

Interactive comment on “Mixed layer variability and chlorophyll *a* biomass in the Bay of Bengal” by J. Narvekar and S. Prasanna Kumar

Anonymous Referee #3

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The authors purport to examine the connection between mixed layer variability and chlorophyll biomass in the Bay of Bengal. This is done by compiling gridded datasets of a number of variables. The results presented are a qualitative description of a number of (hard to see) plots with little discussion. Indeed, Section 3.6 is no more than a description of what is seen in the various figures, the link between the biogeochemical parameters and the physics is not discussed, and the authors give no justification for the last sentence in the Conclusion that they is a strong link between the two.

As mentioned by Reviewer #2 the authors give no reference to previous studies of biological production in the region. This is also true for the characteristics of the surface mixed layer for which there are numerous studies. Three that come readily to hand are: Anitha et al, Ann. Geophys, 2008; Keerthi et al, Climate Dynamics, 2012; Seo et al J.

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Climate, 2009.

I recommend the manuscript is rejected as is and suggest the authors look to the following:

- (i) Put their study into the context of previous studies. What is new about their results and conclusions?
- (ii) There are a number of freely available gridded datasets of MLD that include data from WOD05 and Argo. Why construct another one? In the context of the present study it would be instructive to have a regional comparison of WOD05 and Argo derived MLD.
- (iii) Be more quantitative and go beyond just a visual description of plots. For instance a plot of the rate of change of ML temperature as a function of month, averaged over some suitable area, compared with tendencies implied by surface heat fluxes would help greatly in determining the importance of particular processes.
- (iv) Consider the impact of mesoscale eddies, intraseasonal, and interannual variability on their results. A lot of the spatial variability in the biogeochemical properties presented appears to be induced by length and timescales not attributable to the monsoon. The Keerthi et al study mentioned above would be useful in this regard.

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