

Distribution of Metals and Surface Sediment Texture in Long Island Sound

Dayanna Mariduena¹, Frank O. Nitsche² and Timothy Kenna²

¹Hudson County Community College, ²Lamont-Doherty Earth Observatory, Columbia University

The Long Island Sound (LIS), located between Connecticut and Long Island, New York, is a crucial estuarine ecosystem that is affected by human activities in the surrounding areas. This study uses sediment grab samples from central Long Island Sound that have been collected as part of a larger habitat mapping effort in collaboration with several research groups including the Lamont-Doherty Earth Observatory of Columbia University. We determine element, and especially metal content of the sediment grab samples using x-ray fluorescence (XRF), and map their distribution in the study area, which is essential for characterizing the LIS sediment environment. By comparing the current metal contamination data with historical records, and grain size information we seek to uncover environmental changes over time. The analysis reveals an increase in metal concentrations from east to west, particularly in fine-grained sediments. Historical industrial activities significantly contribute to elevated metal levels, with higher concentrations of copper and zinc observed due to restricted water circulation and industrial runoff. Other factors such as weather, human activity and ocean currents probably also influenced the detailed metal distribution.