SUPPLEMENTARY MATERIALS

Chemical characterization of urban aerosols in Abidjan and Korhogo (Cote d'Ivoire) from 2018 to 2020 and identification of their potential emission sources

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Table S1. Analytical parameters for ion chromatography

Devices (Operating software)	Species analysed	Columns (4 mm) (Analysis time)	Suppression	Eluent composition (Flow rate)
DIONEX ICS 1000 +Passeur d'échantillons AS 40 *(Chromeleon 6.8)*	Anions : F^-,Cl^-, NO_2^-, NO_3^- SO_4^{2-}, PO_4^{3-}	Echange Ionique AG4A-SC + AS4A-SC *(9 mn)*	Autosuppression DIONEX AERS 500	Mode Isocratique (1.8 mM Na_2CO_3/1.7 mM $NaHCO_3$) *(2 mL/mn)*
DIONEX ICS 1100 +Passeur d'échantillons AS 50 *(Chromeleon 6.8)*	Cations : Na^+, NH_4^+, K^+ Mg^{2+}, Ca^{2+}	Echange Ionique CG12A + CS12A *(14 mn)*	Autosuppression DIONEX CERS 500	Mode Isocratique 20 mM CH_3SO_3H (MSA) *(1 mL/mn)*
DIONEX ICS 5000+ +Passeur d'échantillons AS AP *(Chromeleon 7.2)*	Acides et anions : Acetique, Propionique Formique et Oxalique, Cl^-, $NO_3^-$$NO2^-$, SO_4^{2-}, PO_4^{3-}	Echange Ionique AG11 + AS11 *(19 mn)*	Autosuppression DIONEX AERS 500	Mode Gradient 90% H_2O-10% NaOH 5mM (15 mn) 89% H_2O-11% NaOH 100mM (4mn) *(1 mL/mn)*
DIONEX ICS 5000+ +Passeur d'échantillons AS AP *(Chromeleon 7.2)*	Carbonates	Exclusion Ionique ICE-AS1 *(15 mn)*	Sans	Mode Isocratique 100 % H_2O *(1 mL/mn)*

Calibration : Dilution of single-element standards (1000 ppm) in ultrapure water type 1 (Three-point calibration curves forced to zero with R2 > 0.99)

Fig. S1 Contributions of chemical species to identified sources with the PMF in Abidjan (site A1, UFHB). To take account of unidentified fractions, the PM2.5 concentrations were added to the species.

