Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., author comment AC1
https://doi.org/10.5194/hess-2022-66-AC1, 2022

Reply on RC1

Wenqian Mao et al.

Author comment on "Statistical characteristics of raindrop size distribution during rainy seasons in complicated mountain terrain" by Wenqian Mao et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2022-66-AC1, 2022

- 1. The English and grammar of the article need to be carefully revised.

Thanks your comments. The language of the article have been revised

- 2. How to determine the observation instruments are at the same accuracy standard in the 6 sites?

Thanks your comments. The instruments are used the same type with particle size classification and velocity classification. Besides, it is also used the same data processing and quality control, which insure the same accuracy at time and particle size.

- 3. In Fig 1, the size of sites is small and unclear. Add the photos of observation station or equipment.

Thank you very much for your valuable comments. The fig 1 has been revised. And it also added the photos of equipment.

- 4.The research needs to further highlight the reasons for the differences between sites in the discussion and conclusion. And how is the precipitation different from other areas?

Thanks your comments. According to the characteristics of raindrop size distribution (DSD) in Qilian Mountains, we find there are some similarities in different sites, which different from other areas. This is mainly due to melting of tiny, compact graupel, and rimed ice particles (relative to large, low-density snowflakes). Besides, there are also some similarities in different areas, such as the basic law of stratiform and convective rainfall reflecting in the raindrop size distribution. However, it still exists some differences, especially in the DSD parameters, because they have different altitudes and geographical environments. Based on the suggestion and above description, we have supplemented the discussion section. In order to better illustrate the precipitation difference between Qilian Mountains and other areas, we will choose representative site in Qilian Mountains to compare with other areas despite a brief mention of Z-R relationship and classification of precipitation types in this article.

- 5.Extended discussion: Whether the change of DSD is related to other meteorological factors, such as local wind speed?

Thanks for your tips. DSD can reflect the microstructure of precipitation. But it involves a series of microphysical and physical processes from rain generation to falling. There are more researchers to explore the possible factors about the change of DSD. And we will continue to think about the contribution of local wind speed on the change.