An ~1000 year sedimentary record of past high-energy wave events from Conanicut Island, Rhode Island, USA

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Introduction

Fox Hill marsh is a saltwater marsh in Narragansett Bay, Rhode Island that contains nearly a 1000 year record of high-energy wave events, seen as deposits of sand interspersed between layers of salt marsh peat (Fig. 5, 7). There is an existing record from Succotash marsh, 17km southwest of Fox Hill, that dates to approximately 700 years (Donnelly, 2001). Here we attempt to extend the record of storms in the area by analyzing geological cores from Conanicut Island, Rhode Island, USA.

Results

Deposits from below 85cm (Fig. 6) display higher concentrations of fine sediment, likely due to sea level transgression over time. Deeper sediment is probably from farther back in the palaeo-marn, so it contains finer-grained material. Comparison of the Modern Beach Sand composition to that of shallower deposits shows a strong similarity. From this we can infer that sand deposits made in the low-energy marsh system are high-energy overwash fan deposits from the windward beach.

Discussion and Future Work

The storm deposit record found at Fox Hill gives an unprecedented look nearly 1000 years into the past. It extends the existing record from Succotash marsh by approximately 500 years, allowing us to better understand recurrence intervals of large storms in the New England area. However, there is still plenty of work to be done. Our radiocarbon data cannot yet be clearly correlated to the existing record at Succotash marsh. Sand deposits in core 3 need to be constrained by minimum dates, which will allow us to better approximate the date of deposition so that we may correlate more clearly to the Succotash record. This would also allow us to better understand recurrence intervals of large storms (category-3 or greater) in the New England area, as the record at Fox Hill marsh contains 3 storm deposits that are older than any previously known storm deposits in the area.

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