

Supplementary material for *Investigating relationships between aerosol optical depth and cloud fraction using satellite, aerosol reanalysis and general circulation model data*

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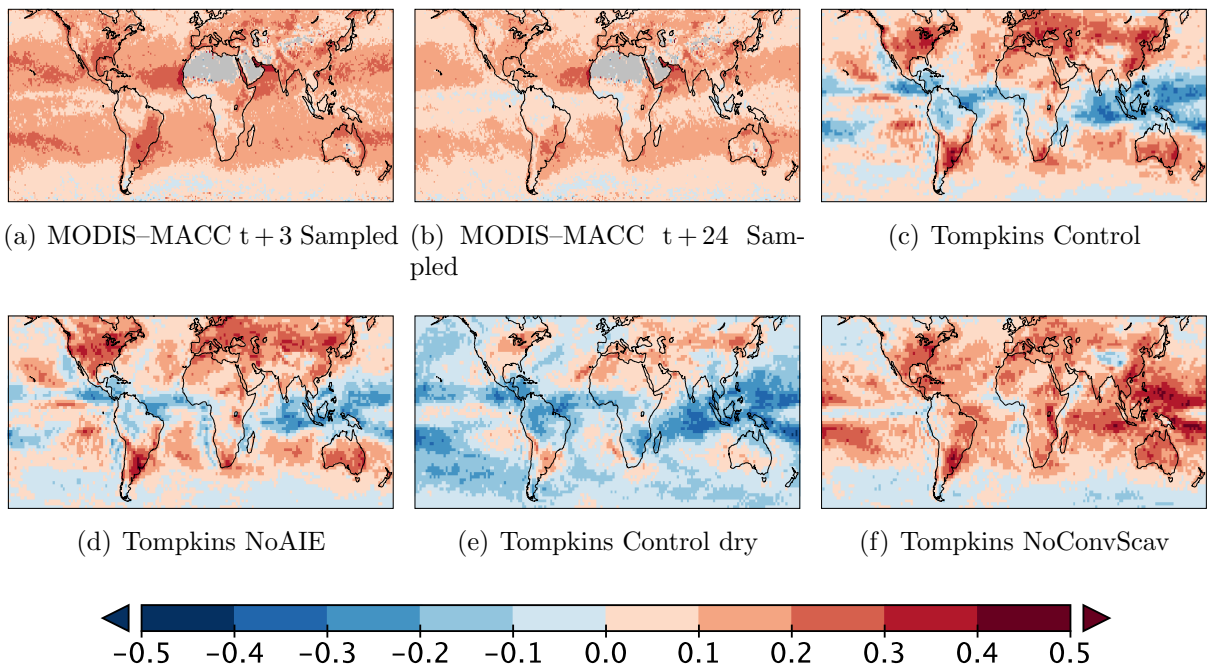


Figure S1: Same as Figure 2 but for (a), (b) MODIS-MACC sampled according to MODIS τ availability and (c)–(f) ECHAM5-HAM Tompkins simulations.

