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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Convective environment in pre-monsoon and monsoon conditions over the Indian subcontinent: the impact of surface forcing" *by* Lois Thomas et al.

Anonymous Referee #1

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The work examines the convective environment in the Indian subcontinent during the pre-monsoon and monsoon seasons using radiosonde and surface flux observations. Such data are highly valuable for this region. The analysis is robust and overall, the paper is well written. However, it lacks clarity at few places that need attention. These are highlighted below.

Fig.1 : Are the horizontal lines in left panels LCL? It's not possible to understand the pre-monsoon vs monsoon difference from these plots. I rather suggest to show mean (and the intra-seasonal spread) profiles or some other means to help following the discussion. Are there any major differences in active and break phase of the monsoon?

Fig 5 - For low qv case (pre-monsoon 1), CAPE does not show any variation; it starts showing some variation when qv is between 7-14 (pre-monsoon 2 case) and then for the pre-monsoon 3 case, t shows a linear behavior. Overall, the pattern looks exponential. Does this mean that there is a threshold qv above which CAPE responds to further change in qv? This needs to be clarified.

How do the two datasets match (e.g. do LCL from the two datasets match). This is important as the conclusions are based on both data sets.

More details about the numerical experiments are required. From where the boundary conditions are taken? What is the time step?

How are these results useful to understand the aerosol impact? Bringing aerosols further complicate due to forcing and feedback. I suggest to remove the reference of aerosols (last paragraph).

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