



EGUsphere, referee comment RC2
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Comment on egusphere-2022-453

Anonymous Referee #2

Referee comment on "Seasonal variation in eddy activity and associated heat/salt transport in the Bay of Bengal based on satellite, Argo, and 3D reprocessed data" by Wei Cui et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-453-RC2>, 2022

Seasonal variations of eddies in the Bay of Bengal are studied by Cui et al., using altimeter and hydrographic data sets. The seasonal variations of the eddy statistics is analysed and presented in detail using 26years of SLA and Argo data sets. The analysis has presented an estimate of temperature and salinity anomalies caused by eddies. The study has also presented the spatial structure of the seasonal variation of heat and salt transport induced by the eddies. In addition, this paper presents a detailed analysis of cyclonic and anticyclonic eddies, their propagation and vertical structure. Even though the advance in terms of science presented in the paper is not substantial, the data that has been presented offers useful material for future studies. Therefore, I recommend that the paper be accepted after the comments and suggestions given below are incorporated.

The results presented are too lengthy and often over-descriptive. Several features of the eddy structure and variability in the Bay of Bengal have been presented in several papers by Cheng et al. and Cui et al. The new results that have emerged consequent to the separation of the analysis into a seasonal cycle need to be highlighted and repetition be avoided.

Significant new contribution from this study is the estimation of heat and salt transports. These transports, however, appear as patches of relatively short spatial extent. What are implications of these transport? Do they affect the SST distribution? Do they affect the heat budget of the Bay of Bengal? The authors may also consider separating the heat and salt fluxes into individual contributions due to cyclonic and anticyclonic eddies.

'Sri Lanka eddy' described in this paper is well known as Sri Lanka Dome (Vinayachandran and Yamagata, JPO, 1998). See the recent paper by Cullen and Shroyer (2022) for additional references. It is suggested that the terminology that is in practice be used.

Line 125: Justify why the removal of seasonal cycle give the mesoscale structure. Past studies have removed 3 or more harmonic or applied appropriate filters to extract mesoscale variations.

Line 157: What are stable eddies?

Figure 2: Is this a schematic? Or is this data for a selected day? Description of line legends A to F is missing.

Line 170 : This sentence is not clearly written. Replace 'choosed' with 'chosen'.

Line 190: The primed quantities have not been defined appropriately.

Line 290: Please replace 'changeable' with variable and correct the sentence.

Line 300: Replace Sri Lanka cold eddy to Sri Lanka Dome.

Line 473: "However, eddies will exchange heat and salt ...". This is not apparent. Please justify with appropriate references.