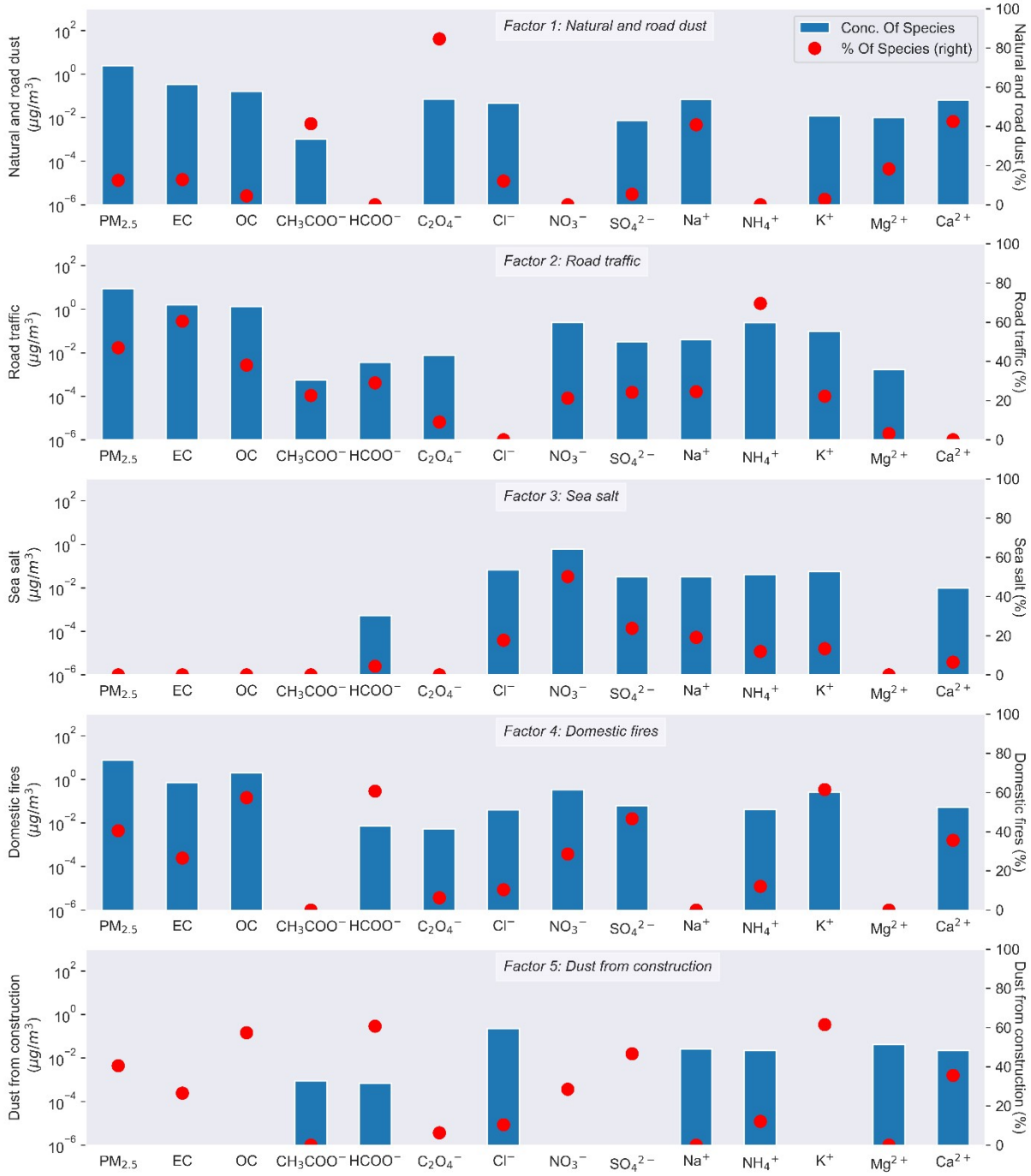


Fig. S2 Contributions of chemical species to identified sources with the PMF in Korhogo (K1 site, UPGC). To take account of unidentified fractions, the PM2.5 concentrations were added to the species.

