



## *Supplement of*

# **A new method for estimating emission ratios in the urban atmosphere: examples of ratios to CO<sub>2</sub>, CO and volatile organic compounds in Paris**

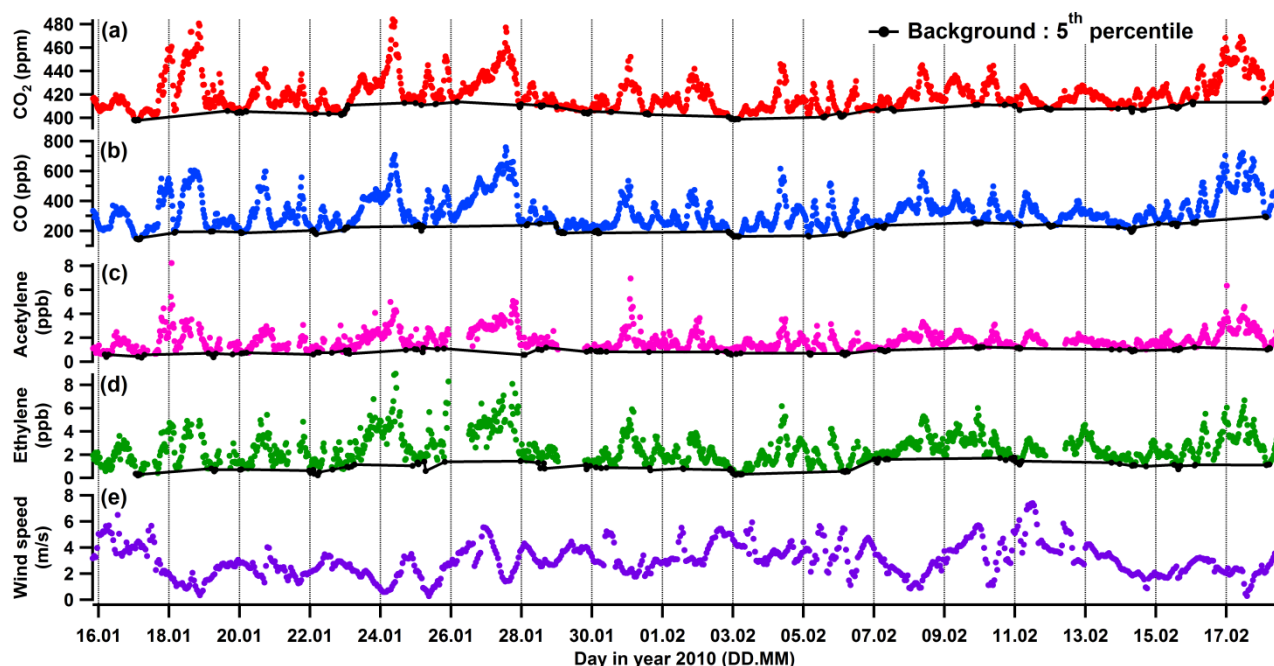
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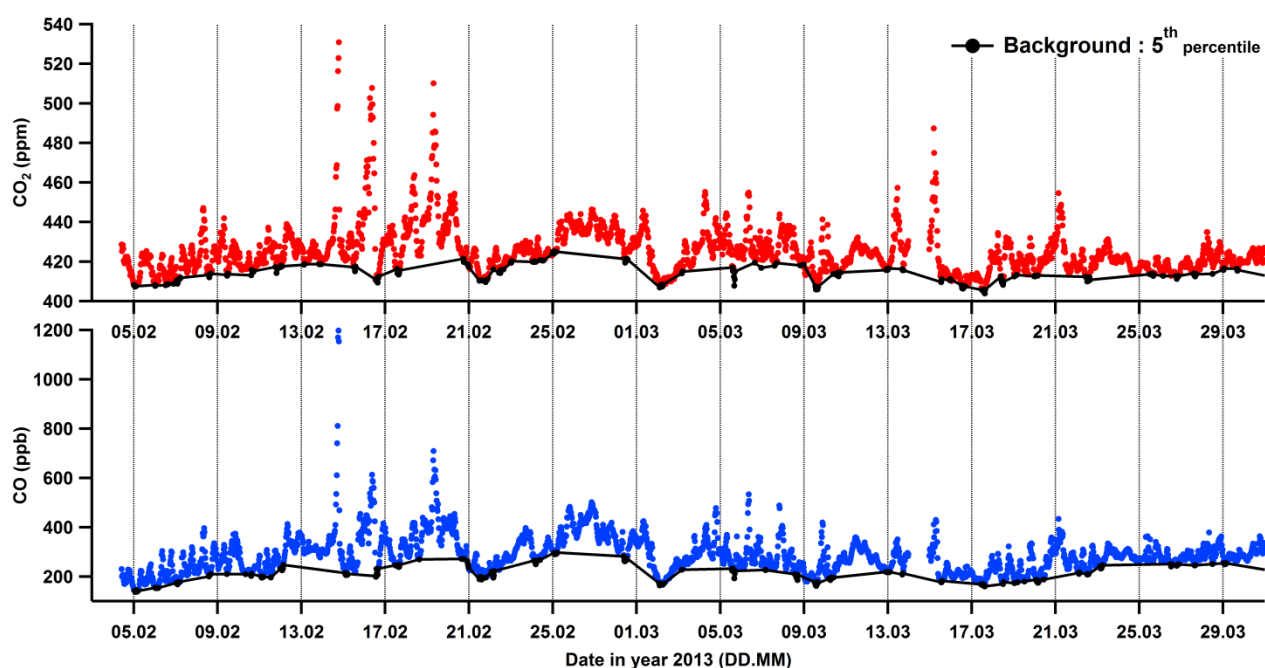
Additional time series:

