



GFDI Colloquium

Climate Variability and its Influence on Varied Physiographic Settings: Evidence from Long Island Salt Marshes

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018 Keen Bldg.**

Abstract: Salt marshes in varied physiographic environments within the same region respond differently to similar climatic and meteorological forcings. Accretion rate geochronologies from four embayments in Long Island, NY, U.S.A., were determined using the naturally occurring radioisotope, ^{210}Pb . These sediment geochronologies were correlated to local climate proxies; a record of sea level from the Battery Park tide gauge proved most useful. Salt marsh accretion rates track changes in the tide gauge record on time scales of 2-5 years, which is a tighter coupling than reported in many previous studies. Accretion rates in an upper meso-tidal, low-fetch setting correlated with the position of annual mean sea level. In environments with lower tidal ranges and longer fetches changes in salt marsh accretion rates appear to track the annualized rate of mean sea-level change. Much of this short-term variability in the tide gauge record appears to be associated with meteorological forcings. This study presents a detailed framework for understanding coastal zone evolution over the past century. Furthermore, these findings suggest that the impacts of climate variability on coastal ecosystems may be as dependent on the geological surroundings as they are on varying climatic parameters.