Supplemental Materials

The following results shown in tables and figures are not included in the manuscript.

Daily variation of OC:EC ratios were studied, a clear trend was not identified. Linear regression results were listed in **Table 1**.

Table 1. Summary of the linear least squares fit results of Thermal OC vs. Thermal EC on daily bases at both sites.

	T1			T2		
Date	Slope	Intercept	R^2	Slope	Intercept	R^2
3-9-06	9.54	-6.08	0.33	2.69	7.58	0.61
3-10-06	0.85	5.97	0.69	4.61	3.43	0.41
3-11-06	1.55	4.84	0.74	3.43	4.23	0.41
3-12-06	1.30	6.28	0.65	2.40	4.80	0.34
3-13-06	0.16	7.32	0.45	0.59	4.85	0.10
3-14-06	N/A	N/A	N/A	5.59	1.78	0.17
3-15-06	0.59	4.20	0.22	3.75	3.19	0.30
3-16-06	0.64	4.87	0.55	1.52	4.72	0.17
3-17-06	0.54	3.47	0.63	-1.74	4.86	0.46
3-18-06	0.10	6.43	0.04	2.35	4.78	0.10
3-19-06	1.96	3.65	0.74	2.12	5.52	0.36
3-20-06	1.39	3.58	0.71	2.22	3.93	0.36
3-21-06	1.14	5.23	0.76	0.04	4.93	0.01
3-22-06	-0.66	9.89	0.15	2.14	5.09	0.24
3-23-06	1.26	4.46	0.22	3.07	2.89	0.50
3-24-06	0.67	2.80	0.06	5.65	1.24	0.65
3-25-06	0.54	2.99	0.44	1.15	2.31	0.07
3-26-06	0.70	3.22	0.26	1.36	2.68	0.09
3-27-06	0.52	3.91	0.29	-1.59	4.03	0.09
3-28-06	0.44	3.56	0.49	-0.10	3.45	0.0001
3-29-06	0.33	4.11	0.27	2.12	2.60	0.23
3-30-06	0.33	4.18	0.63	N/A	N/A	N/A

In order to find the minimum OC/EC or OC/EC_{pri} used in the semi-empirical EC tracer method, the OC/EC data were binned to different range, and then linear regression analysis was applied to each bin. **Table 2** summarized the linear least-squares fit results of OC vs. EC from different subsets of the data to yield OC/EC_{min}

Table 2. Summary of linear least-squares analysis fitting results grouped by different bins of OC:EC ratios at T1 and T2.

Site	Range of OC:EC	No. of data	Slope	Intercept	R^2
T1	0<OC:EC≤1	13	0.56±0.08	2.04±0.65	0.82
	1<OC:EC≤1.5	22	1.11±0.08	0.56±0.44	0.90
	1.5<OC:EC≤2	26	1.69±0.07	0.13±0.28	0.96
	2<OC:EC≤3	81	2.25±0.07	0.76±0.21	0.93
	3<OC:EC≤4	85	2.98±0.06	0.83±0.13	0.96
	4<OC:EC≤5	71	4.56±0.10	-0.11±0.14	0.97
	5<OC:EC≤6	47	5.38±0.10	0.12±0.11	0.99
	6<OC:EC≤8	46	7.12±0.23	-0.17±0.20	0.96
	8<OC:EC≤10	27	8.08±0.21	0.37±0.17	0.98
	10<OC:EC≤12	9	9.94±0.48	0.40±0.26	0.98
	12<OC:EC≤20	10	13.56±1.29	0.31±0.53	0.93
	OC:EC > 20	9	20.30±1.25	1.70±0.45	0.97
T2	0<OC:EC≤5	17	3.17±0.0.50	0.50±0.55	0.73
	5<OC:EC≤7.5	66	6.60±0.21	-0.07±0.18	0.94
	7.5<OC:EC≤10	101	8.03±0.16	0.38±0.11	0.96
	10<OC:EC≤12	53	10.00±0.14	0.37±0.08	0.99
	12<OC:EC≤15	31	11.91±0.43	0.49±0.19	0.96
	15<OC:EC≤20	40	14.88±0.49	0.56±0.15	0.96
	20<OC:EC≤30	14	21.95±2.58	0.41±0.50	0.86
	30<OC:EC≤80	30	29.89±2.51	0.99±0.26	0.84
	80<OC:EC≤160	12	74.08±10.66	1.24±0.41	0.83
	160<OC:EC≤300	16	149.11±31.30	1.69±0.68	0.62
	OC:EC>300	16	157.25±87.21	3.14±0.75	0.19

