



Supplement of

Addressing the difficulties in quantifying droplet number response to aerosol from satellite observations

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Figure S1. Same as Fig. 2, but using the all-data approach.



Figure S2. Same as Fig. 3, but the subsets of data with CGT lower than the 10th percentile and higher than the 90th percentile are defined as weak and strong updrafts, respectively.



Figure S3. Same as Fig. 5, but using the all-data approach.

Table S1. Comparisons of regression results and corresponding statistics for N_d versus SO4B, SO4S, and SO4C calculated from the prebinned and all-data approaches. The regression slopes are shown along with 95% uncertainty estimates (according to a Student's t-test).

Approach	CCN proxy	Sample numbers	Correlation coefficient	Regression slope (S)
Pre-binned approach	SO4B	20	0.96	$0.47{\pm}0.072$
	SO4S	20	0.95	$0.46{\pm}0.078$
	SO4C	20	0.98	0.88±0.094
All-data approach	SO4B	754623	0.60	0.41±0.001
	SO4S	755119	0.57	$0.39{\pm}0.001$
	SO4C	755197	0.54	$0.75 {\pm} 0.003$