Incremental excess of PM components and sources between two neighbouring sites of Bogotá, Colombia

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Supplementary material

Figures

Tables

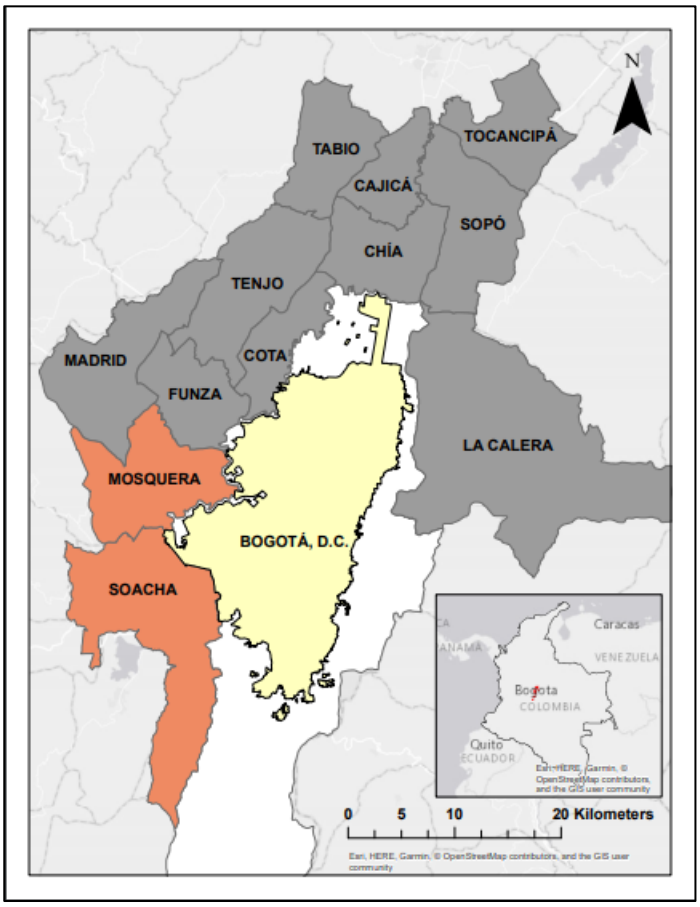


Fig. S1. Map of the metropolitan area of Bogota

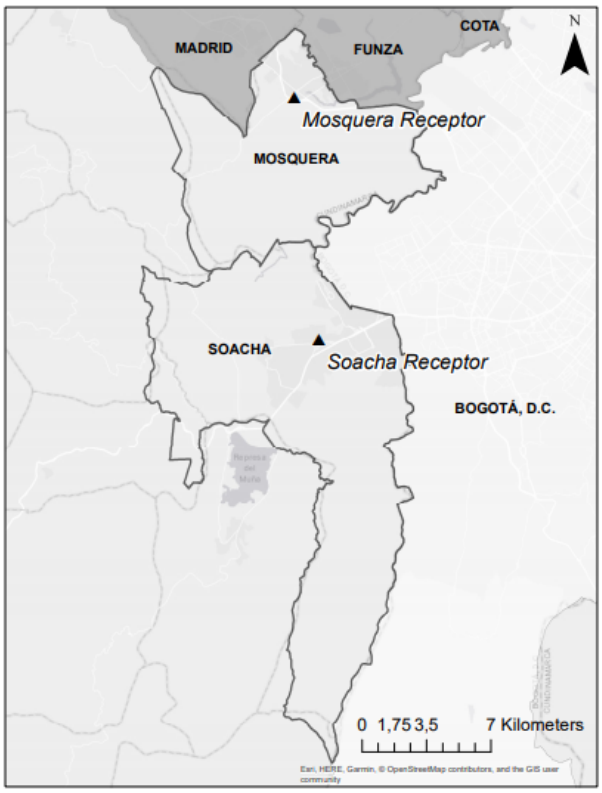


Fig. S2. Location of the Soacha and Mosquera receptors in the study area.

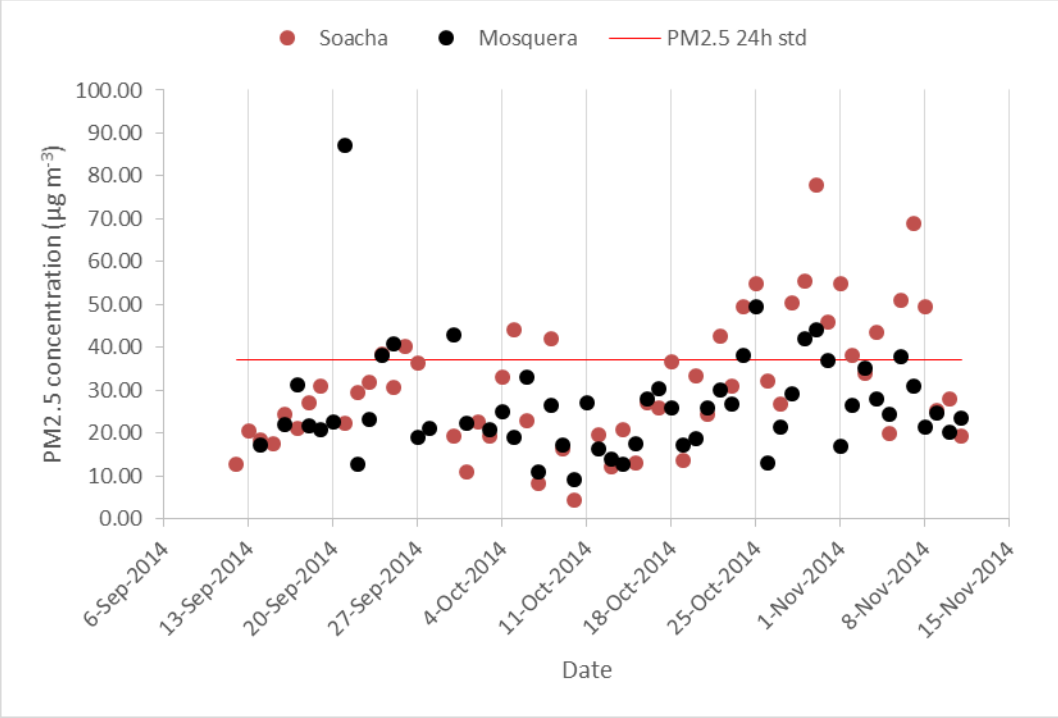


Fig. S3. Daily PM2.5 concentrations at Soacha and Mosquera.

