

APPLICATION OF COMPUTER-AIDED TOMOGRAPHY (CT) TECHNOLOGY TO
VISUALLY COMPARE BELOWGROUND COMPONENTS OF SALT MARSHES IN
JAMAICA BAY AND LONG ISLAND, NEW YORK

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ABSTRACT

Using CT imaging, we found that rapidly deteriorating marshes in Jamaica Bay had significantly less belowground mass and abundance of coarse roots and rhizomes at depth (< 10 cm) compared to more stable areas in the Jamaica Bay Estuary. In addition, the rhizome diameters and peat particle densities were significantly greater in the deteriorating soils at Jamaica Bay. We compared these Jamaica Bay Estuary results with belowground cores collected from marshes in the Peconic and Long Island Sound Estuaries. Marsh cores were first collected at the Nature Conservancy Mashomack Preserve on Shelter Island; however, the CT analysis of these samples indicated this location had a much higher mineral content than the JB stations and was not ideal for direct comparison. Therefore, to look for a more suitable field site for comparison with JB, in September 2010 we collected cores from three more Long Island marshes, which were in the vicinity of Hubbard, Frost and East creeks on the south shore of the Long Island Sound Estuary.

After a brief description of the CT technology applied, we will present some of our results from each of these marshes primarily as 2 and 3D visualizations of various belowground components.

Keywords: belowground; computer-aided tomography; CT; Jamaica Bay; Long Island; salt marshes