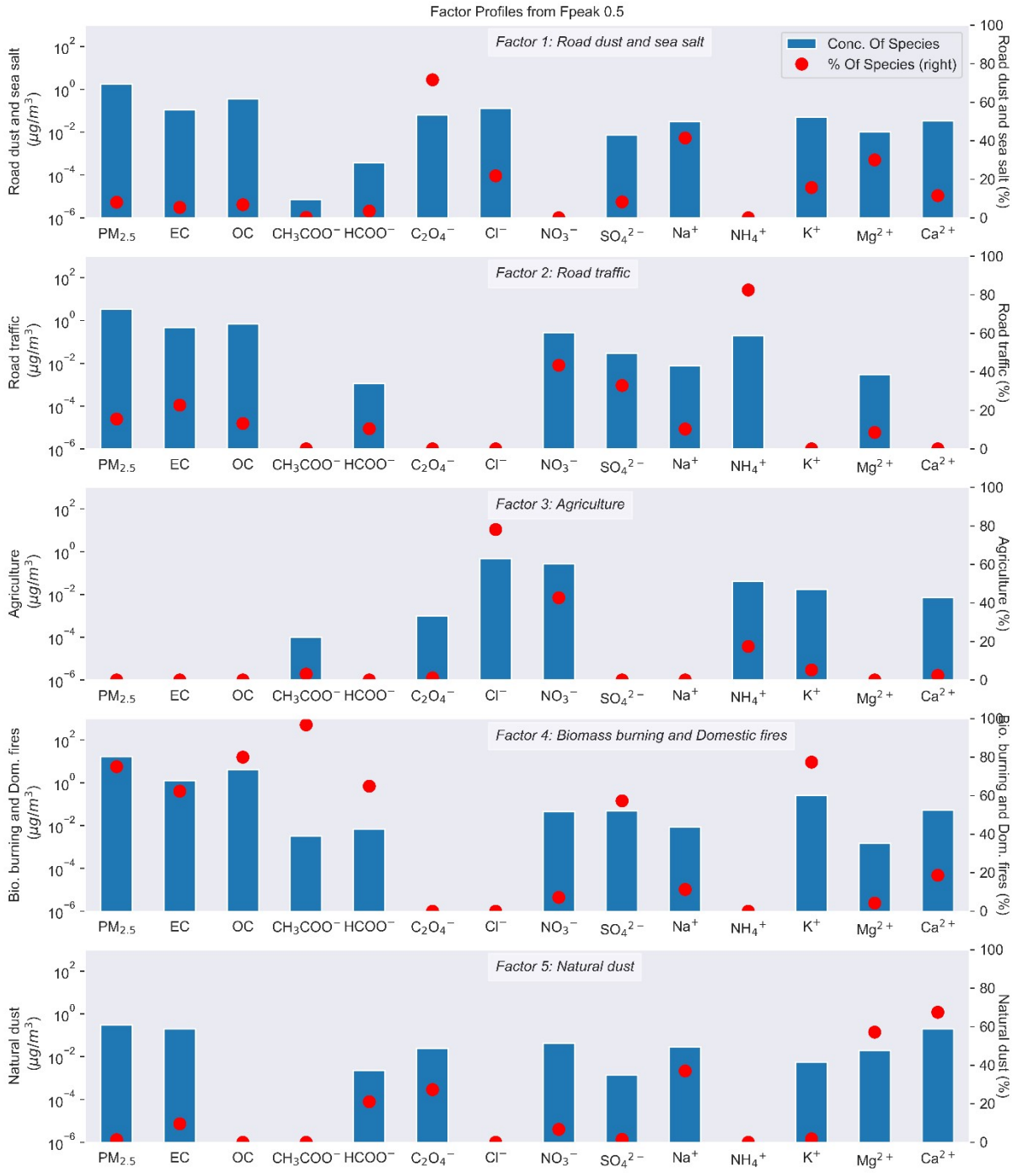


Fig. S3 Contribution profiles of identified sources to PM2.5 aerosol concentrations in Abidjan (site A1, UFHB). The gray-shaded areas represent the dry seasons (DS), from left to right, DS1 and DS2.

