Corrigendum to Atmos. Chem. Phys., 19, 15503–15531, 2019
https://doi.org/10.5194/acp-19-15503-2019-corrigendum


Atmospheric Chemistry and Physics
Open Access
EGU

# *Corrigendum to* "Complex refractive indices and single-scattering albedo of global dust aerosols in the shortwave spectrum and relationship to size and iron content" published in Atmos. Chem. Phys., 19, 15503–15531, 2019

**Claudia Di Biagio**[1], **Paola Formenti**[1], **Yves Balkanski**[2], **Lorenzo Caponi**[1,3], **Mathieu Cazaunau**[1], **Edouard Pangui**[1], **Emilie Journet**[1], **Sophie Nowak**[4], **Meinrat O. Andreae**[5,6], **Konrad Kandler**[7], **Thuraya Saeed**[8], **Stuart Piketh**[9], **David Seibert**[10], **Earle Williams**[11], **and Jean-François Doussin**[1]

[1]LISA, UMR CNRS 7583, Université Paris-Est-Créteil, Université de Paris, Institut Pierre Simon Laplace (IPSL), Créteil, France
[2]Laboratoire des Sciences du Climat et de l'Environnement, CEA CNRS UVSQ UP Saclay, 91191, Gif sur Yvette, France
[3]PM_TEN srl, Piazza della Vittoria 7/14, 16121, Genoa, Italy
[4]Plateforme RX UFR de chimie, Université Paris Diderot, Paris, France
[5]Max Planck Institute for Chemistry, P.O. Box 3060, 55020 Mainz, Germany
[6]Geology and Geophysics Department, King Saud University, Riyadh, Saudi Arabia
[7]Institut für Angewandte Geowissenschaften, Technische Universität Darmstadt, Schnittspahnstr. 9, 64287 Darmstadt, Germany
[8]Science Department, College of Basic Education, Public Authority for Applied Education and Training, Al-Ardeya, Kuwait
[9]Climatology Research Group, Unit for Environmental Science and Management, North-West University, Potchefstroom, South Africa
[10]Walden University, Minneapolis, Minnesota, USA
[11]Parsons Laboratory, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

**Correspondence:** Claudia Di Biagio (claudia.dibiagio@lisa.u-pec.fr)

Published: 26 July 2023

We identified a mistake in Table 6 in the original paper. The $(b \pm \sigma b)$ values for the imaginary part of the complex refractive index ($k$) versus the mass concentration of iron oxides ($MC_{Fe-ox\%}$), hematite ($MC_{Hem\%}$), goethite ($MC_{Goeth\%}$), and elemental iron ($MC_{Fe\%}$) in dust (second column) are not reported correctly; in particular, the $b$ values reported correspond in reality to the $\sigma a$ values in the first column of the table. The corrected values for $(b \pm \sigma b)$ are reported in the following corrected Table 6.

**Table 6.** Results of the linear fit between $k$, SSA, and the mass concentration of iron oxides ($MC_{Fe-ox\%}$), hematite ($MC_{Hem\%}$), goethite ($MC_{Goeth\%}$), and elemental iron ($MC_{Fe\%}$) in dust. Column 1 indicates the wavelength; ($a \pm \sigma a$) indicates the retrieved slope and its estimated uncertainty; ($b \pm \sigma b$) indicates the retrieved intercept and its estimated uncertainty; $R^2$ denotes the correlation coefficient, and $\chi^2_{red}$ is the reduced chi-square of the fit.

