



Supplement of

Measurement report: Saccharide composition in atmospheric fine particulate matter during spring at the remote sites of southwest China and estimates of source contributions

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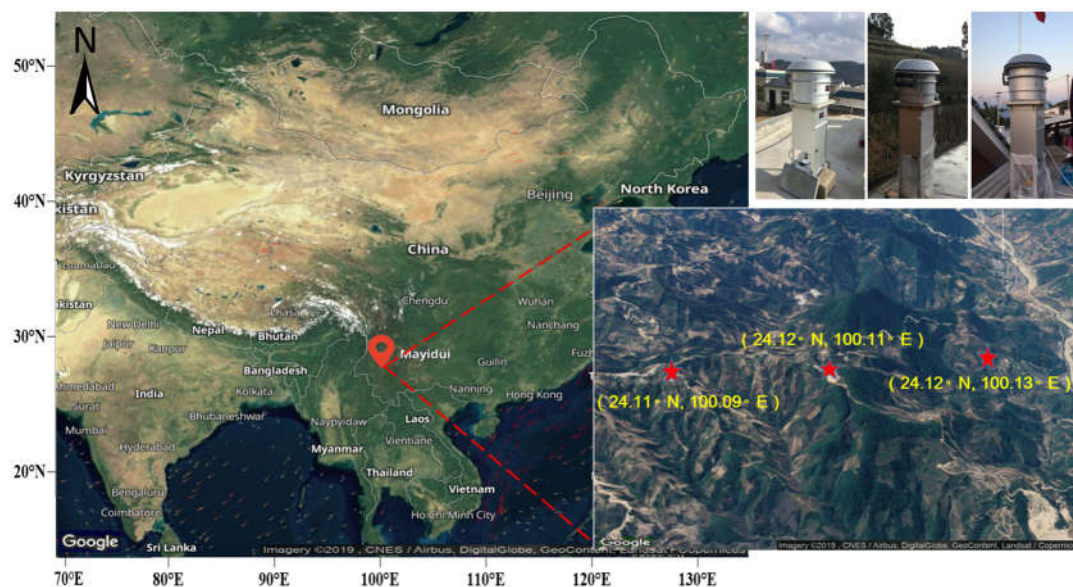


Figure S1. Map of sampling sites. The location of the sampling sites is marked with five-pointed star.

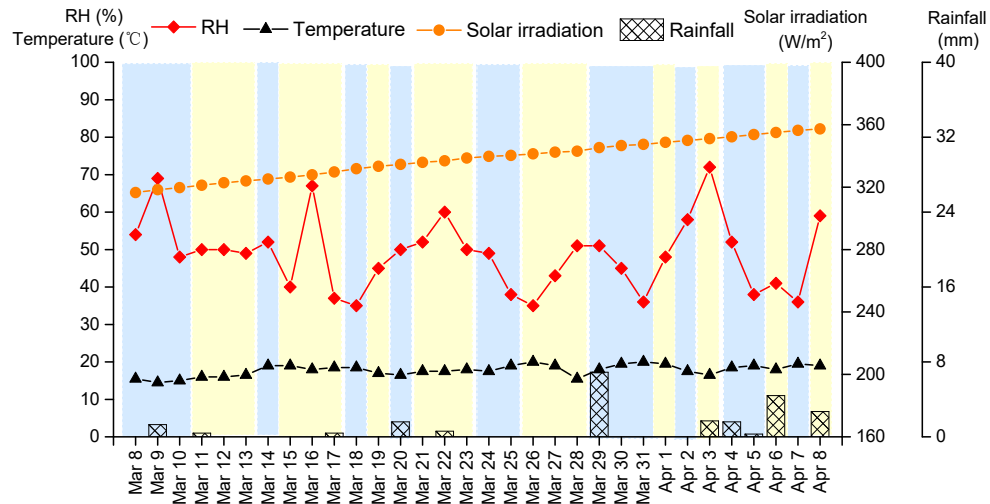


Figure S2. Temporal variations of RH, temperature, solar irradiation and rainfall during the sampling period.

