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Supplement of

**Chemical characterization of submicron aerosol and particle growth events
at a national background site (3295 m a.s.l.)
on the Tibetan Plateau**

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Supporting Information

Table S1. A summary of mass concentration and composition of NR-PM₁ species measured by the AMS and in some cases with black carbon (BC) at different locations in East Asia.

Location	Okinawa Japan	Fukue Japan	Jeju Korea	Jiaying Shanghai	Changdao Island	Mount.Tai	Kaiping Shenzhen	Lanzhou
Time	10/3/2003	3/20/2003	4/13/2001	6/29/2013	3/21/2011	2011	10/12/2008	7/11/2012
	10/28/2003	4/18/2003	4/30/2001	7/15/2013	4/24/2011		11/18/2008	8/7/2012
Org	Mass	3.1	5.0	3.5	10.6	13.4	11.2	11.5
	Frac.	21.4	41.7	40.7	32.1	28.8	32.6	47
SO ₄	Mass	9.2	4.8	3.1	8.2	8.3	9.2	11.1
	Frac.	63.4	40.0	36.0	25.2	17.8	26.7	33.6
NO ₃	Mass	0.19	0.56	0.51	5.9	12.2	7.2	3.5
	Frac.	1.3	4.7	5.9	18.0	26.1	20.9	10.7
NH ₄	Mass	1.9	1.6	1.5	4.2	6.5	5.8	4.6
	Frac.	13.1	13.3	17.4	12.6	13.9	16.9	14.0
Chl	Mass.	0.06	0.07		1.0	1.3	0.95	0.36
	Frac.	0.4	0.6		3.0	2.8	2.8	1.1
BC	Mass				3.0	2.5		2.2
	Frac.				9.1	5.4		6.7
NR-PM ₁	14.5	12.0	8.6	29.9	44.1	34.4	30.8	21.6
PM ₁				32.9	46.6		33.1	24.5
References	(Zhang et al., 2007)	(Takami et al., 2005)	(Topping et al., 2004)	(Huang et al., 2013)	(Hu et al., 2013)	(Zhang et al., 2014)	(Huang et al., 2011)	(Xu et al., 2014)

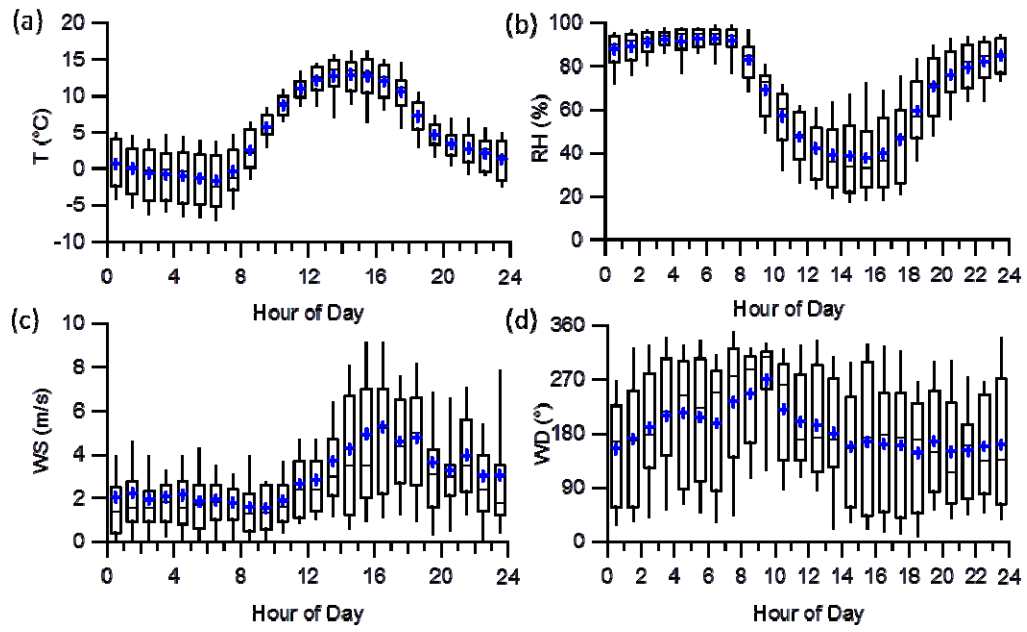


Figure S1. The diurnal variation of meteorology including (a) temperature (T), (b) relative humidity (RH), (c) wind speed (WS), and (d) wind direction (WD).

