Unuma, T., H. Yamauchi, T. Kato, A. Umehara, A. Hashimoto, A. Adachi, and N. Nagumo, 2025: Characteristics of raindrop size distribution using 10-year disdrometer data in eastern Japan. *J. Meteor. Soc. Japan*, **103**, http://doi.org/10.2151/jmsj.2025-011.

Plain Language Summary: This study statistically clarified the characteristics of drop size distributions (DSDs) using about 10 years of DSD data obtained from a ground-based optical disdrometer in eastern Japan. The quasi-equilibrium shape of the DSDs, which is rarely observed in only 16 cases in this study, was likely to have different characteristics between maritime and continental convection. Among them, the contribution to rainfall intensity was larger when the mass-weighted mean diameter (D_m) or the generalized intercept parameter (N_w) was effectively increased with temporal change based on an error analysis. It is likely that the slope parameter, one of the DSD parameters, can be optimized for stronger rainfall events with nearly the same size distribution.

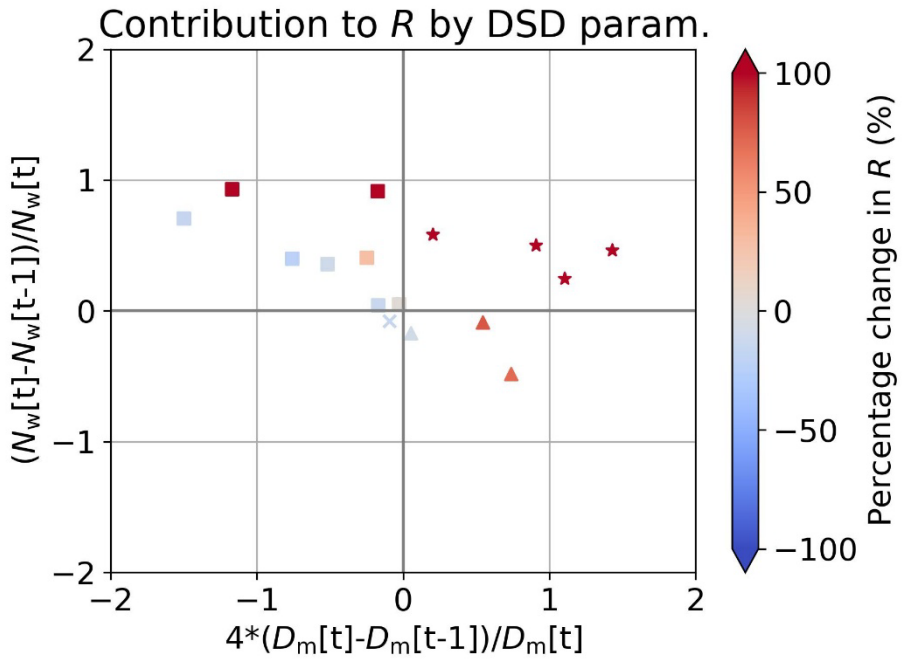

Figure 1. Scatter plot between the two terms of the equation obtained from an error analysis in relation to differences of rainfall intensity (R) between the time when a quasi-equilibrium drop size distribution was detected and its 1 min earlier (color scale).

- For the quasi-equilibrium shape of the DSDs, the contribution to rainfall intensity was larger when the mass-weighted mean diameter (D_m) or the generalized intercept parameter (N_w) was effectively increased with temporal change based on an error analysis.
- For quantitative precipitation estimation, the specific differential phase (K_{DP})–R relation was also statistically evaluated to identify their characteristics and could be improved using the slope parameter with nearly the same size distribution.