Exploring the Abyssal Ocean at Station ALOHA: 
Early results from the ALOHA Cabled Observatory

Roger Lukas
Department of Oceanography
University of Hawai‘i at Manoa

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3:00-3:30 pm Coffee Hour
3:30-4:30 pm Seminar

Abstract
Near-monthly oceanographic measurements have been made at station ALOHA, the primary site of the Hawaii Ocean Time-series since 1988. While these observations included surface-to-bottom profiles of temperature, salinity and dissolved oxygen, and some surprisingly large signals were captured, they did not resolve all the known energetic scales of variability in the deep and abyssal ocean. Since 2008, autonomous moorings deployed at ALOHA measured temperature and velocity profiles within a few hundred m of the bottom. These observations confirmed the existence of large amplitude, episodic events that seem to be associated with cold abyssal waters sloshing from the Maui Deep to the Kauai Deep, and with the strong dynamic and thermodynamic signatures. In June 2011, the ALOHA Cabled Observatory was successfully connected to the HAW-4 fiber optic cable. The electric power and Ethernet communications provided by the ACO now allow sustained, near-bottom, high-resolution measurements to be made in real-time. Energetic events in temperature, salinity and velocity occur on hourly time scales and appear to be a result of turbulence associated with internal tidal motions. These discoveries have implications for the design of other deep-sea infrastructure, including the design of a global-scale abyssal observing system for climate. Other early observations will be shown to illustrate the power of the ACO infrastructure.

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