This draft studies the spatial clustering of tropical precipitation and its impacts based on a measure from an earlier study from the same group. This draft analyzes the interannual variability and finds that the tropical precipitation is more clustered under El-Nino like SST patterns. This draft explores the response of tropical precipitation clustering to global warming in CMIP6 GCM predictions, and finds an increase in clustering associated with the meridional contraction of ITCZ. This draft also studies the impacts of tropical precipitation clustering on TOA radiation budget through tropical relative humidity and low cloud amount, and evaluates the inter-model spread therein. This draft would contribute to the convective organization community if the following points are clarified after revision.

Major comments:

The results are convincing but mostly statistical and descriptive, with very few explanations of the underlying mechanism. I strongly encourage the authors to address the following questions:

- L305-307: Why does the ITCZ narrow under global warming in models? This is crucial to understand the increase in tropical precipitation clustering under global warming.
- L359-373: Why does an El-Nino like SST pattern cause a stronger tropical precipitation clustering? This result is contradictory to existing literature. For example, Quan et al., (2025) found that a smaller SST contrast between tropical western and eastern Pacific causes a weaker large-scale convective aggregation. The authors should add comparisons with previous studies and evaluate if the contradictory result is due to different measures for convective aggregation (= precipitation clustering, I think).
- Figure 11: Is the low could amount response due to the change in RH or the change in static stability (which can be measured by estimated inversion strength)?

The authors might think these questions are out of scape, but I think at least brief relevant discussions are necessary.

Figure 4a and Figure 8: I have the same questions for them, and I will take figure 4a for example.

- It is hard to believe that a R-square value of 0.21 is statistically significant. How did the authors exactly do the significance test and what is the p-value?
- I think the expression “models that show a greater clustering with warming also show a more zonal shift of heavy precipitation to the central Pacific” (L312-313) is not accurate. There is a negative correlation between dAm and dCz, but some models have a positive dAm (greater clustering) and a positive dCz (shift away from the central Pacific). The authors should modify the conclusion.

Section 2.3: What motivate the authors to choose the threshold as 5% or 16mm/day? Could a slightly different threshold (for example, 3% or 10%) result in a significantly opposite conclusion (for example, El-Nino weakens precipitation clustering)?

Figure 6, 10 and 11: I think the authors want to imply that the change in TS can explain the change in RH and low cloud amount. However, they are inconsistent in the tropical south-eastern Pacific region (coast of South America), where a warmer surface temperature induces a smaller RH and more low clouds. How to understand this contrast? This is important because the tropical south-eastern Pacific region is where we have a large low could amount in present climate and it contributes a lot to tropical albedo.

Minor comments:

Colorbar: Blue means positive and red means negative in all figures. This is unconventional. I suggest the authors represent warm by red and cold by blue (for example, in Figure 6) when describing temperature, and use another color when describing moisture (for example, green for moist and yellow for dry).

Unit for precipitation clustering measures: Is it possible to use the same unit for Af and Am (for example, both in percentile or both in km^2), so that readers can easily compare them?

Figure 1: I suggest the authors plot precipitation in one panel and LCF in another. Currently the color has two meanings and is unclear due to overlap.

L479: There is no Figure S10 in SI. I think you mean S8.