Wind roses of surface wind speed, OC, EC, and OC:EC ratio at T1 were shown in Fig. 1. Good similarity exists in their patterns to the wind roses of POC and SOC shown in Fig. 8 of the manuscript.

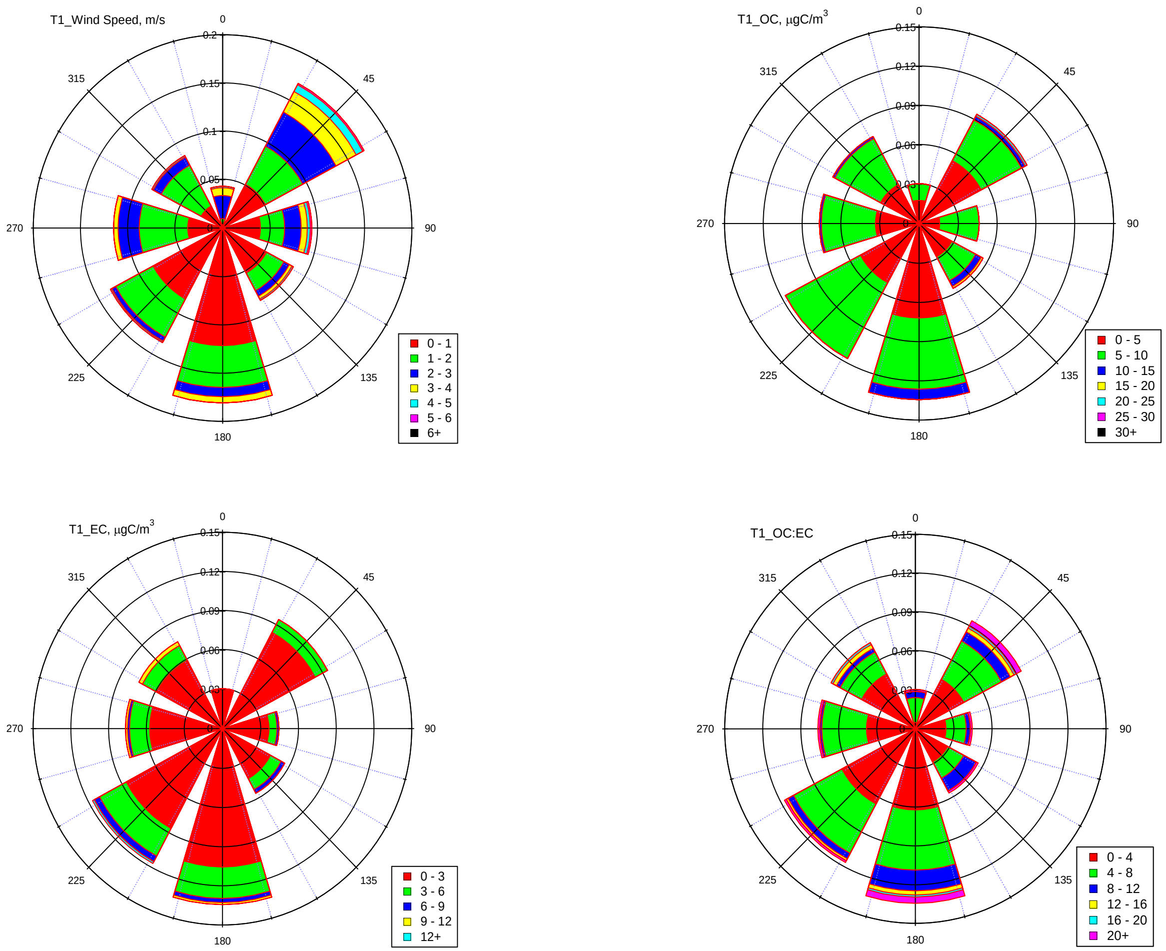

Figure 1. Wind roses of wind speed, OC, EC, and OC:EC at T1.

