

Supplement of Atmos. Chem. Phys., 19, 4963–4990, 2019
<https://doi.org/10.5194/acp-19-4963-2019-supplement>
© Author(s) 2019. This work is distributed under
the Creative Commons Attribution 4.0 License.



Atmospheric
Chemistry
and Physics
Open Access
EGU

Supplement of

Simulation of the transport, vertical distribution, optical properties and radiative impact of smoke aerosols with the ALADIN regional climate model during the ORACLES-2016 and LASIC experiments

M. Mallet et al.

Correspondence to: Marc Mallet (marc.mallet@meteo.fr)

The copyright of individual parts of the supplement might differ from the CC BY 4.0 License.

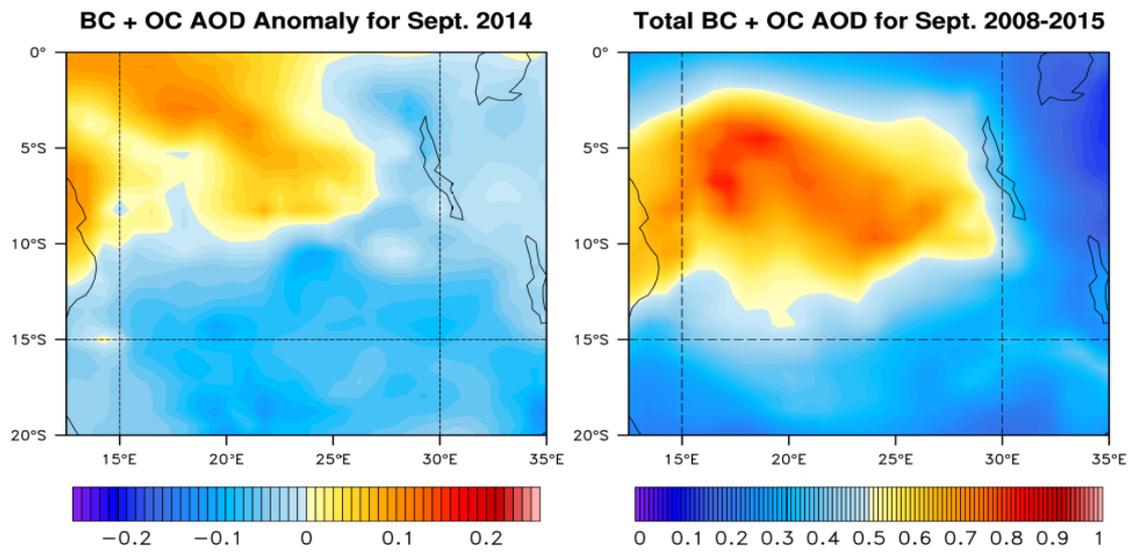


Figure S1. September 2014 BC-OC AOD anomaly (left) compared to the 2008-2015 period (September month only) and the total mean BC+OC AOD for the 2008-2015 period (right) from CAMS reanalyses.