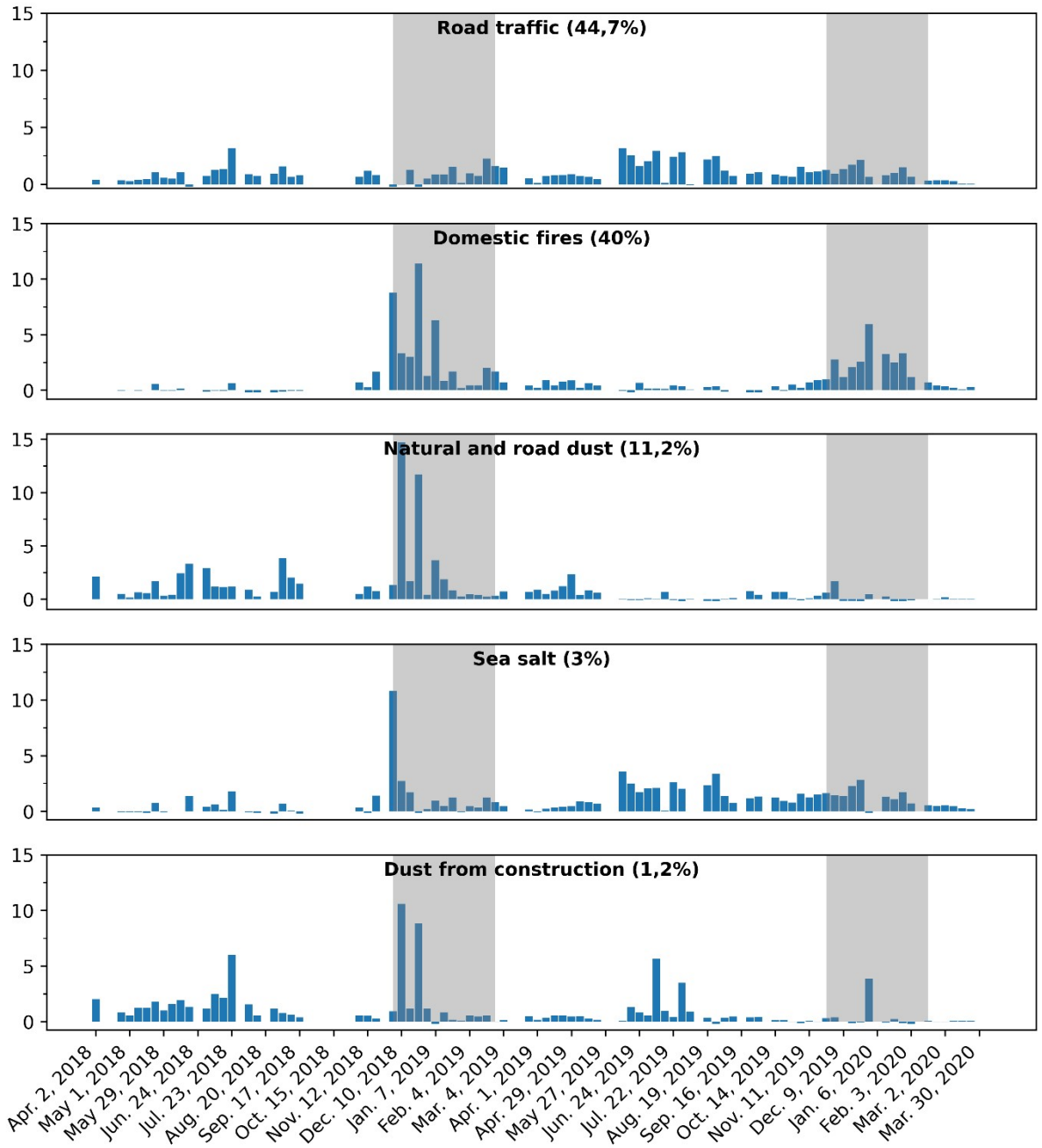


Fig. S4 Contribution profiles of identified sources to PM2.5 aerosol concentrations in Korhogo (K1 site, UPGC). The gray-shaded areas represent the dry seasons (DS), from left to right, DS1 and DS2.

