

# Southeast Coastal Monitoring Using the Student Friendly Basic Observation Buoy (BOB)

Lisa G. Adams<sup>1</sup>, Lundie Spence<sup>2</sup>, Doug Levin<sup>3</sup>, Angela Bliss<sup>4</sup>, EV Bell<sup>5</sup>

## Why BOB?

1. BOB is an educational grade buoy designed to collect water quality data that contributes to coastal observing efforts.
2. BOBs are designed, built, and deployed by students and are capable of continuously monitoring calm waterways.
3. BOB collects data such as temperature, pH, dissolved oxygen, and salinity levels at regular intervals ranging from one to several days, depending upon the frequency of data collection and battery life.
4. BOB's data can be downloaded to a computer and shared on SECOORA's BOB portal website.

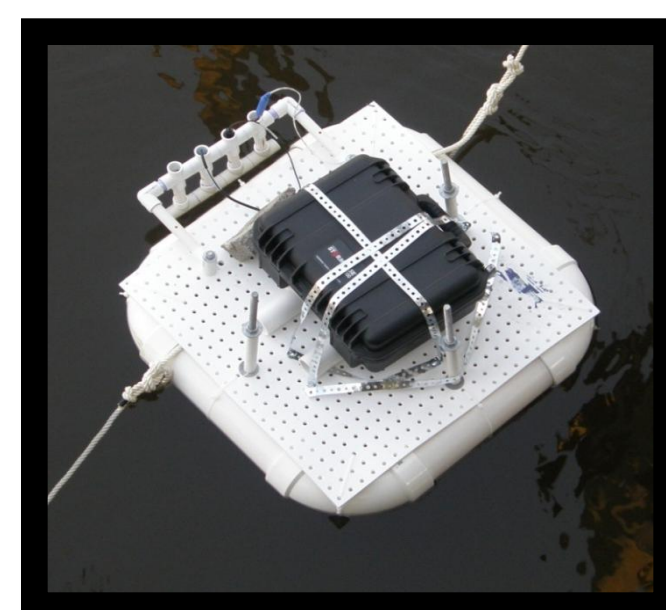


## Sensor Suggestions

Sensors determine the parameters collected by BOB and may include meteorological and aquatic parameters.

The data-logger and sensors currently utilized by both Hilton Head BOB and Beaufort BOB are Pasco, which are educational grade equipment, such as the PASCO Data Logger (PS-2002 PASCO GLX \$329) and the PASCO GLX Sensors (PS-2169 PASPORT Water Quality Sensor \$369). Other Pasco Sensor possibilities exist such as the 3-Axis Acceleration (PS-2119 PASPORT \$185), the Thermocline Sensor (PS-2151 \$269), Flow Rate (PS2130 \$129), and the Sensor Ext Cable (PS-2500 PASPORT \$ 20).

BOB's targeted cost utilizing the Pasco equipment is \$1500, which includes building supplies and sensors.



Other monitoring sensor options are available for Tier One Data Collection as opposed to the educationally designed Pasco devices, such as YSI, Hobo, Hach. However, the total price of BOB increases when using these sensors.

Contact Lisa G. Adams or Lundie Spence for more information (Contact information at right).

## Abstract

The **Basic Observation Buoy (BOB)** is a scaled down, relatively inexpensive buoy made of PVC that can be assembled and deployed by students and volunteer groups. The buoy is designed to serve as a platform for a suite of sensors that continuously measure parameters like temperature, pH, dissolved oxygen, and salinity levels in protected waterways, tidal creeks, and estuaries. Doug Levin designed BOB, while working at NOAA's Chesapeake Bay Office in 2008. Due to the user friendly nature of BOB, the Center for Ocean Sciences Education Excellence Southeast (COSEE SE), Southeast Coastal Ocean Observing Regional Association (SECOORA), and Kennesaw State University have adopted BOB as an outreach and education project. They have supported its growth and implementation in student monitoring programs and hosted a series of three annual workshops, attended by researchers, graduate students, educators, and non-profit water related leaders from NC, SC, GA, and FL.

Partnerships among university scientists, local schools, and informal science centers strengthen coastal monitoring coverage, benefit both the observing community and research programs of participating scientists as well as engage students and community members in the nature of science through data collection. Students learn first hand about environmental issues, like the importance of water quality in our coastal ecosystems and the importance and role of technology in scientific research while contributing data from their watershed. The data collected by BOB can be uploaded to the BOB Data Portal System, which is housed at UNCW and supported by SECOORA. These monitoring relationships often develop into community networks that positively affect all involved. BOBs have been effective in addressing broader impacts of scientists by connecting them with students and citizens within the local community.

