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Biogeosciences Discussions

Interactive comment on "Optical characterization of an eddy-induced diatom bloom west of the island of Hawaii" *by* F. Nencioli et al.

F. Nencioli et al.

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The reviewer expressed several appropriate concerns that have been addressed in the new version of the paper as follows:

1.Objective of the paper: The paper has been modified (abstract, introduction and conclusions) to better address its objective: the identification of optical parameters that are sensitive to the variations in ecological community, that would allow in situ continuous observation of bulk particle composition in open ocean waters.

2.Chlorophyll concentrations: The reviewer was correct, and after comparing the vertical profiles from the ECO-FLNTU sensor with the ones from the ship's fluorometer (calibrated with chlorophyll concentrations from the third transect, as described in Nencioli

et al, 2008) we confirm that there was a general offset. The relationship between the two chlorophyll concentrations is shown in the figure 1. The values measured from the optics package were corrected according to the derived linear relationship. The resulting vertical profiles are now characterized by correct chlorophyll values. Figures 9 and 5 have been also updated and the results from the changed vertical profiles/scattered plots reinterpreted.

3.Background section: The results presented in this section are now better related to the interpretation of the vertical profiles presented in the paper, by adding two new paragraphs (pages 12-13) and a new figure (figure 7) to the Results section.

4.Ap slope (Eisner 2003): the method proposed was applied to our dataset as described in the last paragraph of the Results section. Despite the vertical profile followed the expected trend, the large difference in the range of values and the noisiness which characterized the slope values in regions of low chlorophyll concentrations, limited the information we could retrieve from this parameter. Vertical plots of the ap slope for cast 31 and Cast 35 are shown in figure 2.

5.High Chl/cp vs. remineralization: The sentence has been rephrased. High values of Chl/cp below the DCML are interpreted as resulting from the combination of photoadaptation and remineralization together.

6.Broader cp peak: The layer of senescent diatoms characterized by high concentrations of empty frustules is considered responsible for this feature. See description of figure 7 in the text.

Interactive comment on Biogeosciences Discuss., 6, 8075, 2009.

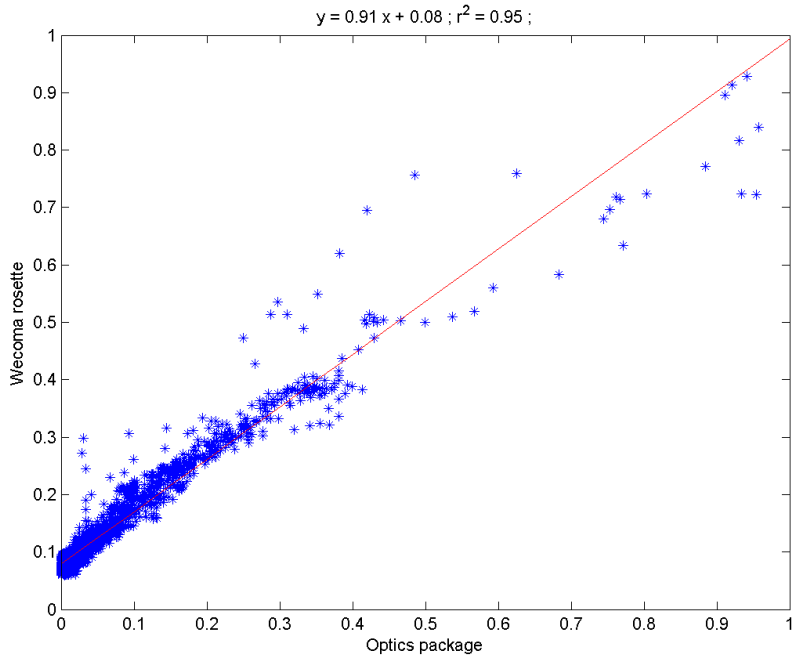
y = 0.91 x + 0.08 ; r2 = 0.95 ;
Wecoma rosette
Optics package
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

Fig. 1.

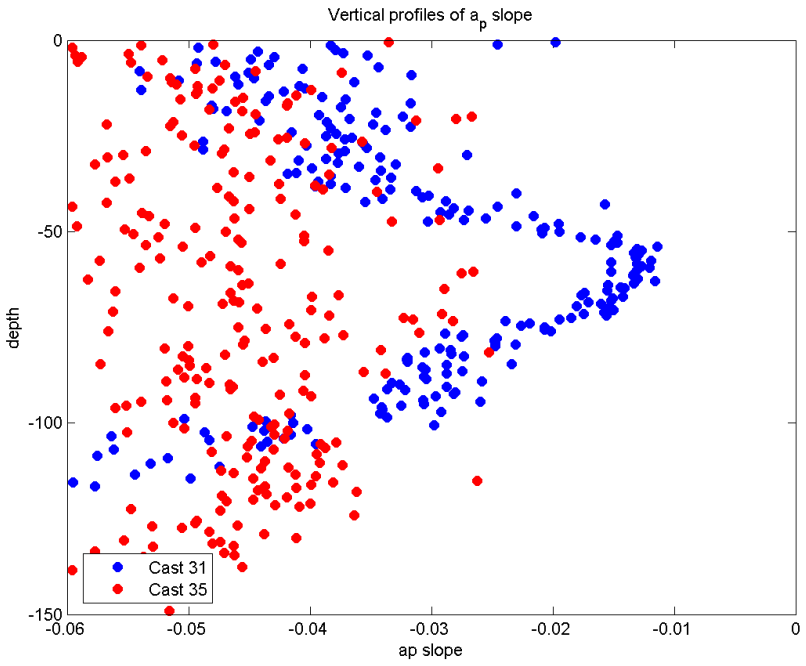
Vertical profiles of ap slope
depth
ap slope
Cast 31
Cast 35
0
-50
-100
-150
-0.06
-0.05
-0.04
-0.03
-0.02
-0.01
0

Fig. 2.