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

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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).
**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 (°C) between the SMK and CTL simulations and for the transect defined at a latitude of 8°S.
**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.