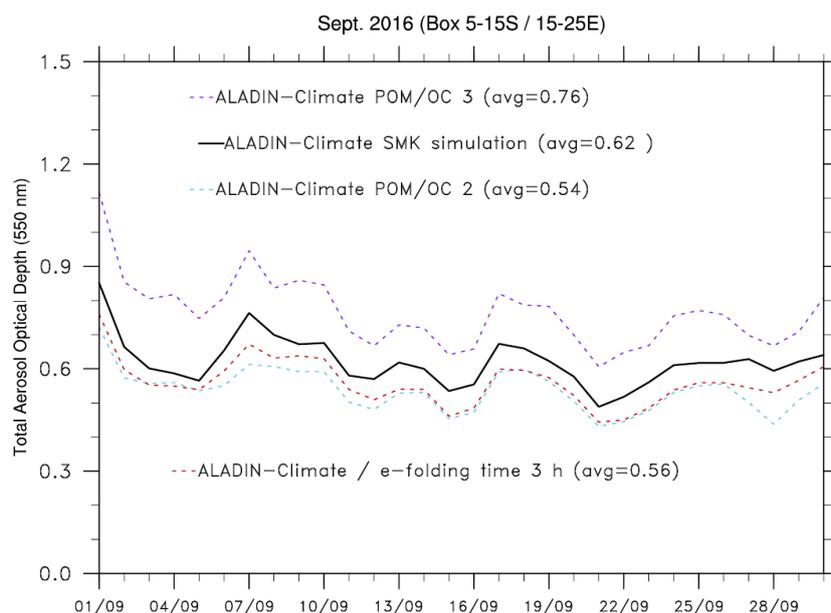


Figure S2. Sensitivity tests on the POM to OC ratio and e-folding time used in the ALADIN-Climate model. Three additional simulations have been performed using a ratio of 2 and 3 and an e-folding time of 3h (Vakkari et al., 2018). The SMK simulation used a ratio of 2.3 (Formenti et al., 2003) and an e-folding time of 6h (Abel et al., 2003).

Mean CER (microm.) - corrected from smoke - September 2016

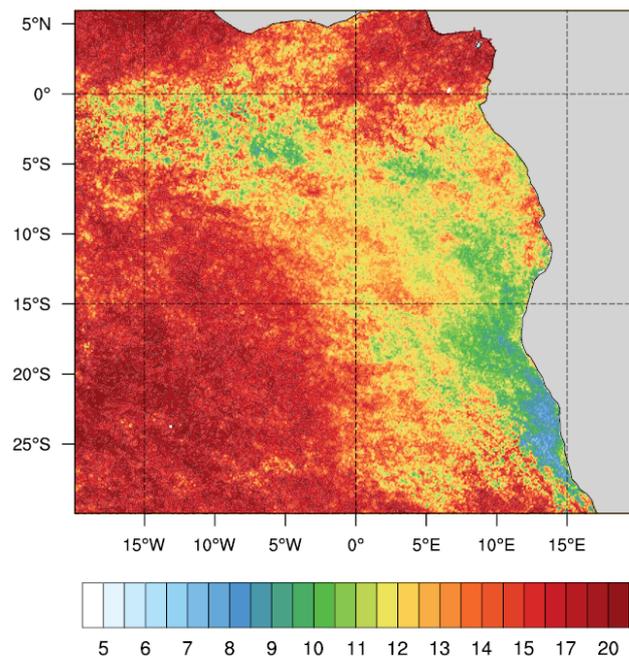


Figure S3. Monthly-mean CER (in μm) derived from the MODIS instrument for September 2016.