One such partnership began in 2010 between Kennesaw State University, Hilton Head Preparatory School, and the Coastal Discovery Museum, where students began monitoring a local tidal creek in South Carolina

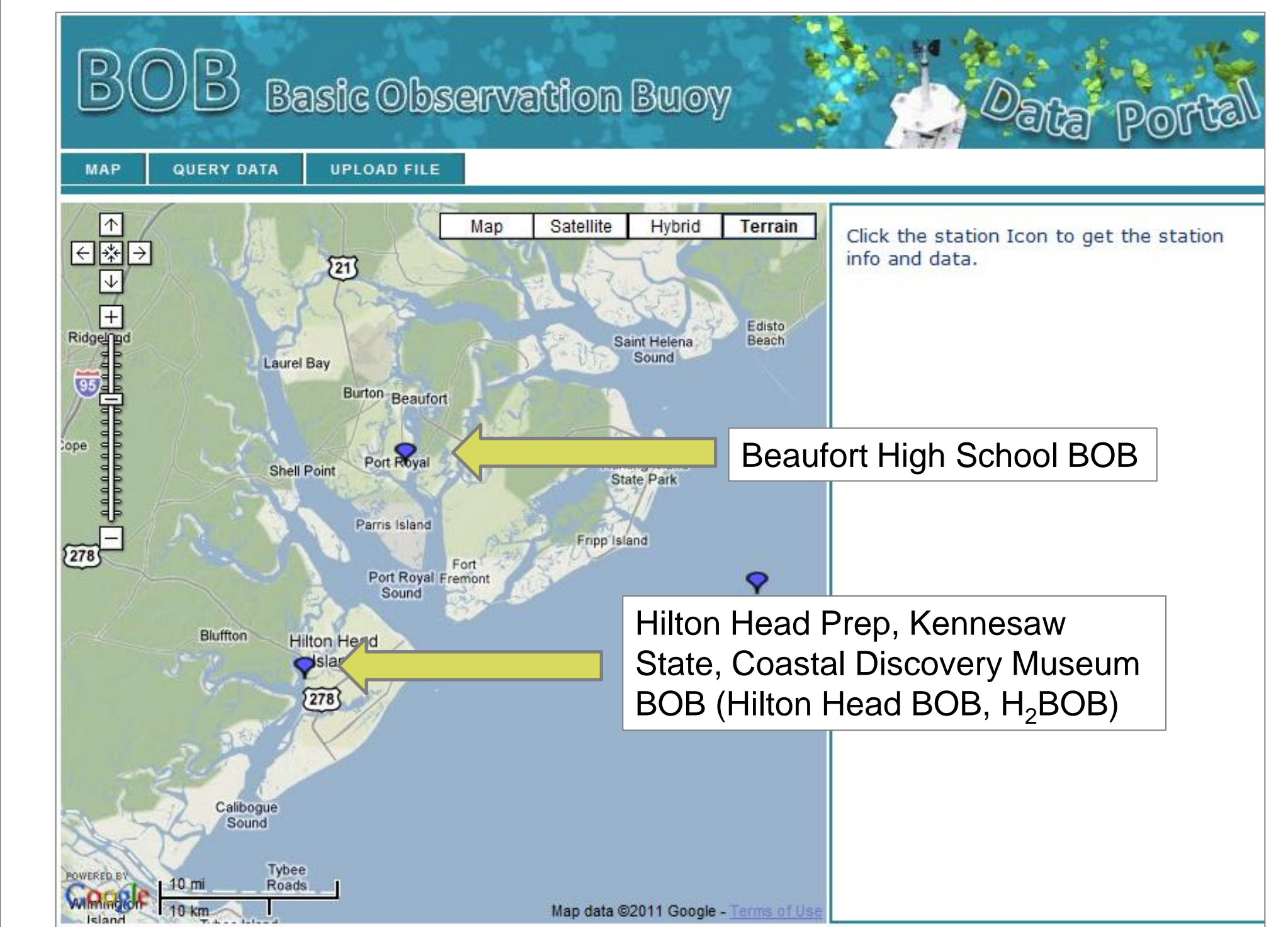


## BOB in Action

- BOB has been incorporated into undergraduate and graduate courses at UNC-Wilmington.
- Jacksonville University and Duval County created six buoys to monitor estuaries.
- Old Dominion University's (ODU) Project SEARCH (Science Education Advancing Research of the Chesapeake Bay and its Habitats) uses BOBs to collect water quality data.
- Students study Beaufort River during their BOB Club at Beaufort High School in South Carolina (pictured above).
- University of North Florida developed a "Pro-BOB" which collects EPA-quality data utilizing wireless communication.
- Mary Baldwin College has a NOAA Bay Watershed Education and Training (B-WET) project in land use and water quality for teacher education working with Governor's School.
- Kennesaw State University has partnered with Hilton Head Prep and the Coastal Discovery Museum to establish a BOB Monitoring Program at Jarvis Creek, located in Hilton Head Island, SC (pictured at right).
- COSEE SE utilized BOB during a professional development workshop to monitor estuarine DO, air temperature, water temperature, and pH.



## Map of Currently Deployed BOBs



<http://cormp2.das.uncw.edu/dev/index.php>

## More on the Presenters:

<sup>1</sup>Department of Biology and Physics, Kennesaw State University, GA, [Ladams@kennesaw.edu](mailto:Ladams@kennesaw.edu)

<sup>2</sup>COSEE SE, SC, [lundie.spence@scseagrant.org](mailto:lundie.spence@scseagrant.org)

<sup>3</sup>Center for Environment and Society, Washington College, MD, [dlevin2@washcoll.edu](mailto:dlevin2@washcoll.edu)

<sup>4</sup>COSEE SE, UGA MAREX, GA, [acbliss@uga.edu](mailto:acbliss@uga.edu)

<sup>5</sup>COSEE SE, SC Sea Grant Consortium, SC, [Elizabeth.vernon@scseagrant.org](mailto:Elizabeth.vernon@scseagrant.org)

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