

# Surface Sediment Texture in the Eastern Long Island Sound

Celeste T. Pallone<sup>1</sup>, Frank O. Nitsche<sup>2</sup>, Timothy C. Kenna<sup>2</sup>

<sup>1</sup>*Barnard College*, <sup>2</sup>*Lamont-Doherty Earth Observatory of Columbia University*

In an effort to reconcile anthropogenic impact and conservation needs in coastal and estuarine ecosystems, many states implemented marine spatial planning and other integrated management approaches. The goal of the Long Island Sound (LIS) Mapping Project is to classify and map the benthic environments in the Sound, in order to support these more effective management practices. A fundamental component of the sedimentary environment is sediment texture, as it indicates depositional processes and different habitats. Approximately 350 surface sediment grabs were collected in the eastern LIS between 2017 and 2018 to determine the details of the sedimentary environments. We collected preliminary field descriptions of sediment lithology and macrofossil and invertebrate abundance. Geographic information system (GIS) software was used to visualize and compare current and previous datasets of surface sediment texture and its relationship to water depth and distance from shore. Our overview of surface sediment texture in the eastern LIS was compared to acoustic backscatter data in order to ground-truth these two methods. The results indicate that fine-grained sediment textures such as mud, sandy mud, and muddy sand are dominant in nearshore environments along the eastern Connecticut coast and coarser-grained sediment textures such as gravelly sand are dominant in the central-eastern LIS. Our initial findings do not align with previous studies of eastern LIS surface sediment texture, which indicated a greater abundance of coarser-grained material in the central section of the study area. The data also indicate that finer-grained sediments are distributed in shallower areas, sand is the most abundant sediment texture and is found across a large range of water depths, and coarser-grained sediments are distributed in deeper areas. The study area is dynamic and has an irregular sea-floor environment that is dominated by tidal currents and experiences major storms. Therefore, it is likely that surface sediment texture changed over the past decade.