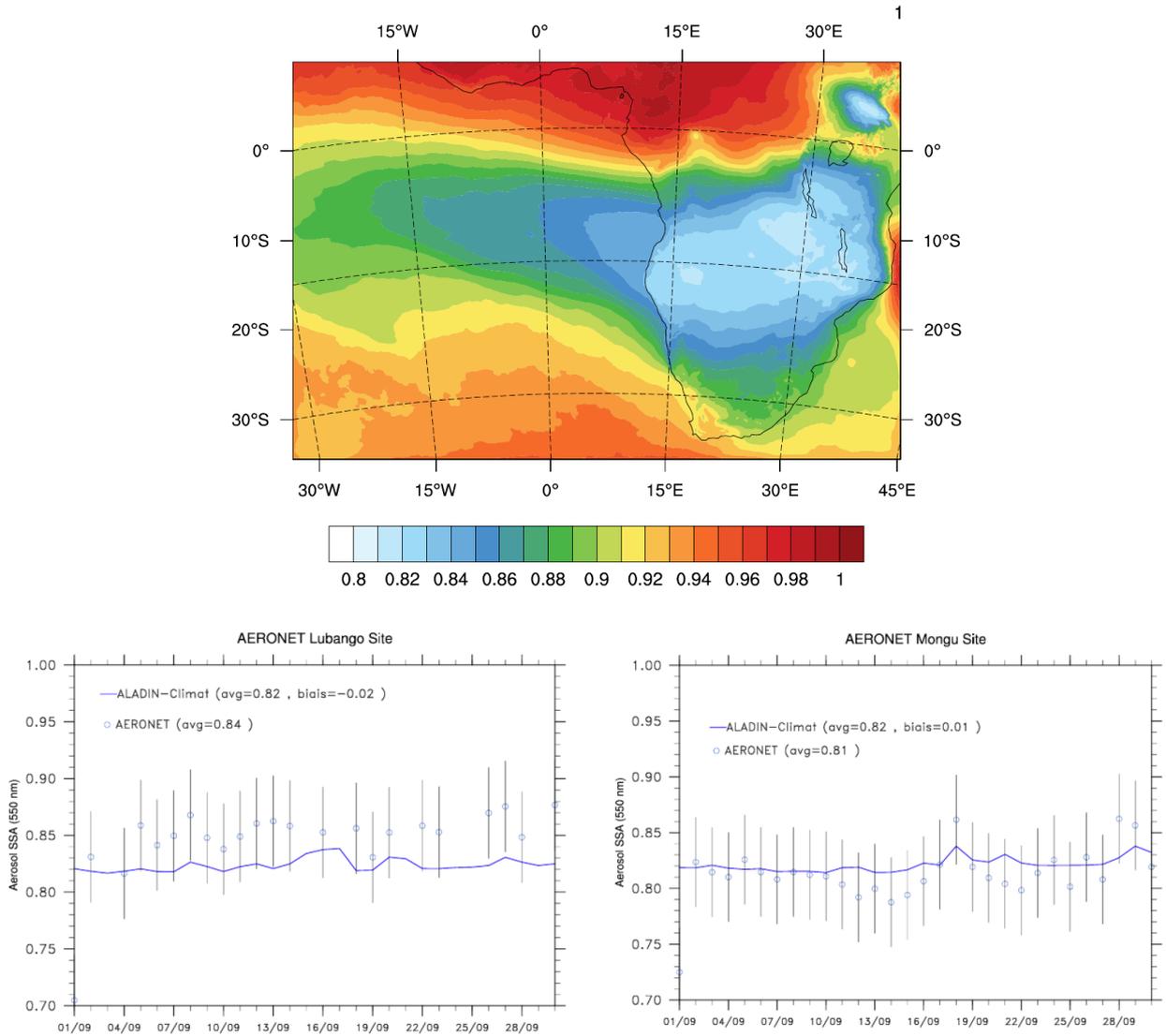


Figure S4. Monthly-mean SSA simulated by the ALADIN-Climate model (at 550 nm) for September 2016, integrated for the whole atmospheric column. AERONET and ALADIN-Climate daily-mean variability of the column-integrated SSA (550 nm) at two stations (Lubango (left bottom) and Mongu (right bottom)).

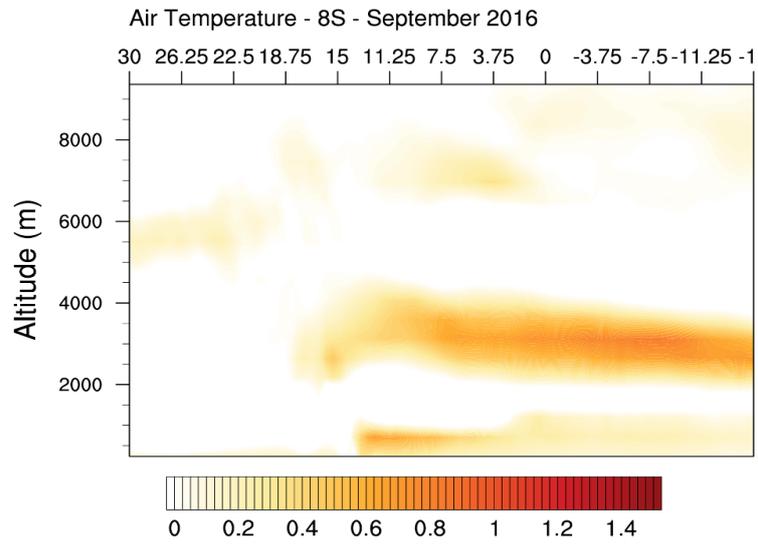


Figure S5. Difference in the air temperature ($^{\circ}\text{C}$) between the SMK and CTL simulations and for the transect defined at a latitude of 8°S .

