Do Local Dynamics Determine Salt Marsh Response to Sea Level Rise?

Alexander S. Kolker,[1,*] Steven L. Goodbred,[1] J.Kirk Cochran,[1] Jim Browne,[2] Tamara Kroboth,[1] Michael Pagano[1] and Aaron Beck[1]

The possibility that climate change may bring about an acceleration in the rate of sea level rise during this century has prompted a need for studies to examine how marshes might respond to this potential threat. A study was taken under the presumption that the best way to understand the impacts of future sea level changes is to understand impacts of past sea level changes. This study exploits an ecological gradient in benthic agglutinated foraminifera as a means for reconstructing paleosealevels. Cores were taken from salt marshes from Hempstead Bay and Jamaica Bay, neighboring bays along the south shore of Long Island. Accretion rates were established using excess ^{210}Pb as a chronometer, and averaged 2.0 mm yr^{-1} in Hempstead Bay and 2.8 mm yr^{-1} in Jamaica Bay. Sea level curves were generated by comparing changes in the foraminiferal community over time. While there exists significant bay-to-bay variation in local rates of sea level rise, mash accretion and foraminiferal assemblage data show that marshes track local rates of sea level rise.

1) Marines Sciences Research Center, SUNY at Stony Brook. Stony Brook, NY 11794-5000
2) Town of Hempstead, Department of Conservation and Waterways, Point Lookout, NY 11569

*Corresponding Author. Please submit inquiries to Alexander Kolker, Marine Sciences Research Center, SUNY at Stony Brook, Stony Brook, NY 11794-5000, kolker@msrc.sunysb.edu, (631) 632-3076