PIGMENT LABELING DETERMINATION OF CARBON TO CHLOROPHYLL

A Thesis

Presented to

Moss Landing Marine Laboratories

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

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May 2001

ABSTRACT

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Nutrient stress is thought to result in measurable increases in the C:Chl ratio of natural phytoplankton communities. It is hypothesized that increases in C:Chl should be evident from nutrient rich coastal waters to stable oligotrophic gyres. Determination of the specific activity of chlorophyll carbon from pigment labeling experiments allows estimates of algal carbon unique to photosynthetic cells. This technique was performed along a transect from Monterey Bay, CA to Station Aloha, HI in the fall of 1998. C:Chl ranged from 15 to 163. Highest values were encountered in the mesotrophic transition zone between eutrophic coastal conditions dominated by eukaryotic phytoplankton and the oligotrophic open ocean characterized by a large percentage of prokaryotes. Nitrate levels did not explain the observed trend in C:Chl. The transition zone may indicate an area of increased stress as comparatively stable coastal and oceanic phytoplankton communities react to the hydrographic/biogeochemical interface that separates the end-member communities.