Supplementary Information to

Interpreting the $^{13}C/^{12}C$ ratio of carbon dioxide in an urban airshed in the Yangtze River Delta, China

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Figure S1: A sample time series of the $^{12}CO_2$ and $^{13}CO_2$ mole fractions in response to switching between ambient sampling mode and calibration mode. The measurement sequence is ambient, calibration gas 1, calibration gas 2, and ambient.

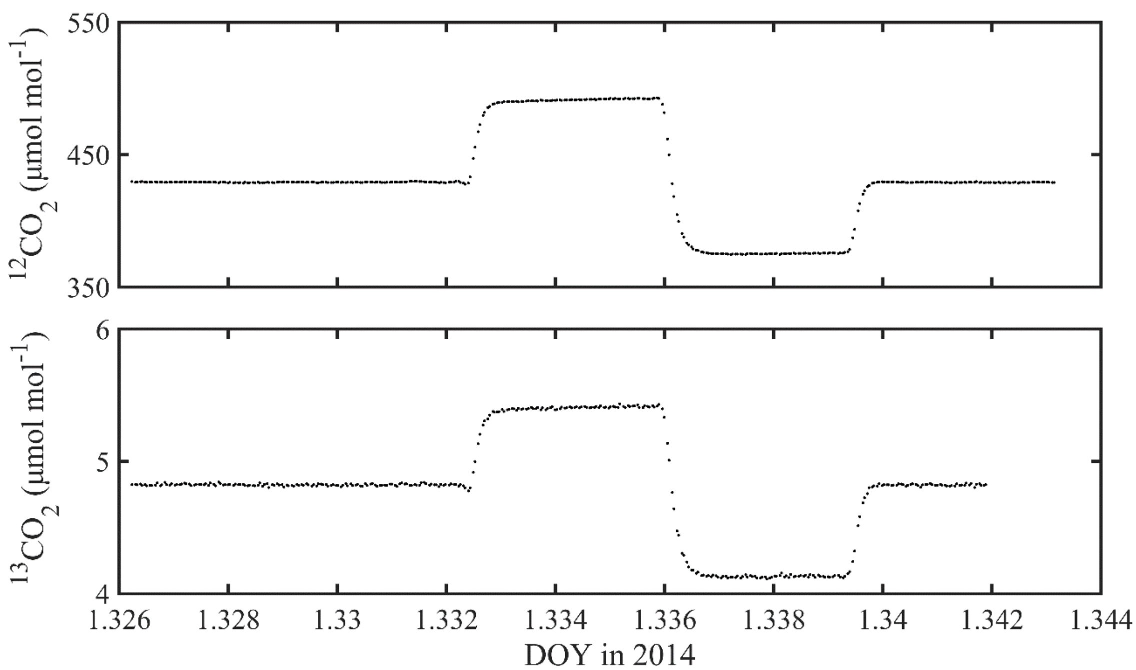

Figure S2: Application of the Miller-Tans method to daytime (10:00-16:00) and nighttime (22:00-6:00) data obtained in January 2014. Each data point is one hourly mean. The solid line is the ordinary least squares regression according to the original Miller-Tans Equation 1. Errors bounds on the regression coefficient are 95% confidence intervals. The background mole fraction and delta values are observations at the WMO baseline site WLG.

