

General remarks:

This paper examined radar quantitative precipitation estimation (QPE) in typhoon Lekima (2019) by comparing surface-based multiple-observational datasets. The discussion on self-consistency between radar and theoretically derived variables is interesting to me. Also, overall quality-control processes in radar and disdrometer are quite beneficial in the radar community. These should be positive points in this manuscript. However, it would be more interpretation for microphysical processes using polarimetric variables. Also, some sentences (or words) should be revised. To enhance the paper, I have the following more specific suggestions.

Specific comments:

1. The microphysical characteristics would be discussed more in the manuscript, because the part related to microphysical processes was in only one section 3.2. Otherwise, the title and abstract should be revised. The author spends most of the manuscript describing data processing (including radar and disdrometer) and comparing observed radar variables and theoretically derived variables. Also, the microphysical processes are included in the summary.
2. Line 83: the reviewer recommends adding more background on why the author chooses the typhoon case. This is because the typhoon case is inappropriate for radar-based QPE related to strong winds and mixed-phase hydrometeor particles. As the author mentioned, there are enormous possibilities for measurement errors in radar, rain gauge, and disdrometer. It could be helpful why the author selected the typhoon case even though there can be large measurement errors.
3. The words are quite not understandable. What is the meaning of “dynamic precipitation microphysical processes”? It seems very complicated to understand the word in the sentences. Please rewrite (or) the words. The others can find as minor suggestions.
4. The reviewer suggests that the authors can use three-dimensional structures to understand microphysical processes. Also, it would be helpful if you plot contoured frequency by altitude diagrams (CFADs) with the dual-polarimetric variable in analyzing microphysical processes. There are many works of literature to understand microphysical processes in deep convective clouds. Below is one piece of literature the authors can refer to,
- Friedrich, K., Kalina, E. A., Aikins, J., Gochis, D., & Rasmussen, R. (2016). Precipitation and Cloud Structures of Intense Rain during the 2013 Great Colorado Flood, *Journal of Hydrometeorology*, 17(1), 27-52.
5. Lines 375-394: it would be helpful if the author could show some figures with vertical structures with polarimetric variables in their microphysical processes (i.e., accretion, coalescence, and breakup).
6. Figure 10: the differences of KDP and ZDR were quite significant in interpreting some microphysical processes. It seems that the author needs additional quality control in the radar variable.
7. Line 376-377: the melting graupels (or hail) are important in their change size for ZDR measurement. It would be helpful if the author could analyze with thermodynamic profiles.

Minor comments:

1. Line 39: this sentence would not be correct. As far as I know, dual-polarimetric variables are used for the operational purpose in radar QPE. For instance, MRMS has used available dual-polarimetric variables in radar QPE. Please see the below reference,
- Ryzhkov A, Zhang P, Bukovčić P, Zhang J, Cocks S. Polarimetric Radar Quantitative Precipitation Estimation. *Remote Sensing*. 2022; 14(7):1695.
<https://doi.org/10.3390/rs14071695>
2. Line 99: what is the “special microphysical processes”?
3. Line 109: what is the “regional central cities”?
4. Line 127–128: please rewrite this sentence. “only gauge observations without any interruptions are utilized in this study”
5. Line 131–141: please consider that these sentences could move to the introduction section.
6. Line 156: why did the author select the threshold (Freq>50%)? I think the ground clutter could be well identified in clear air conditions.
7. Line 357: please add more interpretation about this sentence. What is the meaning of microphysical composition?
8. Figures 9-13: which radar elevation did you use for these analyses?
9. Figure 10: Lines are not clear. Please replot the figure.