Developing and Supporting NOAA's Buoy Observing Systems: PICO, OceanSITES and the Tropical Moored Buoy Array

Christian Meinig
NOAA Pacific Marine Environmental Laboratory, Seattle WA

Project Summary

The Platform and Instrumentation for Continuous Observations (PICO) and associated Flexible and Low-cost Electronics/sensors (FLEX) advances NOAA's open ocean observation systems with the development of an easy to deploy and low cost mooring system using novel technology and commercially available sensors and instrumentation. The PICO project addresses critical issues regarding moored, deep-ocean observations: 1) reducing the total costs of high quality ocean observations, including realtime meteorological and sub-surface profiled measurements (~500m); 2) improving data return rates thru vandalism mitigation, sensor hardening and software maintenance; 3) providing more flexible sampling through controlled profiling rather than fixed-depth measurements. FLEX development is an effort to address legacy ATLAS system obsolescence and expand its capability. Both of these efforts are motivated by the need to enhance and replace the legacy ATLAS moorings used in the Tropical Moored Buoy Array and PMEL Ocean Sites.

Users of this technology are climate researchers, Met Services, warning and forecast managers and industry. Within NOAA, the electronics, sensors, software and mooring technology have been integrated into pCO2, RAMA, PIRATA, KEO, PAPA and ARC observatories that were facing component obsolescence. These FLEX and T-FLEX systems have now been ocean tested and verified against legacy ATLAS systems with very good results. We have transferred portions of the PICO technology to industry (SAIC), which is now selling complete mooring systems configured with meteorological and tsunami sensors to international customers.

Without support, the care and feeding for these critical observatories would cease and eventually software or component obsolescence problems would make them useless.

Updated web site containing videos and animations on the overall concept, basis of the cost savings and results from system deployments can be found at: http://www.pmel.noaa.gov/pico/ or short videos on PMEL's Ocean Buoys YouTube Channel:
http://www.youtube.com/playlist?list=PLE575643A95F6CED2&feature=plcp