



Corrigendum to

“Coarse and giant particles are ubiquitous in Saharan dust export regions and are radiatively significant over the Sahara” published in Atmos. Chem. Phys., 19, 15353–15376, 2019

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The authors became aware that the original Fig. 5 and associated values in the text used size distribution data corrected with a refractive index of $1.53-0.002i$ for the Fennec-Sahara and Fennec-SAL field campaigns, despite stating that refractive indices of $1.53-0.001i$ were used. No other subsequent data or figures are affected. This corrigendum corrects the mass concentrations and associated percentage underestimations so that all data are processed with a refractive index of $1.53-0.001i$.

The changes are as follows.

- Abstract: “Excluding giant particles over the Sahara results in significant underestimation of mass concentration (27 %).”
- Section 3.1, paragraph 7: “Fennec-Sahara mass concentrations can be extremely high, especially at lower altitudes, with the 75th percentile reaching values of up to $960 \mu\text{g m}^{-3}$.”
- Section 3.1, paragraph 8: “It is clear in panel (c) that during Fennec-Sahara the vast majority of dust mass was present at sizes greater than $5 \mu\text{m}$ (an average of 92 % beneath 4.5 km), similar to Fennec-SAL (87 % between 1 and 5 km), and also a large amount during AER-D-SAL (61 % between 1 and 4 km in the SAL). Since models begin to underestimate dust concentration at sizes above $5 \mu\text{m}$ diameter, showing an underestimation by up to a factor of 10 (Kok et al., 2017), a very large fraction of mass will be neglected. Similarly, during Fennec-Sahara, sizes greater than $20 \mu\text{m}$ in diameter were still found to contain 27 % of the dust mass beneath 4.5 km (panel d), or up to 61 % for the 75th percentile. For both AER-D-SAL and Fennec-SAL, 2 % of the total mass was found at these large diameters, though the 75th percentile reaches up to 19 % and 43 %, respectively.”
- Section 3.1, paragraph 9: “Mean DMPs are calculated at 2.2 g m^{-2} (0.6 to 9.5 g m^{-2}) for Fennec-Sahara, 1.5 g m^{-2} (0.2 to 6.2 g m^{-2}) for AER-D-SAL, and 1.0 g m^{-2} (0.1 to 1.6 g m^{-2}) for Fennec-SAL.”
- Conclusion, paragraph 4: “Over the Sahara, 91 % of dust mass is constituted by particles sized larger than $5 \mu\text{m}$ on average, and 27 % of dust mass is constituted by particles sized larger than $20 \mu\text{m}$.” “Over the SAL, the fraction of mass omitted is smaller compared to the Sahara but potentially still important: 61 % to 87 % of dust mass is constituted by sizes over $5 \mu\text{m}$ and 2 % from sizes over $20 \mu\text{m}$.”

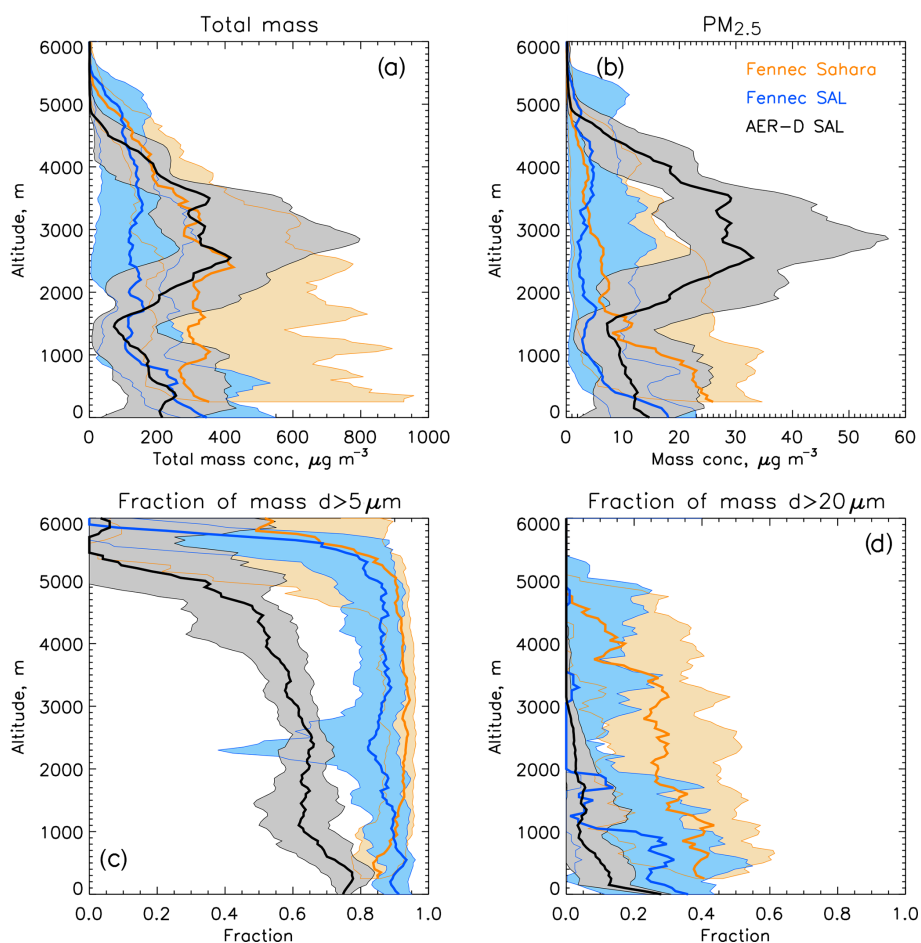


Figure 5. Vertically resolved mass concentrations for Fennect-Sahara (orange), Fennect-SAL (blue), and AER-D-SAL (black). **(a)** Total mass concentration across all sizes measured; **(b)** accumulation-mode mass concentration $d < 2.5 \mu\text{m}$; **(c)** fraction of mass at $d > 5 \mu\text{m}$ and **(d)** $d > 20 \mu\text{m}$. Bold lines and shading indicate the median and interquartile range, respectively. Data are smoothed over 250 m intervals and for Fennect-Sahara only available down to 350 m due to flight restrictions.