



Supplement of

Highly time-resolved characterization of carbonaceous aerosols using a two-wavelength Sunset thermal–optical carbon analyzer

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31 **Table S1.** Temperature protocol of the modified NIOSH 5040 method used in this study.

Gas	Temperature(°C)	Time(s)
He-1	310	70
He-2	480	60
He-3	615	60
He-4	840	100
He/O ₂ -1	550	45
He/O ₂ -2	625	45
He/O ₂ -3	700	45
He/O ₂ -4	775	45
He/O ₂ -5	850	120
CH ₄ /He	0	120

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33 **Table S2.** Comparison of the concentrations of OC and EC in PM_{2.5} between different cities in
 34 China and around the world using the TOT method applied in the NIOSH 5040 protocol.

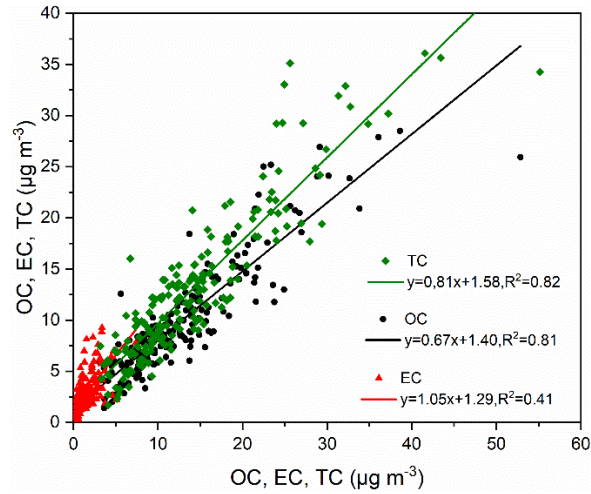
Country	City or region	Site type	Sampling period	OC	EC	OC/EC	References
China	Beijing	Urban	Mar 2013-Feb 2014	14.0	4.1	3.4	(Ji et al., 2016)
China	Shanghai	Urban	Oct 2005-Jul 2006	14.7	2.8	5.0	(Feng et al., 2009)
China	Chengdu	Urban	May 2012-Apr 2013	19.0	4.6	4.3	(Chen et al., 2014)
China	Chongqing	Urban	May 2012-Apr 2013	15.2	4.0	3.8	(Chen et al., 2014)
China	Nanjing	Suburban	Annual 2014	5.7	3.2	1.8	(Chen et al., 2017)
China	Guangzhou	Rural	Mar 2012–Feb 2013	6.1	0.8		(Lai et al., 2016)
China	Mount Heng	Set at 1269 m asl	Mar-May 2009	3.0	0.5	5.2	(Zhou et al., 2012)
Mexico	Mexico City	Suburban	Mar 2006	6.4	2.1	4.5	(Yu et al., 2009)
India	Delhi	Suburban	Nov 2010-Feb 2011	54.1	10.4	5.2	(Tiwari et al., 2012)
America	Philadelphia	Suburban	Jul 2002-Aug 2002	4.8	0.4	18.7	(Jeong et al., 2004)
America	Rochester	Suburban	Jun 2002	9.2	0.3	23.6	(Jeong et al., 2004)
Spain	Aragón	Urban	Dec 2011	3.6	1.1	4.7	(Escudero et al., 2015)
China	Nanjing	Suburban	Jun 2015-Aug 2016	8.6	2.9	3.6	This study

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36 **Table S3.** Statistics on the meteorological factors in four seasons at the NUIST site during the
37 study period.