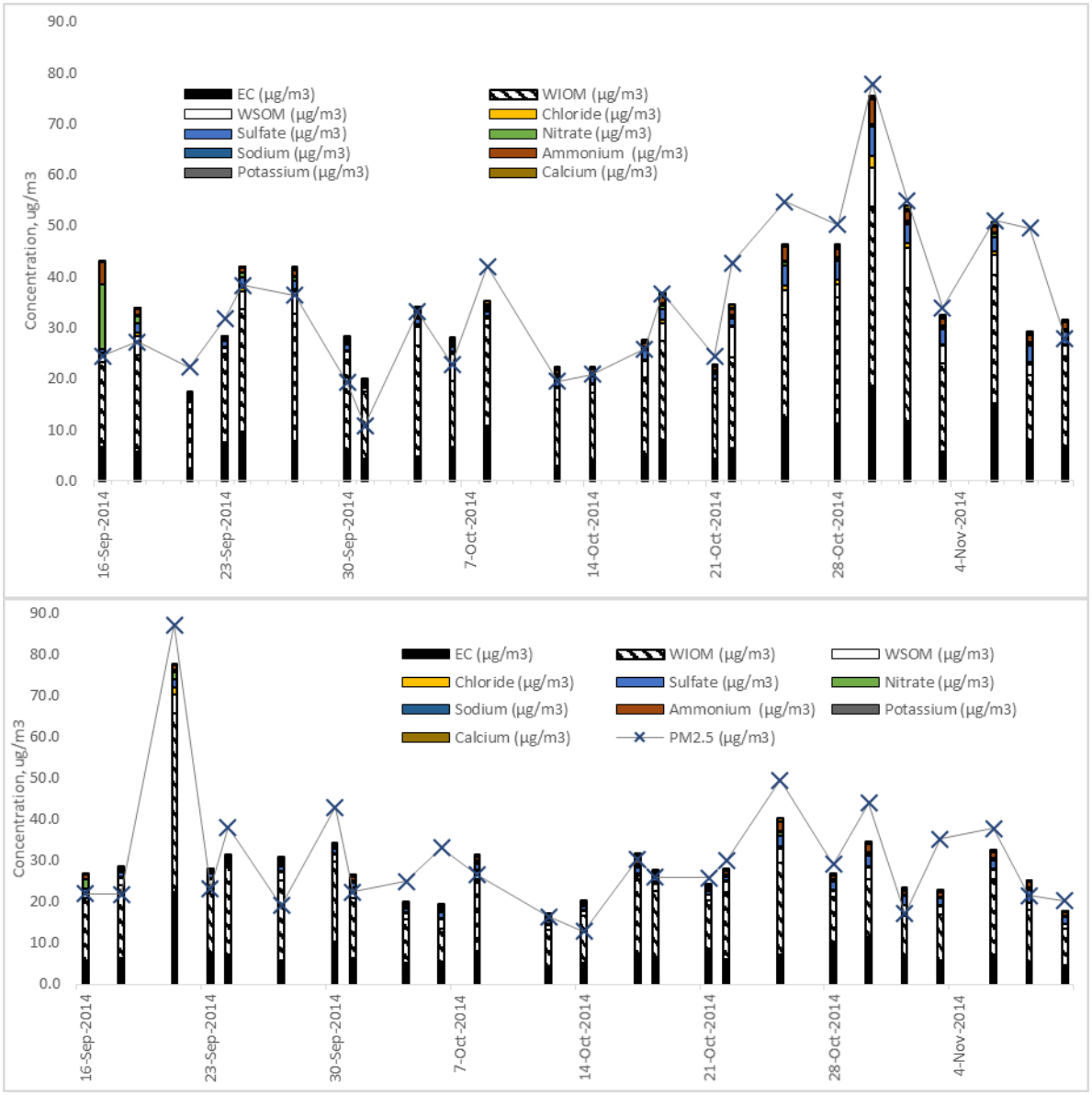


Fig. S4. Daily $PM_{2.5}$ and bulk composition at Soacha (upper) and Mosquera (lower).

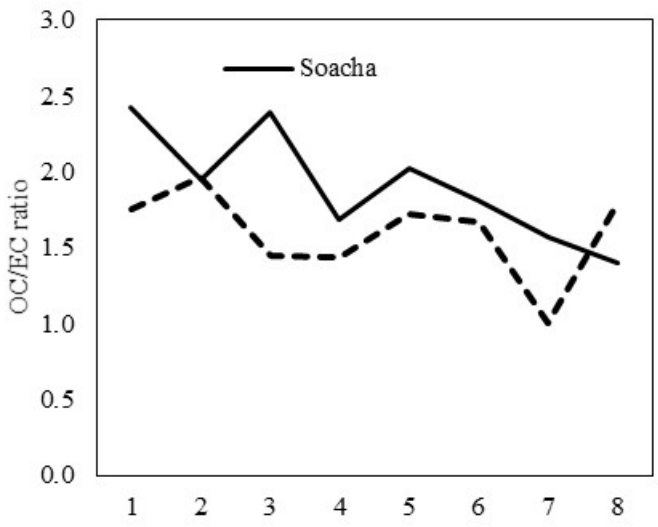


Fig. S5. Weekly OC/EC ratio in Soacha and Mosquera.

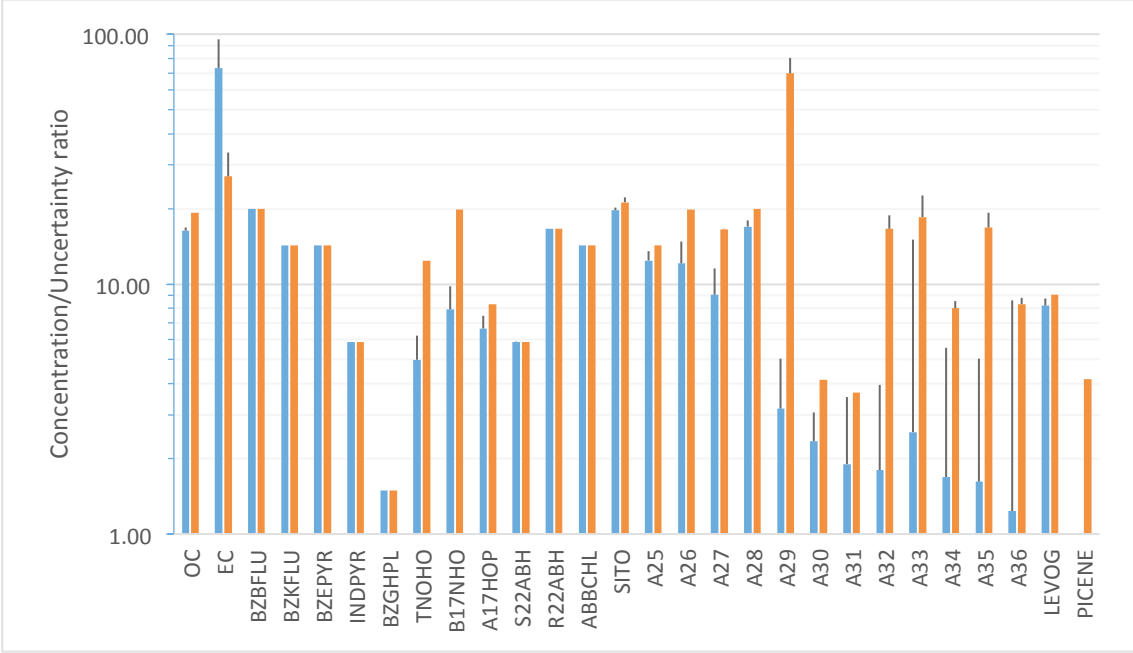


Fig. S6. Concentration/uncertainty ratios for the analyzed species used in the CMB model