Wind roses of surface wind speed, OC, EC, and OC:EC ratio at T2 were shown in Fig. 2. Good similarity exists in their patterns to the wind roses of POC and SOC shown in Fig. 8 of the manuscript.

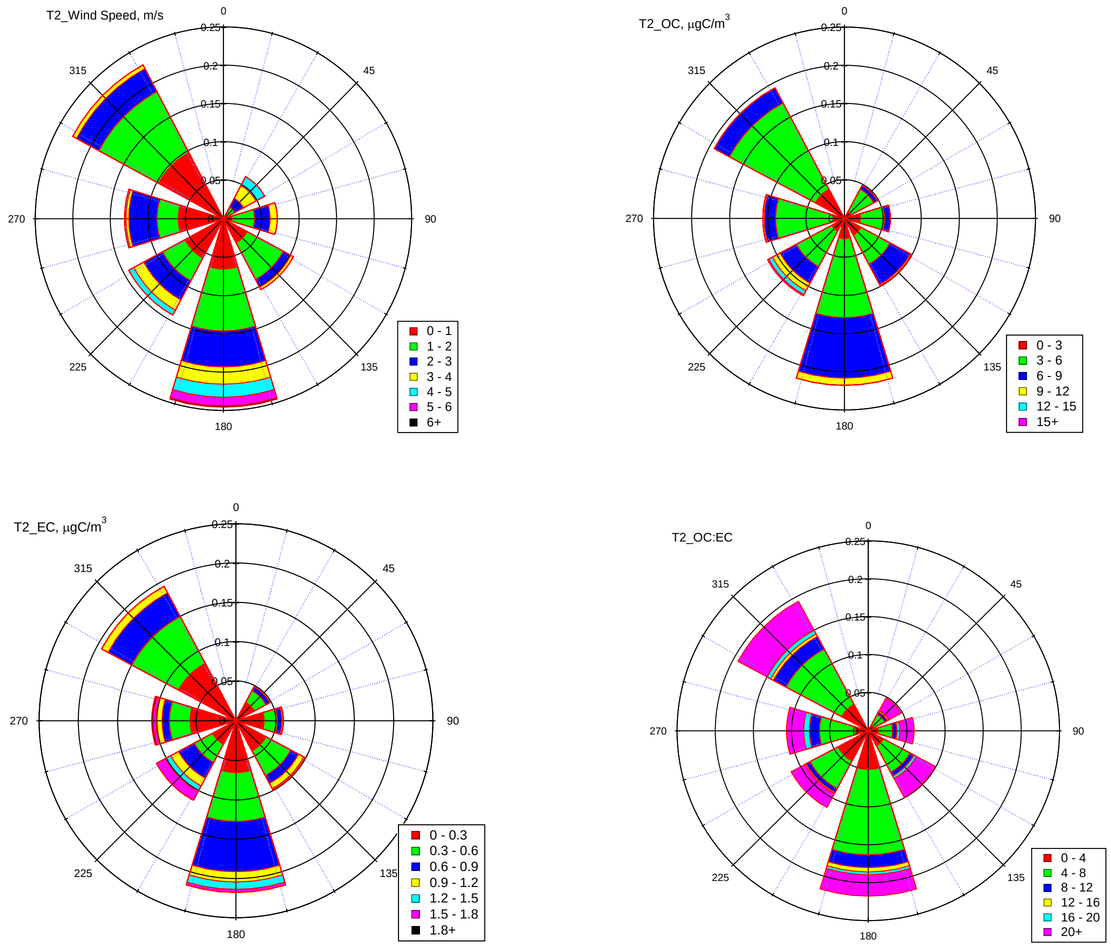

Figure 2. Wind roses of wind speed, OC, EC, and OC:EC at T2.