	Atmospheric Pressure (hPa)	Relative Humidity (%)	Temperature (°C)	Wind Speed (m s ⁻¹)	Total Precipitation (mm)
Spring	1009.9	66.0	16.8	1.9	256.3
Summer	1000.7	72.6	26.7	1.4	586.0
Autumn	1014.6	71.0	19.5	1.7	218.5
Winter	1027.0	63.9	5.7	1.7	82.1

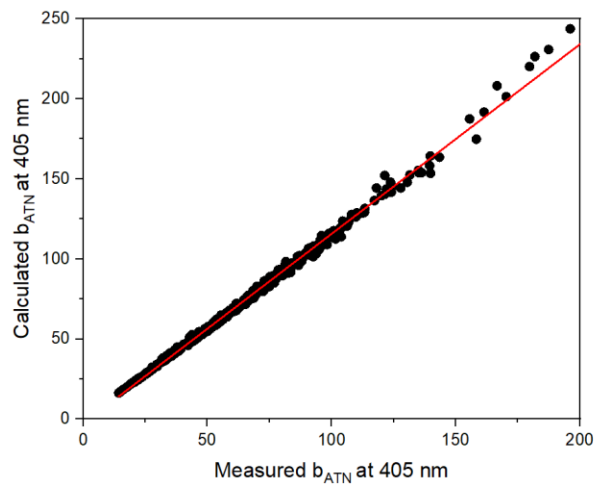
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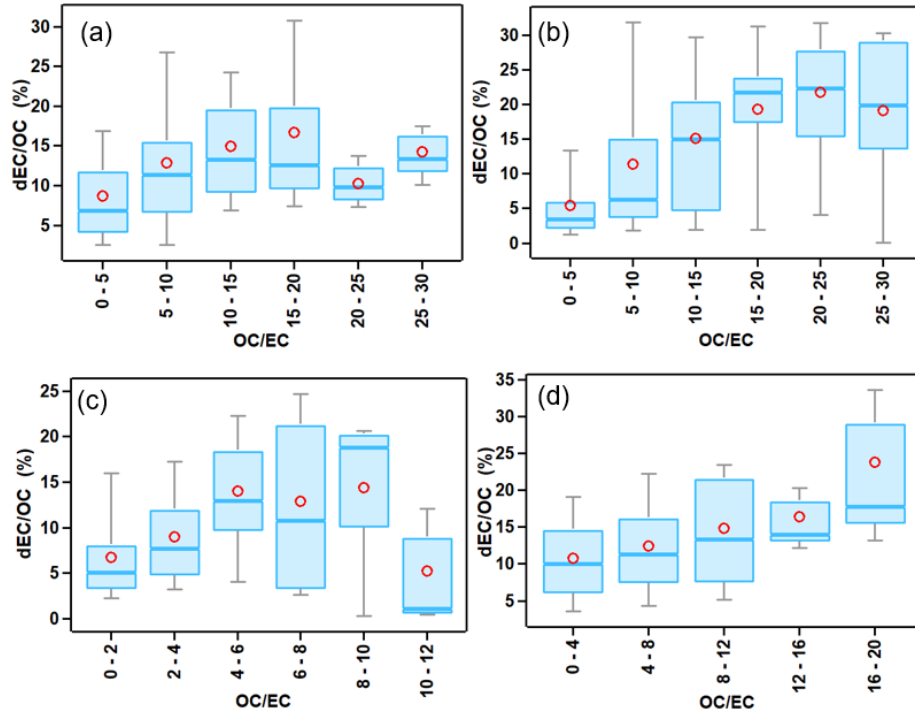
40 **Figure S1.** Correlations between the real-time OC, EC and TC concentrations (y-axis) and
 41 sampling OC, EC and TC concentrations (x-axis) during the corresponding periods.