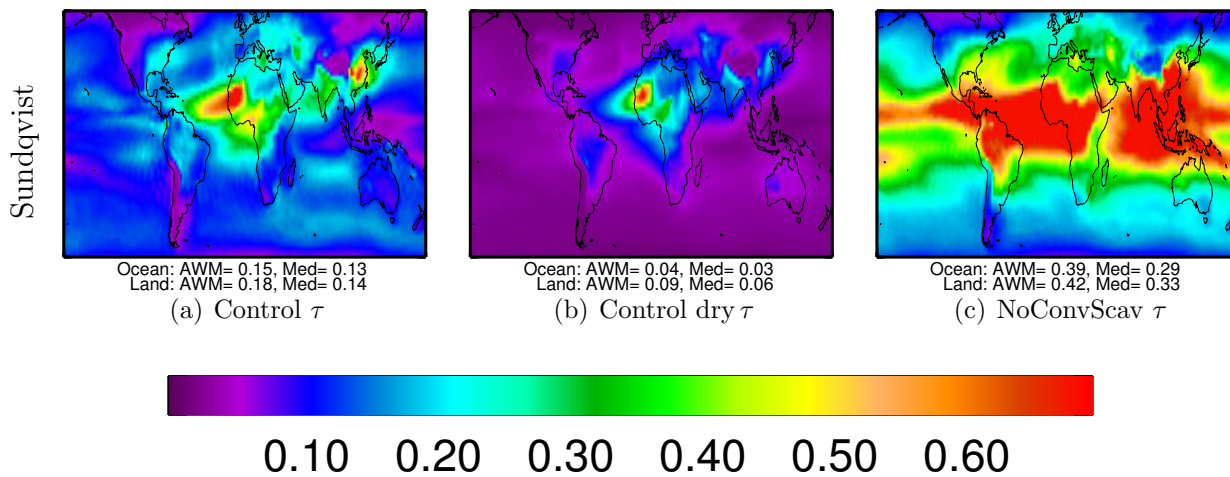


Figure S2: Annual (all seasons) mean aerosol optical depth (τ) for ECHAM5-HAM Sundqvist simulations. The area-weighted means (AWM) and median (Med) for both ocean and land are shown beneath each map. The Tompkins simulations have very similar annual mean τ fields to the respective Sundqvist simulations. The NoAIE simulations have very similar annual mean τ fields to the Control simulations. The area-weighted mean (AWM) and median (Med) for both ocean and land are shown beneath each map.

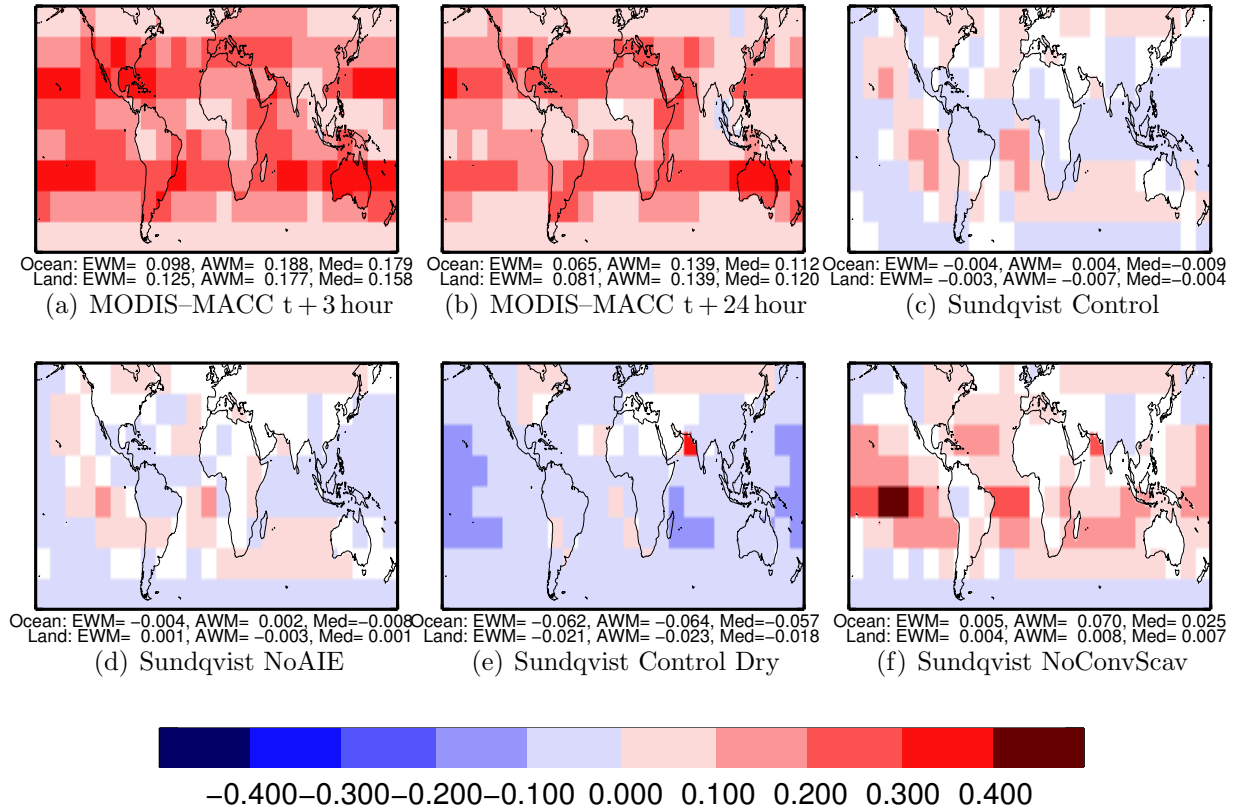


Figure S3: Same as Figure 2, but for $\frac{df_c}{d \ln \tau}$. The grid-method of Grandey and Stier (2010) has been used. The lin-log relationship was chosen based on semi-empirical considerations (Chapter 3 of Grandey, 2011). The error-weighted mean (EWM), area-weighted mean (AWM) and median (Med) for both ocean and land are shown beneath each map.