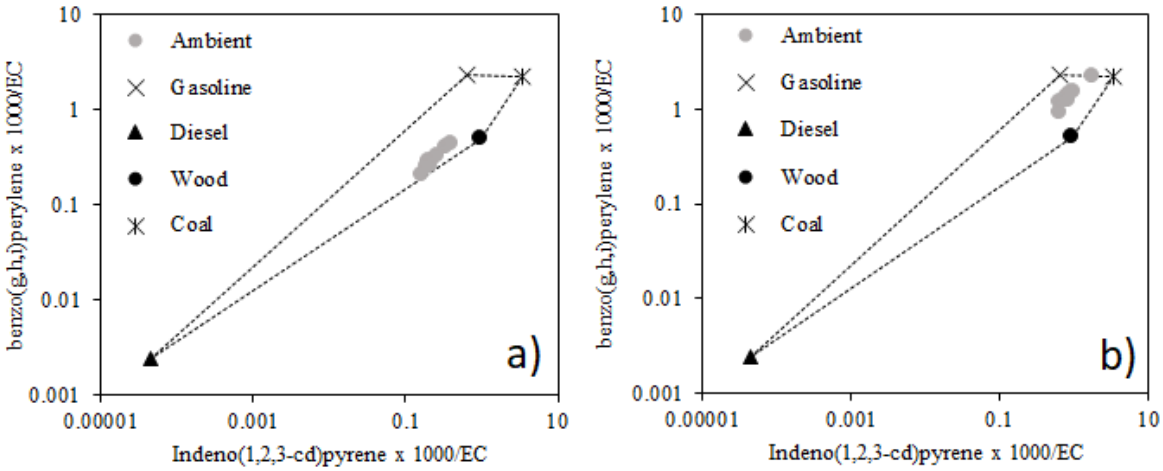
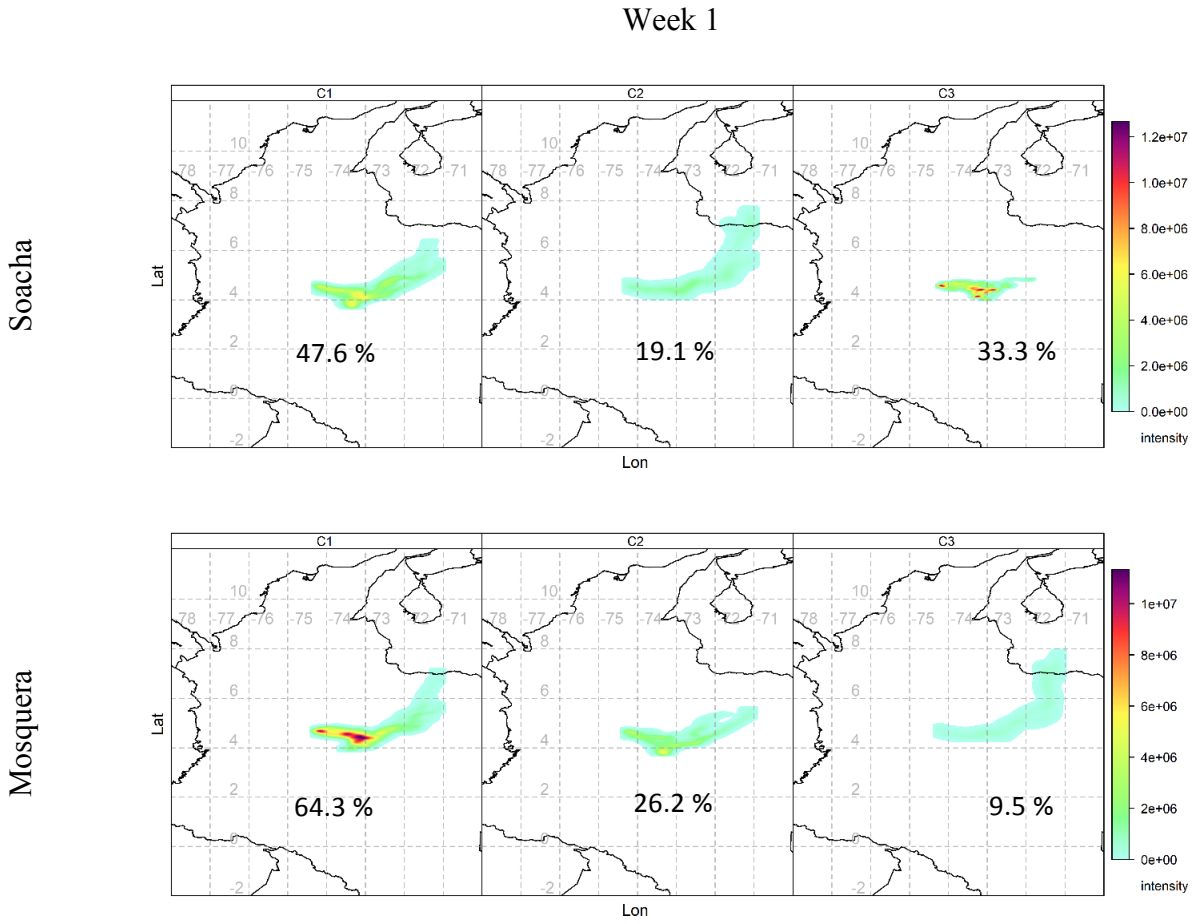
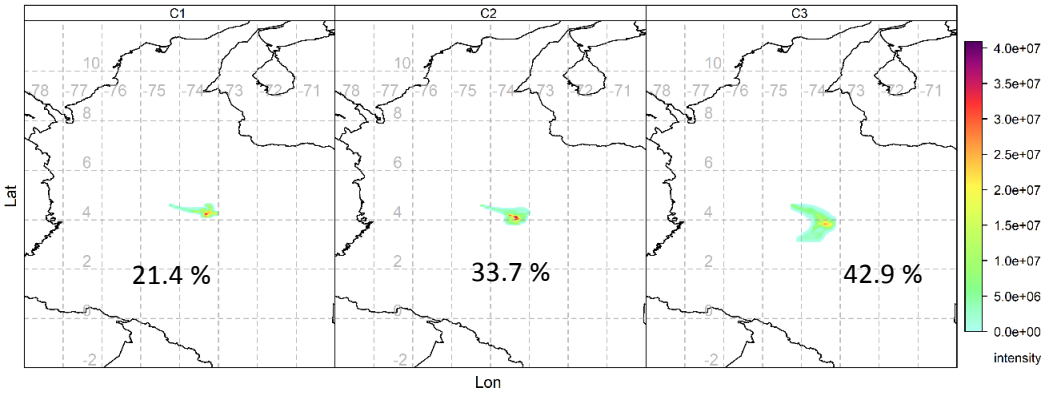


Fig. S7. Ratio-ratio plot of recommended PAHs in a) Soacha and b) Mosquera.

