Development of a New Paradigm for Analysis of Disdrometric Data

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A number of disdrometers currently on the market are able to characterize hydrometeors on a drop-by-drop basis with arrival timestamps associated with each arriving hydrometeor. This allows an investigator to parse a time series into disjoint intervals that have equal numbers of drops, instead of the traditional subdivision into equal time intervals.

Such a "fixed-N" partitioning of the data can provide several advantages over the traditional equal time binning method, especially within the context of quantifying measurement uncertainty (which typically scales with the number of hydrometeors in each sample). An added bonus is the natural elimination of measurements that are devoid of all drops.

This analysis method is investigated by utilizing data from a dense array of disdrometers located near Charleston, South Carolina, USA. Implications for the usefulness of this method in future studies are explored.