Author Correction: Weak average liquid- cloud-water response to anthropogenic aerosols

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Correction to: *Nature* <https://doi.org/10.1038/s41586-019-1423-9>

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In this Article, a coding mistake occurred when calculating $-\frac{\Delta \ln \text{COD}}{\Delta \ln R_e}$ and $\frac{\Delta \ln \text{LWP}}{\Delta \ln \text{CDNC}}$, in which COD denotes the cloud optical depth; R_e denotes the cloud droplet effective radius; LWP denotes the liquid water path; and CDNC denotes the cloud droplet number concentration. The natural logarithm of those cloud properties was mistakenly taken before, instead of after, calculating the track segment average. The mistake has been corrected in Figs. 3b, 4, 6 and Extended Data Tables 2, 4 of the original Article, and the incorrect, published figures and tables are shown as Figs. 1–5 of this Amendment, for transparency to readers. The conclusions of the paper, including the main conclusion that changes in cloud water caused by aerosols exert a weak climate-warming effect, and all other figures and tables, are not affected.

The correction has minor effects on the results of the paper, which remain qualitatively the same. The radiative forcing exerted by LWP adjustments is now estimated at $+0.15 \text{ W m}^{-2}$, instead of $+0.12 \text{ W m}^{-2}$. Consequently, the observed decrease in cloud water now offsets 29%, up from 23%, of the global climate-cooling effect caused by aerosol-induced increases in the concentration of cloud droplets. In addition, the y-axis label in Fig. 4 should be $\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$ without a minus sign. The original Article has been corrected online.

Fig. 1 | This figure displays the corrected and the incorrect published Fig. 3b of the original Article.

Corrections & amendments

Fig. 2 | This figure displays the corrected and the incorrect published Fig. 4 of the original Article.

Fig. 3 | This figure displays the corrected and the incorrect published Fig. 6 of the original Article.

Original Extended Data Table 2				
Type of track	Number of track observations	Cloud top height [m]	Relative humidity [%]	$\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$
Industry St land	6478	2259	42.6	-0.071 (0.003)
Large industry St land	984	2862	34.2	-0.215 (0.018)
Fires St land	1389	2532	46.5	-0.088 (0.006)
Volcano St ocean	2521	1311	39.7	-0.107 (0.007)
Volcano Cu ocean	831	1471	76.1	+0.051 (0.012)
Ship St ocean	793	721	26.6	-0.021 (0.013)

Corrected Extended Data Table 2				
Type of track	Number of track observations	Cloud top height [m]	Relative humidity [%]	$\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$
Industry St land	6478	2259	42.6	-0.098 (0.003)
Large industry St land	984	2862	34.2	-0.249 (0.017)
Fires St land	1389	2532	46.5	-0.081 (0.006)
Volcano St ocean	2521	1311	39.7	-0.109 (0.007)
Volcano Cu ocean	831	1471	76.1	-0.021 (0.012)
Ship St ocean	793	721	26.6	-0.028 (0.013)

Fig. 4 | This figure displays the corrected and the incorrect published Extended Data Table 2 of the original Article.

Original Extended Data Table 4		
R_e interval [μm]	$\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$ volcano and ship tracks over ocean	$\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$ industry and fire tracks over land
$R_e < 10.5$	-0.115 (0.013)	-0.124 (0.014)
$10.5 \leq R_e < 13.5$	-0.140 (0.012)	-0.145 (0.005)
$13.5 \leq R_e < 16.5$	-0.068 (0.015)	-0.104 (0.006)
$16.5 \leq R_e < 19.5$	-0.004 (0.017)	-0.043 (0.006)
$19.5 \leq R_e < 22.5$	+0.052 (0.033)	-0.035 (0.009)
$R_e \geq 22.5$	+0.106 (0.035)	-0.008 (0.017)

Corrected Extended Data Table 4		
R_e interval [μm]	$\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$ volcano and ship tracks over ocean	$\Delta \ln \text{LWP} / \Delta \ln \text{CDNC}$ industry and fire tracks over land
$R_e < 10.5$	-0.145 (0.012)	-0.129 (0.009)
$10.5 \leq R_e < 13.5$	-0.165 (0.010)	-0.161 (0.005)
$13.5 \leq R_e < 16.5$	-0.094 (0.012)	-0.122 (0.006)
$16.5 \leq R_e < 19.5$	-0.026 (0.016)	-0.062 (0.006)
$19.5 \leq R_e < 22.5$	+0.056 (0.022)	-0.058 (0.009)
$R_e \geq 22.5$	+0.116 (0.030)	-0.026 (0.011)

Fig. 5 | This figure displays the corrected and the incorrect published Extended Data Table 4 of the original Article.