Characteristics of carbons during transfer favourable and unfavourable days downwind of Mexico City were studied. The scatter plots of OC vs. EC during T1 to T2 transfer likely, possible, and unlikely days did not reveal useful findings.

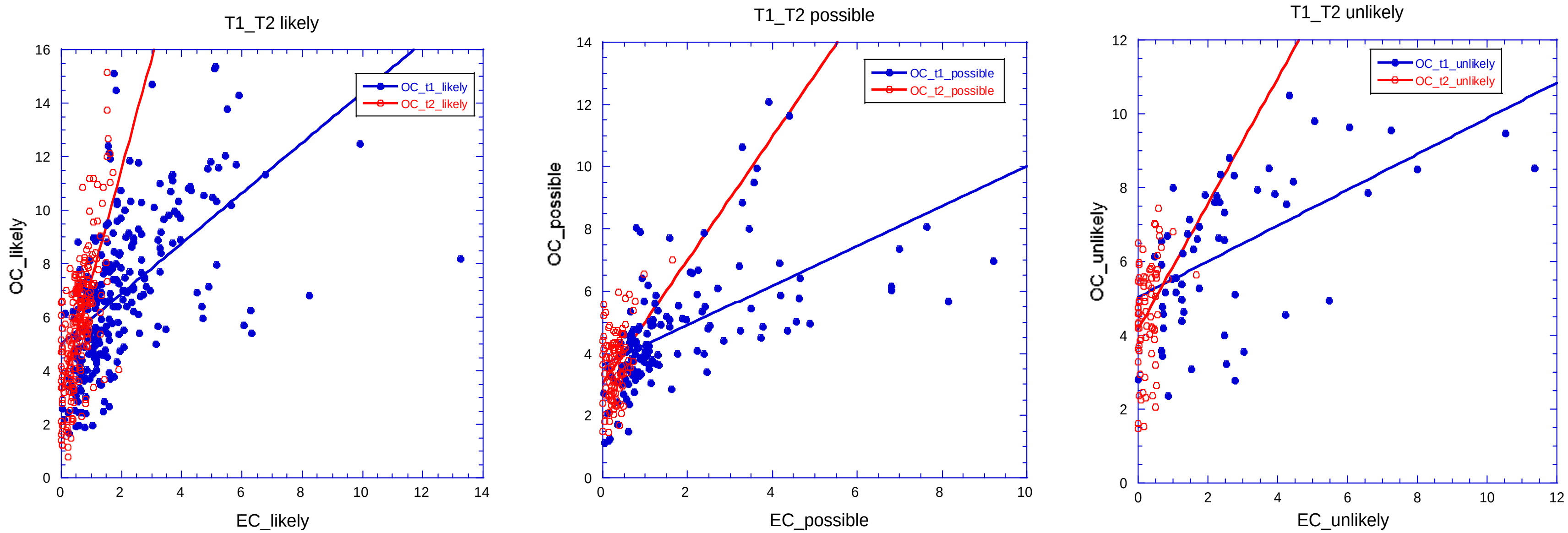

Figure 3. Scatter plots of OC vs. EC in three T1 to T2 transfer scenarios: transfer likely, possible, and unlikely. The solid lines are linear least-squares fits.

Correlations between EC and various trace gas pollutants at T1 were studied. Strong correlations were seen between EC and CO, EC and NO, and EC and NOx. However, the same was not true with EC vs. O_3 or EC vs. SO_2. These findings were summarized in Fig. 4.

