

## ***Interactive comment on “Physical Modulation to the Biological Productivity in the Summer Vietnam Upwelling System” by Wenfang Lu et al.***

### **Anonymous Referee #1**

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This study showed a close spatio-temporal covariability between biogeochemical module based on CoSINE model and kinetic energy based on ocean current from ADT in summer Vietnam upwelling system. The model results show that weakened circulation and eddy activity, with  $\sim 21\%$  less nitrate inventory and  $\sim 16\%$  weaker primary productivity when separation current is absent.

My impression on this manuscript is that two different physical and biological perspectives are well linked together to address productivity changes in response to physical forces. However, I found some misleading facts from the results that this paper discussed. Thus, I would like to recommend to accept this paper for the publication of OS after some revision.

Major Comments Is there any critical condition to explain that the elevated kinetic en-

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ergy and intensified circulation can be explained by the separation of the upwelling current system (as described in Abstract).

Authors discuss Figure 5 for model comparison with OISST and VGPM NPP. To me, Model SST and NPP are not quite similar. Although authors admit its discrepancies, authors need to estimate this SST differences can cause how much uncertainties to obtain the result from covariability in physical-biological interaction.

For Fig. 7 (Line 218), “Subsurface CHL maxima appears at  $\sim 35$  m, which is somewhat shallower than that in the observation.” Authors also need to discuss this depth differences leading to how much uncertainties to obtain current results.

#### Minor Comments

Fig. 1, Magenta diamonds for observation stations are not clear. Change them with another better color (maybe black color)

Fig.2 shows CHL concentraton in Fig. 2a. I am wondering whether its magnitudes are right. It seems too low. Authors need to check.

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