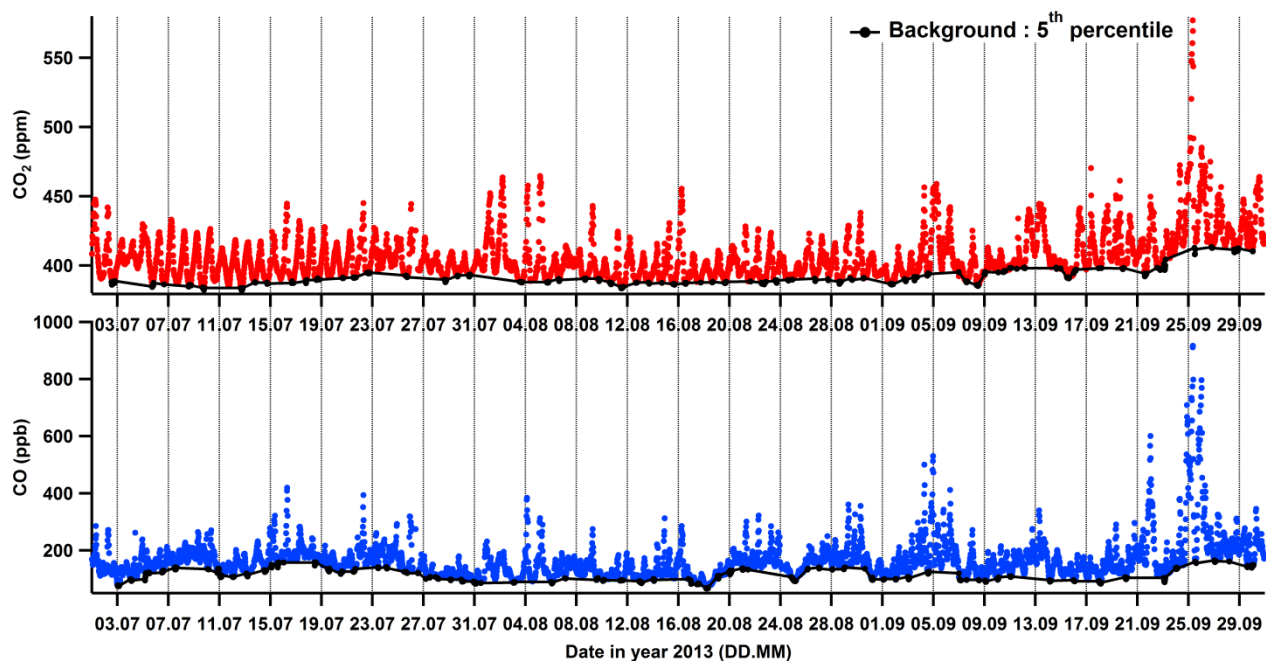
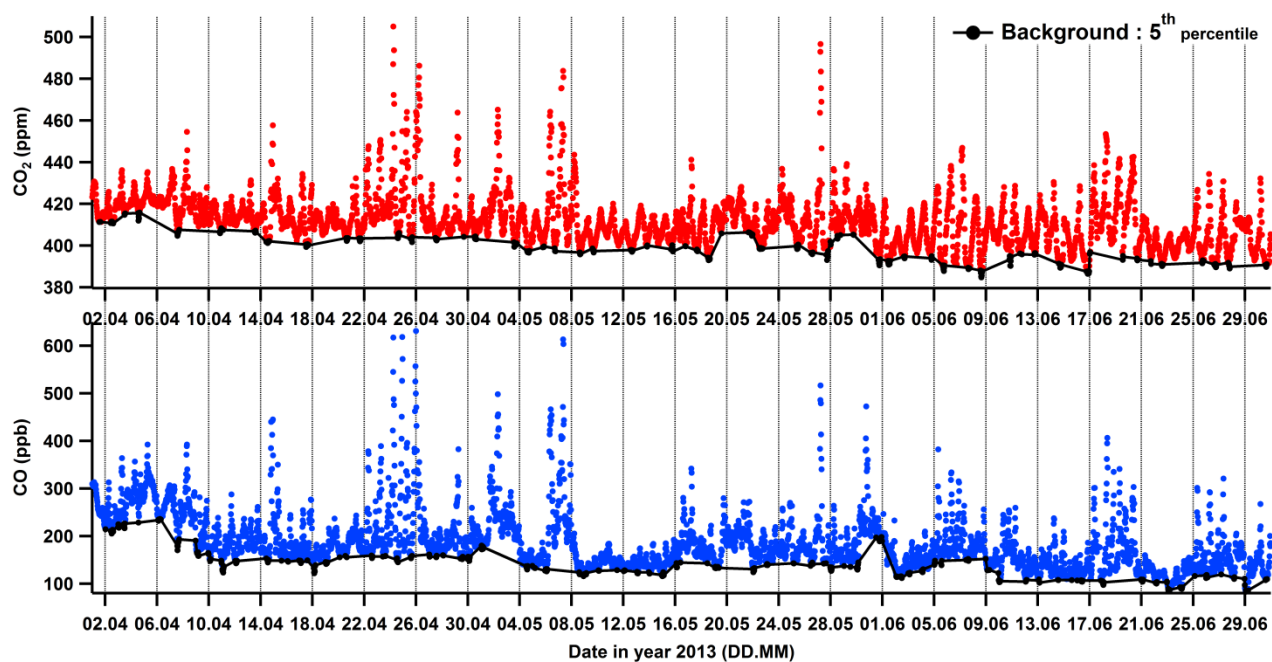
Fig.S1 shows typical time series of the atmospheric gases mole fractions collected during the MEGAPOLI/CO<sub>2</sub>-Megaparis campaign with a time step of 30 min. Wind speed is also represented.

