

## ***Interactive comment on “Mesoscale processes regulating the upper layer dynamics of Andaman waters during winter monsoon” by Salini Thaliyakkattil Chandran et al.***

### **Anonymous Referee #3**

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Manuscript entitle “Mesoscale processes regulating the upper layer dynamics of Andaman waters during winter monsoon” by Chandran et al., used multiple data set to study eddy in the Andaman Sea. It is an interesting study but identification of eddy is through qualitative approach. I have few suggestions on their manuscript

(1) Oceanic circulation in upper ocean is not only geostrophic, identification of eddy through geostrophic current is not enough. It is better to follow Okubo-Weiss parameter method to identify eddies. (2) It is suggested to use OSCAR current observations rather than using geostrophic current. (3) It is known that equatorial westerly jet (Wyrki jet) produces down welling Kelvin wave which propagate as a coastal Kelvin and ra-

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diate Robby wave which favors cyclonic eddies in the BoB including Andaman Sea. These mechanism is already reported by earlier study but here authors connected it with bio-geochemistry using in-situ should be reflected and discussed in detail. Author mentioned that they measured vertical velocity but throughout the manuscript it is not displayed. It is suggested use them in this study and may compare it with up welling of isotherms etc. (4) Author mentioned vertical stability and vertical shear of currents favors the formation of eddies. It can control vertical mixing, however shear of horizontal current in horizontal plane supports the formation of eddies. This what discussed by Okubo-Weiss. Author should drop related sentences from the abstract about vertical shear and stratification. (5) It is mentioned that BoB upper ocean stratification restrict nutrient supply and later it is mentioned that eddy support up welling and nutrient supply, however it is not clear what is a role of waves and convective mixing? According to figure 8 higher chlorophyll is reported in north BoB, where stratification is more.

Minor comments: (1) Figures quality need to be improve and better display eddy location in spatial plots of all parameters. (2) Figure captions are short i.e “wavelet power spectra of SSHA”, and contain little information about figure. (3) Figure 3 X axis caption is missing. (4) Figure 2 caption should be “depth longitude section of b) temperature, c) salinity and d) density distribution at the eddy location” than “b) Vertical temperature, c) salinity and d) density distribution at the eddy location”. (5) In Figure 2 data used in the present study along the ship track is displayed, whereas in figure 1 other data locations are also mentined which are not used in the manuscript. Better to drop figure 2 and all the points from where data collected and used in the present study can be displayed in Figure 2a. (6) Figure 6 include eddy location in this plot. (7) Figure 4 and 9 can be merged as 4a and 4b (8) In Figure 7 same period OSCAR current should be overlay. (9) Figure 8 (a-d) are missing in figure, confusing to know it.

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