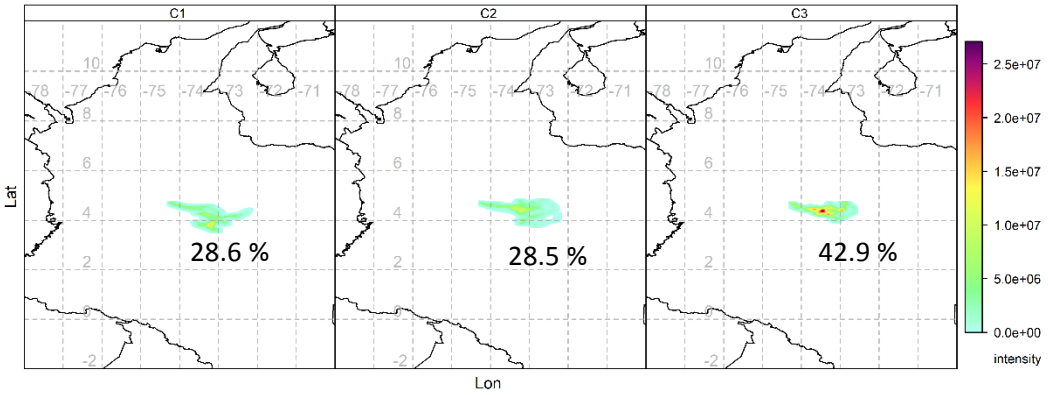


Week 2

Soacha

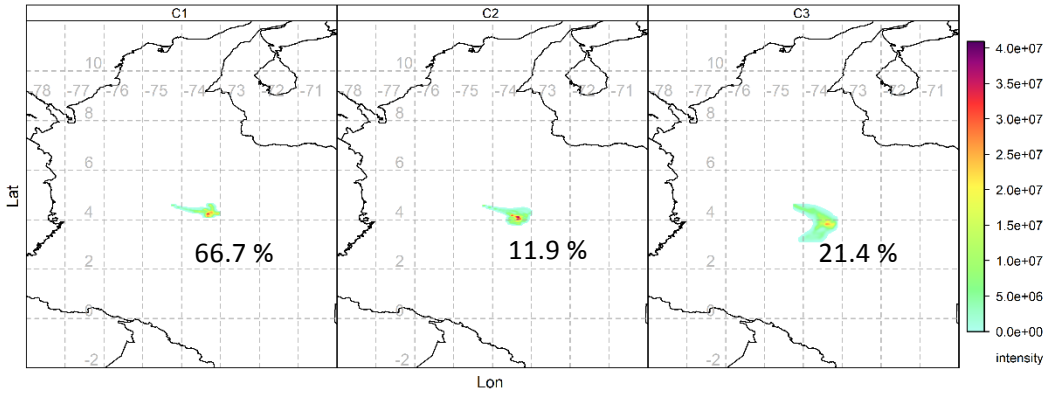


Mosquera

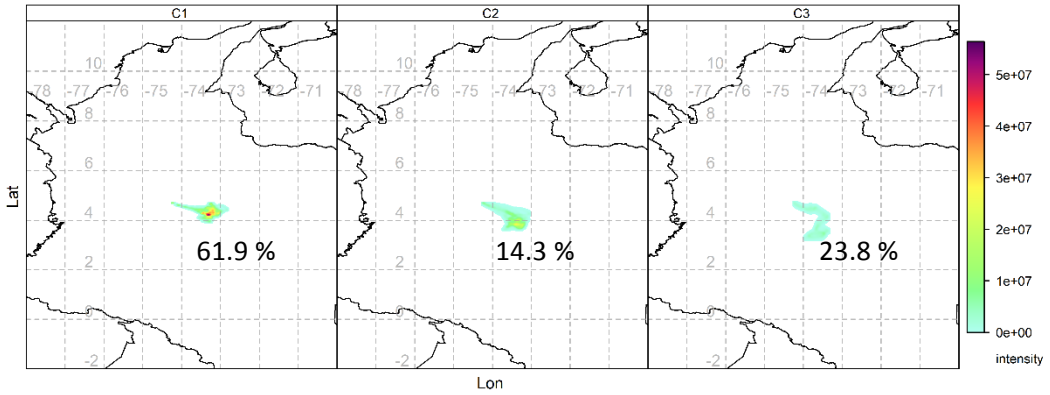


Week 3

Soacha

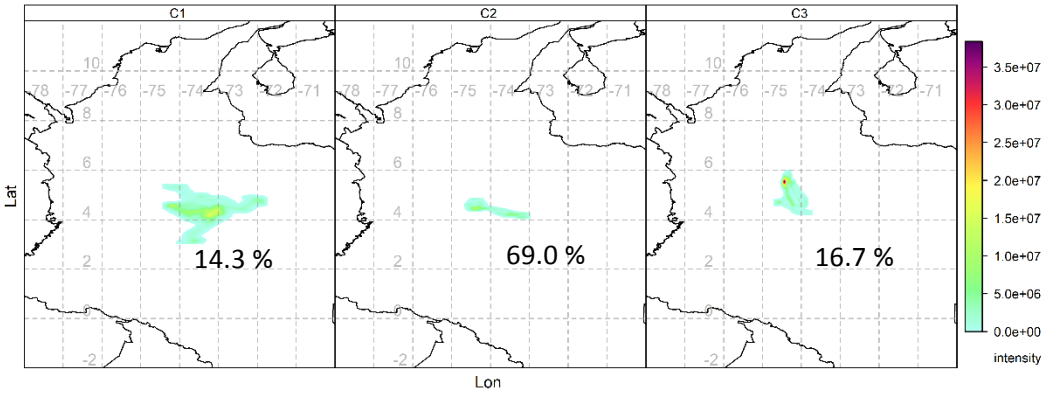


Mosquera

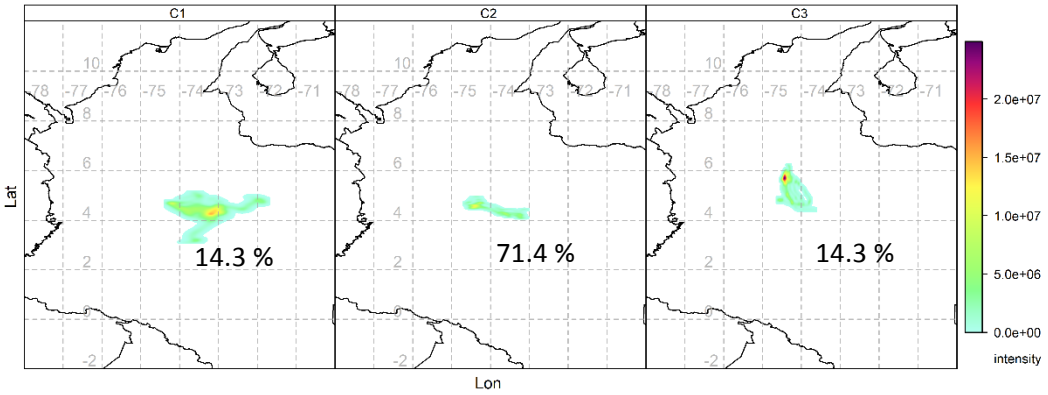


Week 4

Soacha

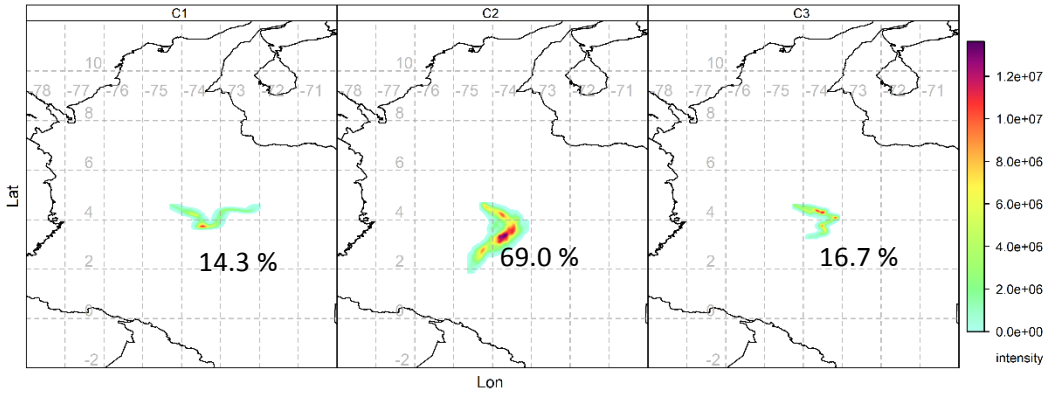


Mosquera

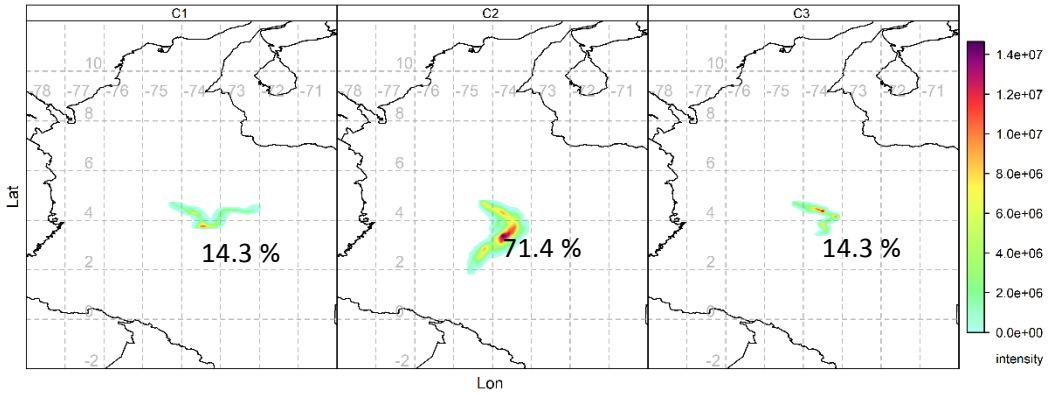


Week 5

Soacha

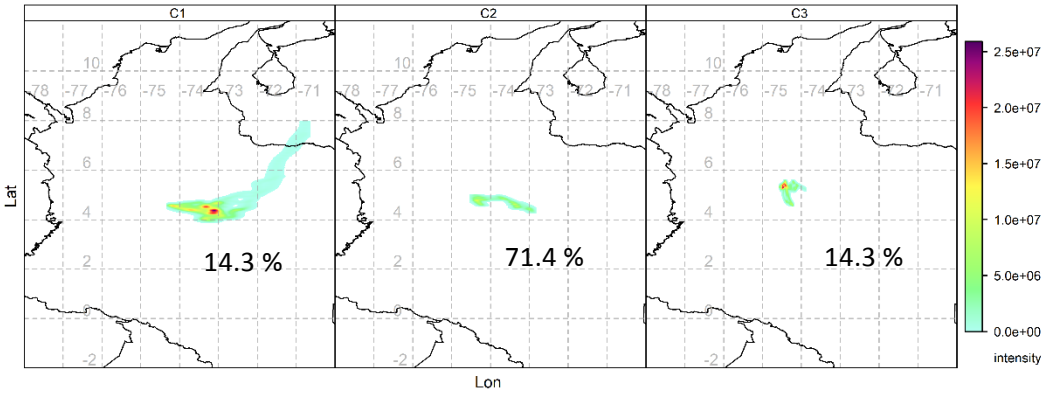


