

Arduino-Based Inexpensive and Portable Wireless Temperature Sensor Buoy

Conductivity-Temperature-Sensors (CTD's) and scientific buoys are essential oceanographic instruments for measuring properties of water, such as temperature. Independent researchers and small research and educational institutions may lack the funding, resources, and experience needed to operate these technical instruments. In this study, an Arduino-based buoy probe was developed out of low-cost, durable materials, and programmed to send wireless temperature measurements. The probe was calibrated, and tested for accuracy and precision in ambient Penobscot Bay temperature ranges. The buoy casing was tested for integrity and buoyancy. The finished buoy probe, capable of relaying ocean temperature within acceptable accuracy parameters up to 52 m, and running on a 5v battery pack for two days, was tested against a Seabird CTD. Currently, it could be used to monitor ambient water temperature of close to shore environments such as intertidal zones. With modifications, it has the potential of being a versatile instrument capable of measuring water properties at low construction costs, making it a more accessible option to small research organizations.

Advisor: Lauren Sahl