

Supplement of Atmos. Meas. Tech., 10, 2837–2850, 2017
<https://doi.org/10.5194/amt-10-2837-2017-supplement>
© Author(s) 2017. This work is distributed under
the Creative Commons Attribution 3.0 License.



Supplement of

Comparison of different Aethalometer correction schemes and a reference multi-wavelength absorption technique for ambient aerosol data

Jorge Saturno et al.

Correspondence to: Jorge Saturno (j.saturno@mpic.de)

The copyright of individual parts of the supplement might differ from the CC BY 3.0 License.

Supplementary material

Table S1. Constants C^* and m_s taken from Arnott et al. (2005)

Wavelength (nm)	C^*	m_s
370	1.813	0.0335
470	2.073	0.0457
520	2.076	0.0523
590	2.104	0.0616
660	2.182	0.0713
880	2.226	0.1038
950	2.199	0.1148

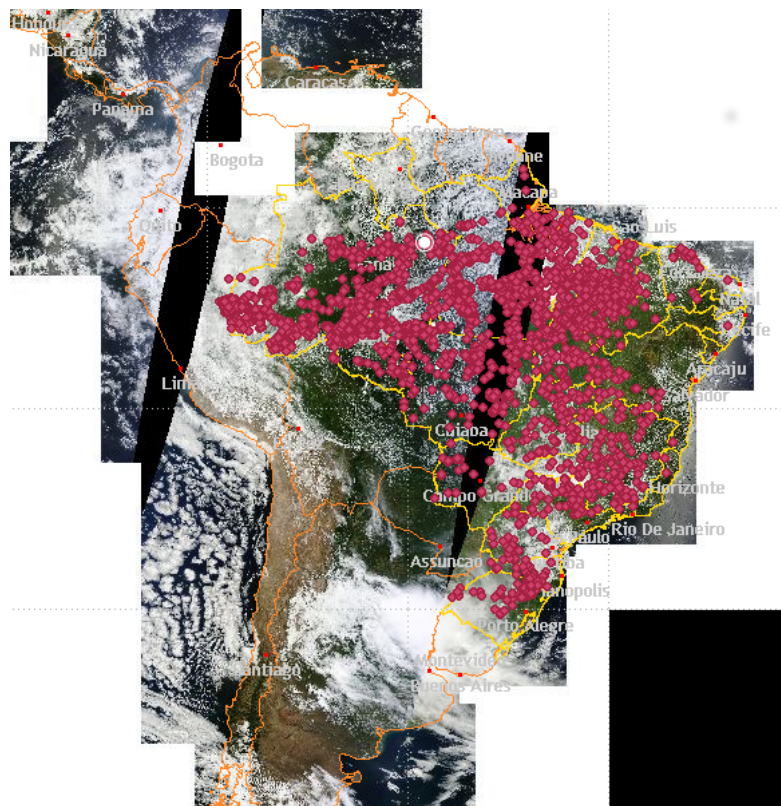
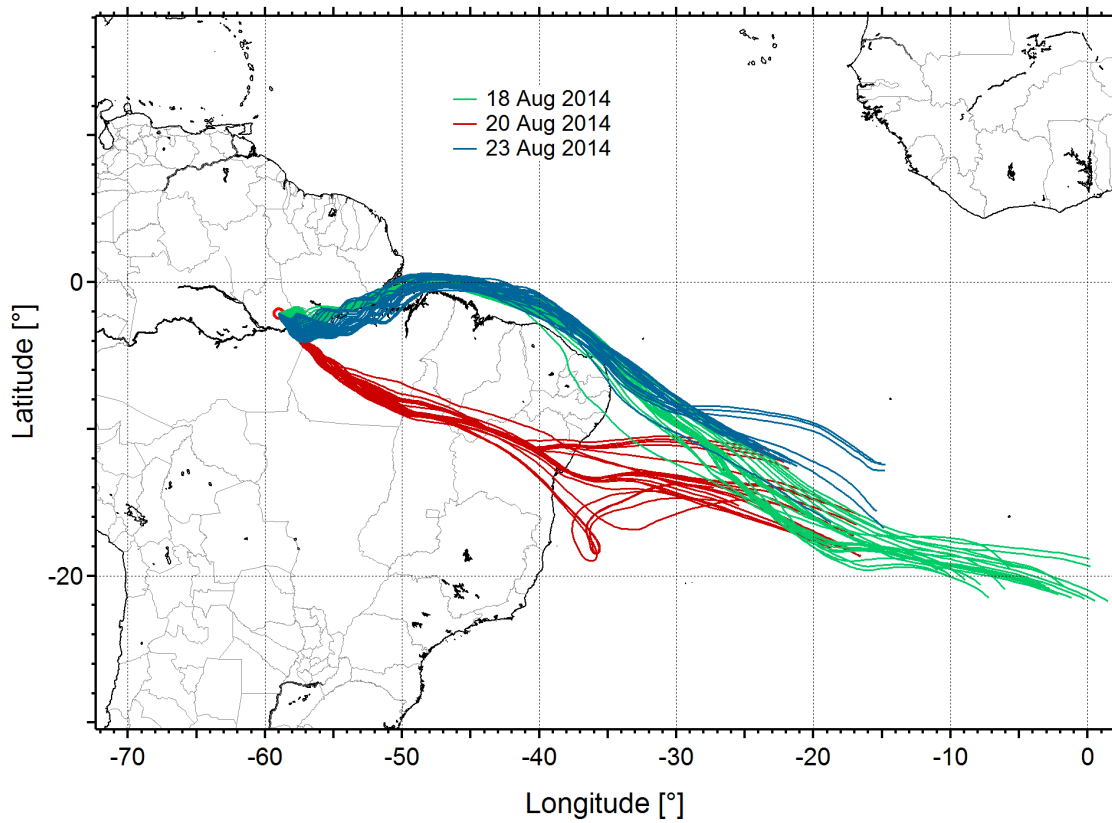