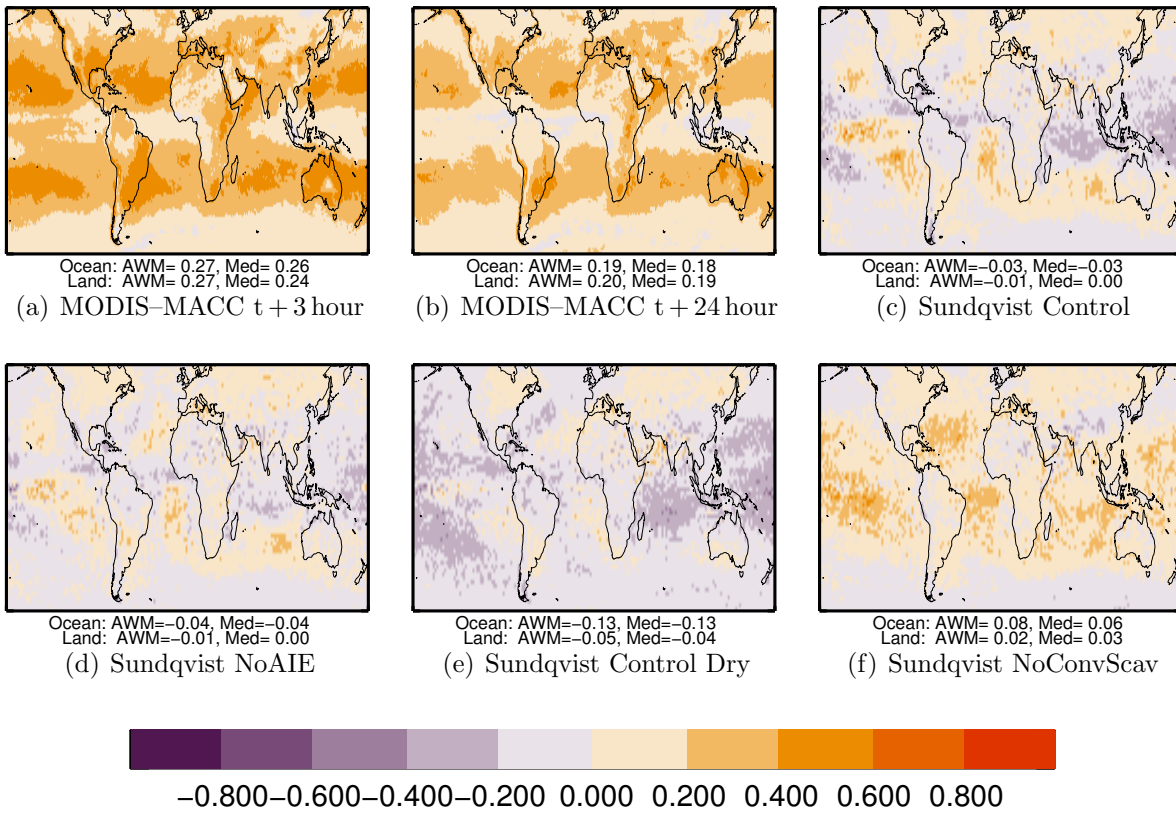


Figure S4: Same as Figure 2, but for $df_c - d \ln \tau$ correlation.

References

- Grandey, B. S.: Investigating aerosol–cloud interactions, Ph.D. thesis, University of Oxford, UK, URL <http://ora.ox.ac.uk/objects/uuid:8b48c02b-3d43-4b04-ae55-d9885960103d>, 2011.
- Grandey, B. S. and Stier, P.: A critical look at spatial scale choices in satellite-based aerosol indirect effect studies, *Atmos. Chem. Phys.*, 10, 11 459–11 470, doi:10.5194/acp-10-11459-2010, 2010.