Mosquera

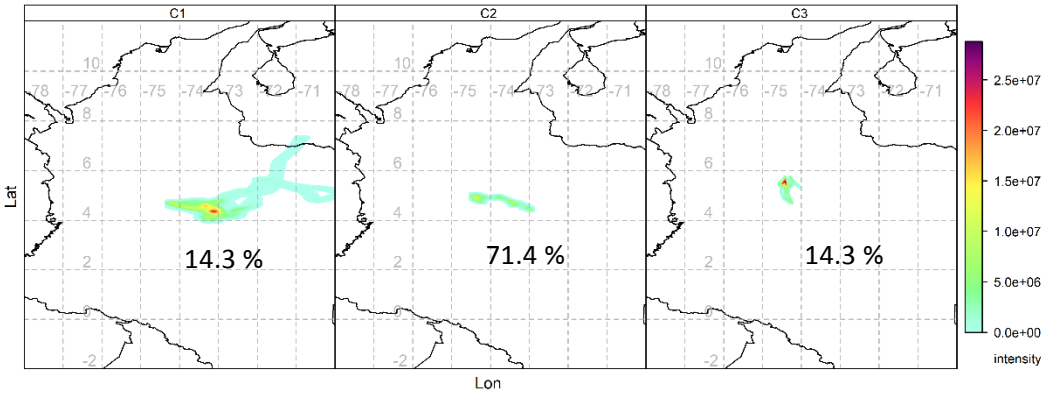


Week 6

Soacha

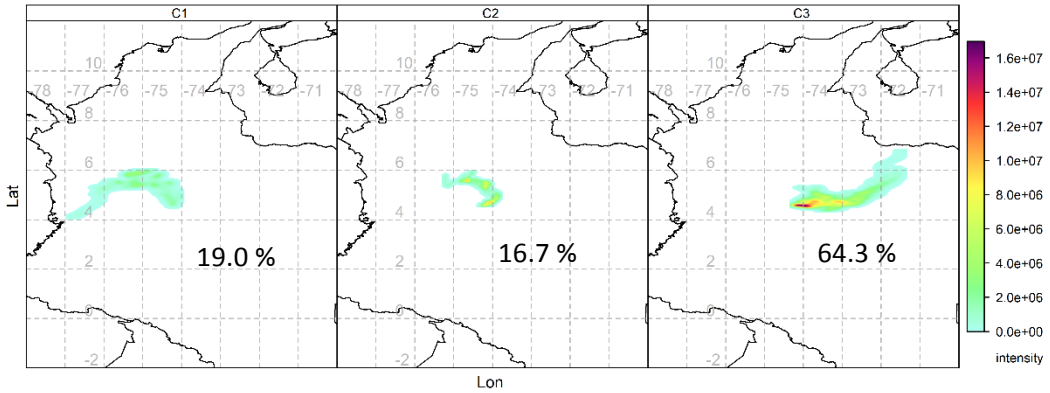


Mosquera

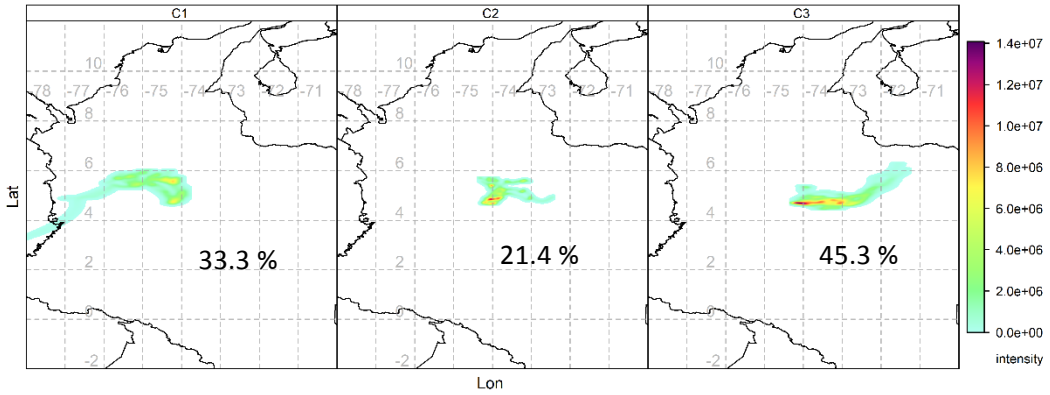


Week 7

Soacha



Mosquera



Week 8

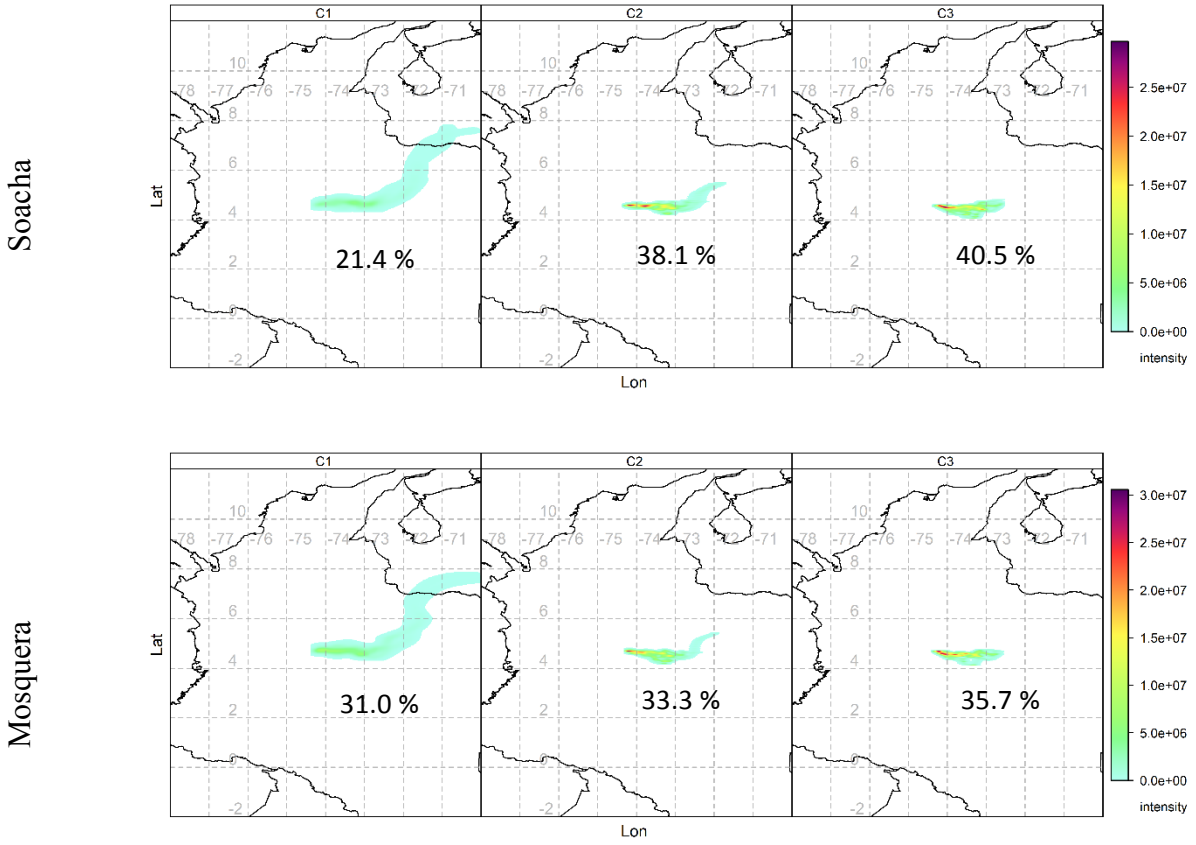


Fig. S6. Weekly kernel densities of backward trajectories arriving at Soacha and Mosquera. Percentages correspond to the contribution of C1, C2 and C3 back trajectory clusters at each site per week.

