Basic Observation Buoy (BOB) Objectives for 2010

The following defines and describes an educational grade buoy that contributes usable water quality data to observation systems.

1. BOBs are an educational grade buoy designed to collect water quality data that contributes to observation systems (such as Weatherbug (www.weatherbug.com), or weather underground (www.weatherunderground.com).

2. The BOB program involves student designed, built and deployed buoys that host data collection, storage, and transmission capabilities.

3. A successful BOB will collect accurate air and water temperature measured at a one hour intervals for a period of 7 days.

4. BOB will be able to transmit the data to a receiving portal/computer at near real time intervals, and be retrievable from a URL.

5. BOBs are targeted for quiet, protected water where wave heights are unlikely to exceed 15cm.

6. The unit that the temperature sensors plug into will be able to accept other sensors to measure other parameters as available. Additional sensors should follow the specifications set in #4. The data must be accurate and measured at a frequency commensurate with the data parameter being measured and collected for a period of at least 7 (consecutive) days. A list of parameters-of-interest is included below.

7. The target cost for a BOB is $1500 inclusive of the buoy structure, sensor(s), data storage, and transmission.

Other Water Quality Parameters to be Considered

1. Meteorological Parameters, including rain fall (a gimbled rain gauge?)
2. Wind Speed and Wind Direction (orientation issues on a moving buoy)
3. Wave measurement (size, periodicity, direction – 3-axis accelerometer)
4. Water Level (Tides & Storm Surge)
5. Current Speed and Direction (ADCP)
6. Conductivity/ Salinity (knowing that water temp and conductivity = salinity)
7. Dissolved Oxygen (membrane and/or non membrane)
8. pH
9. Chlorophyll A
10. Turbidity
11. Color
12. Harmful Algal Bloom = when Chlorophyll A peaks, a water sampler is engaged.
13. Nutrients - Phosphates, Nitrates, (ion sensors)
14. Passive acoustics (listening for ambient and anthropomorphic noises)

Prepared by Doug Levin (doug.levin@noaa.gov) & Doug Wilson (doug.wilson@noaa.gov)