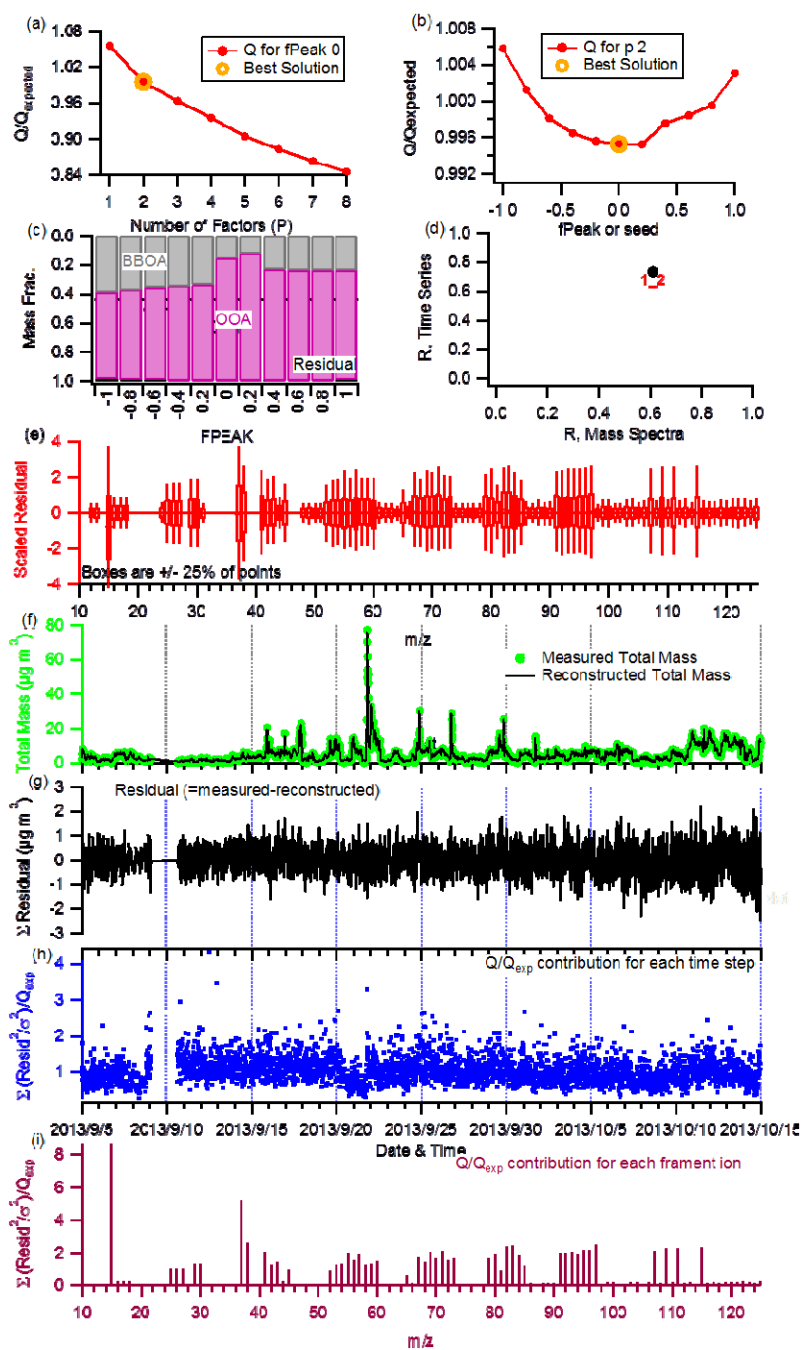


Figure S2. Summary of key diagnostic plots of the PMF results for an ACSM data acquired at the NBS: (a) Q/Q_{exp} as a function of number of factor (P) selected for PMF modeling. For the two-factor solution (i.e., the best P): (b) Q/Q_{exp} as a function of FPEAK, (c) fractions of OA factors vs. FPEAK, (d) correlations among PMF factors, (e) the box and whiskers plot showing the distributions of scaled residuals for each organic mass, (g) variations of the residual (= measured – reconstructed) of the fit, (h) the Q/Q_{exp} for each point in time, and (i) the Q/Q_{exp} values for each m/z .