Tables

Table SI. Concentrations and uncertainties of analyzed species for the CMB model

Soacha														
Week	**OC**	**OCU**	**EC**	**ECU**	**BZBFLU**	**BZBFLUU**	**BZKFLU**	**BZKFLUU**	**BZEPYR**	**BZEPYRU**	**INDPYR**	**INDPYRU**	**BZGHPL**	**BZGHPLU**
1	11.38	0.71	4.69	0.07	0.001430	0.000072	0.001488	0.000104	0.000978	0.000069	0.001578	0.000268	0.001900	0.001273
2	15.76	0.93	8.09	0.11	0.001964	0.000098	0.001853	0.000130	0.001291	0.000090	0.001795	0.000305	0.002334	0.001564
3	12.18	0.75	5.09	0.08	0.001053	0.000053	0.001031	0.000072	0.000706	0.000049	0.001050	0.000178	0.001444	0.000967
4	11.37	0.71	6.75	0.09	0.002096	0.000105	0.002098	0.000147	0.001657	0.000116	0.002697	0.000459	0.002992	0.002004
5	11.58	0.72	5.72	0.08	0.001195	0.000060	0.000815	0.000057	0.000728	0.000051	0.000962	0.000164	0.001167	0.000782
6	13.41	0.81	7.40	0.10	0.002657	0.000133	0.001885	0.000132	0.001580	0.000111	0.001975	0.000336	0.002387	0.001600
7	21.59	1.22	13.76	0.10	0.003346	0.000167	0.002855	0.000200	0.002101	0.000147	0.002951	0.000502	0.003524	0.002361
8	13.18	0.81	9.43	0.10	0.002070	0.000104	0.001500	0.000105	0.001298	0.000091	0.001830	0.000311	0.002421	0.001622
median	*12.68*	*0.78*	*7.07*	*0.09*	*0.002017*	*0.000101*	*0.001677*	*0.000117*	*0.001295*	*0.000091*	*0.001813*	*0.000308*	*0.002361*	*0.001582*
Q1	*11.53*	*0.72*	*5.56*	*0.08*	*0.001371*	*0.000069*	*0.001374*	*0.000096*	*0.000916*	*0.000064*	*0.001446*	*0.000246*	*0.001786*	*0.001197*
Q3	*13.99*	*0.84*	*8.42*	*0.10*	*0.002236*	*0.000112*	*0.001939*	*0.000136*	*0.001599*	*0.000112*	*0.002156*	*0.000367*	*0.002563*	*0.001718*
st.dev.	*3.25*	*0.16*	*2.75*	*0.01*	*0.000718*	*0.000036*	*0.000599*	*0.000042*	*0.000452*	*0.000032*	*0.000657*	*0.000112*	*0.000722*	*0.000484*
Week	**TNOHO**	**TNOHOU**	**B17NHO**	**B17NHOU**	**A17HOP**	**A17HOPU**	**S22ABH**	**S22ABHU**	**R22ABH**	**R22ABHU**	**ABBCHL**	**ABBCHLU**	**SITO**	**SITOU**
1	0.000176	0.000044	0.000457	0.000063	0.000452	0.000079	0.000279	0.000047	0.000218	0.000013	0.000158	0.000011	0.000276	0.000014
2	0.000265	0.000048	0.000814	0.000073	0.000712	0.000104	0.000480	0.000082	0.000393	0.000024	0.000219	0.000015	0.000445	0.000021
3	0.000125	0.000047	0.000355	0.000067	0.000384	0.000078	0.000298	0.000051	0.000199	0.000012	0.000161	0.000011	0.000242	0.000012
4	0.000240	0.000050	0.000576	0.000072	0.000679	0.000103	0.000416	0.000071	0.000306	0.000018	0.000154	0.000011	0.000278	0.000014
5	0.000120	0.000038	0.000278	0.000054	0.000342	0.000065	0.000264	0.000045	0.000179	0.000011	0.000115	0.000008	0.000208	0.000010
6	0.000208	0.000040	0.000552	0.000059	0.000638	0.000092	0.000361	0.000061	0.000300	0.000018	0.000156	0.000011	0.000318	0.000016
7	0.000291	0.000043	0.000497	0.000057	0.000762	0.000104	0.000433	0.000074	0.000220	0.000013	0.000156	0.000011	0.000435	0.000022
8	0.000210	0.000040	0.000439	0.000056	0.000572	0.000085	0.000371	0.000063	0.000331	0.000020	0.000187	0.000013	0.000279	0.000015
median	*0.000209*	*0.000043*	*0.000477*	*0.000061*	*0.000605*	*0.000088*	*0.000366*	*0.000062*	*0.000260*	*0.000016*	*0.000157*	*0.000011*	*0.000279*	*0.000015*
Q1	*0.000163*	*0.000040*	*0.000418*	*0.000057*	*0.000435*	*0.000079*	*0.000293*	*0.000050*	*0.000213*	*0.000013*	*0.000155*	*0.000011*	*0.000267*	*0.000013*
Q3	*0.000247*	*0.000047*	*0.000558*	*0.000068*	*0.000687*	*0.000103*	*0.000420*	*0.000071*	*0.000312*	*0.000019*	*0.000167*	*0.000012*	*0.000347*	*0.000017*
st.dev.	*0.000058*	*0.000004*	*0.000151*	*0.000007*	*0.000148*	*0.000014*	*0.000073*	*0.000012*	*0.000070*	*0.000004*	*0.000028*	*0.000002*	*0.000081*	*0.000004*

