

CHARACTERISTICS OF RAINDROP SIZE DISTRIBUTION OBSERVED IN SOUTHERN CHINA IN DIFFERENT WEATHER SCENARIOS USING 2-D VIDEO DISDROMETER

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The characteristics of raindrop size distribution (DSD) in different weather scenarios have been studied using measurements from two-dimensional video disdrometer (2DVD) installed at Chek Lap Kok (CLK) in Hong Kong. Based on the precipitation classification by Wen et al. (2016), stratiform and convection precipitation types in each of the weather scenarios were identified, including cold surge, tropical cyclones' (TC) rainbands and monsoon trough, etc. Comparison was made with the DSD data collected from 2 sets of 2DVD installed respectively at Enping (EP) and Yangchuan (YC) in Guangdong to analyse any spatial variations in DSD over southern China. Preliminary analysis showed that the mass-weighted mean diameter (D_m) for stratiform precipitation fell largely in the range of 0.5 – 2 mm for rainfall intensity (R) below 15 mm/hr. For convective precipitation, D_m varied mostly from 1 to 3 mm. Based on the scatterplot of D_m and R , for convective precipitation with high R values (> 50 mm/hr), D_m seemed to have plateaued in around 2 mm. Further increase of R was mainly due to the increase in concentration of raindrops. The results were consistent with the findings of Wen et al. (2016) for DSD observed in East China. Using DSD data at CLK, EP and YC, the composite raindrop spectra (CRS) associated with the outer rainbands of TC Wipha in 2019 at the above three locations were found to be similar. Such similarity was also observed when comparing those CRSs associated with the rainbands of TCs Lionrock and Kompasau in 2021. Among all the analysed CRSs related to TC's rainbands, the maximum raindrop size was around 4 to 5 mm which was slightly higher than those observed by Tokay et al. (2008) in analysing the CRSs of TCs over the Atlantic ocean.