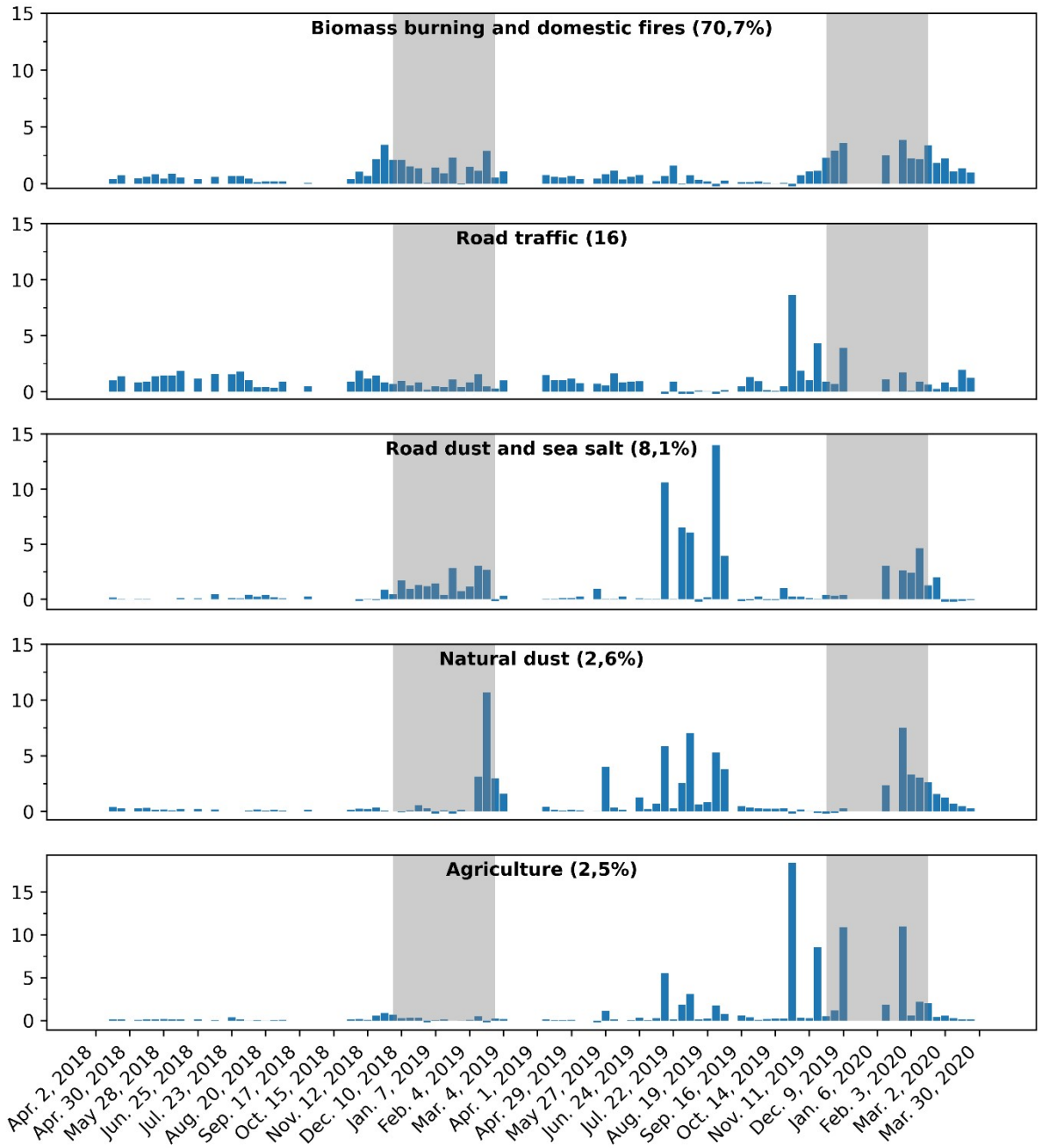
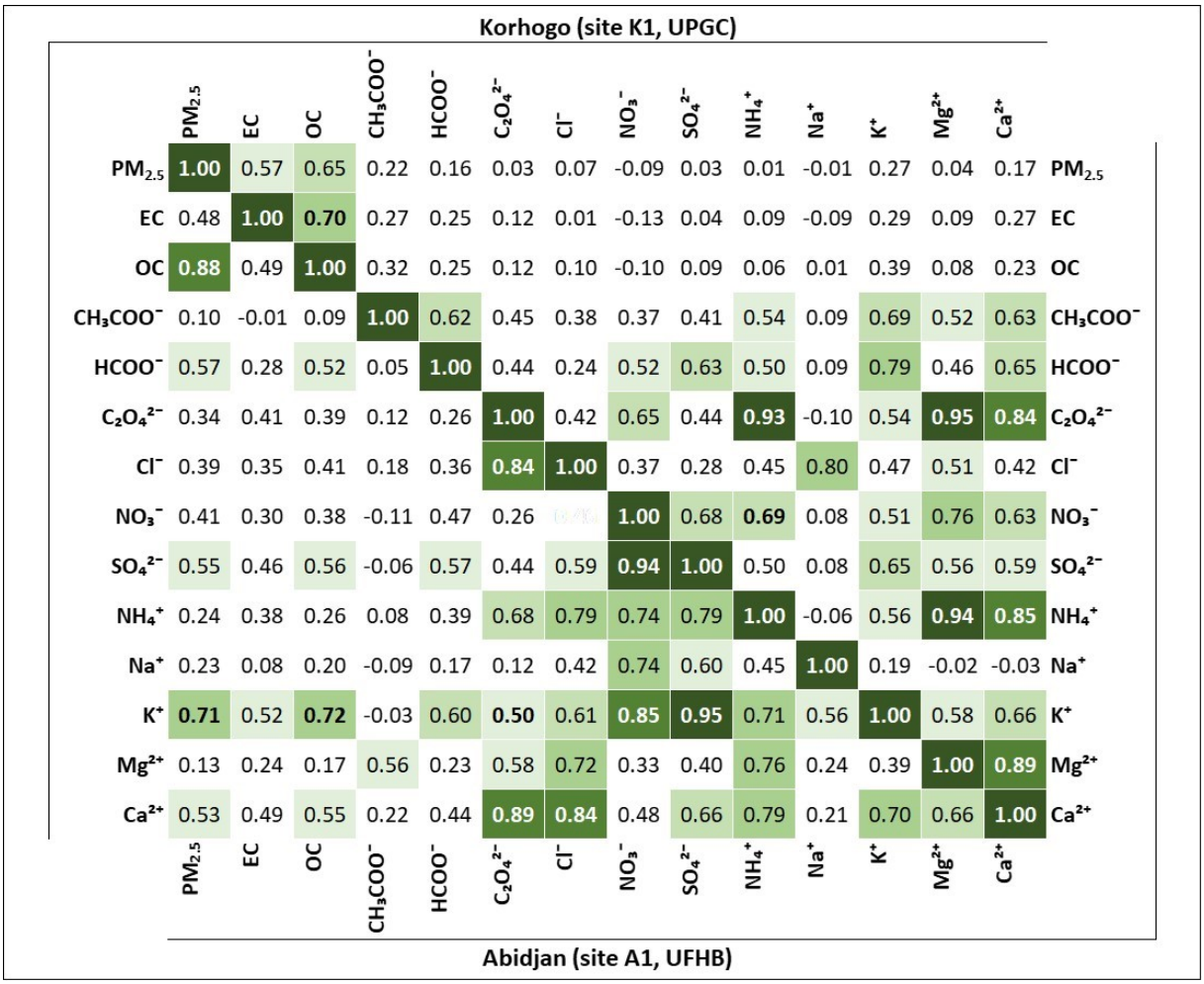