Figure S1. HYPSLIT 200-m high 9-days backward trajectories calculated for 18, 20 and 23 August 2014. Fire spots shown in the bottom picture were remotely detected by NOAA-12 between 19 August 2014 00:00:00 and 21 August 2014 23:59:59, ATTO site location is shown as a white circle.

Filter loading correction

Comparison between Schmid et al. and Collaud Coen et al.

The ratio between attenuation coefficients and the MAAP absorption coefficients (expressed as C_{ref}) should not depend on ATN after applying the filter-loading correction. Figure S2 shows C_{ref} as a function of ATN, after applying both filter-loading corrections. The result of both corrections is quite similar and the slopes obtained by orthogonal fits are statistically equivalent. The drop observed in C_{ref} for ATN > 30% in the Schmid correction was also obtained by Collaud Coen et al. (2010) in a sampling site located far from the sources, where the aerosol was characteristically aged and SSA was close to 1.

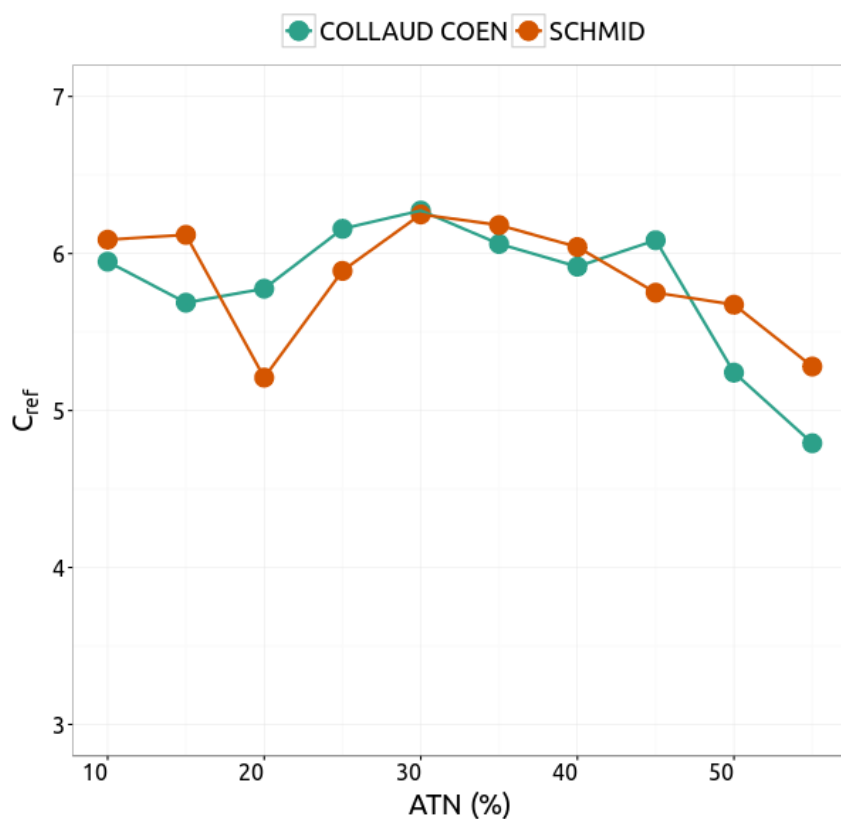


Figure S2. C_{ref} obtained by following Schmid and Collaud Coen corrections as a function of 5%-wide attenuation bins.