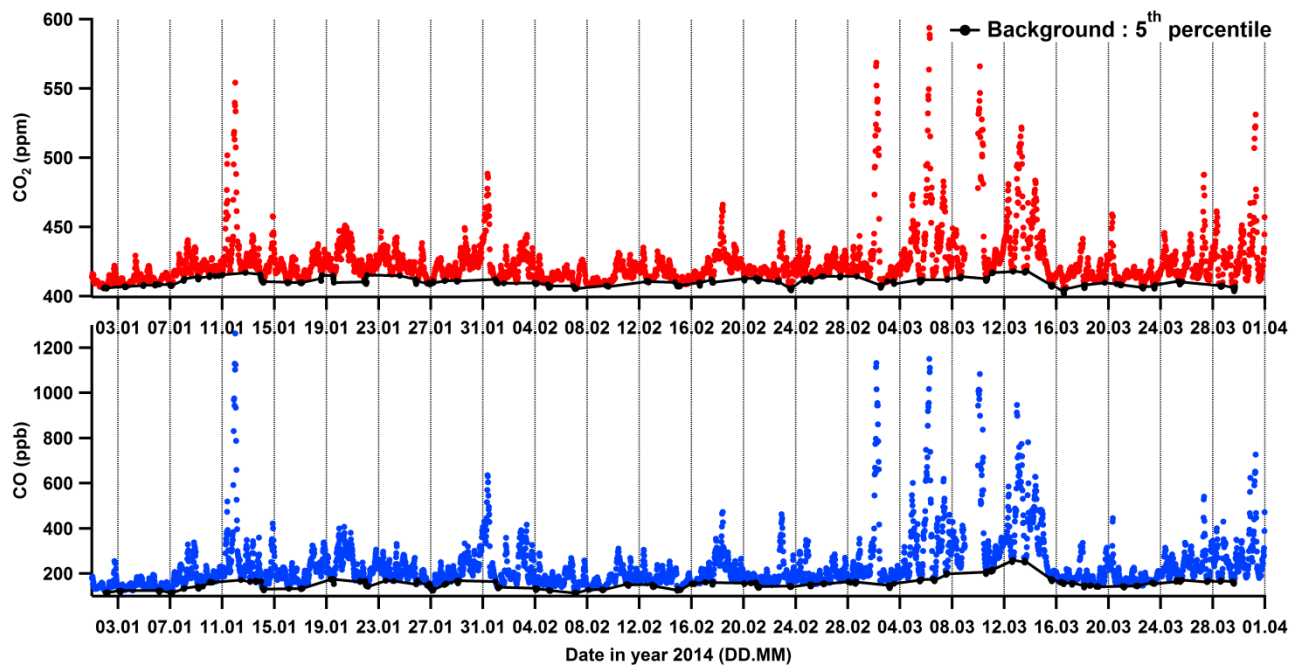
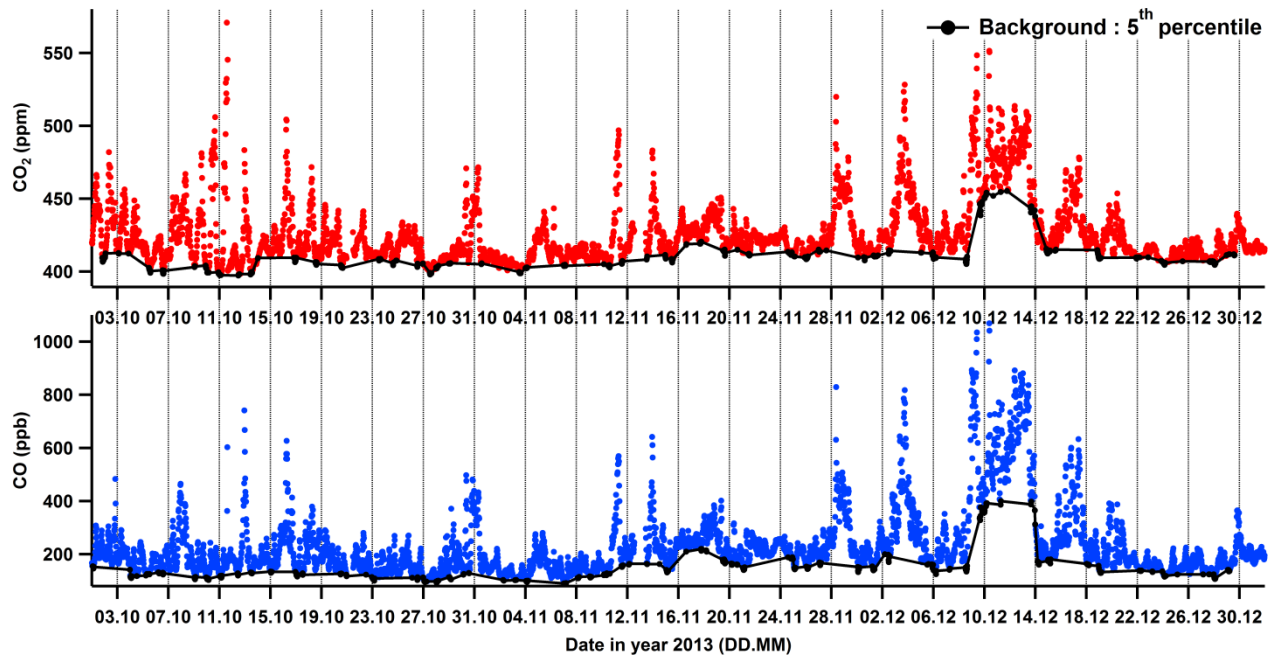


