



Zachary D. Stromer, M.S.
Coastal Scientist

Expertise

Expertise in coastal, estuarine, and fluvial geomorphology and sedimentology. Application of field and laboratory research in order to resolve and evaluate geologic processes. Acquisition of geophysical and geologic data from a variety of environments. Physical (grain size, mineralogy, porosity, etc) and geochemical (XRF, isotope analysis, total organic carbon content, gamma spectroscopy, etc) analysis and interpretation of sediment samples. Utilization of GIS and MATLAB for analysis and visualization of data.

Education

M.S., Geology – 2016 Univ. of Massachusetts - Amherst
B.S., Environmental Geology/Chemistry – 2014 Northeastern University

Work Experience

2016-Present	Woods Hole Group, Inc. (Coastal Scientist)
2014-2016	University of Massachusetts - Amherst (Teaching Assistant)
2014-2016	University of Massachusetts – Amherst (Research Assistant)
2013	Woods Hole Oceanographic Institute (Field/Lab Technician)

Qualification Summary

- Sediment core/sample collection
- Geochemical and physical sediment characterization
- Geochronological analysis of sediment cores
- GIS geospatial analysis applications
- Geophysical survey data acquisition (Bathymetric and GPR)
- Extensive field operations and logistics management of geologic and water sampling
- Programming experience with MATLAB

Publications and Presentations:

2

Key Projects

Record of Extra-Tropical Cyclone Driven Flooding for the Boston Area

Developed and analyzed historic and sedimentological records of flooding for the Boston area to assess flood risk. Historic tide gauge tabulations and accounts of extreme flooding allowed for the extension of the record of the most extreme events back 300 years. Sediment cores were collected from a pond in Plymouth to validate these records independent of human modifications to Boston Harbor. Sandy overwash deposits preserved in the cores collected from the back-barrier pond provided evidence of the intensity and timing of these past strong flood events as well as recording extreme flood event occurrences over the past 1000 years. These records suggest an under-assessment of the most extreme flooding events in Boston using solely the modern instrumental data set (95 years long) and generalized extreme value statistics. Results indicate a possible correlation between extra-tropical storm frequency in the Boston area and variations in the NAO and north-south temperature gradients over the past millennium.

Analysis of Sediment Cores Collected Immediately Post-Hurricane Sandy

Examined multiple vibracores collected after Hurricane Sandy from around the New York Bight in order to identify storm driven overwash deposits. Cores were analyzed for grain size and organic content, and an age model was created using a variety of age proxies. Overwash deposits associated with a strong hurricane which occurred in 1821 were identified at nearly all sites. Few events were identified in the cores from between 500 and 1000 B.P., consistent with a quiescent period previously identified from around the region.

Publications and Presentations

- Stromer, Zachary D. "Comparing the sediment signature of hurricane sandy with the historic and prehistoric storm deposits." Geological Society of America Abstracts with Programs. Vol. 46. No. 2.
- Stromer, Zachary D. "The great colonial hurricane of 1635 – reassessing extreme flood vulnerability for the southern coast of Massachusetts." Geological Society of America Abstracts with Programs. Vol. 47. No. 2.