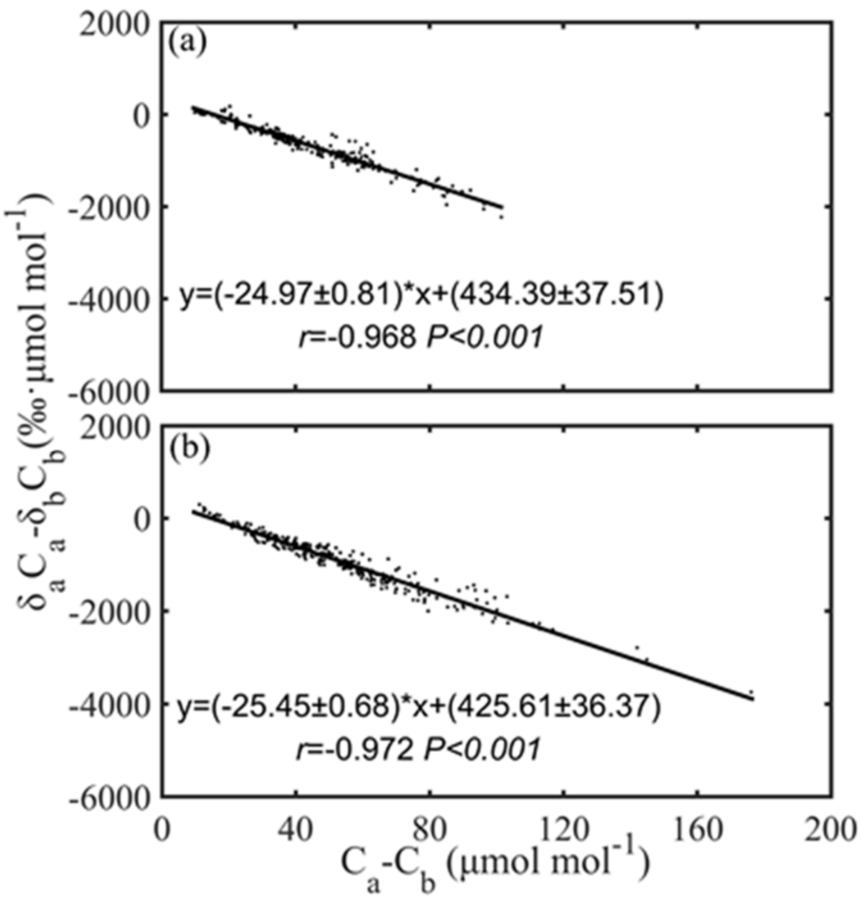

Figure S3: Application of the Miller-Tans method to the data obtained by Sturm et al. (2006) at Bern, Switzerland from 26 Apr to 1 May, 2004. Each data point is 12-minute mean. The solid line is the ordinary least squares regression according to the original Miller-Tans Equation 1. Errors bounds on the regression coefficient are 95% confidence intervals. The background mole fraction and delta values are observations at the WMO baseline site HUN (Hegyhatsal, Hungary).

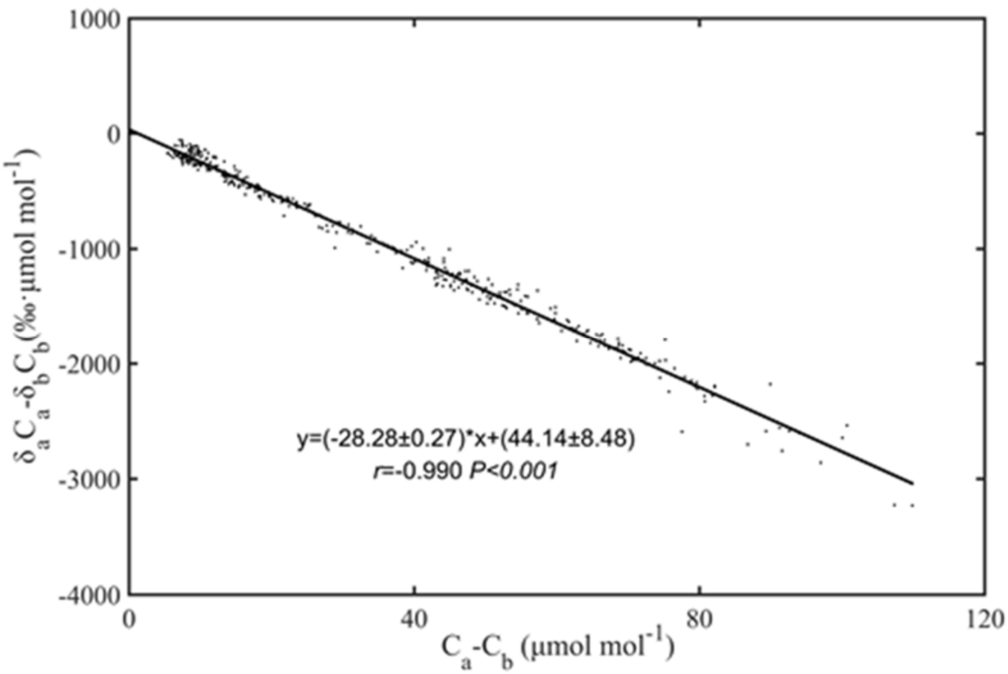

Figure S4. Same as Figure 7 but using *δ*s obtained from the Keeling plot method.