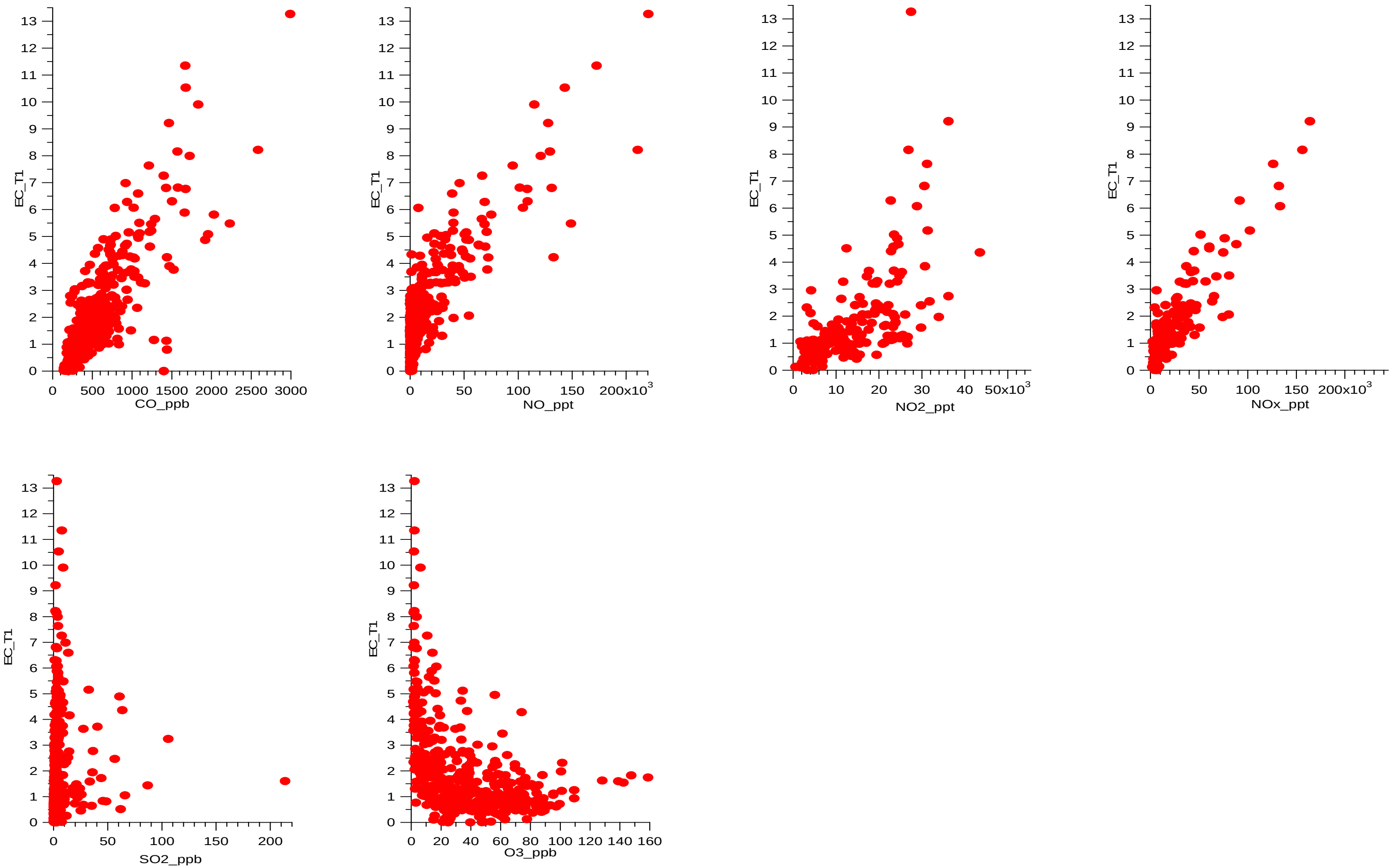

Figure 4. Scatter plots of EC vs. CO, EC vs. NO, EC vs. NO_2, EC vs. NOx, and EC vs. SO_2, EC vs. O_3, at T1.

Correlations between OC and various trace gas pollutants at T1 were studied. Strong correlations were not seen between OC and CO, OC and NO, and OC and NOx. The same was true with OC vs. O_3 or OC vs. SO_2. These findings were summarized in Fig. 5.