Fig. S5 Correlation matrices between the concentrations of chemical species analysed in PM2.5 collected in Abidjan (site A1, UFHB) and Korhogo (site K1, UPGC). To take account of unidentified fractions, the PM2.5 concentrations were added to the species.



	$PM_{2.5}$	EC	OC	CH_3COO^-	$HCOO^-$	$C_2O_4^{2-}$	Cl^-	NO_3^-	SO_4^{2-}	NH_4^+	Na^+	K^+	Mg^{2+}	Ca^{2+}	
$PM_{2.5}$	**1.00**	0.57	0.65	0.22	0.16	0.03	0.07	-0.09	0.03	0.01	-0.01	0.27	0.04	0.17	$PM_{2.5}$
EC	0.48	**1.00**	**0.70**	0.27	0.25	0.12	0.01	-0.13	0.04	0.09	-0.09	0.29	0.09	0.27	EC
OC	**0.88**	0.49	**1.00**	0.32	0.25	0.12	0.10	-0.10	0.09	0.06	0.01	0.39	0.08	0.23	OC
CH_3COO^-	0.10	-0.01	0.09	**1.00**	0.62	0.45	0.38	0.37	0.41	0.54	0.09	0.69	0.52	0.63	CH_3COO^-
$HCOO^-$	0.57	0.28	0.52	0.05	**1.00**	0.44	0.24	0.52	0.63	0.50	0.09	0.79	0.46	0.65	$HCOO^-$
$C_2O_4^{2-}$	0.34	0.41	0.39	0.12	0.26	**1.00**	0.42	0.65	0.44	**0.93**	-0.10	0.54	**0.95**	**0.84**	$C_2O_4^{2-}$
Cl^-	0.39	0.35	0.41	0.18	0.36	**0.84**	**1.00**	0.37	0.28	0.45	**0.80**	0.47	0.51	0.42	Cl^-
NO_3^-	0.41	0.30	0.38	-0.11	0.47	0.26	[illegible]	**1.00**	0.68	**0.69**	0.08	0.51	0.76	0.63	NO_3^-
SO_4^{2-}	0.55	0.46	0.56	-0.06	0.57	0.44	0.59	**0.94**	**1.00**	0.50	0.08	0.65	0.56	0.59	SO_4^{2-}
NH_4^+	0.24	0.38	0.26	0.08	0.39	0.68	0.79	0.74	0.79	**1.00**	-0.06	0.56	**0.94**	**0.85**	NH_4^+
Na^+	0.23	0.08	0.20	-0.09	0.17	0.12	0.42	0.74	0.60	0.45	**1.00**	0.19	-0.02	-0.03	Na^+
K^+	**0.71**	0.52	**0.72**	-0.03	0.60	**0.50**	0.61	**0.85**	**0.95**	0.71	0.56	**1.00**	0.58	0.66	K^+
Mg^{2+}	0.13	0.24	0.17	0.56	0.23	0.58	0.72	0.33	0.40	0.76	0.24	0.39	**1.00**	**0.89**	Mg^{2+}
Ca^{2+}	0.53	0.49	0.55	0.22	0.44	**0.89**	**0.84**	0.48	0.66	0.79	0.21	0.70	0.66	**1.00**	Ca^{2+}
	$PM_{2.5}$	EC	OC	CH_3COO^-	$HCOO^-$	$C_2O_4^{2-}$	Cl^-	NO_3^-	SO_4^{2-}	NH_4^+	Na^+	K^+	Mg^{2+}	Ca^{2+}	

Fig. S6 Monthly back-trajectories for Dec. 2018, Jan. and Feb. 2018 2019 (DS1) and Dec. 2019, Jan. and Feb. 2019 2020 (DS2), assessed on Abidjan at 50 m above ground.