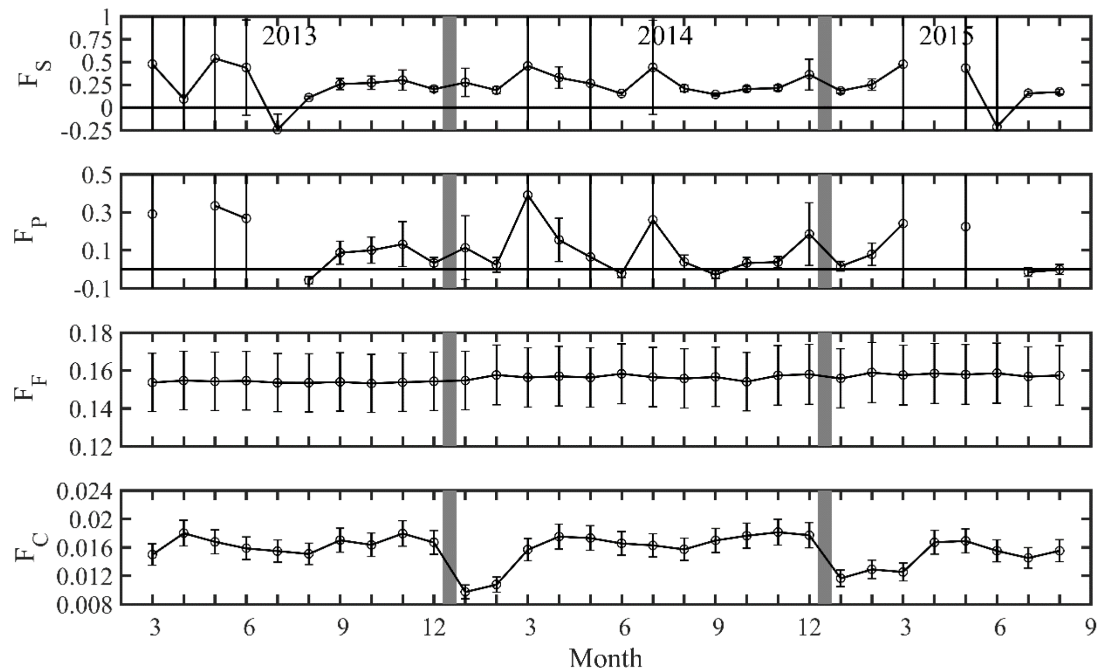

Figure S5. Same as Figure 8 but using δs obtained from the Keeling plot method.