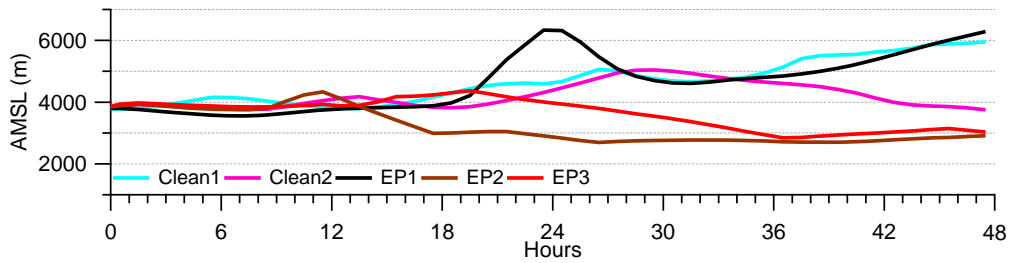
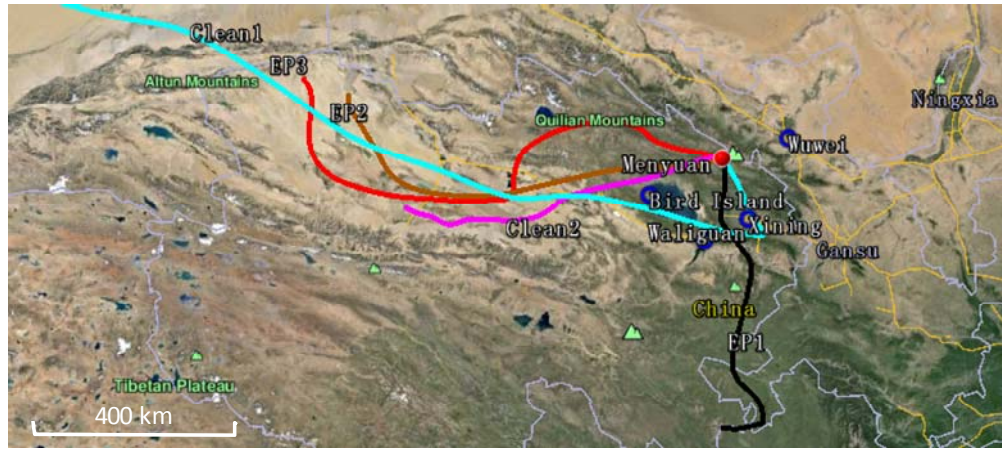


Figure S3. The back trajectories at 500 m (AGL) during five episodes marked in Figure 3. The time for each trajectory was 00:00 on 14 Sep. for Clean 1, 12:00 on 22 Sep. for Ep1, 00:00 on 27 Sep. for Ep2, 00:00 on 9 Oct. for Clean2, 00:00 on 14 Oct. for Ep3. The time is UTC time which is equal to Beijing time minus 8 hours. AMSL refers to above mean seal level.

