

Variability of phytoplankton in relation to carbon flux in the Bermuda time series-study site

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Sub-tropical regions of the Atlantic Ocean is a net carbon sinking area which carbon export to the deep ocean is affected by the changes in biogeochemical features with seasonal dissimilarity. Bermuda Atlantic Time series-Study (BATS) is one of the well-established study sites where extensive oceanographic investigations have been carried out since 1988. This study was focused on the seasonal carbon biomass contribution by micro phytoplankton ($>8\mu\text{m}$) which is large enough to measure the dimension by the light microscope, to the total carbon flux and the biogenic silica contribution by diatoms.

Water samples were collected from nineteen monthly cruises (October 2008-April 2010) which represented six different depths (1 m-140 m) and were analyzed for the micro phytoplankton bio volume calculations. Diatoms, Dinoflagellates, Flagellates and Ciliates were concerned as major micro phytoplankton in the site and the highest biomass was observed in the autumn with bigger diatom cells at >100 m depths. The highest cell abundance was recorded in spring. Sixty percent of the total carbon amount was contributed by the 0.000-0.005 $\mu\text{gC}/\text{cell}$ size fraction, in all seasons, except in the autumn which was 60% dominated by the diatoms of 0.10-0.65 $\mu\text{gC}/\text{cell}$ size class during this period.

The results revealed that the minerally heavy diatoms can govern the sinking carbon biomass and biogenic silica amounts, in BATS, together with concurrent physicochemical features.

Keywords: carbon flux, micro phytoplankton, biogenic silica, BATS station

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