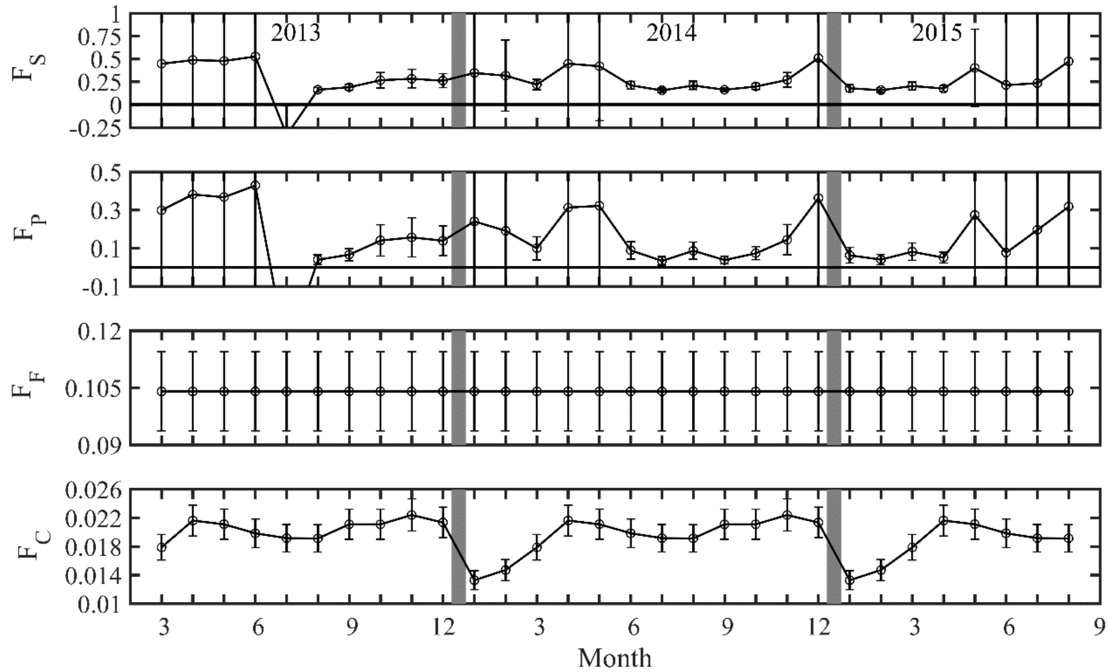

Table S1: Application of Miller-Tans method (Equation 1) to data obtained at urban sites.

City	Period	Reference	Background site	Slope	Intercept	R^2
Dallas Campus, Texas	1998 - 1999	Clark-Thorne and Yapp, 2003	MLO	-29.44 ± 4.39	147.20 ± 102.93	0.869
Dallas Downtown, Texas	1998 - 1999	Clark-Thorne and Yapp, 2003	MLO	-27.92 ± 3.13	104.10 ± 81.39	0.785
Bangalore, India	Oct 2008 - Nov 2008	Guha et al., 2010	SEY	-27.03 ± 4.35	7.65 ± 112.16	0.880
Paris	Dec 1997 - Apr 1999	Widory, 2003	AZR	-28.64 ± 2.47	469.83 ± 229.74	0.983
Salt Lake City, Utah	Jan 2002	Pataki et al., 2003	MLO	-34.25 ± 0.92	-247.90 ± 72.10	0.997
Salt Lake City, Utah	Aug 2002	Pataki et al., 2003	MLO	-28.63 ± 3.33	-153.48 ± 39.34	0.961
Pasadena CA	April 2014 - Jul 2014	Affek et al., 2005	MLO	-29.07 ± 20.09	-232.22 ± 323.02	0.547
Krakow, Poland	Sep 1994	Zimnoch et al. ，2004	Schauinsland	-27.96 ± 0.47	-6.6 ± 11.14	0.999
Beijing, China	Aug 2013	Pang et al., 2016	WLG	-26.84 ± 0.57	-187.09 ± 10.16	0.908
Bern, Switzerland	26 Apr - 1 May, 2004	Sturm et al., 2006	HUN	-28.28 ± 0.27	44.14 ± 8.84	0.990

MLO – Mauna Loa, United States. Latitude 19.536, longitude -155.576, elevation 3397 m.
SEY – Mahe Island, Seychelles. Latitude -4.682, longitude 55.532, elevation 2 m.
AZR – Terceira Island, Azores, Portugal. Latitude 38.766, longitude: -27.375, elevation 19 m.
Schauinsland – Schauinsland, Germany. Latitude 47.92, longitude 7.92, elevation 1205 m.
WLG – Mt.Waliguan, China. Latitude 36.288, longitude 100.896, elevation 3810 m
HUN – Hegyhatsal, Hungary. Latitude 46.950, longitude 16.650, elevation 248 m.

Table S2: Comparison of the surface source $^{13}C/^{12}C$ ratio determined with the Keeling plot and the Miller-Tans method (Equation 3). Results are averages for the whole experimental period.

Methods	Daytime		Nighttime	
	δ_S (‰)	std (‰)	δ_S (‰)	std (‰)
Miller-Tans method	-24.37	0.61	-24.58	0.44
Keeling plot	-25.88	0.32	-25.79	0.25

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