Bonne Bay Ocean Observatory

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Abstract: An Ocean Observatory is being deployed in Bonne Bay, a fjord on the west coast of Newfoundland, in Fall 2003, by Memorial University of Newfoundland, to understand the influence of the physical environment on the temporal variability of marine ecosystems. The Observatory provides investigators scheduled and interactively managed real time data acquisition and control of the network of sensors. Serving a multi-disciplinary team, the instrument array is diverse, including acoustic sensors to determine currents, bubble distribution and plankton abundance, video to determine plankton and benthos species abundance, and sensors for temperature, salinity, chlorophyll fluorescence, carbon dioxide, oxygen and inorganic nutrient concentrations and spectral irradiance. The control and telemetry system is comprised of a power distribution sub-system and TCP/IP based network consisting of two Ethernet local area networks, one on shore linking data acquisition and control computers and one underwater connecting the sensors, joined by an armored 1.5 km electro-optic cable. The system is designed to be modular, accommodating guest instruments at spare Ethernet and serial ports. The paper describes the functional requirements, the software and network architectures, and the physical implementation of the Ocean Observatory.

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