

Supplementary material to “Effects of absorbing aerosols in cloudy skies: A satellite study over the Atlantic Ocean”

Karsten Peters, Johannes Quaas and Nicolas Bellouin

Geographical- and temporal distribution of absorbing aerosols

We define anthropogenic fractions (HIGH and LOW) using the analysis of anthropogenic- versus natural fractions of AOD as described in Bellouin et al., 2005, using MODIS collection 5 data from EOS-Aqua. Scenes in which more than 50% of the AOD is anthropogenic are marked HIGH, the others are marked LOW.

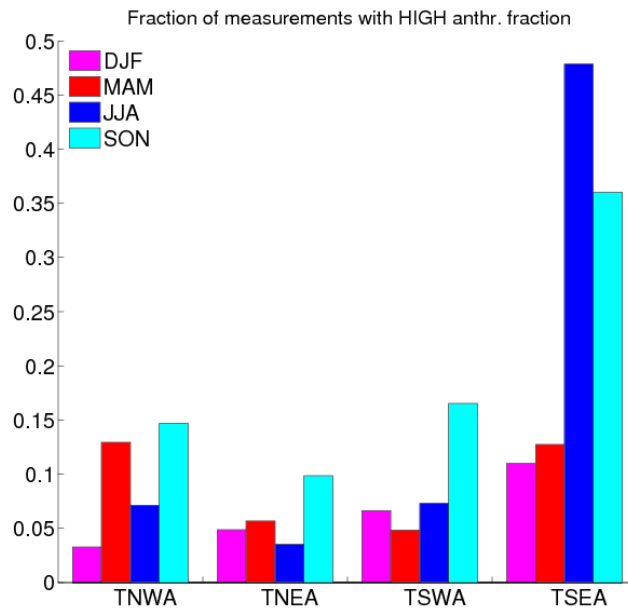


Fig S1: Fraction of measurements with HIGH anthropogenic fraction. This is the ratio of the amount of HIGH measurements to the sum of all measurements.

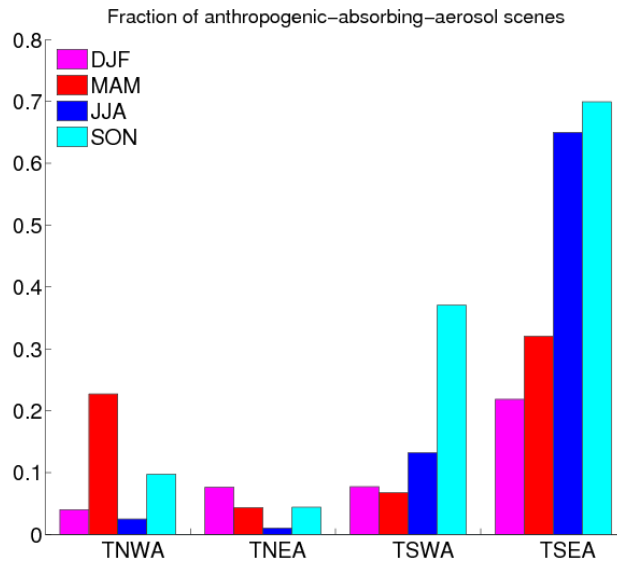


Fig S2: Fraction of anthropogenic-absorbing-aerosol measurements with respect to all absorbing-aerosol measurements. This is the amount of HIGH measurements with UV-AI > 0.7 divided by the sum of all measurements with UV-AI > 0.7 .

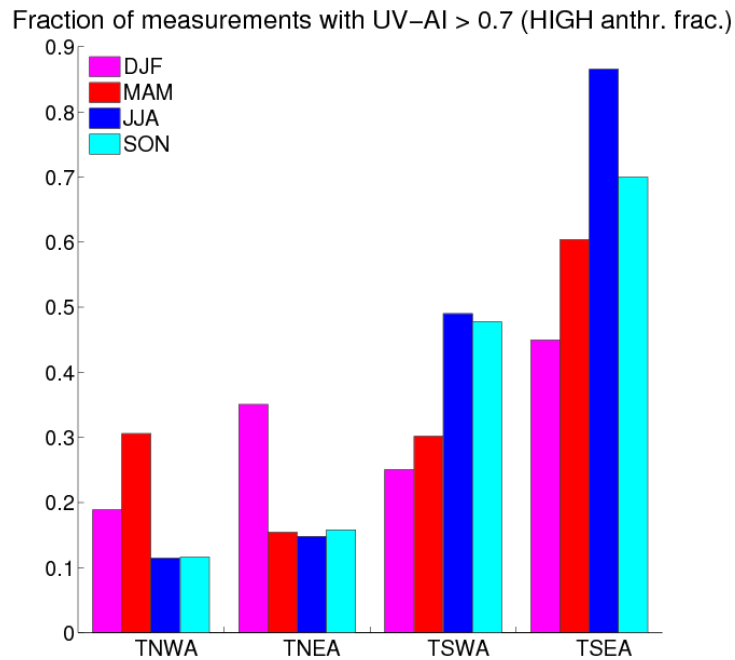


Fig S3: Fraction of absorbing-aerosol scenes (UV-AI > 0.7) with HIGH anthropogenic fraction. This is similar to Table 2 in the paper, but only for HIGH anthropogenic fraction.

