PERTURBATION OF NUTRIENT INVENTORIES AND PHYTOPLANKTON COMMUNITY COMPOSITION DURING STORM EVENTS IN A TROPICAL COASTAL SYSTEM: HE‘EIA FISHPOND, O‘AHU, HAWAI‘I

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By
Charles W. Young III

Thesis Committee:
Kathleen C. Ruttenberg, Chairperson
Margaret McManus
Brian Glazer

ABSTRACT

Tropical islands, characterized by highly variable rainfall, experience dynamic changes in coastal ocean dissolved nutrient inventories and particulate loads. Episodic storm events can impact nutrient concentrations and ratios such that the effects are felt throughout the coastal marine ecosystem. We report results from a 13-month study focusing on changes in marine biogeochemistry within a historical Hawaiian fishpond, He‘eia Fishpond, on the island of O‘ahu. The fishpond is influenced by freshwater and seawater inputs and receives fluvial sediment flux from the uplands. We observe storm-induced perturbations in nutrient inventories and resulting transformations in phytoplankton community composition. These seasonal changes in nutrient inventories are a function of the relationship between baseline and storm-induced discharge and the associated residence time of the tidally mediated fishpond receiving waters.