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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 #2

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General comments:

In this study, using multivariate analyses, the authors attempted to determine the factors controlling spatial and seasonal changes of biodiversity and productivity (abundance) of phytoplankton community in a tropical coastal ecosystem, the Bach Dang Estuary, Northern Vietnam. They concluded that salinity, suspended particulate matter, and probably heavy metals (mercury, tin) were important factors controlling the phytoplankton community and productivity. There are several issues in this manuscript.

1. There is no figure or table summarizing the dominant phytoplankton species and their relative abundance to the total phytoplankton; the estimation of the contribution of

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each planktonic group (nano, pico, cyano) to total primary production (as Chl-a) was not shown.

2. The authors emphasized higher primary production in the wet season (p499 lines 13-14). However, in wet season they collected samples three times from station 28 and twice from station 30 during 09-11 July 2008 (Table 1). The daily value of Chl-a, DPP, PPP, BA, Pico, Cyano concentrations in station 28 varied greatly (up to 14X), and the Cyano concentration in station 30 varied ~10X in two days. If the Chl-a data of station 28 in the 2nd and 3rd sampling dates were removed, the primary production between the two seasons would be very similar. The authors seemed to ignore the large daily changes in the same stations, raising a big question concerning the reliability of the data obtained from the other stations.

3. The authors mentioned that “methyl-mercury (MeHg) concentrations in the particulate phase were higher during the dry season” (p499 lines 4-8) and concluded that “Freshwater phytoplankton community composition was associated with dissolved methyl mercury and particulate inorganic mercury concentrations during the wet season, whereas, during the dry season, dissolved methyl mercury and particulate butyl tin species were important factors for the discrimination of the phytoplankton community structure.” (p485 line 20-24). However, in Table 3, the concentrations of both particulate and dissolved MeHg in wet and dry seasons were very low, 0.00-0.02 in most of the stations, and there was no trend in seasonal variation.

4. Other issues: the manuscript is not concisely written and hard to understand.

Detailed comments:

Abstract

P485, lines 19, 21, 23 conclusion related to methyl mercury does not supported by the data, needs to be removed;

Introduction

BGD

8, C100–C103, 2011

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P490 line 10, change “mans’ activities” to “human activities”.

P491 lines 24-25, change “(e.g., Duarte et al., 2007; Ullrich et al., 2001; Downs et al., 1998)” to (e.g., Downs et al., 1998; Ullrich et al., 2001; Duarte et al., 2007) ; line 28, change “organo-tin” to “organotin”; line 29, change “Again, many” to “Many”.

P492 line 20, change to “The study sites were located in Bach Dang Estuary, North Vietnam. Bach Dang Estuary is a large”; line 23, change “The site is subject to a sub-tropical” to “This estuary is subject to a sub-tropical”.

Methods

P493 line 10 “Inorganic nutrients”, need to itemize the inorganic nutrients, give the full-names; line 26, change “Lugols” to “Lugol’s”.

P494 line 20 changed “determined after” to “measured by”; line 28, change “was measured using NaH¹⁴CO₃ following the method of Rochelle-” to “was measured following Rochelle-”

P495 lines 11-13, change to “The production rate of a sample was considered to be significant when the scintillation count of the sample was at least three times of that of the dark blank.”; lines 18-22, change to “Bacterial production (BP) was measured following Rochelle-Newall et al. (2008a) with the incubations conducted in the dark and at in situ temperature.”; line 26, change “the particulate and dissolved concentrations,” to “the particulate and dissolved concentration of metallic species.”

Results

P497 lines 14-19, change to “The meteorology and physical conditions of the two sampling periods differed considerably (Table 1, Fig. 2). In July, temperatures were higher (28.5–31.1 °C and 18.5–23.1 °C, for July and March, respectively) and river discharge was higher, reflecting the higher precipitation rates observed during the wet season (Table 1). For example, at Station 4, river outflow was 988m³ s⁻¹ in July as compared to 175m³ s⁻¹ in the dry season (March) (Vu et al., in preparation). Consequently,”

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P498 lines 14-15, change to “Concentrations of tin (Butyl-Sn) and mercury species varied between stations and season and fell within the range of those observed in temperate estuaries. For tributyltin (TBT), the concentrations of both particulate and dissolved forms were higher in the wet season than dry season; no significant difference of mono-butyl tin concentration was found between the two seasons. For di-butyl tin although the concentration of the particulate form did not vary significantly between the seasons at each station, the concentration of the dissolved form were significantly higher in the dry season for almost all the stations (Table 3).”

P499 lines 1-10, change to “The concentrations of mercury species also varied between station and between season. As the general trend, the inorganic mercury concentrations (both particulate and dissolved forms) were higher in wet season than dry season. methyl-mercury (MeHg) concentrations were generally low (0.00-0.07 ngL⁻¹); at some stations (e.g. Stns. 10, 15) the particulate form MeHg was higher in wet season, while at other stations (e.g. 18, 26) higher in dry season (Table 3).”

Table 1.

Change abbreviation for Station from “Stat.” to “Stn.”; the decimals for the values of the wet and dry seasons are no consistent for most of the items measured, e.g. Depth, Sal., Turn, Dip,....

Reference

P512 line 24-26, delete Navarro et al 2011 because this paper is still in preparation.

P515 lines 9-11, delete Vu et al. 2011 because this paper is still in preparation.

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

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