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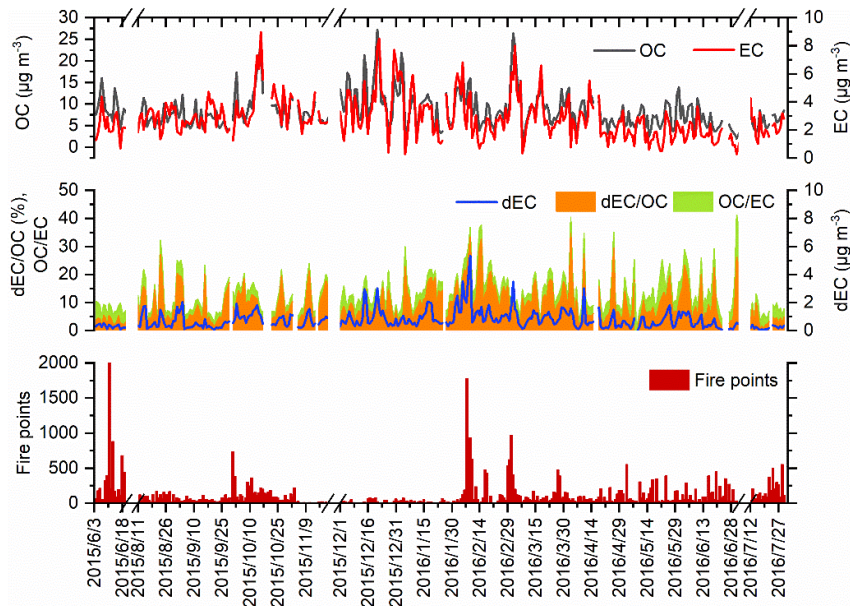
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44 **Figure S2.** Measured b_{ATN} at 405 nm compared with b_{ATN} fitted from Eq. (3) using a two-
 45 component model.



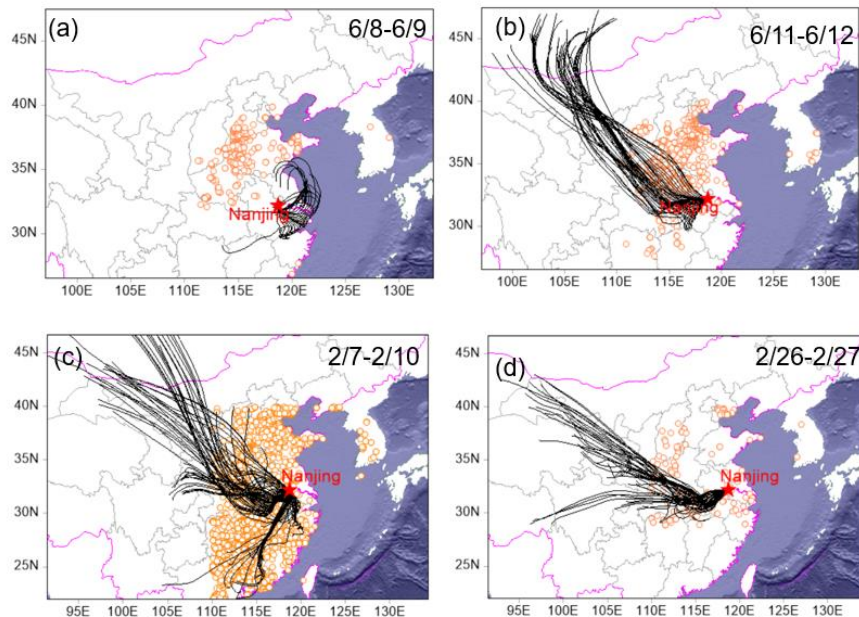
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47 **Figure S3.** dEC/OC variation at different intervals of OC/EC ratios in spring (a), summer (b),
 48 autumn (c) and winter (d).



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50 **Figure S4.** Time variations of OC, EC, dEC, dEC/OC, OC/EC and fire points obtained from the
 51 Fire Information for Resource Management System (FIRMS) derived from the Moderate
 52 Resolution Imaging Spectroradiometer (MODIS).



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55 **Figure S5.** 48-h back trajectories at 500 m above the study site from 8 June 2015 to 9 June 2015(a),
 56 11 June 2015 to 12 June 2015 (b), respectively and from 7 February 2016 to 10 February 2016 (c)
 57 and 26 February 2016 to 27 February 2016 (d), respectively.

58 References

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