A PIGMENT-BASED ANALYSIS OF PROCHLOROPHYTE SEDIMENTATION LOSSES

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Prochlorococcus, the smallest known oxygenic photoautotroph, may account for 25-50% of the total chlorophyll biomass in the oligotrophic open ocean. Their small size has been hypothesized to cause greatly reduced population losses as a result of low cell sinking. This hypothesis, however, has not been tested in the field. Relative sinking rates and grazing on prochlorophytes and non-prochlorophytes were estimated by comparing the ambient pigment concentrations to sediment trap pigment fluxes in the North Pacific Central Gyre and the Sargasso Sea. Divinyl chlorophyll *a* (d-chl), the unique pigment in prochlorophytes, and monovinyl chlorophyll *a* (m-chl), characteristic of all other phytoplankton, were analyzed by HPLC. The net conclusion was that prochlorophytes experienced a 5-fold reduction in settling losses relative to all other phytoplankton; grazing discrimination could not be supported.