

Assessment of the COVID-19 Lockdown Effects on Spectral Aerosol Scattering and Absorption Properties in Athens, Greece

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Table S1. Mean $\pm$ standard deviation values of scattering, absorption, SAE (scattering Angström exponent), AAE (absorption Angström exponent) and SSA (single scattering albedo) during the pre-lockdown (March 1–22 2020), lockdown (March 23–May 3 2020) and post-lockdown (May 4–31 2020) periods and associated changes at Thessio, Athens. The asterisk denotes statistically significant difference (0.95 confidence level).

Parameters	Pre-lockdown	Lockdown	Post-lockdown	Lockdown vs. Pre-lockdown (%)	Post-lockdown vs. Lockdown (%)
	March 1–22	March 23–May 3	May 4–31		
$b_{sca,550}$ (Mm^{-1})	39.8 ± 33.8	33.7 ± 23.9	31.5 ± 19.4	−15.3%*	−6.5%
$b_{abs,520}$ (Mm^{-1})	25.2 ± 26.9	15.3 ± 13.8	16.1 ± 15.5	−39.3%*	+5.2%
SAE	1.87 ± 0.55	2.08 ± 0.26	2.04 ± 0.40	+11.2%*	−1.9%
AAE	1.37 ± 0.11	1.35 ± 0.10	1.22 ± 0.07	−1.5%	−9.6%*
SSA	0.66 ± 0.13	0.72 ± 0.08	0.71 ± 0.09	+9.1%*	−1.4%

Table S2. Mean $\pm$ standard deviation values of scattering, absorption, SAE, AAE and SSA for 2020 and previous years corresponding to the pre-lockdown (1–22 March 2020), lockdown (23 March–3 May 2020) and post-lockdown (4–31 May 2020) periods. Displaying also the % differences in 2020 compared to the mean of previous years. The asterisk denotes statistically significant difference (0.95 confidence level).

	$b_{sca,550}$ (Mm^{-1})	$b_{abs,520}$ (Mm^{-1}) ^a	SAE	AAE ^a	SSA
Pre-lockdown (1–22 March 2020)					
2017–2019 (mean)	45.4 $\pm$ 36.5	24.2 $\pm$ 25.2	1.72 $\pm$ 0.54	1.31 $\pm$ 0.19	0.67 $\pm$ 0.14
2020	39.8 $\pm$ 33.8	25.2 $\pm$ 26.9	1.87 $\pm$ 0.55	1.37 $\pm$ 0.11	0.66 $\pm$ 0.13
%diff. (2020/2017–2019)	–12.3%*	+4.13%	+8.7%*	+4.4%	–1.5%
Lockdown (23 March–3 May 2020)					
2017–2019 (mean)	42.5 $\pm$ 24.8	24.0 $\pm$ 23.3	1.96 $\pm$ 0.39	1.27 $\pm$ 0.10	0.68 $\pm$ 0.11
2020	33.7 $\pm$ 23.9	15.3 $\pm$ 13.8	2.08 $\pm$ 0.26	1.35 $\pm$ 0.10	0.72 $\pm$ 0.08
%diff. (2020/2017–2019)	–20.7%*	–36.3%*	+6.1*	+6.3*	+5.9%*
Post-Lockdown (4–31 May 2020)					
2017–2019 (mean)	33.8 $\pm$ 19.2	16.9 $\pm$ 15.3	1.93 $\pm$ 0.35	1.20 $\pm$ 0.09	0.70 $\pm$ 0.11
2020	31.5 $\pm$ 19.4	16.1 $\pm$ 15.5	2.04 $\pm$ 0.40	1.22 $\pm$ 0.07	0.71 $\pm$ 0.09
%diff. (2020/2017–2019)	–6.8%*	–4.7%	+5.7%*	+1.7%	+1.4%

^aFor the absorption coefficient and AAE the mean is for 2016–2019.

