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*Supplement of*

**Variability in vertical structure of precipitation with sea surface temperature over the Arabian Sea and the Bay of Bengal as inferred by Tropical Rainfall Measuring Mission precipitation radar measurements**

**Kadiri Saikranthi et al.**

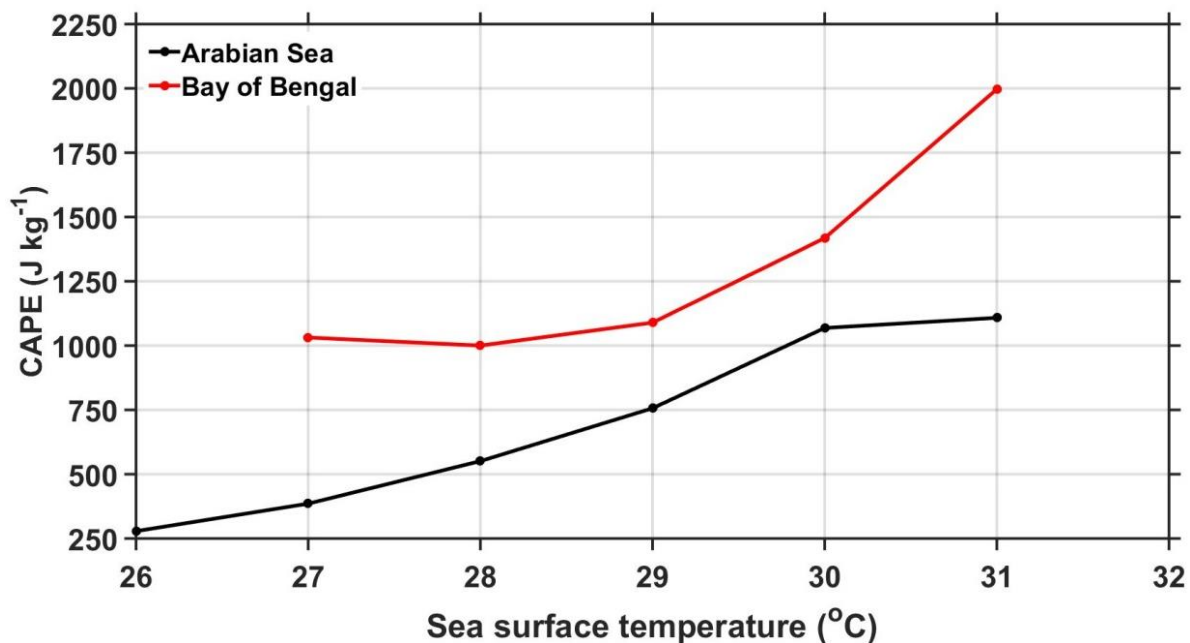
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## Supplementary material

Satheesh et al. (2006) showed an increase in AOD with increase in latitude over the AS due to the dust advection from Arabia desert regions during ISM season, whereas SST decreases with increase in the latitude. In other words the SST is low and AOD is high in northern AS whereas over the southern AS, SST is high and AOD is low. This contrasting spatial distribution of AOD and SST could cause a negative correlation between AOD and SST as depicted in Fig. 6a. To examine whether the observed decrease in AOD with increase in SST over the AS is due to the latitudinal variation of AOD or exists at all latitudes, we have segregated the data into 2° latitude bins and plotted the mean AOD with SST for all bins and is depicted in Fig. S2. In spite of the magnitude, AOD variation with SST is nearly similar at all latitudes of the AS, i.e., the higher AOD is observed at lower SSTs and vice versa (Fig. S2a). On the other hand the latitudinal variation of AOD with SST over the BOB shown in Fig. S2b also show a decrease in AOD with SST till 30 °C but the magnitude of variation is trivial relative to the AS. Also, as depicted in Fig. 6a AOD increases above 30 °C with SST over the BOB. This indicates that though there is a difference in magnitude of variation, AOD varies with SST over both the seas at all latitudes. This analysis is repeated using the multi-angle imaging spectroradiometer (MISR) dataset (which is not shown here) for small, medium large aerosol particles. Interestingly all three types also show a decrease in AOD with rise in SST over both the seas.

Satheesh, S. K., Moorthy, K. K., Kaufman, Y. J., and Takemura, T.: Aerosol Optical depth, physical properties and radiative forcing over the Arabian Sea, *Meteorol. Atmos. Phys.*, 91, 45–62, doi:10.1007/s00703-004-0097-4, 2006.

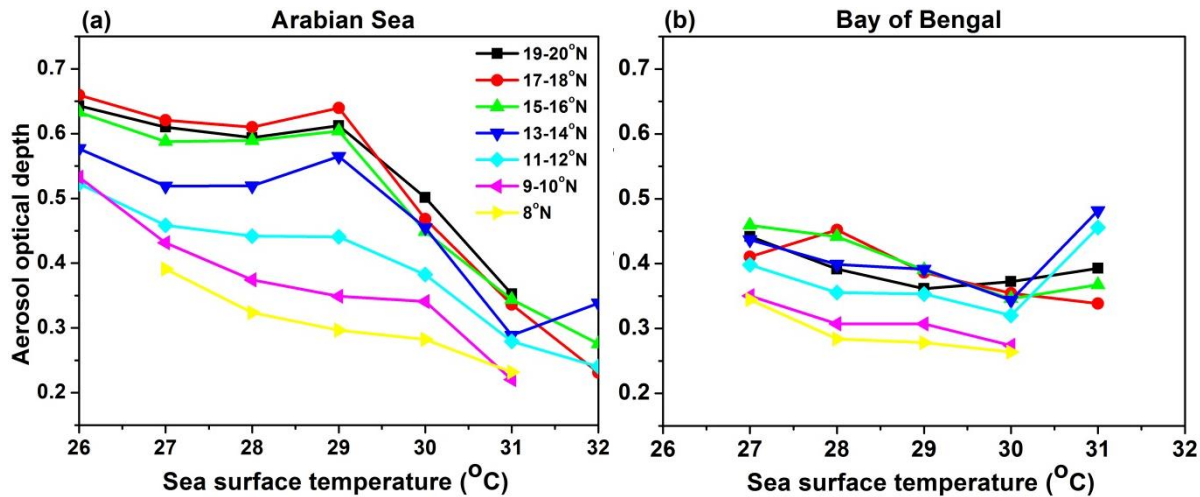


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28 **Figure S1:** Variation of mean CAPE (in J kg<sup>-1</sup>) with SST over the AS and the BOB during  
 29 the ISM season.

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33 **Figure S2:** (a) and (b), respectively, represent latitudinal variation (for every 2° latitude  
 34 interval) of mean AOD over the AS (between 63°E and 72°E) and the BOB (between  
 35 83°E and 92°E).