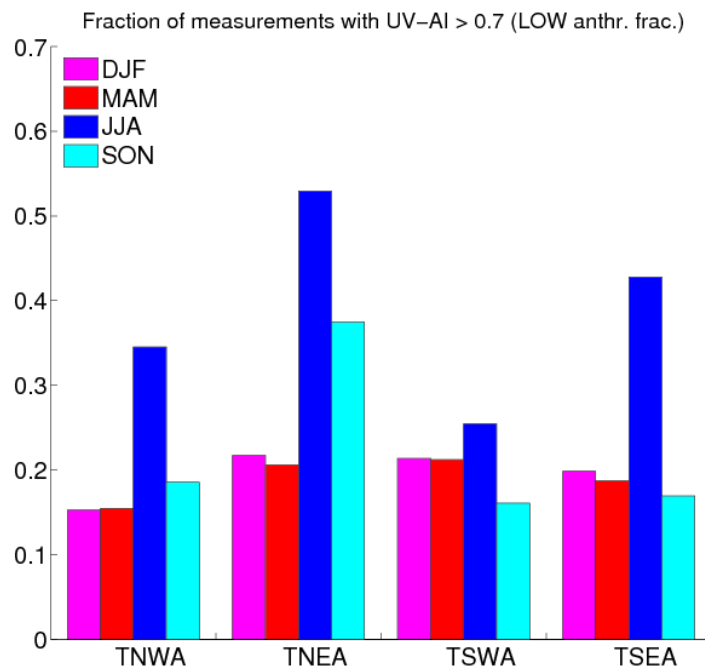


Fig S4: Fraction of absorbing-aerosol scenes (UV-AI > 0.7) with LOW anthropogenic fraction. This is similar to Table 2 in the paper, but only for LOW anthropogenic fraction.