| | $k = a MC_{Fe-ox\,\%} + b$ | | | $SSA = a MC_{Fe-ox\,\%} + b$ | | |
|---|---|---|---|---|---|---|
| Wavelength (nm) | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ |
| 370 | $(11.9 \pm 2.4)\ 10^{-4}$ | $(-0.2 \pm 4.6)\ 10^{-4}$ | 0.88; 0.6 | $(-5.8 \pm 0.8)\ 10^{-2}$ | $(1.00 \pm 0.02)$ | 0.83; 1.7 |
| 470 | $(9.0 \pm 1.7)\ 10^{-4}$ | $(-0.5 \pm 3.2)\ 10^{-4}$ | 0.89; 0.8 | $(-3.8 \pm 0.6)\ 10^{-2}$ | $(1.00 \pm 0.01)$ | 0.78; 1.8 |
| 520 | $(6.8 \pm 1.3)\ 10^{-4}$ | $(-0.2 \pm 2.4)\ 10^{-4}$ | 0.90; 0.9 | $(-2.9 \pm 0.4)\ 10^{-2}$ | $(1.01 \pm 0.01)$ | 0.76; 2.0 |
| 590 | $(4.5 \pm 0.9)\ 10^{-4}$ | $(-0.4 \pm 1.6)\ 10^{-4}$ | 0.85; 1.4 | $(-1.8 \pm 0.3)\ 10^{-2}$ | $(1.00 \pm 0.01)$ | 0.75; 2.3 |
| 660 | $(4.3 \pm 0.8)\ 10^{-4}$ | $(-1.3 \pm 1.4)\ 10^{-4}$ | 0.81; 1.6 | $(-1.3 \pm 0.2)\ 10^{-2}$ | $(1.00 \pm 0.00)$ | 0.75; 2.2 |
| 880 | $(3.4 \pm 0.6)\ 10^{-4}$ | $(0.2 \pm 1.2)\ 10^{-4}$ | 0.79; 1.0 | $(-0.76 \pm 0.16)\ 10^{-2}$ | $(1.00 \pm 0.00)$ | 0.79; 1.4 |
| 950 | $(3.2 \pm 0.6)\ 10^{-4}$ | $(0.4 \pm 1.0)\ 10^{-4}$ | 0.77; 1.1 | $(-0.62 \pm 0.13)\ 10^{-2}$ | $(0.99 \pm 0.00)$ | 0.78; 1.1 |
| | $k = a MC_{Hem\,\%} + b$ | | | $SSA = a MC_{Hem\,\%} + b$ | | |
| Wavelength (nm) | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ |
| 370 | $(9.7 \pm 2.7)\ 10^{-4}$ | $(8.7 \pm 4.0)\ 10^{-4}$ | 0.67; 1.9 | $(-4.4 \pm 0.6)\ 10^{-2}$ | $(0.95 \pm 0.01)$ | 0.73; 3.5 |
| 470 | $(8.3 \pm 1.9)\ 10^{-4}$ | $(4.9 \pm 2.7)\ 10^{-4}$ | 0.72; 1.9 | $(-3.0 \pm 0.4)\ 10^{-2}$ | $(0.97 \pm 0.01)$ | 0.76; 3.2 |
| 520 | $(6.9 \pm 1.5)\ 10^{-4}$ | $(4.0 \pm 2.0)\ 10^{-4}$ | 0.74; 2.0 | $(-2.2 \pm 0.3)\ 10^{-2}$ | $(0.98 \pm 0.00)$ | 0.78; 3.3 |
| 590 | $(3.7 \pm 0.8)\ 10^{-4}$ | $(3.1 \pm 1.2)\ 10^{-4}$ | 0.61; 2.1 | $(-1.3 \pm 0.2)\ 10^{-2}$ | $(0.99 \pm 0.00)$ | 0.71; 2.7 |
| 660 | $(3.7 \pm 0.8)\ 10^{-4}$ | $(1.3 \pm 1.1)\ 10^{-4}$ | 0.51; 2.6 | $(-0.9 \pm 0.2)\ 10^{-2}$ | $(0.99 \pm 0.00)$ | 0.62; 2.5 |
| 880 | $(2.9 \pm 0.7)\ 10^{-4}$ | $(2.1 \pm 1.1)\ 10^{-4}$ | 0.43; 2.1 | $(-0.6 \pm 0.1)\ 10^{-2}$ | $(0.99 \pm 0.00)$ | 0.57; 1.8 |
| 950 | $(2.6 \pm 0.6)\ 10^{-4}$ | $(2.3 \pm 0.9)\ 10^{-4}$ | 0.46; 2.1 | $(-0.5 \pm 0.1)\ 10^{-2}$ | $(0.99 \pm 0.00)$ | 0.49; 1.7 |
