

Interactive  
Comment

***Interactive comment on “Natural variability of bio-optical properties in Case 1 waters: attenuation and reflectance within the visible and near-UV spectral domains, as observed in South Pacific and Mediterranean waters” by A. Morel et al.***

**Anonymous Referee #2**

Received and published: 12 September 2007

In this concise paper, Morel and coworkers revisit the "bio-optical assumption," in which optical properties of the majority of ocean waters (called Case I waters) can be predicted from the chlorophyll a concentration (cf. Morel 1988, Morel and Maritorena 2001). In the present study, deviations from the assumption are examined in the context of likely extreme cases: the Mediterranean, where variations in CDOM absorption and particle scattering are higher than the 'average' variation with respect to chloro-

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phyll, and the South Pacific subtropical gyre, where CDOM concentrations and particle abundance may be the lowest in all ocean waters. Also in this study the spectrum down to 310 nm is considered (as opposed to 350 or 400 nm in previous studies). The authors conclude that deviations from the 'average' bio-optical relationships based on chlorophyll introduce systematic bias depending on location (i.e. errors are not random within a given locality), and that at shorter wavelengths, the dominance of CDOM in total absorption invalidates the bio-optical assumption entirely.

This study is a logical evolution of previous studies, and is very clear. The conclusions, while not surprising, are well supported by the data, which are particularly valuable in the context of previous studies (i.e. common methods, etc). The figures are also clear, but in my printed version the labels were a bit small and difficult to read.

The paper relies heavily on the Morel et al. (2007) L&O paper describing the optical properties of the subtropical South Pacific as found in the BIOSOPE study. This is fine, but it raised a question for me. Apparently unstated in the current paper is a resolution to the question of which absorption spectrum for pure water should be used (in Morel et al. 2007 two alternates are proposed). It's not clear to me why the aw1 spectrum was chosen. I don't disagree at all with this choice, but what was the justification here. This may be one of the most significant points in the paper, and I think it's worth expanding on a bit here.

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Interactive comment on Biogeosciences Discuss., 4, 2147, 2007.

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