# Coastal Observation Technology System Project Summary – 2004

**Project Name/Title:** The Long Island Sound Integrated Coastal Observing System (LISICOS)

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**Recipient Institution:** University of Connecticut

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**Brief Project Summary:** With more than eight million people living in its watershed, Long Island Sound (LIS) is the nation's preeminent urban estuary. LIS provides the region with natural resources, including oysters, clams, lobsters, and bluefish, and both commercial and sport fishing are important to the regional economy. Unfortunately, LIS has also served as the region's sewer, resulting in water quality degradation and critical habitat loss. Extensive wastewater treatment plant upgrades have been mandated to rectify these problems. The high concentration of development along the surrounding coastline has also prompted increased dredging for navigation, electric power transmission, and gas pipelines. The goal of the Long Island Sound Integrated Coastal Observing System is the development of a sustained capability to observe the Long Island Sound ecosystem and an adequate capability to understand and predict its response to natural and anthropogenic changes.

**Accomplishments to Date:**

- Deployment and maintenance of five buoys that monitor salinity, temperature, and dissolved oxygen throughout the sound.
- Three of the above buoys provide over-water meteorological observations. One includes a surface wave sensor, and one includes PAR and chlorophyll sensors.
- Development of a three-dimensional circulation model.
- Development and testing of a primary-production respiration model.
- Coupling of the circulation and ecosystem models.
- Analysis of existing hydrography to infer exchange between LIS, the Hudson River, and the shelf waters

**Current Year Objectives:**

- Quantify horizontal and vertical transport of water, carbon, nitrogen, and oxygen in the western sound.
- Determine the relative contribution of local primary production (autochthonous) and input of allochthonous matter to the organic fluxes.

- Measure the spatial and temporal variation of primary production and its fate (fraction respired, grazed, vertically sunk, horizontally advected, etc.).
- Measure the spatial and temporal variation in the benthic oxygen demand in western LIS.
- Synthesize the observations and develop a model that can be used to predict the evolution of oxygen concentrations in response to management options.
- Measure and track changes in composition and function of plankton and benthos, including benthic recruitment dynamics.

**Partners:**

- National Undersea Research Program
- Sea Grant College Program
- Connecticut Department of Environmental Protection
- Norwalk Aquarium
- U.S. Environmental Protection Agency – Long Island Sound Office
- Connecticut Audubon