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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Variability of vertical structure of precipitation with sea surface temperature over the Arabian Sea and the Bay of Bengal as inferred by TRMM PR measurements" *by* Kadiri Saikranthi et al.

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The article titled "Variability of vertical structure of precipitation with sea surface temperature over the Arabian Sea and the Bay of Bengal as inferred by TRMM PR measurements" submitted by Kadiri Saikranthi et al has to address about the following concerns before the Editor makes a final decision.

(a) The article title highlights aspect of the variability of vertical structure of precipitation with sea surface temperature (SST). However, the authors explore the relationships be-

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tween the SST and other variables such as AOD, CER ice and CER liquid, total column water vapour etc. that may not directly represent the vertical structure of precipitation.

(b) The figure 1 shows the regions considered in this study with background colour representing the mean SST during SWM period over AS and BoB. It is clearly evident that the regions of interest depict significant spatial heterogeneity in the SST ($\sim$ 2 degrees C). In such a scenario, (in the figures 4, 5 and 6) I think the standard deviation should be present in those figures.

(c) I would recommend to use MODIS level 2 data products for AOD, CER-ice and CER-liquid for exploring the relationships between different variables. Further, the authors have not mentioned from where the total column water vapour data was obtained. Even the combined uncertainty from different sources of data (e.g., TRMM, MODIS and ECMWF Interim Reanalysis) was not accounted for when establishing the relationships.

(d) It would be nice if the authors establish the mechanism on why the contrasting relationships were observed over BoB and AS. The authors shall note that SST depends on other factors such as turbidity of the sea water and sea surface albedo, which in turn depend on other variables including wind speed and chlorophyll concentration. While the authors have ignored these essential variables, the relationships with AOD, CER-ice, CER-liquid and total column water vapour alone cannot provide the variability in SST in the regions of interest.

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