ALADIN-Climat LCF (%) for August-September 2016

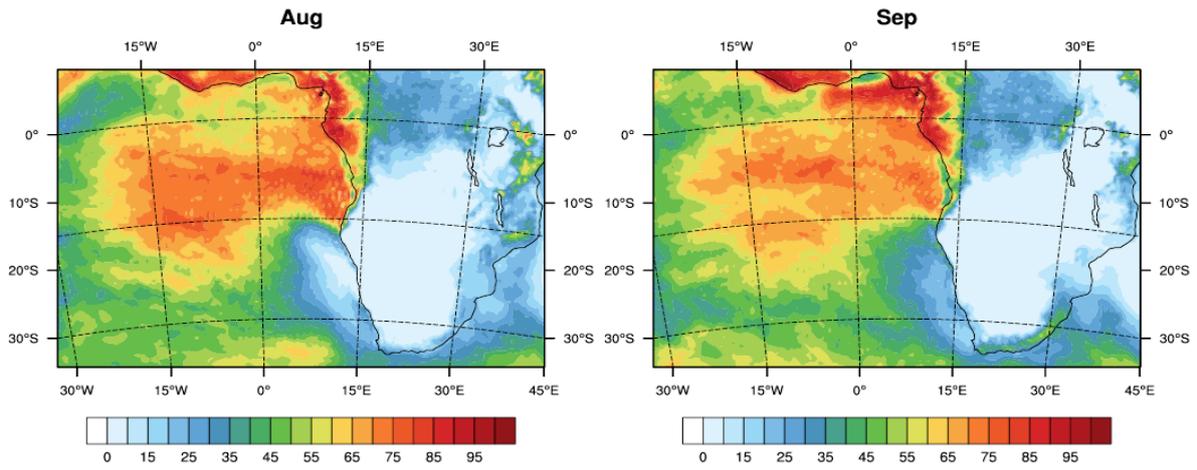


Figure S6. Monthly-mean Low Cloud Fraction (LCF) estimated by the ALADIN-Climate model for August and September 2016.

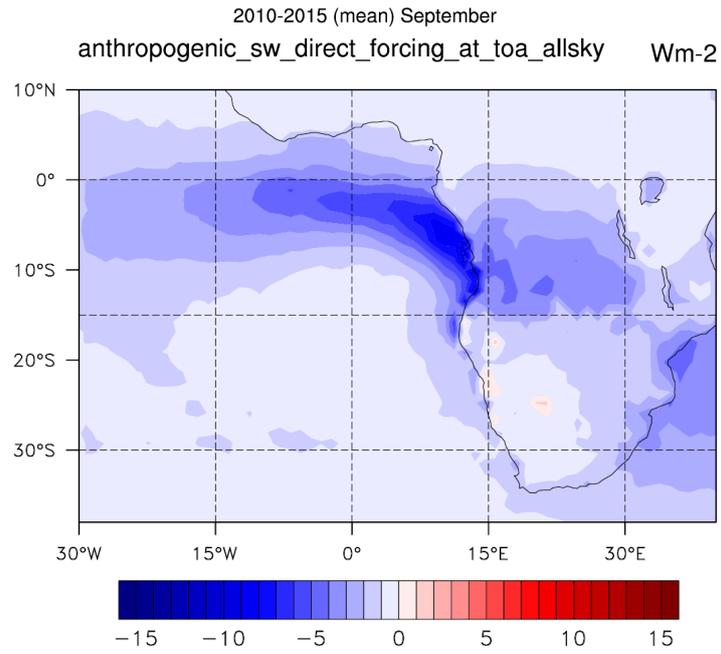


Figure S7. Monthly-mean (September) SW DRF (in all-sky conditions) estimated from the MACC NRT data, for the period 2000-2015.

