

Final Report Summary

This project maintained ferry-based oceanographic sampling in eastern Long Island Sound (LIS). A ferry was equipped with an acoustic Doppler current profiler and a water property sampler. Vertical profiles of absolute water velocity, and near-surface water temperature, salinity, and chlorophyll fluorescence, were collected nominally 8 times daily along a transect between New London, CT and Orient Point, NY. This unique dataset is made possible by Cross Sound Ferry Services, who facilitate sampling from their vessel MV John H as an in-kind contribution; to achieve similar sampling with a research vessel would be incompatible with budgets of traditional research projects. The measurements are useful to address fundamental questions about the tidal and residual circulation, and water property characteristics, near the eastern mouth of the LIS estuary where it interacts most strongly with the coastal ocean. Basic data reduction and quality assurance was carried out on the measurements in order to produce gridded data products (GDPs) that are suitable for convenient use by modelers. The GDPs are available at the project website. The observations are useful for their key roles in calibrating, validating, and constraining hydrodynamic models, hence improving the water quality models they underlie, and thus helping improve water quality management decisions. Water quality models play a central role in total maximum daily load (TMDL) management methods now being applied to address the issue of hypoxia in LIS from a nutrient-load perspective. While hypoxia tends to occur in the western and central parts of LIS, the bulk of the exchange of water between LIS and the coastal ocean occurs at the eastern end, which makes ferry-based sampling in eastern LIS important to improve understanding of LIS-wide dynamics. Public outreach includes a display in the passenger area of the ferry with a real-time data presentation and an explanatory poster for laypeople, in addition to a project website that expands on the explanatory content of the poster and also provides visitors the ability to preview and download the GDPs.