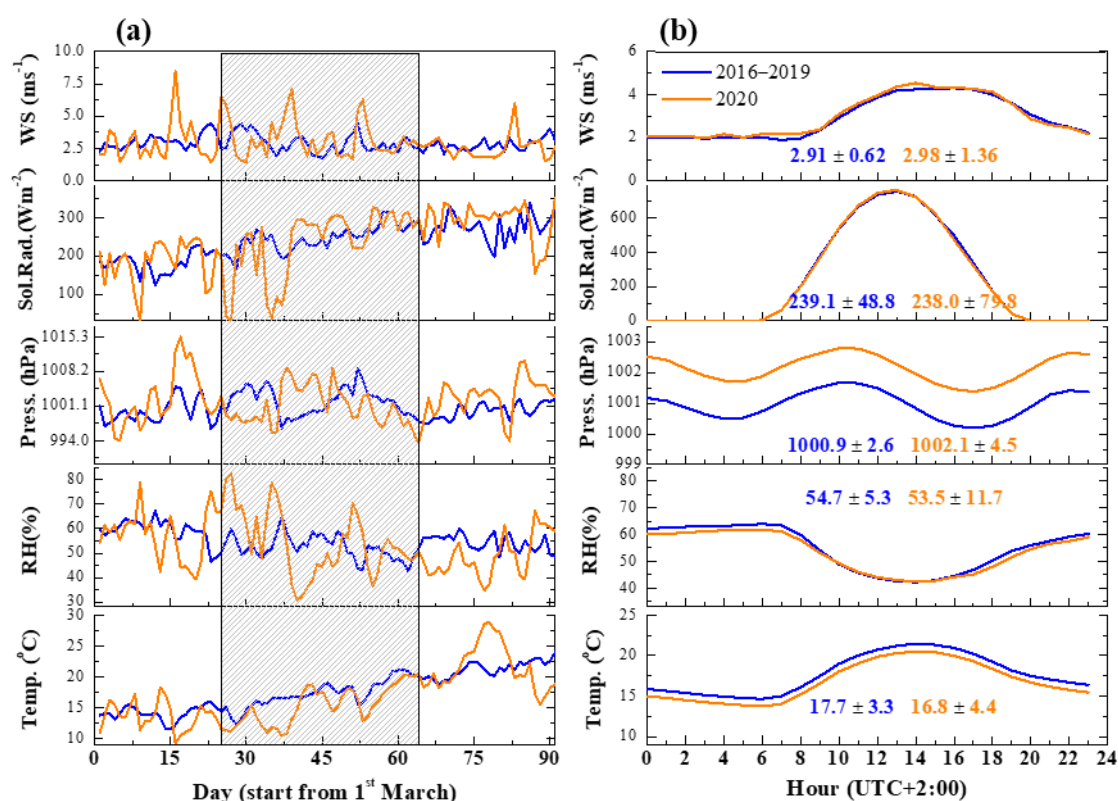


Figure S1. (a) Mean daily variation of meteorological parameters in March–May (2016–2019; blue) and in the respective period in 2020 (orange) at Thissio, Athens. The shaded area defines the lockdown period in 2020 (23 March–3 May 2020). (b) Mean diurnal variation of meteorological parameters in 2016–2019 (blue) and in 2020 (orange) during the March–May period.