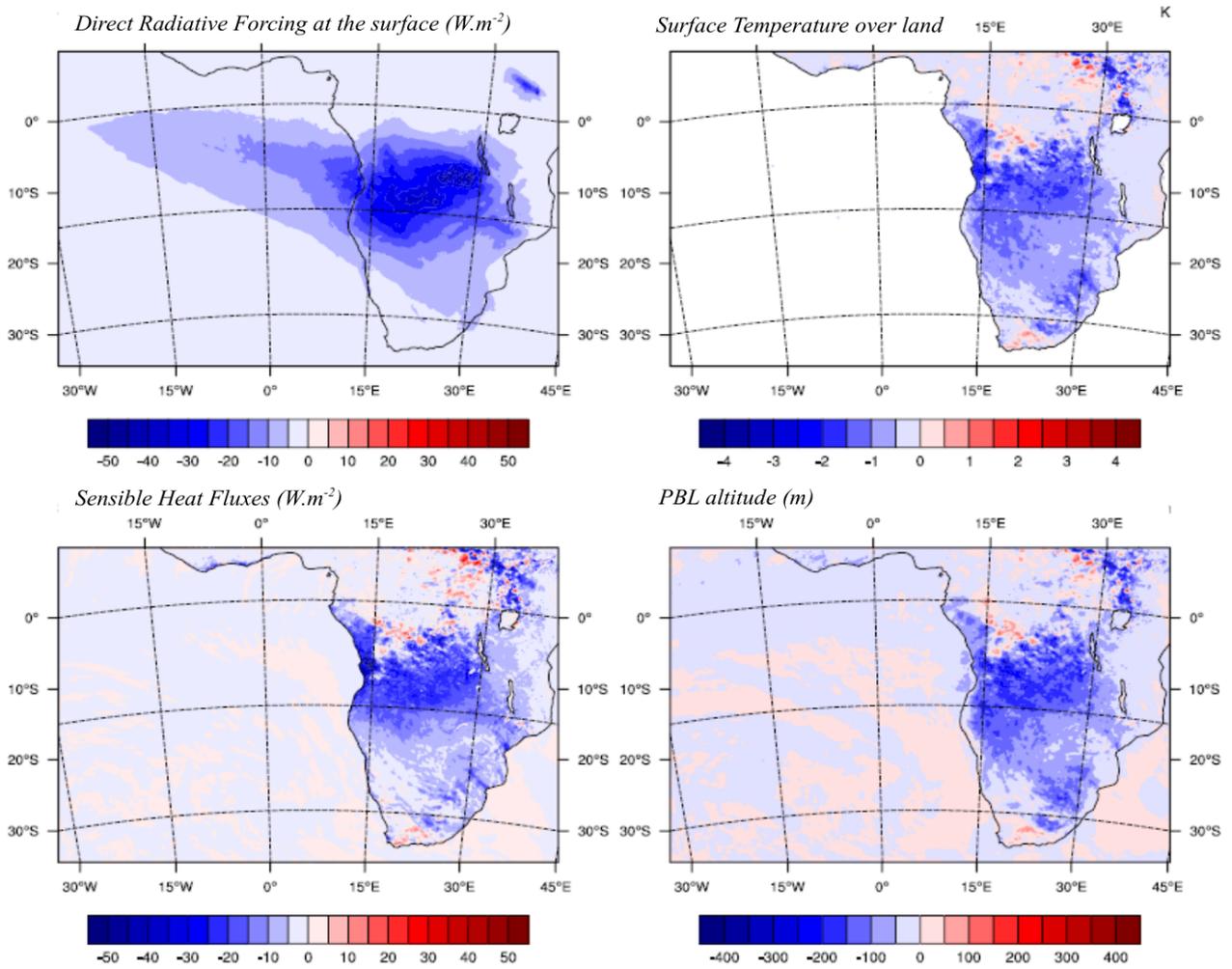


Figure S8. Differences between the CTL and SMK ALADIN-Climate runs in the monthly-mean (September 2016) SW surface radiations (top left), 2 meter continental temperature (top right), sensible heat fluxes (bottom left) and PBL height (bottom right), for the SMK_SSA simulation.