| | $k = a MC_{Goeth\,\%} + b$ | | | $SSA = a MC_{Goeth\,\%} + b$ | | |
| Wavelength (nm) | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ |
| 370 | $(9.0 \pm 2.5)\ 10^{-4}$ | $(17 \pm 2.2)\ 10^{-4}$ | 0.47; 1.8 | $(-13.4 \pm 6.9)\ 10^{-3}$ | $(0.90 \pm 0.01)$ | 0.32; 6.8 |
| 470 | $(5.5 \pm 1.7)\ 10^{-4}$ | $(12.5 \pm 1.5)\ 10^{-4}$ | 0.43; 2.3 | $(-8.3 \pm 4.7)\ 10^{-3}$ | $(0.94 \pm 0.00)$ | 0.21; 6.2 |
| 520 | $(3.4 \pm 1.1)\ 10^{-4}$ | $(9.6 \pm 1.2)\ 10^{-4}$ | 0.41; 2.5 | $(-4.9 \pm 3.2)\ 10^{-3}$ | $(0.96 \pm 0.00)$ | 0.17; 6.4 |
| 590 | $(0.5 \pm 0.6)\ 10^{-4}$ | $(7.2 \pm 0.8)\ 10^{-4}$ | 0.50; 3.2 | $(0.9 \pm 2.0)\ 10^{-3}$ | $(0.97 \pm 0.00)$ | 0.23; 5.5 |
| 660 | $(2.2 \pm 0.8)\ 10^{-4}$ | $(4.8 \pm 0.7)\ 10^{-4}$ | 0.55; 3.6 | $(0.2 \pm 1.6)\ 10^{-3}$ | $(0.98 \pm 0.00)$ | 0.34; 4.4 |
| 880 | $(2.6 \pm 0.8)\ 10^{-4}$ | $(4.7 \pm 0.6)\ 10^{-4}$ | 0.62; 2.4 | $(-1.1 \pm 1.4)\ 10^{-3}$ | $(0.98 \pm 0.00)$ | 0.47; 3.0 |
| 950 | $(2.6 \pm 0.8)\ 10^{-4}$ | $(4.4 \pm 0.6)\ 10^{-4}$ | 0.55 ; 2.5 | $(-2.1 \pm 1.4)\ 10^{-3}$ | $(0.98 \pm 0.00)$ | 0.54; 2.6 |
| | $k = a MC_{Fe\,\%} + b$ | | | $SSA = a MC_{Fe\,\%} + b$ | | |
| Wavelength (nm) | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ | $a \pm \sigma a$ | $b \pm \sigma b$ | $R^2$; $\chi^2_{red}$ |
| 370 | $(6.0 \pm 1.4)\ 10^{-4}$ | $(-7.3 \pm 7.0)\ 10^{-4}$ | 0.60; 1.5 | $(-2.7 \pm 0.4)\ 10^{-2}$ | $(1.02 \pm 0.02)$ | 0.67; 3.1 |
| 470 | $(4.7 \pm 1.0)\ 10^{-4}$ | $(-7.1 \pm 5.0)\ 10^{-4}$ | 0.62; 1.7 | $(-1.8 \pm 0.3)\ 10^{-2}$ | $(1.02 \pm 0.01)$ | 0.72; 2.8 |
| 520 | $(3.9 \pm 0.8)\ 10^{-4}$ | $(-6.8 \pm 3.9)\ 10^{-4}$ | 0.65; 1.6 | $(-1.3 \pm 0.2)\ 10^{-2}$ | $(1.01 \pm 0.01)$ | 0.72; 2.9 |
| 590 | $(2.5 \pm 0.5)\ 10^{-4}$ | $(-4.3 \pm 2.4)\ 10^{-4}$ | 0.56; 1.7 | $(-0.8 \pm 0.1)\ 10^{-2}$ | $(1.01 \pm 0.01)$ | 0.70; 2.4 |
| 660 | $(2.0 \pm 0.4)\ 10^{-4}$ | $(-2.6 \pm 1.7)\ 10^{-4}$ | 0.48; 1.9 | $(-0.5 \pm 0.1)\ 10^{-2}$ | $(1.00 \pm 0.00)$ | 0.62; 2.0 |
| 880 | $(1.8 \pm 0.4)\ 10^{-4}$ | $(-2.4 \pm 2.0)\ 10^{-4}$ | 0.40; 1.8 | $(-0.4 \pm 0.1)\ 10^{-2}$ | $(1.00 \pm 0.00)$ | 0.54; 1.6 |
| 950 | $(1.4 \pm 0.3)\ 10^{-4}$ | $(-0.3 \pm 1.4)\ 10^{-4}$ | 0.45; 2.0 | $(-0.3 \pm 0.1)\ 10^{-2}$ | $(1.00 \pm 0.00)$ | 0.49; 1.5 |