



## Supplement of

## **AEROCOM and AEROSAT AAOD and SSA study – Part 1:** Evaluation and intercomparison of satellite measurements

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Figure S1. Global maps of SSA for four products, and their differences. SSA differences are based on collocated data (within 3 hours). Note that the products are available for different years, e.g. POLDER-SRON and FL-MOC do not overlap. No AOD threshold was used.



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POLDER-GRASP-M vs Aqua-DT



POLDER-SRON vs Aqua-DT



OMAERUV vs Aqua-DT



**Figure S3.** Global maps of three-year averages of AOD difference of four satellite products with Aqua DarkTarget. Products were pairwise collocated within 3 hours.



**Figure S2.** Taylor diagrams for the satellite AAOD products, when three products are collocated together. Shaded regions indicate 5% - 95% uncertainty range. Colours indicate satellite product (see also Fig. 1). Products were collocated together with AERONET, within 3 hours, and only 48 pairs of collocated data were available for analysis.



POLDER-GRASP-M vs POLDER-SRON (AOD>0.125)



POLDER-GRASP-M vs POLDER-SRON (AOD>0.25)



**Figure S4.** Comparison of different pairs of satellite AAOD, over land (red) and ocean (blue), for different thresholds of minimum AOD (0.0, 0.25, 0.5, and 0.75). The data were collocated within 3 hours.

**Figure S5.** Global maps of SSA difference for 3-year averaged POLDER data, as a function of minimum AOD threshold. The under-lying super-observations were first collocated within 3 hours, then screened for minimum AOD, and finally averaged. Using a different minimum AOD constrains available data to a smaller part of the globe but has locally only a small impact on the difference.