Comments to the Author

Review of the paper "Assessing K_{DP}-based QPE for the record-breaking rainfall over Zhengzhou city on 20 July 2021".

In this paper, for the record-breaking rainfall in Zhengzhou City on 20 July 2021, the performance of K_{DP}-based quantitative precipitation estimation is evaluated based with ground observation equipments (rain gauge, disdrometer and S-band dual-polarization radar). Several "best K_{DP} estimate" and "Parameterizations of $R(K_{DP})$" methods are discussed in depth. On this basis, the quantitative precipitation estimation results based on K_{DP} are analyzed in the case of single-point and multi-point statistical rain rate, and areal rainfall maps, respectively. Finally, the research work is concluded.

The logic of this paper is clear and rigorous, and the discussion and analysis are in-depth and convincing after the previous review process. It is meaningful for the application of polarimetric radar in the monitoring of extreme precipitation and the corresponding disaster warning. However, there are also some deficiencies in the writing of the paper, and this paper can be published after these are resolved. Therefore, my suggestion is minor revision.

Below are some specific comments.
Major comments:
1. Extreme rainfall events are rare but destructive, so it is important to monitor them indeed. Only one extreme rainfall event was studied in this study, and whether the robustness of some conclusions obtained needs to be further tested, which may be important to assess the strength of the significance of this study. Of course, I understand that extreme rainfall events are difficult to capture, and the title of this paper is aimed at this extreme rainfall event over Zhengzhou city on 20 July 2021. However, considering the robustness of K_{DP}-based QPE algorithm is meaningful for practical applications. Therefore, I suggest that the author can mention relevant content in the later part of the paper. It's not mandatory.
2. Line 251-252: I'm wondering if it can deduce this conclusion based on the results. The fact that one method is better than the other two does not seem to mean that the uncertainty of that method has been minimized. Perhaps none of the three methods is ideal for achieving functionality. After all, for such an empirically fitted model, it is more likely to be more about convenience in the operation system.

Minor comments:
1. Figure 1(d): This figure is not mentioned in the paper, although the relevant wind speed information is explained later in the paper.
2. Line 62: There are some inconsistent expressions, such as "Fig. 1(a)", "Figure 1(c)", "Fig. 2b", please unify them in the full text.
3. Line 62-63: Latitude and longitude keep the same number of digits after the decimal point.

4. Line 78: The references here should not be bracketed, please revise it in full text scope.

5. Line 128: OTT PARSIVEL's version needs to be noted. As far as I know, there is a difference in accuracy between the first and second generation.

6. Line 154: The author only used Zhengzhou radar for QPE. The Luoyang radar seems only to have been used to show the difference in the location of heavy rainfall centers at different heights as shown in Figure 2. However, the purpose of the article is "Assessing KDP-based QPE for the record-breaking rainfall over Zhengzhou city on 20 July 2021". Although it is interesting in revealing the phenomenon, I am considering the necessity of radar related content in Luoyang in this paper. The author may consider my opinion, but it is not mandatory.

7. Figure 2: "$R=51K_{DP}^{0.86}$" needs to be stated here, even if mentioned in Section 3.2.

8. Line 180: I'm not sure if "noise" is appropriate, perhaps uncertainty?

9. Line 204: Replace "16~17" with "16:00~17:00", please revise it in full text scope.

10. Line 206: Replace "well.Therefore" with "well. Therefore".

11. Line 258-259: Explaining why or adding references is needed.

12. Section 4.2: Does the rain gauge here include meteorology and hydrology? How many in total?

13. Line 296: std might be better in italics.

14. Figure 7: Please refine this drawing. Different subgraphs appear overwritten, and (e) the legend of the graph is out of the graph box.

15. Line 361: Replace "saturation" with "saturation".