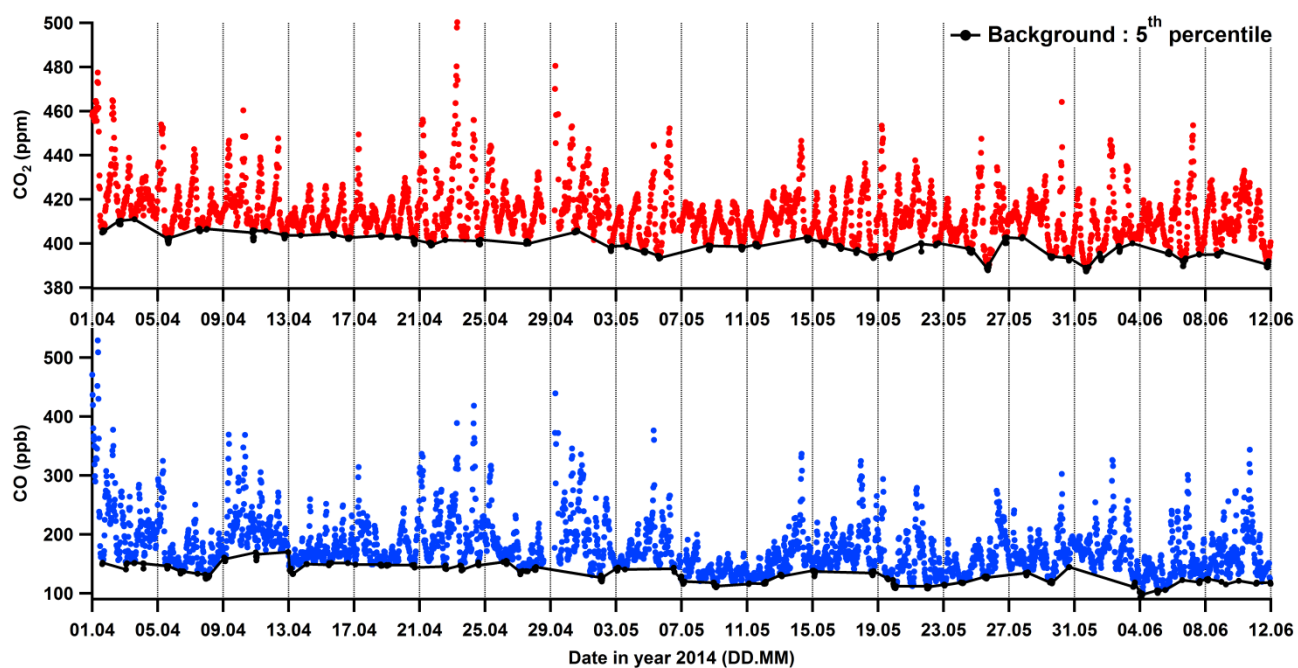
**Fig. S1:** (a-d) Time series (in time UTC) of observations collected during the MEGAPOLI/CO<sub>2</sub>-Megaparis campaign: (a-d) mole fractions of selected compounds (the black lines represent the different species background levels defined with the calculation of the 5<sup>th</sup> percentile shown as black disks); (e) wind speed.