Week	A25	A25U	A26	A26U	A27	A27U	A28	A28U	A29	A29U	A30	A30U	A31	A31U
1	0.005821	0.000540	0.004777	0.000486	0.005434	0.000683	0.007426	0.000435	0.005067	0.001522	0.002286	0.000935	0.002934	0.001361
2	0.009365	0.000750	0.007036	0.000560	0.007115	0.000751	0.007713	0.000450	0.005730	0.001568	0.002357	0.001046	0.003037	0.001766
3	0.006423	0.000595	0.004717	0.000523	0.005310	0.000734	0.005823	0.000383	0.003420	0.001679	0.002520	0.000998	0.003213	0.000495
4	0.009760	0.000789	0.006729	0.000579	0.006735	0.000780	0.007405	0.000448	0.004737	0.001695	0.002539	0.000743	0.003261	0.001359
5	0.004737	0.000455	0.003801	0.000418	0.004204	0.000585	0.005633	0.000345	0.004029	0.001339	0.002041	0.001667	0.002618	0.002019
6	0.008533	0.000675	0.007229	0.000521	0.007746	0.000707	0.006321	0.000374	0.003812	0.001351	0.002055	0.001580	0.002668	0.002461
7	0.014888	0.001088	0.013137	0.000755	0.016526	0.001123	0.011684	0.000617	0.011269	0.001338	0.006033	0.002469	0.006487	0.003100
8	0.009971	0.000765	0.007504	0.000530	0.009413	0.000774	0.008216	0.000457	0.006257	0.001344	0.002890	0.002126	0.003574	0.002746
median	*0.008949*	*0.000712*	*0.006883*	*0.000526*	*0.006925*	*0.000742*	*0.007415*	*0.000441*	*0.004902*	*0.001437*	*0.002439*	*0.001313*	*0.003125*	*0.001893*
Q1	*0.006273*	*0.000581*	*0.004762*	*0.000512*	*0.005403*	*0.000701*	*0.006197*	*0.000381*	*0.003975*	*0.001343*	*0.002228*	*0.000982*	*0.002867*	*0.001360*
Q3	*0.009813*	*0.000771*	*0.007298*	*0.000565*	*0.008163*	*0.000776*	*0.007839*	*0.000452*	*0.005861*	*0.001596*	*0.002626*	*0.001782*	*0.003339*	*0.002532*
st.dev.	*0.002972*	*0.000181*	*0.002699*	*0.000091*	*0.003624*	*0.000147*	*0.001794*	*0.000078*	*0.002345*	*0.000146*	*0.001234*	*0.000580*	*0.001176*	*0.000795*
Week	**A32**	**A32U**	**A33**	**A33U**	**A34**	**A34U**	**A35**	**A35U**	**A36**	**A36U**	**LEVOG**	**LEVOGU**	**PICENE**	**PICENEU**
1	0.003656	0.001817	0.003468	0.000479	0.003510	0.002372	0.002980	0.001670	0.002511	0.002111	0.578784	0.070018	0.000308	0.000074
2	0.003766	0.002752	0.003573	0.001415	0.003624	0.003397	0.003070	0.002108	0.002592	0.002779	0.912092	0.104726	0.000289	0.000070
3	0.004232	0.004031	0.003825	0.003419	0.004849	0.003892	0.003286	0.002689	0.002961	0.002774	0.494980	0.063224	0.000180	0.000043
4	0.004069	0.002563	0.003860	0.001488	0.003910	0.003129	0.003317	0.002817	0.002798	0.002771	0.573836	0.070968	0.000481	0.000116
5	0.003216	0.000838	0.003052	0.000078	0.003085	0.001621	0.002622	0.001407	0.002207	0.001371	0.275305	0.039680	0.000268	0.000064
6	0.003245	0.000479	0.003078	0.000167	0.003110	0.000913	0.002645	0.000301	0.002223	0.000241	0.588703	0.069732	0.000386	0.000093
7	0.003307	0.003213	0.003048	0.002953	0.003082	0.001544	0.003814	0.002619	0.002843	0.002216	0.907073	0.103013	0.000639	0.000153
8	0.003229	0.000543	0.003063	0.001263	0.003093	0.000233	0.002631	0.000268	0.002212	0.000096	0.467131	0.057469	0.000408	0.000098
median	*0.003481*	*0.002190*	*0.003273*	*0.001339*	*0.003310*	*0.001997*	*0.003025*	*0.001889*	*0.002552*	*0.002164*	*0.576310*	*0.069875*	*0.000347*	*0.000083*
Q1	*0.003241*	*0.000764*	*0.003060*	*0.000401*	*0.003091*	*0.001386*	*0.002641*	*0.001131*	*0.002220*	*0.001089*	*0.488018*	*0.061785*	*0.000284*	*0.000068*
Q3	*0.003842*	*0.002867*	*0.003636*	*0.001854*	*0.003695*	*0.003196*	*0.003293*	*0.002636*	*0.002809*	*0.002772*	*0.668295*	*0.078979*	*0.000426*	*0.000102*
st.dev.	*0.000379*	*0.001240*	*0.000332*	*0.001153*	*0.000577*	*0.001196*	*0.000394*	*0.000957*	*0.000287*	*0.001039*	*0.202196*	*0.020539*	*0.000134*	*0.000032*

Mosquera														
Week	**OC**	**OCU**	**EC**	**ECU**	**BZBFLU**	**BZBFLUU**	**BZKFLU**	**BZKFLUU**	**BZEPYR**	**BZEPYRU**	**INDPYR**	**INDPYRU**	**BZGHPL**	**BZGHPLU**
1	11.21	0.58	5.86	0.23	0.001922	0.000096	0.002292	0.000160	0.001458	0.000102	0.005731	0.000974	0.008942	0.005991
2	12.97	0.67	6.58	0.31	0.001899	0.000095	0.001955	0.000137	0.001307	0.000092	0.005421	0.000922	0.008930	0.005983
3	10.29	0.54	7.11	0.27	0.001711	0.000086	0.001883	0.000132	0.001276	0.000089	0.004609	0.000784	0.008267	0.005539
4	8.23	0.43	5.75	0.19	0.002017	0.000101	0.002150	0.000150	0.001406	0.000098	0.004753	0.000808	0.007156	0.004794
5	10.39	0.54	6.03	0.22	0.001455	0.000073	0.001798	0.000126	0.001046	0.000073	0.004589	0.000780	0.007305	0.004894
6	12.00	0.62	7.17	0.31	0.001849	0.000093	0.002440	0.000171	0.001381	0.000097	0.006503	0.001106	0.010312	0.006909
7	9.03	0.47	8.98	0.23	0.002589	0.000129	0.002968	0.000208	0.001759	0.000123	0.005961	0.001013	0.008300	0.005561
8	10.16	0.53	5.68	0.14	0.003370	0.000169	0.004568	0.000320	0.003349	0.000234	0.010483	0.001782	0.012750	0.008542
median	*10.34*	*0.54*	*6.31*	*0.23*	*0.001910*	*0.000096*	*0.002221*	*0.000155*	*0.001394*	*0.000098*	*0.005576*	*0.000948*	*0.008615*	*0.005772*
Q1	*9.88*	*0.51*	*5.83*	*0.21*	*0.001815*	*0.000091*	*0.001937*	*0.000136*	*0.001299*	*0.000091*	*0.004717*	*0.000802*	*0.008026*	*0.005378*
Q3	*11.41*	*0.59*	*7.12*	*0.28*	*0.002160*	*0.000108*	*0.002572*	*0.000180*	*0.001533*	*0.000107*	*0.006097*	*0.001036*	*0.009285*	*0.006221*
st.dev.	*1.43*	*0.07*	*1.04*	*0.05*	*0.000566*	*0.000028*	*0.000854*	*0.000060*	*0.000679*	*0.000048*	*0.001811*	*0.000308*	*0.001699*	*0.001138*
Week	**TNOHO**	**TNOHOU**	**B17NHO**	**B17NHOU**	**A17HOP**	**A17HOPU**	**S22ABH**	**S22ABHU**	**R22ABH**	**R22ABHU**	**ABBCHL**	**ABBCHLU**	**SITO**	**SITOU**
1	0.000406	0.000033	0.001163	0.000058	0.001175	0.000141	0.000536	0.000091	0.000429	0.000026	0.000319	0.000022	0.000447	0.000021
2	0.000523	0.000042	0.001526	0.000077	0.001546	0.000186	0.000727	0.000124	0.000590	0.000035	0.000379	0.000027	0.000561	0.000028
3	0.000471	0.000038	0.001274	0.000064	0.001330	0.000160	0.000697	0.000118	0.000481	0.000029	0.000291	0.000020	0.000431	0.000020
4	0.000326	0.000026	0.000979	0.000049	0.000989	0.000119	0.000548	0.000093	0.000403	0.000024	0.000193	0.000014	0.000336	0.000017
5	0.000355	0.000029	0.001067	0.000054	0.001057	0.000127	0.000543	0.000092	0.000423	0.000025	0.000200	0.000014	0.000377	0.000017
6	0.000418	0.000034	0.001223	0.000061	0.001238	0.000149	0.000659	0.000112	0.000438	0.000026	0.000225	0.000016	0.000458	0.000021
7	0.000412	0.000033	0.001124	0.000056	0.001254	0.000151	0.000660	0.000112	0.000467	0.000028	0.000197	0.000014	0.000417	0.000020
8	0.000380	0.000031	0.001158	0.000058	0.001110	0.000133	0.000626	0.000106	0.000404	0.000024	0.000229	0.000016	0.000451	0.000024
median	*0.000409*	*0.000033*	*0.001160*	*0.000058*	*0.001206*	*0.000145*	*0.000642*	*0.000109*	*0.000434*	*0.000026*	*0.000227*	*0.000016*	*0.000439*	*0.000020*
Q1	*0.000374*	*0.000030*	*0.001110*	*0.000056*	*0.001097*	*0.000132*	*0.000547*	*0.000093*	*0.000419*	*0.000025*	*0.000199*	*0.000014*	*0.000407*	*0.000019*
Q3	*0.000432*	*0.000035*	*0.001236*	*0.000062*	*0.001273*	*0.000153*	*0.000669*	*0.000114*	*0.000471*	*0.000028*	*0.000298*	*0.000021*	*0.000453*	*0.000022*
st.dev.	*0.000059*	*0.000005*	*0.000153*	*0.000008*	*0.000163*	*0.000020*	*0.000069*	*0.000012*	*0.000058*	*0.000003*	*0.000064*	*0.000004*	*0.000061*	*0.000003*