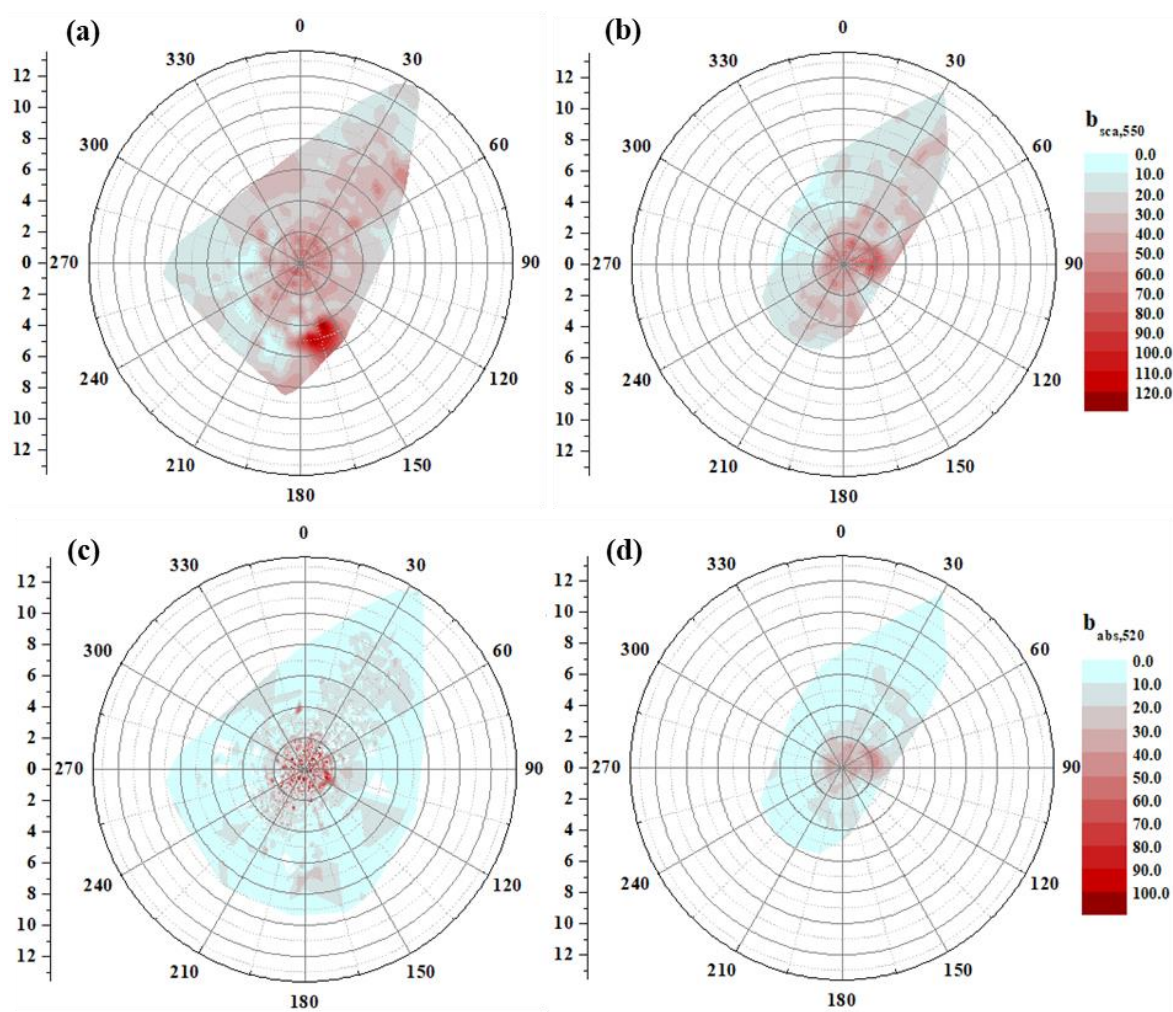


Figure S2. Wind roses of the $b_{sca,550}$ (a, b) and $b_{abs,520}$ (c, d) during the period, 23 March–3 May 2020 for 2016–2019 (a, c) and 2020 lockdown (b, d).

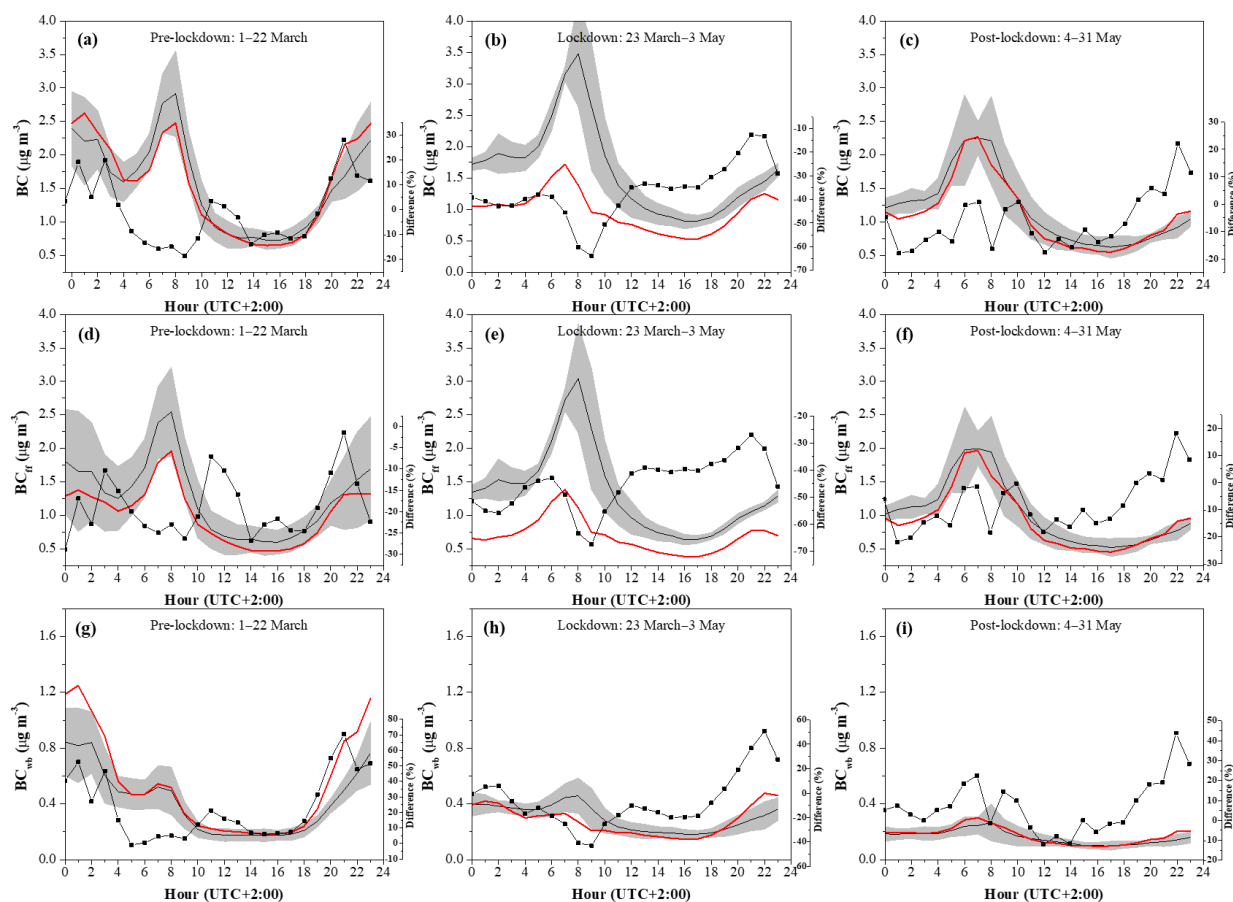


Figure S3. Mean diurnal patterns of BC (a–c), BC_{fr} (d–f) and BC_{wb} for periods pre- post- and during lockdown. Red line corresponds to year 2020, while black line to the period mean for the years 2016–2019. The shaded area corresponds to one standard deviation from the 2016–2019 diurnal mean. The percentage (%) differences between 2020 and 2016–2019 (red and black lines, respectively) are also given. .