



## **Reducing uncertainty of aerosol indirect effects using a joint satellite-reanalysis approach**

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Aerosols are known to have a significant impact on cloud microphysics, acting as cloud condensation nuclei (CCN) and thereby altering cloud properties. Global estimates of indirect aerosol effects purely from satellites are very uncertain and often give insignificant results. To improve observationally based estimates we use a joint multi-component approach combining cloud retrievals from the A-Train satellite instruments and aerosol information from the MACC-II reanalysis. We show the ability of this approach to compute CCN and validate the results with insitu measurements. Furthermore we discuss the impact of these findings for computing cloud droplet numbers and cloud albedo to fill the gap in the chain leading to an accurate estimate of the first aerosol indirect radiative forcing.