

**Table S1.** Standardized results (parameter estimates) for path coefficients of the SEM model performed for ambient data (Fig. 4.).

Dependent	Predictor	Estimate	Std Error
BF	← $\kappa_{\text{tot}}$	-0.50	0.02
BF	← RH	-0.66	0.02
BF	← O:C	-0.16	0.02
BF	← $\text{RH}_{\text{ambient}}$	-0.17	0.03
$\kappa_{\text{tot}}$	← $\kappa_{\text{OA}}$	0.97	0.02
$\kappa_{\text{tot}}$	← $f_{\text{OA}}$	-0.53	0.02
$\kappa_{\text{OA}}$	← $\text{RH}_{\text{ambient}}$	-0.10	0.04
$\kappa_{\text{OA}}$	← $f_{\text{OA}}$	0.26	0.03
$\kappa_{\text{OA}}$	← O:C	0.12	0.04
RH	← $\text{RH}_{\text{ambient}}$	0.52	0.05
RH	← $T_{\text{ambient}}$	0.13	0.05
$\text{RH}_{\text{ambient}}$	← $T_{\text{ambient}}$	-0.79	0.01
O:C	← $\text{RH}_{\text{ambient}}$	-0.54	0.03

**Table S2.** Standardized results (parameter estimates) for path coefficients of the SEM model performed for OFR data (Fig. 5.).

Dependent		Predictor	Estimate	Std Error
BF	←	RH	-0.50	0.02
BF	←	O:C	-0.25	0.03
BF	←	$f_{\text{OA}}$	0.52	0.03
BF	←	$\log_{10}(\text{OH})$	-0.11	0.03
O:C	←	$f_{\text{OA}}$	-0.35	0.04
O:C	←	$\log_{10}(\text{OH})$	0.37	0.04
RH	←	$T_{\text{ambient}}$	-0.48	0.03
$f_{\text{OA}}$	←	$f_{\text{ABS}}$	-0.42	0.03
$f_{\text{OA}}$	←	$\log_{10}(\text{OH})$	-0.51	0.03