

***Interactive comment on “Mechanisms controlling primary and new production in a global ecosystem model – Part II: the role of the upper ocean short-term periodic and episodic mixing events” by E. E. Popova et al.***

**E. E. Popova et al.**

Received and published: 20 October 2006

Referee 2.

Referee: “ it would have been better to compare e.g. 10 year averages” This is a very valid point. However the way OCCAM deals with external fluxes is such that a simple averaging procedure cannot be done internally in the model and new files with fluxes must be created outside the main model realisation. Thus we were at the limit of our capabilities for this experiment and its extension to 10 years will involve looking for a major source of funding. We are not sure that amount of resources involved will justify the improvement.

Referee: “Z/P is an imprecise diagnostic of the grazing pressure; perhaps a more precise term would be the grazing divided by Pr.Pr.” An even more precise term would be (pr.pr-grazing)/pr.pr. We analysed this and other possible measures of grazing pressure and came to the conclusion that a simple Z/P term was the most illustrative and clear way of describing the effect.

Abstract: The Referee suggested expanding the Abstract to include mechanisms that cause the change in primary production. While ideally this would be useful information to include in the Abstract, it cannot be done in a simple and concise manner because in each area there are a number of mechanisms involved. Listing them would create an Abstract that is too long and lacking in focus.

p.1118 l.20-21 “stratification” changed to “mixing”

p.1118 - p.1131 changed as suggested

p.1132 l5 “and the depth of the nitracline is deeper than the maximum UML depth” added.

Figure 1. Changed as suggested

Figures 7 and 9 “(see Fig.5 for explanation)” is added

Figure 8. “for the 6h (dark blue), daily (light blue), weekly (yellow) and monthly (red) forcing runs.” Added to the captions.

Referee 3.

We could not understand the meaning of the first three comments: (p.1117 p. 1124 p.1125)

p.1127: “light limitation” was changed to “light conditions” p. 1127 l.21 “the centres” was changed to “in the centres” p.1139. second “thin” is changed to “thick”

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Interactive comment on Ocean Sci. Discuss., 3, 1115, 2006.