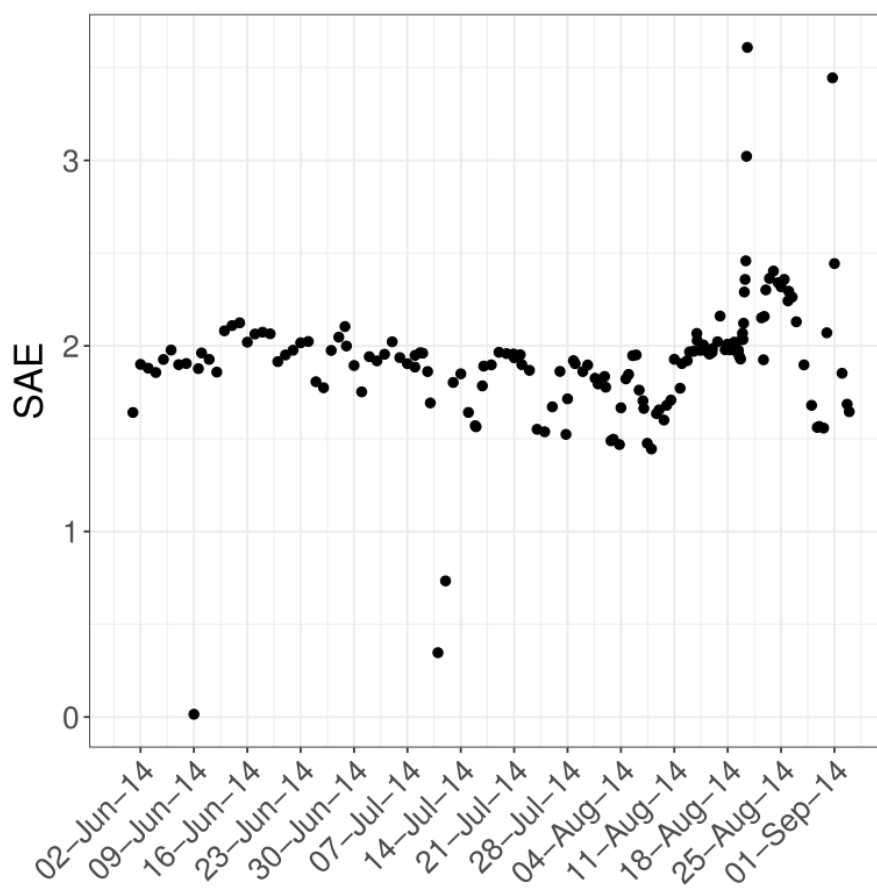


Figure S3. Scattering Ångström exponent, \hat{a}_{SCA} , averaged over MAAP filter sampling times.

Software

We used the statistical software environment R (R Development Core Team, 2009) to process the data presented in this work. When comparing two different datasets, resulting from different instruments or different corrections, we used the package SMATR (Falster et al., 2006; Warton et al., 2012) to apply standardized major axis (SMA) estimations.

The scripts used in this work are available under GPLv3 license at:
<https://dx.doi.org/10.6084/m9.figshare.c.3501153.v3>

References

Falster, D. S., Warton, D. I. and Wright, I. J.: SMATR: Standardised major axis tests and routines, ver 2.0, 2006.

R Development Core Team: R: A language and environment for statistical computing, [online] Available from: <http://www.r-project.org>, 2009.

Warton, D. I., Duursma, R. A., Falster, D. S. and Taskinen, S.: smatr 3- an R package for estimation and inference about allometric lines, *Methods Ecol. Evol.*, 3(2), 257–259, doi:10.1111/j.2041-210X.2011.00153.x, 2012.