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# *Interactive comment on* "Variation of phytoplankton absorption coefficients in the northern South China Sea during spring and autumn" *by* J. Wu et al.

**J. Wu et al.**

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We greatly appreciate the detailed and constructive comments/suggestions given by Dr. E. Devred. We accept Dr. Devred's criticism on the statement p1557 line 11, "while random variation occurs in different regimes", although we are not trying to infer that phytoplankton absorption spectrum is random. Variations in phytoplankton absorption do reflect changes in pigment composition of the phytoplankton community or reflect physiological responses and adaptation to changes in physical environments (light, nutrients, temperatures, etc). To be consistent with this fact, the sentence has been changed to "while variations of their relationships occur in different regimes". We agree that our analysis of the absorption spectrum was limited. The ratio of aph(490)/aph(555) was thus calculated as suggested. Sathyendranath et al. (2005)



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reported that the ratio of 490 to 555 nm was positively correlated with the ratio of zeaxanthin to chla and negatively correlated with the ratio of fucoxanthin to chla, suggesting that when this ratio is higher the portion of picoplanktons tends to be greater in the community. Our results show that this ratio tends to decrease with depth, and it is not lower on Transect C the coastal water than on Transect A & B the offshore water, except at Stas.C4 & C5. These seem not correspond to the spatial distribution of picoplanktons indicated by parallel studies (e.g. Chen et al., 2006; Dai et al., 2007). Apparently this ratio does not provide us more information concerning pigments and the phytoplankton community structure for waters in this study. Because we do not have detailed data regarding chlorophyll and other pigments, it is a pity that we are unable to analyze the chlorophyll-specific absorption coefficients, which can infer information about cell size. And thus we are unable to develop useful models such as those in Bricaud et al. (2004) and in Devred et al (2006). Additionally, the main reason we chose Carder's model to do the fitting is that SeaDAS provides remote sensed aph products based on Carder algorithm. We well acknowledge that the limited data obtained from the two cruises are insufficient to provide the full scenario of temporal and spatial variability of aph in the South China Sea. Efforts are continued to collect both optical and biogeochemical data with wider coverage in both temporal and spatial scales. We believe these efforts will lead to a better understanding of the complex ecosystem of the SCS and an advancement of algorithms that account for the regional specificity of bio-optical properties.

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Interactive comment on Biogeosciences Discuss., 4, 1555, 2007.