

Interactive comment on “Variability of lightning hazard over Indian region with respect to ENSO Phases” by Sreenath Avaronathan Veettil et al.

Anonymous Referee #1

Received and published: 6 December 2020

The manuscript titled "Variability of lightning hazard over Indian region with respect to ENSO Phases" emphasizes the dependence of lightning activity over India with ENSO. Since lightning is a destructive natural hazard and India such a densely populated country, it is essential to understand the distribution of lightning flash rate (LFR) and its seasonal oscillation to avoid casualties. The manuscript is started by explaining the seasonal variability of LFR over India. Based on the seasonal change, three hotspots of LFR are identified. The variability of LFR under ENSO phases are substantiated with the vertical distribution of graupel and snow, responsible for the charge generation inside clouds. It is an excellent method to explain the anomalous distribution of LFR. The authors used the relatively less explored vertical profile of latent heating and hydrometeors TRMM data and presented deepening clouds based on this vertical profile.

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Manuscripts display the distribution of LFR from 1995-2013 over the three hotspots and indicate that the three hotspots of LFR over the Indian land region became more prominent in the last decade of the monsoon season, one of the significant findings in this study, and it is useful for the society also. The indirect influence of ENSO warm phase on LFR over India during the post-monsoon season by modulating the subtropical westerly jet is another impressive result explained with geopotential height and upper-level wind anomaly.

Specific comments:

1. Include how the authors calculated the anomaly of LFR in the data and methodology section.
2. The location of monsoon trough and Western disturbances should be presented in Figure 2 for convenient reading.

Technical corrections:

There are some minor grammar issues in the manuscript. Eg.

Line 119: Change "enhance" to enhances

Line 137: "An elongated region, over central India,", remove the commas.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2020-292>, 2020.

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