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Biogeosciences Discussions

Interactive comment on "Phytoplankton diversity and productivity in a highly turbid, tropical coastal system (Bach Dang Estuary, Vietnam)" *by* E. J. Rochelle-Newall et al.

Anonymous Referee #1

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General comments:

The authors attempted to determione what factors were regulating spatial and temporal changes in phytoplankton community and productivity in Bach Dang Estuary, Vietnam, using multivariate analyses. They concluded that salinity, suspended particulate matter (SPM) and heavy metals were responsible for spatial and temporal variations in phytoplankton productivity and the phytoplankton assemblage.

However, many issues are of concern.

First of all, they did not consider the effects of nutrient availability, hydrodynamics, grazing and light on phytoplankton community structure and productivity. These fac-

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tors frequently regulate phytoplankton growth. Secondly, they just simply pointed out that salinity and suspended particulate matter were important factors regulating phytoplankton distribution, based on the multivariate analyses. But they did not give a detailed explanation on how salinity and suspended particulate matter regulated the phytoplankton distribution. However in this paper that covers from inshore to offshore stations, changes in salinity and SPM reflected changes in hydrodynamic conditions and light availability which are very important for phytoplankton growth. Thirdly, there was no figure or table summarizing the dominant species and their contributions to the total abundance of phytoplankton. They showed the abundance of pico-, cyano- and nano-phytoplankton, but did not estimate their contribution to Chl a concentrations. So we don't know how important the small size phytoplankton were in terms of biomass in that area.

Detailed comments:

Abstract

In the last sentence, their statement is not correct.

Methods

What depths were samples taken from?

Need to add references for nutrient measurements.

DOC samples were stored at what temperature?

Why measure dissolved primary production?

How did you calculate depth-integrated primary production and bacterial production?

Results

Show the vertical changes in salinity and temperature for each station in order to show the hydrodynamic conditions.

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Describe the spatial and temporal patterns in nutrient concentrations.

The sentence — 'Chl-a flux was negative, indicating a marine or estuarine, rather than a freshwater source' – is not clear.

Where are the data on the contributions of the dominant species to the phytoplankton assemblage?

Discussion

They did not consider the effects of nutrient availability, hydrodynamics, grazing and light on phytoplankton community structure and productivity, when they talk about the factors regulating phytoplankton diversity and productivity. Hence, it is difficult to convince the reader that heavy metals and/or salinity are the primary factors regulating phytoplankton distribution.

The section on 'phytoplankton-bacterioplankton coupling' is focused on bacterial production, which is not closely related to the topic of this paper. It is suggested that this section be shortened.

Grade: Reject

Interactive comment on Biogeosciences Discuss., 8, 487, 2011.