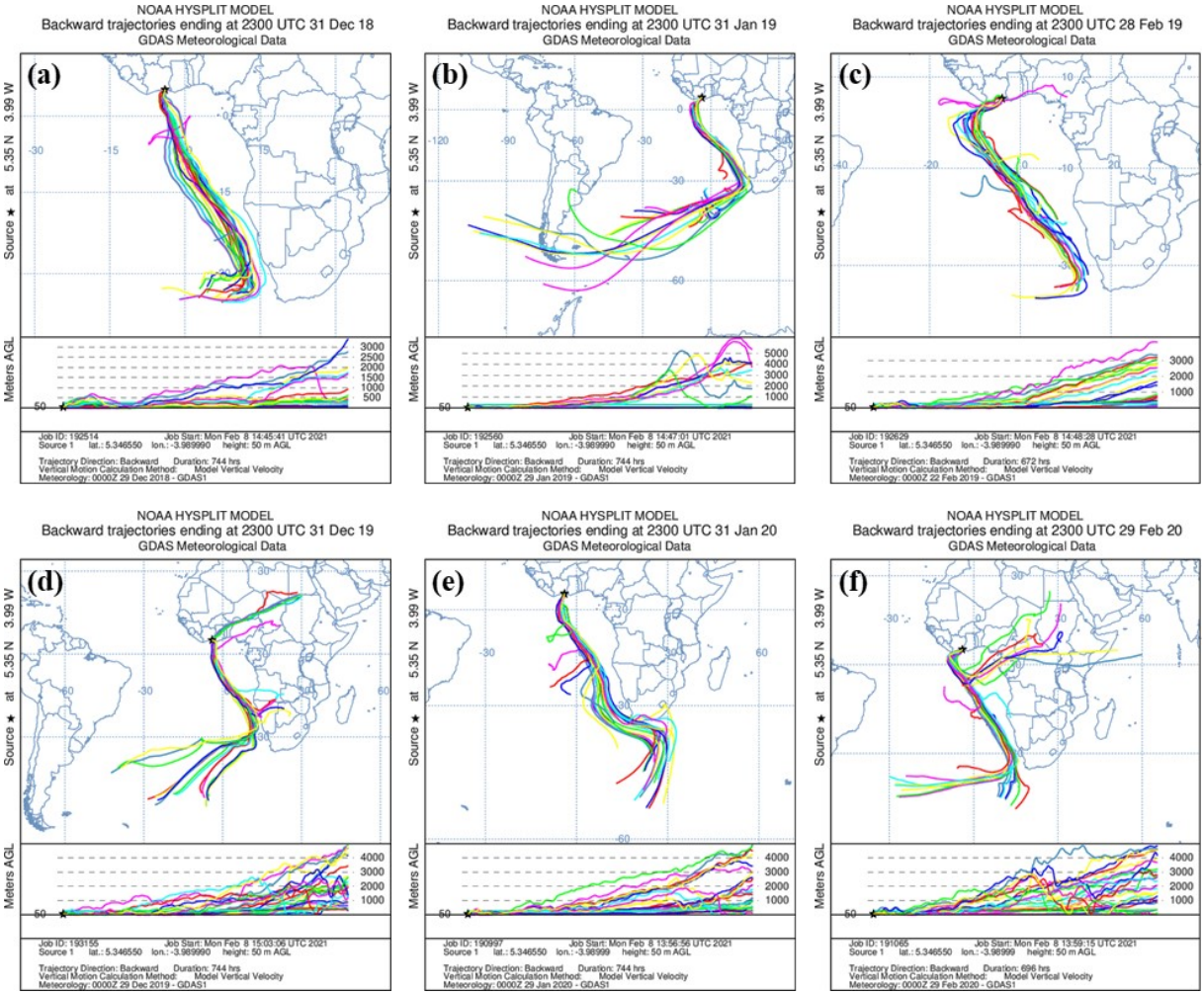


Fig. S7 Monthly back-trajectories for Dec. 2018, Jan. and Feb. 2018 2019 (DS1) and Dec. 2019, Jan. and Feb. 2019 2020 (DS2), assessed on Korhogo at 50 m above ground level

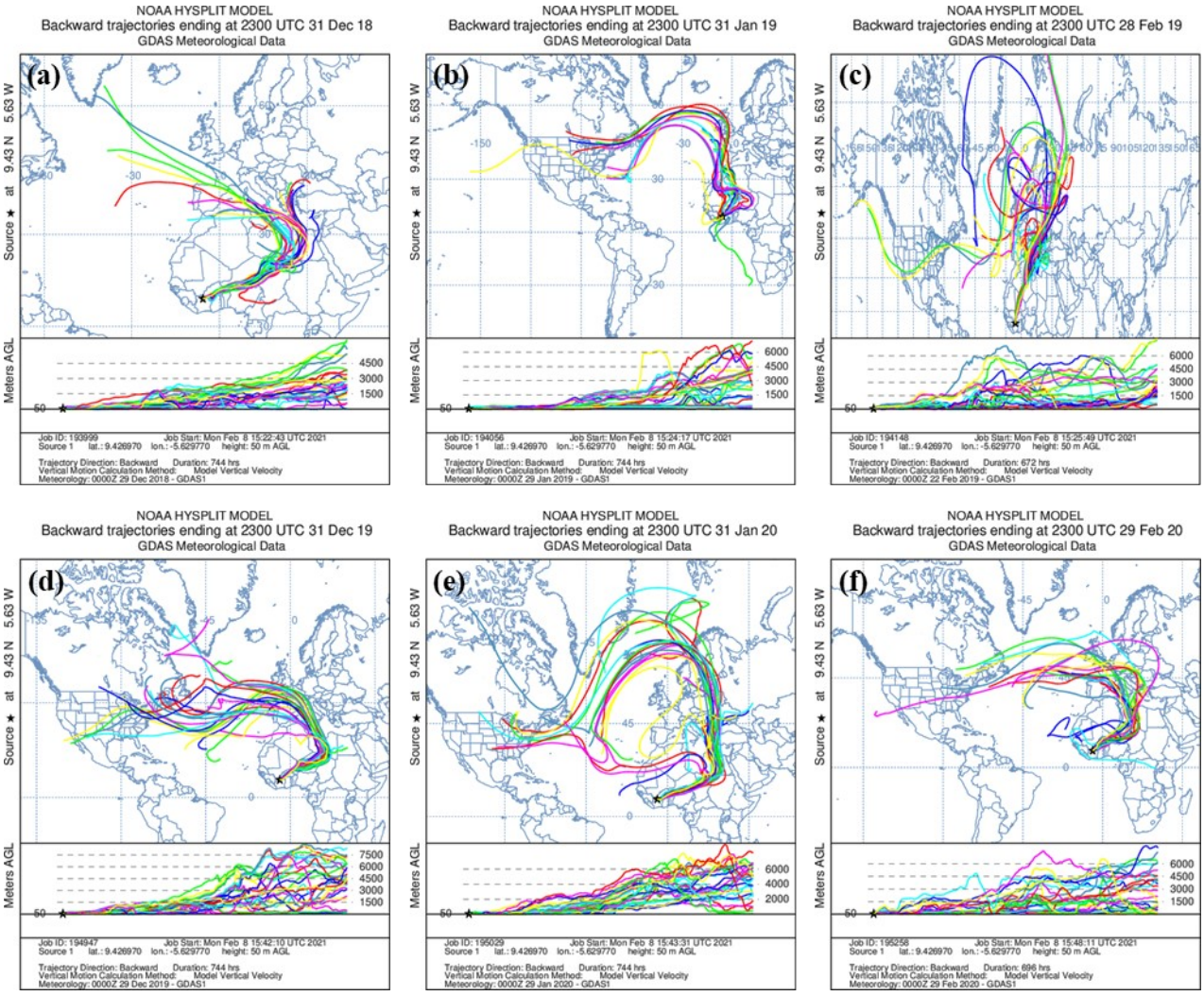


Fig. S8 Wind roses for Dec. 2018, Jan. and Feb. 2019 (DS1) and Dec. 2019, Jan. and Feb. 2020 (DS2), evaluated over Abidjan using data measured at synoptic stations

