SPATIAL AND TEMPORAL RESPONSE OF BACTERIOPLANKTON TO STORM RUNOFF IN KANE'OHE BAY, HAWAI'I: A NATURAL PERTURBATION EXPERIMENT

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

IN

OCEANOGRAPHY

DECEMBER 2008

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ABSTRACT

Microbial community structure in a pelagic marine coastal ecosystem is dependent on the physico-chemical properties of the environment. The structure and dynamics of the microbial assemblage in a subtropical coastal embayment were investigated via terminal restriction fragment length polymorphism (T-RFLP) and clone library analysis. Spatial and temporal sampling was performed over an 8-month period, during which a large storm event occurred. Non-metric multidimensional scaling (NMS) of 16S rRNA T-RFLP fragments revealed highly variable spatial and temporal trends in the bacterioplankton community. A shift in the microbial community in response to the storm perturbation was associated with physico-chemical factors that occur on short temporal scales and remain spatially localized. Following the storm event, the microbial community shifted from being dominated by groups commonly thought to be widespread in coastal regions (*Synechococcus* and SAR11) to bacterial groups associated with relatively eutrophic conditions (*Gammaproteobacteria* and *Roseobacter*). By using adaptive sampling and increasing the sampling frequency after the storm, we were able to effectively examine the response of the microbial community.