-water interface. PAR light profiles will be used to calculate light availability at the sediment surface. Dataflow data will be used for assessing lateral gradients in conductivity, temperature, pH, oxygen, and chlorophyll and their changes over time. Eddy Covariance instrument data will be used to determine vertical oxygen flux, temperature changes over time and characteristics of the current flow (direction, velocity, turbulence).

Sediment samples will be analyzed for sediment composition, grain size spectrum, permeability, and porosity. Pore water samples will be analyzed for salinity, POC, DOC, DIC, Chl a and nutrient contents. Water column samples will be analyzed for the same parameters as the pore water samples.

Lab data and samples:

Readings of oxygen and temperature sensors will be used to calculate oxygen consumption rates. Sediment samples will be analyzed for sediment composition, grain size spectrum, permeability, and porosity. Water samples will be analyzed for POC, DOC, DIC, Chl a and nutrient contents.

Data processing:

After quality control that excludes data generated by faulty sensors and out of range data, the raw data will be processed using OriginLab, SigmaPlot, ImageJ and Excel software that will produce tables, figures and macros for automated data processing.

Documentation and metadata

Metadata files will link raw data files to processed data files, and field campaigns. Metadata will be compiled using NOAA's Metadata Enterprise Resource Management Aid and according to the guidelines provided by the Biological and Chemical Oceanography Data Management Office (BCO-DMO) (<https://www.bco-dmo.org/>). A Dataset Metadata Form will be completed for each dataset contributed to BCO-DMO. The data will have the following units: GPS data (Lat/Long), depth profiles (cm water depth), flow velocity profiles (direction, cm s⁻¹), Dataflow data: salinity (mg L⁻¹), temperature (°C), pH (unitless), oxygen (μmol L⁻¹), and chlorophyll (μg L⁻¹), Eddy covariance data: oxygen (μmol L⁻¹), temperature (°C) and flow velocity data (direction, cm s⁻¹), water analysis data: oxygen (μmol L⁻¹), carbon dioxide (μmol L⁻¹), nutrients (NO_x, ammonia, phosphate μmol L⁻¹), PAR (μmol (photon) m⁻² s⁻¹), salinity and particle penetration (mm). Sediment data: grain size median (μm), porosity (%), permeability (m²), organic content (% dw). All data will be associated with date and time.

Data availability

Metadata files, full data sets, derived data products and physical collections will be made publicly accessible within two years of collection. The Biological and Chemical Oceanography Data Management Office (BCO-DMO, <https://www.bco-dmo.org/>) will be used as the primary data management archive. When the award is initialized, BCO-DMO will be contacted the project will be registered by submitting project metadata. Updates on the status of metadata and data archival will be included in the Annual Project Reports, and the compliance with this Data Management Plan will be documented in the Final Project Report. For data submissions that are due after the Final Report, we will report plans for final data submission.

Publication of data and analyses

Results of this project will be presented at international science conferences (e.g. ASLO, AGU) and published in peer-reviewed papers submitted to international scientific journals. With these publications, subsets of the data will be made available also as in Web Appendices that several journals now manage (e.g. L&O).