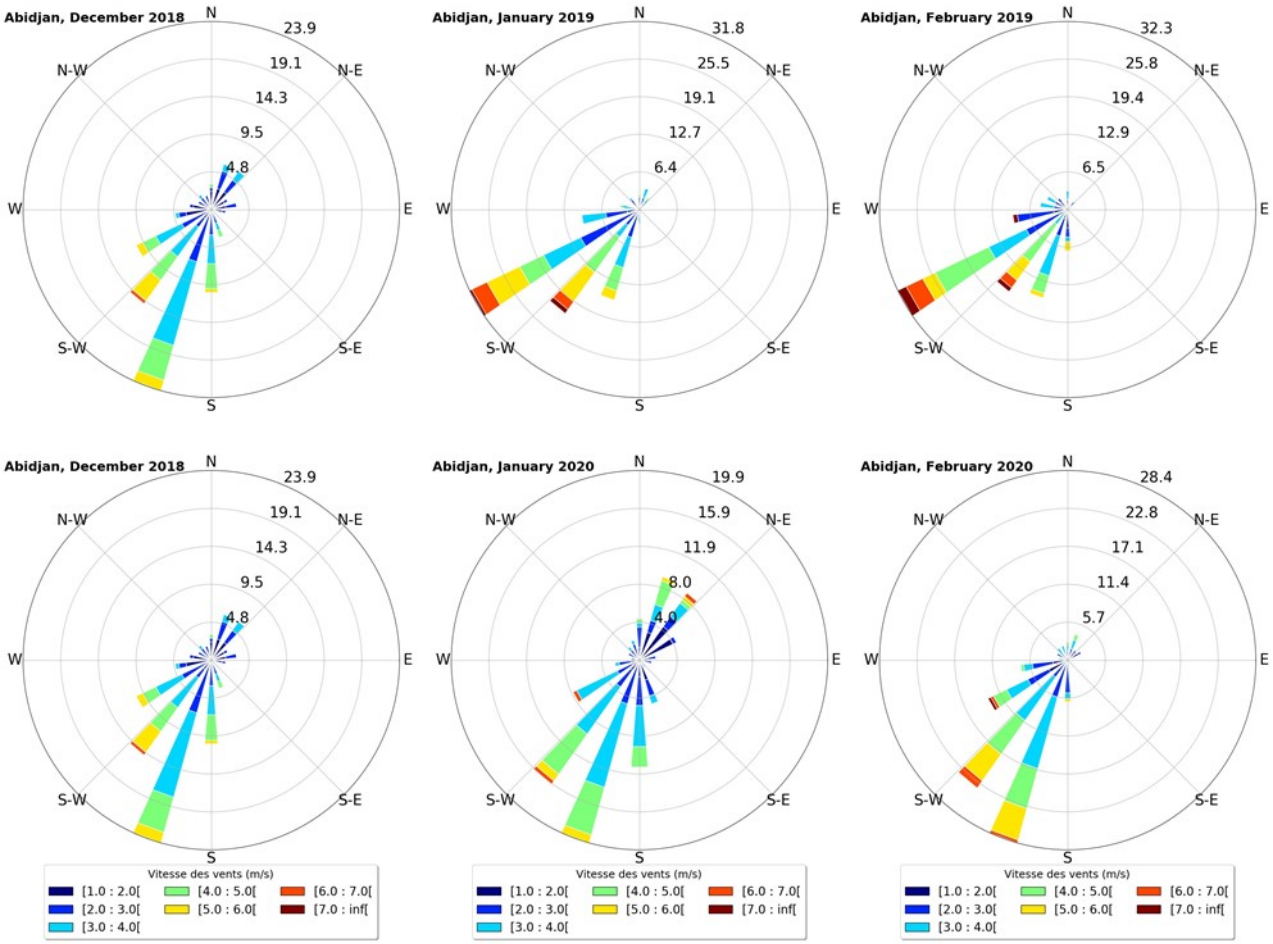


Fig. S9 Wind roses for Dec. 2018, Jan. and Feb. 2019 (DS1) and Dec. 2019, Jan. and Feb. 2020 (DS2), evaluated over Korhogo using data measured at synoptic stations