Radium isotope results from surface waters of several sites around Little Lagoon, Alabama from 2010-2012 (LittleLagoonGroundwater project)

Website: https://www.bco-dmo.org/dataset/528387
Version: close to final
Version Date: 2014-09-16

Project
» Groundwater Discharge, Benthic Coupling and Microalgal Community Structure in a Shallow Coastal Lagoon (LittleLagoonGroundwater)

Contributors	Affiliation	Role
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Coverage

Spatial Extent: **N**:30.266 **E**:-87.66 **S**:30.235 **W**:-87.818
Temporal Extent: 2010-04-05 - 2012-05-21

Dataset Description

Radium isotope results surface water runoff from Little Lagoon(LL), Lake Shelby(LS), Canal(C), and Pass(P) samples in and around Lake Shelby, Alabama. These data are part of a study to assess submarine groundwater discharge.

Results, methodology, summary tables and instrumentation are included in:

Su, Ni, W.C. Burnett, H.L. MacIntyre, J.D. Liefer, R.N. Peterson and R. Viso, 2014. Natural Radon and Radium Isotopes for Assessing Groundwater Discharge into Little Lagoon, AL: Implications for Harmful Algal Blooms. Estuaries and Coasts, 37: 893-910. (pdf)

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Data Files

File
radium_isotopes_rs.csv (Comma Separated Values (.csv), 6.56 KB) MD5:1c65d1d183b2a53a3c395e577667f266 Primary data file for dataset ID 528387

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Parameters

Parameter	Description	Units
date_local	date at time of collection	dd-mon-yy
year	year of collection	yyyy
yrday_local	day of year - mostly for plotting	julian day
site	descriptive text for station	text
lat	latitude	decimal degrees; North is positive
lon	longitude	decimal degrees; West is negative
sal	salinity	practical salinity units
Ra_223	radium isotope 223	disintegrations per minute per 100 Liters
err_Ra223	uncertainty of measurements - plus or minus one delta	disintegrations per minute per 100 Liters
Ra_224	radium isotope 224	disintegrations per minute per 100 Liters
err_Ra224	uncertainty of measurements - plus or minus one delta	disintegrations per minute per 100 Liters
Ra_226	radium isotope 224	disintegrations per minute per 100 Liters
err_Ra226	uncertainty of measurements - plus or minus one delta	disintegrations per minute per 100 Liters
Ra_228	radium isotope 224	disintegrations per minute per 100 Liters
err_Ra228	uncertainty of measurements - plus or minus one delta	disintegrations per minute per 100 Liters
time_series	one part of study involved time series of measurements over two days at Little Lagoon Pass.	HH:MM

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Instruments

Dataset-specific Instrument Name	Ortec IG detector
Generic Instrument Name	Gamma Ray Spectrometer
Dataset-specific Description	with relative efficiency of 20% (Dulaiova and Burnet, 2004) - see methodology paper by Su et al. Ra determined via Lucas cell counting and assessed by gamma spectrometry (R=0.97, n=112).
Generic Instrument Description	Instruments measuring the relative levels of electromagnetic radiation of different wavelengths in the gamma-ray waveband.

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Deployments

LittleLagoon

Website	https://www.bco-dmo.org/deployment/528089
Platform	SmallBoat_FSU
Start Date	2010-04-05
End Date	2013-08-17
Description	The sampling sites were all accessed from small boats, here amalgamated to one deployment called LittleLagoon.

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Project Information

Groundwater Discharge, Benthic Coupling and Microalgal Community Structure in a Shallow Coastal Lagoon (LittleLagoonGroundwater)

Coverage: southern Alabama, east of Mobile

This project investigated the link between submarine groundwater discharge (SGD) and microalgal dynamics in Little Lagoon, Alabama. In contrast to most near-shore environments, it is fully accessible; has no riverine inputs; and is large enough to display ecological diversity (c. 14x 0.75 km) yet small enough to be comprehensively sampled on appropriate temporal and spatial scales. The PIs have previously demonstrated that the lagoon is a hot-spot for toxic blooms of the diatom *Pseudo-nitzchia spp.* that are correlated with discharge from the surficial aquifer. This project assessed variability in SGD, the dependence of benthic nutrient fluxes on microphytobenthos (MPB) abundance and productivity, and the response of the phytoplankton to nutrient enrichment and dilution. The work integrated multiple temporal and spatial scales and demonstrated both the relative importance of SGD vs. benthic recycling as a source of nutrients, and the role of SGD in structuring the microalgal community. (*paraphrased from Award abstract*)

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0961970

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