Week	A25	A25U	A26	A26U	A27	A27U	A28	A28U	A29	A29U	A30	A30U	A31	A31U
1	0.010275	0.000720	0.008243	0.000414	0.010394	0.000626	0.008092	0.000405	0.009375	0.000145	0.006438	0.001560	0.008392	0.002283
2	0.013842	0.000969	0.011103	0.000556	0.014127	0.000849	0.009366	0.000469	0.011309	0.000130	0.006790	0.001641	0.008169	0.002220
3	0.013287	0.000931	0.010507	0.000528	0.013602	0.000819	0.010292	0.000515	0.013503	0.000183	0.008925	0.002159	0.013015	0.003532
4	0.008673	0.000608	0.006618	0.000333	0.008137	0.000491	0.005882	0.000295	0.006842	0.000132	0.004802	0.001169	0.006302	0.001720
5	0.010527	0.000737	0.007881	0.000396	0.011338	0.000682	0.007734	0.000387	0.010112	0.000126	0.006582	0.001591	0.011701	0.003169
6	0.012061	0.000845	0.009591	0.000481	0.012872	0.000774	0.009634	0.000482	0.010147	0.000128	0.007090	0.001712	0.007918	0.002152
7	0.009523	0.000667	0.008295	0.000416	0.009921	0.000597	0.007744	0.000388	0.008590	0.000131	0.006478	0.001567	0.007379	0.002008
8	0.011009	0.000771	0.008362	0.000420	0.010031	0.000604	0.007377	0.000369	0.008195	0.000126	0.005822	0.001410	0.007286	0.001982
median	*0.010768*	*0.000754*	*0.008329*	*0.000418*	*0.010866*	*0.000654*	*0.007918*	*0.000396*	*0.009744*	*0.000130*	*0.006530*	*0.001579*	*0.008044*	*0.002186*
Q1	*0.010087*	*0.000707*	*0.008152*	*0.000409*	*0.010004*	*0.000602*	*0.007645*	*0.000383*	*0.008491*	*0.000127*	*0.006284*	*0.001523*	*0.007356*	*0.002001*
Q3	*0.012368*	*0.000866*	*0.009820*	*0.000493*	*0.013055*	*0.000785*	*0.009433*	*0.000472*	*0.010437*	*0.000136*	*0.006865*	*0.001659*	*0.009219*	*0.002504*
st.dev.	*0.001681*	*0.000118*	*0.001379*	*0.000069*	*0.001940*	*0.000116*	*0.001334*	*0.000067*	*0.001909*	*0.000018*	*0.001093*	*0.000263*	*0.002182*	*0.000588*
Week	**A32**	**A32U**	**A33**	**A33U**	**A34**	**A34U**	**A35**	**A35U**	**A36**	**A36U**	**LEVOG**	**LEVOGU**	**PICENE**	**PICENEU**
1	0.005892	0.000348	0.006185	0.000330	0.004403	0.000552	0.004713	0.000284	0.003082	0.000366	0.274553	0.030328	0.000486	0.000117
2	0.005010	0.000313	0.005465	0.000297	0.003881	0.000490	0.004026	0.000255	0.002307	0.000298	0.201107	0.022262	0.000611	0.000147
3	0.009065	0.000440	0.010639	0.000417	0.007133	0.000828	0.006647	0.000358	0.004063	0.000474	0.358803	0.039624		
4	0.004241	0.000318	0.004162	0.000302	0.003066	0.000432	0.002825	0.000259	0.001997	0.000282	0.238980	0.026410	0.000398	0.000096
5	0.006035	0.000303	0.007085	0.000287	0.004520	0.000537	0.004480	0.000247	0.002627	0.000314	0.190772	0.021123	0.000297	0.000071
6	0.005546	0.000307	0.005217	0.000291	0.003988	0.000495	0.004256	0.000250	0.002609	0.000315	0.260458	0.028754	0.000456	0.000109
7	0.005129	0.000314	0.005875	0.000298	0.004178	0.000515	0.004247	0.000256	0.002519	0.000312	0.247239	0.027311	0.000589	0.000141
8	0.004646	0.000301	0.003982	0.000286	0.002719	0.000397	0.004931	0.000246	0.002709	0.000319	0.294064	0.032436	0.001039	0.000249
median	*0.005337*	*0.000313*	*0.005670*	*0.000297*	*0.004083*	*0.000505*	*0.004368*	*0.000255*	*0.002618*	*0.000315*	*0.253848*	*0.028033*	*0.000486*	*0.000117*
Q1	*0.004919*	*0.000306*	*0.004953*	*0.000290*	*0.003677*	*0.000476*	*0.004192*	*0.000249*	*0.002466*	*0.000309*	*0.229512*	*0.025373*	*0.000427*	*0.000103*
Q3	*0.005928*	*0.000326*	*0.006410*	*0.000309*	*0.004432*	*0.000541*	*0.004768*	*0.000265*	*0.002802*	*0.000331*	*0.279431*	*0.030855*	*0.000600*	*0.000144*
st.dev.	*0.001394*	*0.000044*	*0.001970*	*0.000041*	*0.001243*	*0.000122*	*0.001000*	*0.000035*	*0.000580*	*0.000057*	*0.049969*	*0.005497*	*0.000222*	*0.000053*

Table SII. Weekly incremental excess of carbonaceous compounds and ions in Soacha compared to Mosquera (Soacha minus Mosquera).

Week	EC	WIOM	WSOM	Chloride	Sulfate	Nitrate	Sodium	Ammonium	Potassium	Calcium	PM2.5
1	-1.17	-0.21	0.47	0.07	0.06	3.43	0.00	1.09	-0.04	0.01	2.77
2	1.50	2.71	1.79	0.13	0.58	0.15	0.02	0.34	-0.01	0.03	8.16
3	-2.02	2.78	0.23	0.15	-0.20	-0.03	-0.05	-0.02	-0.06	-0.04	-8.44
4	1.00	3.15	1.87	0.03	-0.04	0.08	-0.10	-0.03	-0.01	0.10	2.81
5	-0.32	0.15	1.74	0.09	0.60	0.10	-0.01	0.35	-0.13	-0.12	4.94
6	0.22	0.68	1.58	0.21	0.71	0.01	0.10	0.27	0.05	-0.01	5.58
7	4.78	16.61	3.49	1.28	2.21	-0.22	0.23	1.46	0.19	0.14	30.77
8	3.75	3.66	1.17	0.25	0.78	0.09	0.08	0.09	0.08	0.10	13.71