

# **Addressing the difficulties in quantifying the Twomey effect for marine warm clouds from multi-sensor satellite observations and reanalysis**

Hailing Jia<sup>1</sup>, Johannes Quaas<sup>1</sup>, Edward Gryspeerdt<sup>2,3</sup>, Christoph Böhm<sup>4</sup>, and Odran Sourdeval<sup>5</sup>

<sup>1</sup>Leipzig Institute for Meteorology, Universität Leipzig, Leipzig, Germany

<sup>2</sup>Space and Atmospheric Physics Group, Imperial College London, UK

<sup>3</sup>Grantham Institute for Climate Change and the Environment, Imperial College London, UK

<sup>4</sup>Institute for Geophysics and Meteorology, University of Cologne, Cologne, Germany

<sup>5</sup>Laboratoire d'Optique Atmosphérique, Université de Lille, CNRS, Lille, France

**Correspondence:** Hailing Jia (hailing.jia@uni-leipzig.de)

**Table S1.** Comparisons of regression results and corresponding statistics for  $N_d$  versus SO4B, SO4S, and SO4C calculated from the pre-binned and all-data approaches.

Approach	CCN proxy	Sample numbers	Correlation coefficient	Regression slope ( $S$ )
Pre-binned approach	SO4B	20	0.96	0.47
	SO4S	20	0.95	0.46
	SO4C	20	0.98	0.88
All-data approach	SO4B	754623	0.60	0.41
	SO4S	755119	0.57	0.39
	SO4C	755197	0.54	0.75