Correlation of measured vs. modeled LPA

We correlate CERES-measured LPA to that obtained from application of Eq. 1

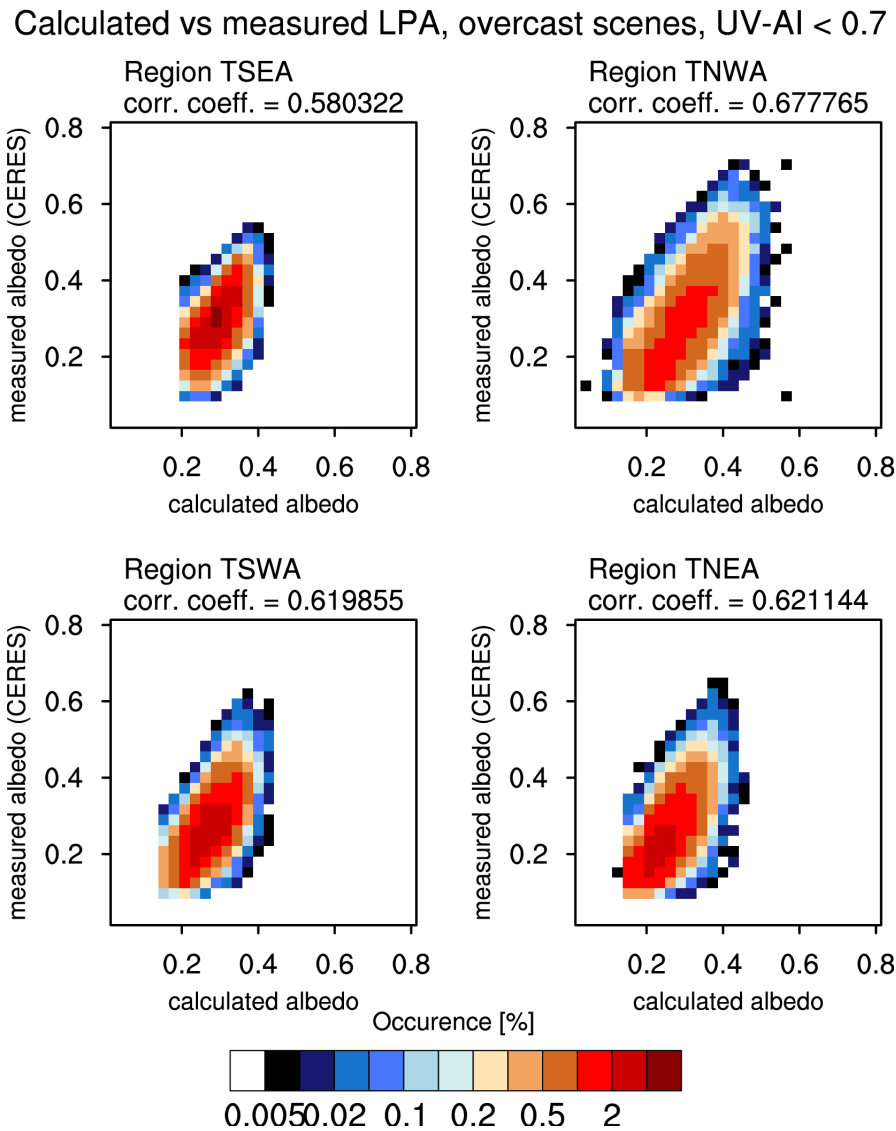


Fig S5: Scatterplot of CERES measured LPA vs. calculated LPA for overcast scenes having a retrieved UV-AI < 0.7. The calculated LPA was obtained by using Eq. 1 in the manuscript together with the obtained coefficients a_0 , a_1 and a_2 . Used scenes are overcast, LPA values < 0.1 are ignored.

Calculated vs measured LPA, overcast scenes, UV-AI > 0.7

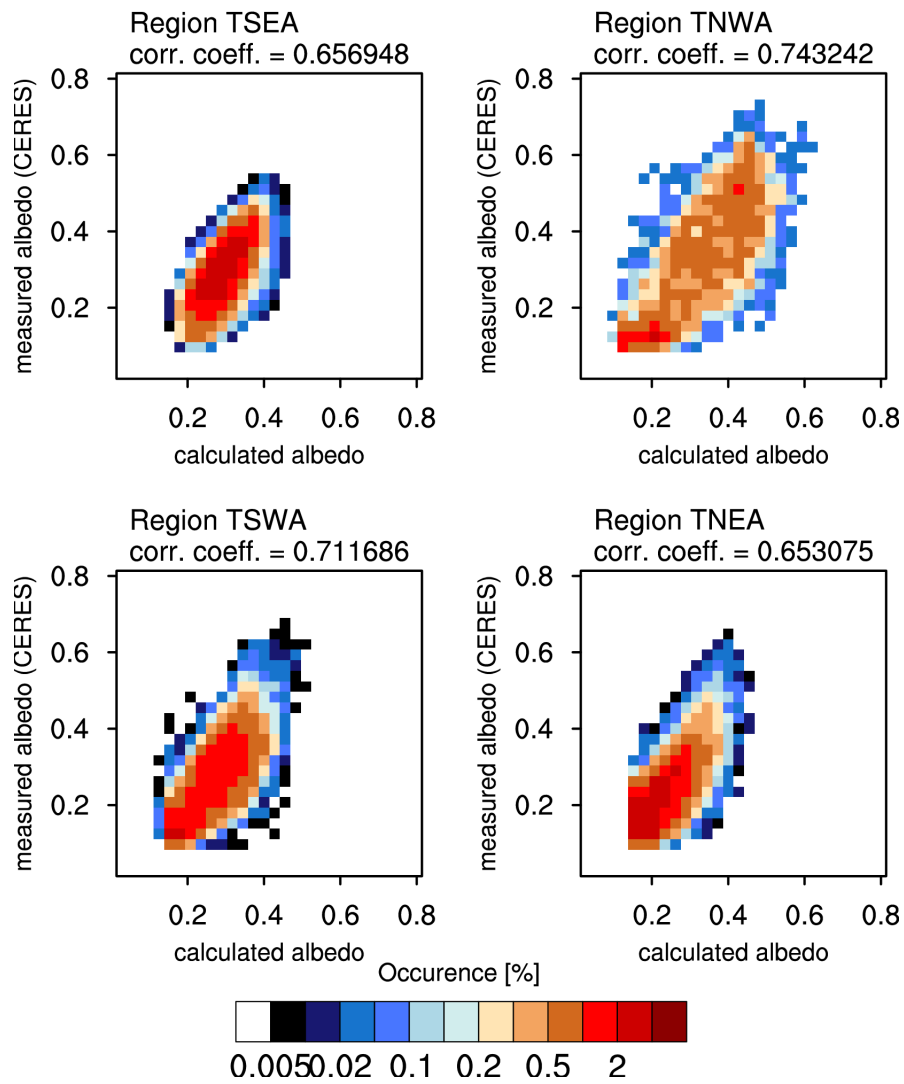


Fig. S6: Scatterplot of CERES measured LPA vs. calculated LPA for overcast scenes having a retrieved UV-AI > 0.7. The calculated LPA was obtained by using Eq. 1 in the manuscript together with the obtained coefficients a_0 , a_1 and a_2 . Used scenes are overcast, LPA values < 0.1 are ignored.