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 the study site include GPS data and beach profiles, temperature profiles, moisture profile records. Gas data will carbon dioxide and oxygen concentrations and their changes over time. Sediment samples will be collected for sand and organic content analyses.

Lab studies:
The data collection in the lab include temperature, nutrient, O_2, CO_2 readings. The sample collection in the lab includes time series of gas samples and sediment samples.

Analyses

Field data and samples:
Gas sample data will be used for assessing composition and fluxes of gases.
Sediment samples will be analyzed for sediment composition, grain size spectrum, permeability, and porosity, and content of POC, TN and P.

Lab data and samples:
Readings of carbon dioxide, oxygen and temperature sensors will be used to calculated CO_2 production rates and oxygen consumption rates. Gas and sediment samples will be analyzed as listed for the field samples. Measurements furthermore include moisture, gas flow, organic carbon, total nitrogen, inorganic nutrients and and pH.

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 automized 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), gas flow (cm^{-3} s^{-1}), gas analysis data: temperature (^oC), oxygen ($\mu mol\ L^{-1}$), carbon dioxide ($\mu mol\ L^{-1}$), nutrients (NOx, ammonia, phosphate $\mu mol\ L^{-1}$) and gas flow velocity data (cm^{-3} s^{-1}). Sediment data: grain size median (μm), porosity (%), permeability (m^2), 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).