

## ***Interactive comment on “The effect of typhoon on particulate organic carbon flux in the southern East China Sea” by C.-C. Hung et al.***

### **Anonymous Referee #1**

Received and published: 25 May 2010

Title: The effect of typhoon on particulate organic carbon flux in the southern East China Sea

Authors: Hung et al.

General comments:

This paper describes in situ data set including salinity, temperature, chlorophyll concentration and particulate carbon export flux in the southern East China Sea. The strength of this manuscript is that it presents some new in situ data showing the effects of typhoons on phytoplankton biomass and export. Very few similar data sets have been collected and published so far. A weakness of this manuscript is that is not well written. The revision should include corrections and improvements in the English. I

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have noticed that one of the authors is a native English speaker, therefore I think that such improvements of the language can be achieved easily. More importantly however, I think that the revision should also include some clarifications and improvements in a way the data are presented (see specific comments).

Specific comments:

Title: I suggest that the title should be changed, because POC flux is only one of the effects of typhoons discussed in this paper (for example “Changes in ocean properties associated with typhoons in the southern East China Sea”).

Most important problem: I think that all the calculations discussing dilution of organic matter, injections of nutrients etc. due to the effects of typhoon on surface waters should be based on changes of the mixed layer depth (MLD) and not changes of the euphotic depth. A nice example how such calculations can be done is given in the following paper by S. Son et al., Possible biogeochemical response to the passage of Hurricane Fabian observed by satellites, JOURNAL OF PLANKTON RESEARCH, VOL. 29, NUMBER 8, PAGES 687–697, 2007.

Other comments:

- 1) page 3525 line 2: Standard satellite algorithm OC4v4 is not based on “chlorophyll absorption spectra” but on the remote sensing reflectance.
- 2) Page 3526: What MODIS chl data have you used, from Terra or Aqua? Why did you not use MODIS SST data, which would be concurrent with the Chl data used in your paper?
- 3) Page 3528 and Fig 3: I would like to see the vertical profiles of water temperature, salinity and density in order to be able to understand the changes in water properties due to the typhoon.
- 4) Table 1. There is a mistake in the Table: there should be MLD and not TD in the Table header. The MLD estimate should be based on water density and not water

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temperature, since you have salinity and temperature data. Why was MLD defined as the depth where water temperature INCREASED? I was surprised by the fact that MLD after the typhoon was less than before the typhoon. Could you discuss this in comparison to the climatological data for this region?

5) I think that you often use the term “upwelling” when you most likely mean “cooling”

6) Why are the 3-day average MODIS Chl data compared with instantaneous in situ Chl determinations? I suggest you compare MODIS data from the same day when in situ data were collected and indicate time difference (in hours) between the two estimates. It could be then interesting to discuss how Chl concentrations have changed in time after the typhoon. I think, that it is reasonable to expect the following. Just after the passage of the typhoon the concentration of surface Chl is likely to decrease, because Chl is mixed from surface waters to greater depth. Shortly after the typhoon the Chl is expected to increase in response to higher nutrient concentrations and increasing water stability. After some more time Chl concentration is likely to decrease again, when nutrients are used up and their concentrations are decreasing. You should also include the following reference when discussing satellite Chl data: Tang, S. , Chen, C., Zhan, H. , Zhang, J. and Yang, J.(2008) 'An appraisal of surface chlorophyll estimation by satellite remote sensing in the South China Sea', International Journal of Remote Sensing, 29: 21, 6217 – 6226, DOI: 10.1080/01431160802175579, URL: <http://dx.doi.org/10.1080/01431160802175579>

7) pages 3532 -3: You should include in the methods section the information about how was the diffuse attenuation coefficient for downwelling irradiance determined and what were the light wavelengths. \_\_\_\_\_

Interactive comment on Biogeosciences Discuss., 7, 3521, 2010.

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