

YSI sonde data: temperature, salinity, and dissolved oxygen from Groves Creek salt marsh, Skidaway Island Georgia, USA, 2013-2015

Website: <https://www.bco-dmo.org/dataset/682912>

Data Type: Other Field Results

Version: 1

Version Date: 2017-02-21

Project

» [Tempo and mode of salt marsh exchange](#) (GrovesCreek)

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Abstract

This dataset includes temperature, depth, and salinity data from a YSI 600 OMS sonde deployed in Groves Creek salt marsh, Skidaway Island Georgia, USA, from July 2013 to March 2015.

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Coverage

Spatial Extent: Lat:31.97 Lon:-81.02

Temporal Extent: 2013-07-26 - 2015-03-10

Methods & Sampling

YSI sampling:

YSI 600 OMS sondes were used to obtain time series data for dissolved oxygen (DO) at stations S2 and S8. At S8, the sondes were mounted on the same bottom frames as the CTDs. At S2, the YSIs (and the fDOM and CHL fluorometers and the S::CAN absorbance spectrometer) were mounted on a rack in the open "moon pool" of a floating dock moored in the outside bend of the channel at Groves Creek. The open center space of the dock was ~ 1x2m, and the instruments were mounted 1 m below the surface (~80 cm below the underside of the dock). The YSIs were battery powered and sampled at 15-minute intervals. Battery power and fouling limited deployments to 2 weeks in the warm months and up to 4 weeks in the winter. Individual YSI sonde deployments at S2 and S8 overlapped by ~24-48 hours. YSIs were also subject to periodic batch intercalibration trials.

Data Processing Description

YSI data processing:

YSI temperatures closely tracked the CTDs. See the intercalibration trials for possible adjustments. The temperature data have not been processed. Salinity readings for individual sondes were quite variable relative to the CTDs. See the intercalibration data files. However, their near-surface deployment location made them less susceptible to severe fouling. This the “shape” of the YSI salinity output is likely to be a more reliable representative of field conditions than the MCs, although the absolute value of the salinity for any given deployment is suspect. These two salinity data sets have not yet been reconciled to generate a representative salinity time series for either S2 or S8.

In contrast, the DO data are superb. DO concentrations obtained from the YSIs differed by on the order of 0.05 mg l⁻¹ for successive deployments and for simultaneous intercalibration deployments. As a result, we were able to generate a single DO time series for S2 and S8 by simply averaging the differences between overlaps of successive deployments following application of a Matlab “lowess” local regression smoothing procedure. These data have also been linearly interpolated onto a 10 minute interval time axis to facilitate intercomparison to other data sets. However, the YSI-generated estimates of DO %saturation must be interpreted cautiously because the salinity output of each sonde cannot be assumed to be accurate. Uncertainties in the %saturation estimates due to errant salinities will be on the order of a few %.

BCO-DMO Processing notes:

- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions
- added station, lat, lon, date, time, ISO_DateTime columns
- ISO Date format generated from date and time values
- reduced decimal places of O2 to 2

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Data Files

File
TS_O2.csv (Comma Separated Values (.csv), 8.31 MB) MD5:513ffd5eb57ec6019ca51794b97a5bf0 Primary data file for dataset ID 682912

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Parameters

Parameter	Description	Units
station	station identifier	unitless
lat	latitude; north is positive	decimal degrees
lon	longitude; east is positive	decimal degrees
deployment	deployment number	unitless
date	UTC date formatted as yyyy-mm-dd	unitless
time	UTC time; formatted as hh:mm	unitless
ISO_DateTime_UTC	Date/Time (UTC) ISO formatted based on ISO 8601:2004(E) with format YYYY-mm-ddTHH:MM:SS[.xx]Z	unitless
datenum_matlab	MATLAB formatted datenum	unitless
temp	temperature	degrees Celsius
salinity	salinity	PSU
O2	dissolved oxygen concentration	milligrams/liter (mg/l)
record	record number	unitless

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Instruments

Dataset-specific Instrument Name	YSI 600 OMS sondes
Generic Instrument Name	YSI Sonde 6-Series
Generic Instrument Description	YSI 6-Series water quality sondes and sensors are instruments for environmental monitoring and long-term deployments. YSI datasondes accept multiple water quality sensors (i.e., they are multiparameter sondes). Sondes can measure temperature, conductivity, dissolved oxygen, depth, turbidity, and other water quality parameters. The 6-Series includes several models. More from YSI.

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Deployments

Groves_Creek_2013-2015

Website	https://www.bco-dmo.org/deployment/682763
Platform	Groves Creek - SkIO
Start Date	2013-07-26
End Date	2015-03-11
Description	Studies of temporal and compositional changes in exported material in a saltmarsh, both the quantity and quality of dissolved organic matter (DOM) and particulate organic matter (POM) exported from Groves Creek.

Project Information

Tempo and mode of salt marsh exchange (GrovesCreek)

Website: <http://www.skio.uga.edu>

Coverage: Salt marsh east of Savannah, Georgia, USA.

Description from NSF award abstract:

Salt marshes are critical mediators of the flux of material between the terrestrial and marine realms. The balance of material import, export, and transformation affects both the marsh itself and the surrounding estuary. Previous efforts to understand the role of marshes have concentrated either on examining temporal changes (often at low resolution) of bulk exports, or compositional changes in exported material with little regard for its temporal variability. Researchers working at the Skidaway Institute of Oceanography contend that both the quantity and quality of materials exchanged between marsh and estuary in tidally-dominated systems along the southeastern US coast vary significantly in response to semidiurnal, diurnal, tidal, meteorological and seasonal forcing, and that this variability must be included when considering the total contributions of marshes to carbon cycling along the land-ocean boundary. This study will utilize a three-pronged strategy to assess both the quantity and quality of dissolved organic matter (DOM) and particulate organic matter (POM) exported from Groves Creek, a well-characterized meso-tidal salt marsh in coastal Georgia. In particular, by evaluating how marsh function responds to a full spectrum of present environmental conditions, this project will provide tangible insight into how carbon cycling in these critical regions will respond to anticipated changes in those conditions.

This project is related to the project "Marine priming effect - molecular mechanisms for the biomineralization of terrigenous dissolved organic matter in the ocean" found at <https://www.bco-dmo.org/project/554157>.

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1234704