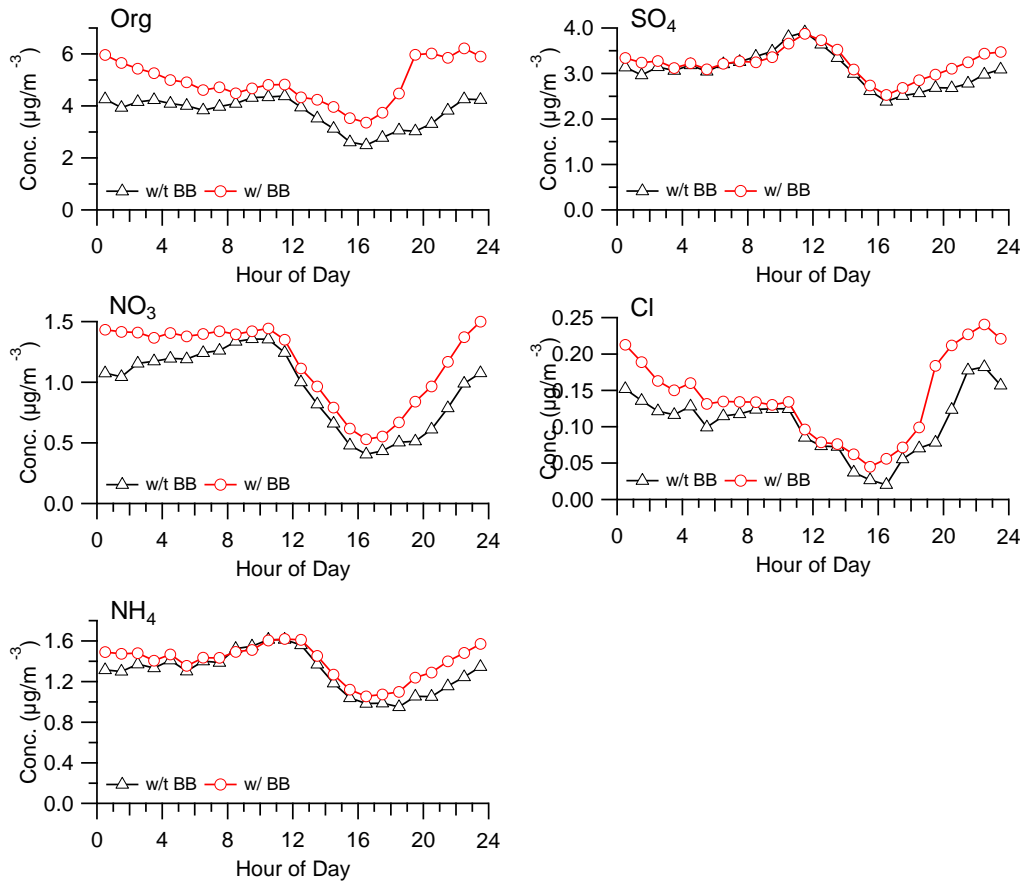


Figure S4. Diurnal profiles of NR-PM₁ species with (w/) and without (w/t) biomass burning (BB) events.

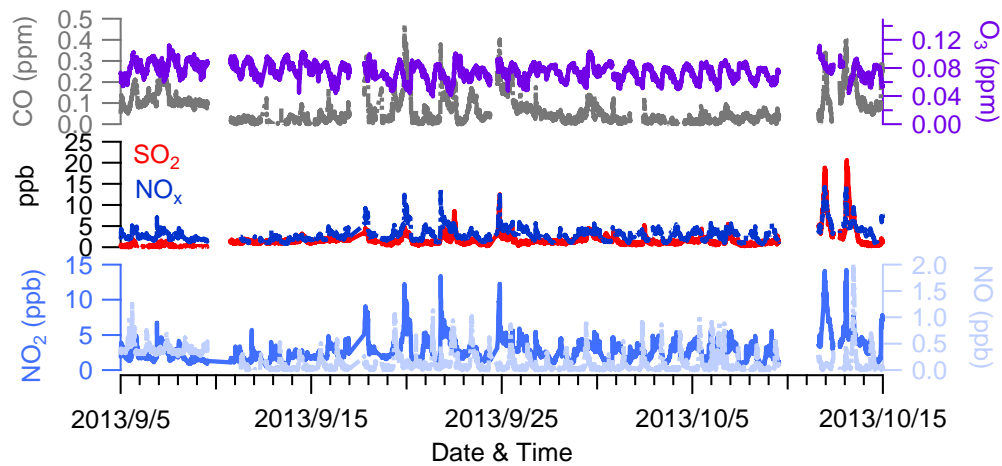


Figure S5. Time series of gas phase species including CO, O₃, SO₂, NO_x, NO₂, NO during this study.

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