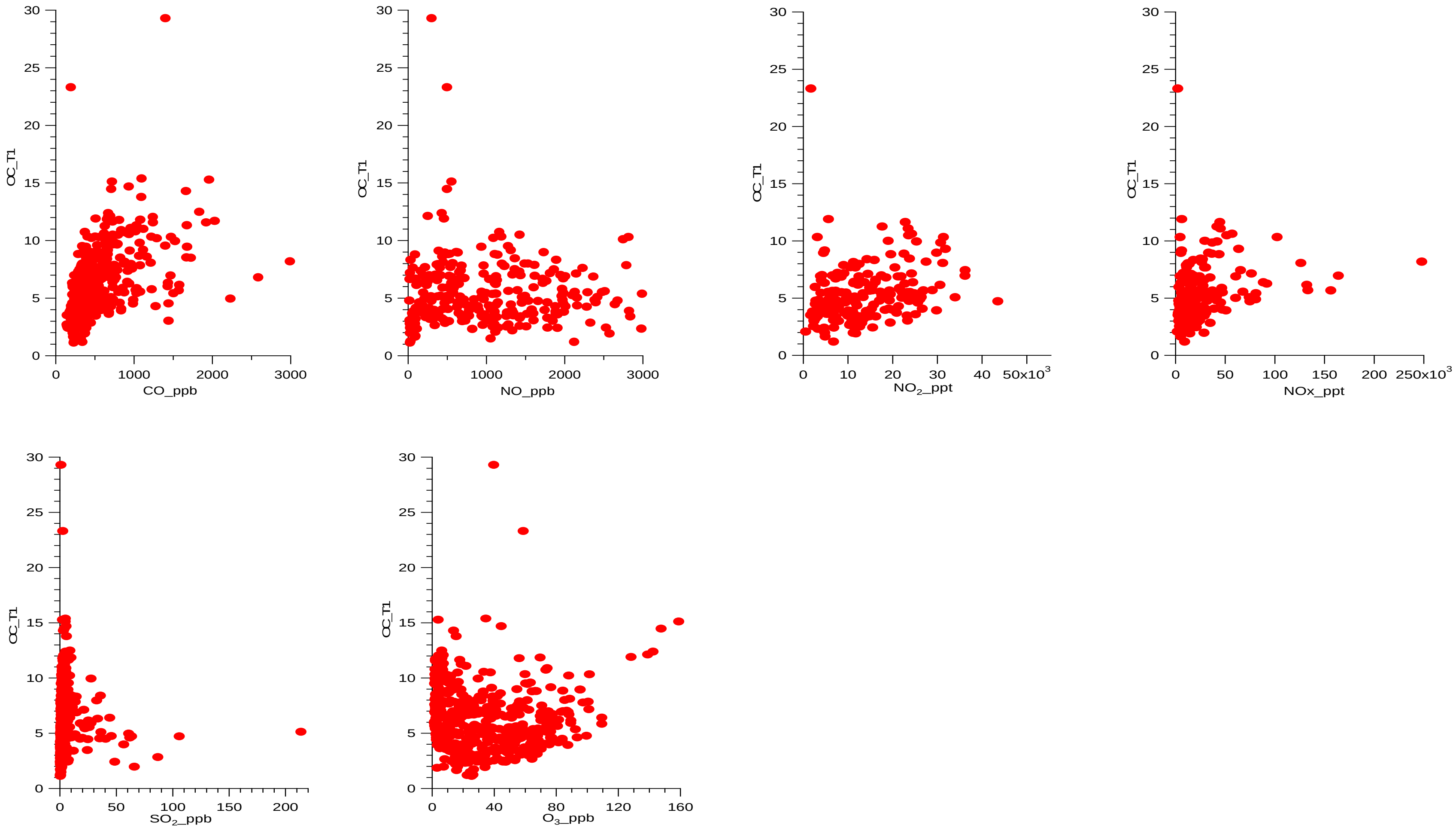

Figure 5. Scatter plots of OC vs. SO_2, OC vs. O_3, OC vs. CO, OC vs. NO, OC vs. NO_2, and OC vs. NOx at T1.