

1.47 CORRECTION OF DROP SIZE DISTRIBUTIONS FROM DIFFERENT DISDROMETERS USING GENERALIZED NORMALIZATION PARAMETERS DURING ICE-POP 2018 PROJECT

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The drop size distribution (DSD) can be measured by various disdrometers such as 2D-Video Disdrometer (2DVD), PARTicle Size VELOCITY (PARSIVEL) and Precipitation Occurrence Sensor System (POSS). These disdrometers were installed in Pyeongchang area for ICE-POP 2018 (International Collaborative Experiments for Pyeongchang 2018 Olympic & Paralympic winter games) project. Their observation principles are different. For example, 2DVD is optical disdrometer using two optical cameras and PARSIVEL is laser optical disdrometer. POSS is based on radar principle. The measured DSD can be influenced by these discrepancy and various sources of errors. Therefore, the development of correction technique of DSD is required.

In this study, correction of the disdrometers was performed by using generalized normalization parameters such as N_0 (Generalized characteristics number concentration) and D_m' (Generalized characteristics diameter) with 2DVD as a reference. To perform inter-comparison of the disdrometers, one 2DVD, 13 PARSIVELs and 5 POSSs were installed at the same site, Daegwallyeong Weather office (DGW), in the summer of 2017. About 2000 1-minute DSDs were collected during the inter-comparison experiment. The comparison of generalized normalization parameters between 2DVD and the others were performed. We define that bias of N_0 is concentration correction factor and bias of D_m is diameter correction factor. DSD were corrected by these two factors. Single moments (0th to 6th) and rainfall rate (R) were compared between original DSD and corrected DSD to evaluate our correction technique of DSD. The moments and R of corrected DSD are relatively closer to these of 2DVD than original DSD. Corrected averaged DSDs also have very similar shape with that of 2DVD. The value of two factors obtained in this study can be used to correct the disdrometer data observed during ICE-POP 2018 project.
