A Method to Estimate Newly Fallen Snow Density Based on Disdrometer Data

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   This study proposes a method to estimate the density of newly fallen snow using disdrometer data. By analyzing the particle size and fall velocity distributions obtained from a disdrometer, the degree of riming is quantified and used to derive snow density. Compared to conventional temperature-based methods, the proposed approach shows a stronger correlation (R = 0.78) and significantly lower RMSE (10.5 kg m^{-3}). This technique enables automated, high-frequency estimation of snow density, improving snowfall depth calculations and snow hazard assessments, especially under sub-zero conditions where conventional temperature-based methods are less accurate.