**Ocean Science
Discussions**

Interactive comment on "Assimilation of ocean colour data into a Biochemical Flux Model of the Eastern Mediterranean Sea" *by* G. Triantafyllou et al.

Anonymous Referee #1

Received and published: 26 October 2006

Review of the manuscript: Assimilation of ocean colour data into a Biochemical flux model of the eastern Mediterranean G. Triantafyllou, G. Korres, I. Hoteit G. Petihakis and A. C. Banks Submitted for publication on Ocean Science Ref: 2006-0061.

The manuscript describe the result of a ocean color data assimilation exercise with a coupled physical-biogeochemical model implemented in the eastern Mediterranean Sea. The topic of the paper is interesting and it is potentially publishable. However, In order to fully reach publication standard. It is required a major revision offort along the lines listed in the itemised list below. The manusacript will then need a second round of reviewing.

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General Comments

G-1. page 1574, line 27. It is stated the Princeton Ocean Model (POM) implementation is very similar, but not identical to the model implemented by Korres and Lascaratos (2003), the resolution of the model used here being coarser. Therefore, I strongly recommend to add a short section Comparing the circulation features of the two model indicating wether or not the differences can be ascribed to the coarser resolution.

G-2. section 5. It is stated that the assimilation scheme generally improves the model behaviour during the whole study period except than at spring bloom time. Some conjectural explanations for this are proposed, but it is recommended to go deeper into this issue. At least the Chlorophyll surface fields (Observation, free run and analysis) for the period end of March- end of April should be shown and properly discussed. Currently there are not.

G-3. Section 5. The relatively worse behaviour of the assimilation scheme in the Egean Sea seems to be constant across the whole period of study (Figs 7 and 8). So in this region the scheme "fails" not only during spring bloom time. A more accurate investigation and discussion on this issue is strongly recommended.

Specific Comments

S-1. page 1574, line 25. It is strongly recommended that future work will utilise the U.S. Navy Digital Bathymetric Database 1 instead of the 5. The horizontal resolution of DBDB1 is much better than DBDB5.

S-2. page 1576, line 14. is strongly recommended that future work will utilise the MEDATLAS data base to provide Initial Conditions to the physical component of the coupled model.

S-3. Section 2. Please provide information about the open boundary conditions applied to both components of the coupled model.

S-4. Fig. 10. This figure is completely unuseful if it is not shown jointly with the

corresponding fields from the free run.

Editorial Comments

E-1. Title and whole text : I would rather write Biogeochemical rather than Biogeo-chemical.

E-2. page 1570, Lines 20-21. I would suggest rewriting the opening sentence of the introductory section as follows: The Mediterranean Sea characterised by prominent morphological discontinuities defining su-basins with different hydrodynamics and eco-logical conditions.

E-3. page 1570, line 25. Please give a reference for the Mediterranean Sea operational forecatsting system.

E-4. page 1571, line 20. repeat–>repeated.

E-5. page 1571, line 26. Remove the unuseful text into perentheses.

E-6. page 1574, line 9. The correct and "so to say" official reference for the Princeton Ocean model is the following: Blumberg, A.F., and G.L. Mellor (1987), A description of a three dimensional coastal ocean circulation model, in Three dimensional coastal ocean model, edit by N. S. Heaps, pp 1-16 AGU, Washington D.C.

E-7. Page 1577, line 16. Please explain better the meaning of asynchronously coupled (off-line coupled?).

E-8. Figs. 7, 8, 9, 10. The quality of the figures is very poor. They should be redone in a clearer format.

E-9. Captions of Figs. 10, 11, 12 13. The units for the integrated chlorophyll and bacterial biomass should be mg/m2 and not mg/m2/d.

Interactive comment on Ocean Sci. Discuss., 3, 1569, 2006.

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