Fig. S2 shows the continuous measurements of CO<sub>2</sub> and CO in Jussieu collected between February 2013 and June 2014.









**Fig. S2:** Temporal variation (with time given in UTC) of the CO<sub>2</sub> and CO mole fractions collected in Jussieu between February 2013 and June 2014. The black lines represent the different species background levels defined with the calculation of the 5<sup>th</sup> percentile (black disks).

Ratios between co-emitted species for the MEGAPOLI/CO<sub>2</sub>-Megapolis campaign:

The ratios between the co-emitted species for the MEGAPOLI/CO<sub>2</sub>-Megapolis campaign, derived from our method, are presented in Table S1.

	$\Delta\text{CO}_2$	$\Delta\text{CO}$	$\Delta\text{Acetylene}$	$\Delta\text{Ethylene}$	$\Delta\text{Propene}$	$\Delta\text{i-pentane}$	$\Delta\text{n-pentane}$	$\Delta\text{Ethane}$	$\Delta\text{Propane}$
$\Delta\text{CO}_2$	-	6.33	25.21	33.51	6.26	11.47	3.41	31.70	20.38
$\Delta\text{CO}$		-	2.78	5.13	0.88	2.04	0.73	3.09	2.27
$\Delta\text{Acetylene}$			-	0.84	0.17	0.34	0.11	0.53	0.35
$\Delta\text{Ethylene}$				-	0.13	0.17	0.07	0.34	0.24
$\Delta\text{Propene}$					-	0.88	0.36	1.10	1.08
$\Delta\text{i-pentane}$						-	0.36	0.93	0.71
$\Delta\text{n-pentane}$							-	1.60	1.43
$\Delta\text{Ethane}$								-	0.43
$\Delta\text{Propane}$									-

**Table S1:** Observed ratios between co-emitted species derived from our method for the MEGAPOLI/CO<sub>2</sub>-Megapolis campaign. The mole fraction ratio is reported in ppb/ppm for  $\Delta\text{CO}/\Delta\text{CO}_2$ , all others to  $\Delta\text{CO}_2$  are reported in ppt/ppm. Those that do not include  $\Delta\text{CO}_2$  are reported in ppb/ppb. For readability, the diagonal (unity ratios) has been replaced by dashes (-).