

# Radon isotope results from groundwater wells around Little Lagoon, Alabama from 2010-2012 (LittleLagoonGroundwater project)

**Website:** <https://www.bco-dmo.org/dataset/535127>

**Version:** working toward final

**Version Date:** 2014-10-13

## 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:30.28 E:-87.657 S:30.233 W:-87.891

**Temporal Extent:** 2010-05-26 - 2012-08-17

## Dataset Description

Radon isotope results from groundwater wells 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](#))

Keywords: Radon isotopes; Submarine groundwater discharge; algal blooms;

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## Data Files

File
<b>radon_isotopes_gw.csv</b> (Comma Separated Values (.csv), 2.31 KB) MD5:4651b4f265e671c87f921a23e0fdf328
Primary data file for dataset ID 535127

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## Parameters

Parameter	Description	Units
date_local	date at time of collection	dd-mon-yy
year	year of collection	yyyy
yday_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
Rn222	radon isotope 222	disintegrations per minute per Liter
err_Rn222	uncertainty of measurements - plus or minus one delta	disintegrations per minute per Liter
temp	temperature of water	degrees centigrade

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## Instruments

<b>Dataset-specific Instrument Name</b>	CTD Diver
<b>Generic Instrument Name</b>	CTD - profiler
<b>Dataset-specific Description</b>	The radon system is integrated with a CTD Diver (Van Essen) and logging GPS with depth-sounding capabilities.
<b>Generic Instrument Description</b>	The Conductivity, Temperature, Depth (CTD) unit is an integrated instrument package designed to measure the conductivity, temperature, and pressure (depth) of the water column. The instrument is lowered via cable through the water column. It permits scientists to observe the physical properties in real-time via a conducting cable, which is typically connected to a CTD to a deck unit and computer on a ship. The CTD is often configured with additional optional sensors including fluorometers, transmissometers and/or radiometers. It is often combined with a Rosette of water sampling bottles (e.g. Niskin, GO-FLO) for collecting discrete water samples during the cast. This term applies to profiling CTDs. For fixed CTDs, see <a href="https://www.bco-dmo.org/instrument/869934">https://www.bco-dmo.org/instrument/869934</a> .

<b>Dataset-specific Instrument Name</b>	RAD-7
<b>Generic Instrument Name</b>	RAD-7 Radon Detector
<b>Dataset-specific Description</b>	Rn in the lagoon surface waters were measured continuously using an automated pumping and sparging system connected to a suite of three RAD-7 detectors arranged with the counting cycles time-parallel for real-time in situ analysis (Burnett et al. 2001; Dulaiova et al.2005). Radon concentrations in discrete samples of deep and shallow groundwater were measured on 250-ml grab samples using an additional radon-in-water (RAD-H2O) accessory (DurrIDGE) to the RAD7 radon detector.
<b>Generic Instrument Description</b>	The DURRIDGE RAD7 is a radon and thoron detector. The RAD7 is a computer-driven electronic detector, with pre-programmed set-ups for common tasks. It's built to withstand everyday use in the field. A rugged case encloses the detector, which is self-contained and self-sufficient. The RAD7 comes with a built-in air pump, rechargeable batteries, and a wireless infrared printer. ( <a href="https://durrIDGE.com/products/rad7-radon-detector/">https://durrIDGE.com/products/rad7-radon-detector/</a> )

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## Deployments

### LittleLagoon

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/528089">https://www.bco-dmo.org/deployment/528089</a>
<b>Platform</b>	SmallBoat_FSU
<b>Start Date</b>	2010-04-05
<b>End Date</b>	2013-08-17
<b>Description</b>	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-nitzschia* 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
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-0961970</a>

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