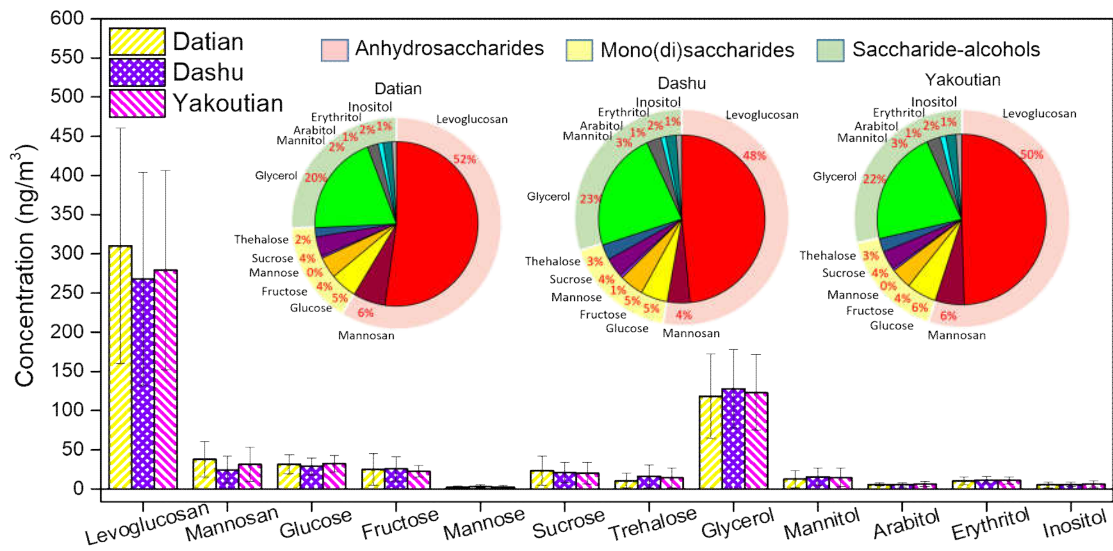


Figure S3. Average concentrations of saccharide compounds and the contribution of them for the Datian, Dashu, and Yakoutian samples during the observation period.

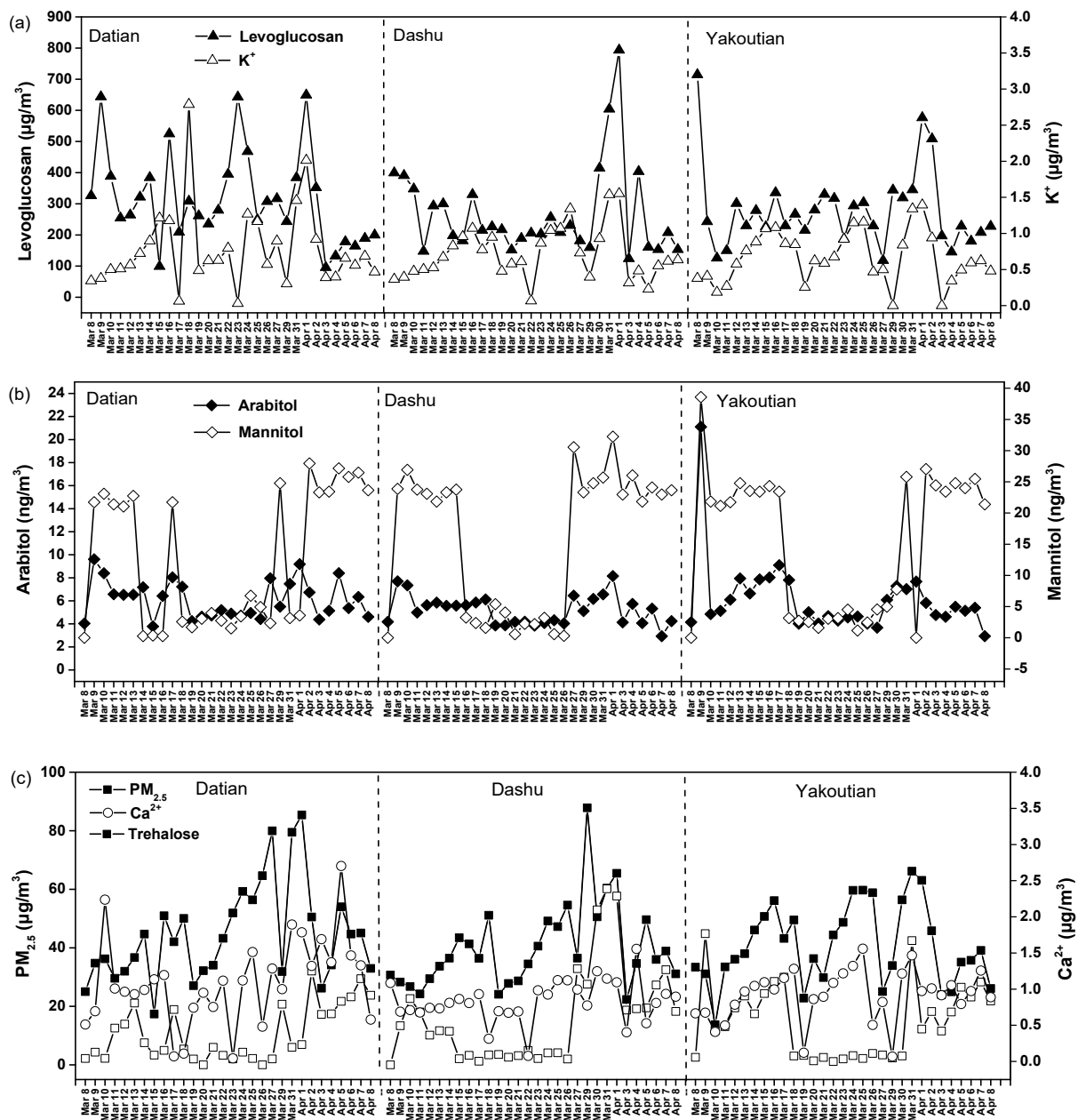


Figure S4. (a) Daily variation on average concentrations of levoglucosan and K^+ , (b) arabitol and mannitol, $\text{PM}_{2.5}$, (c) Ca^{2+} and trehalose at the three sites throughout the sampling period.

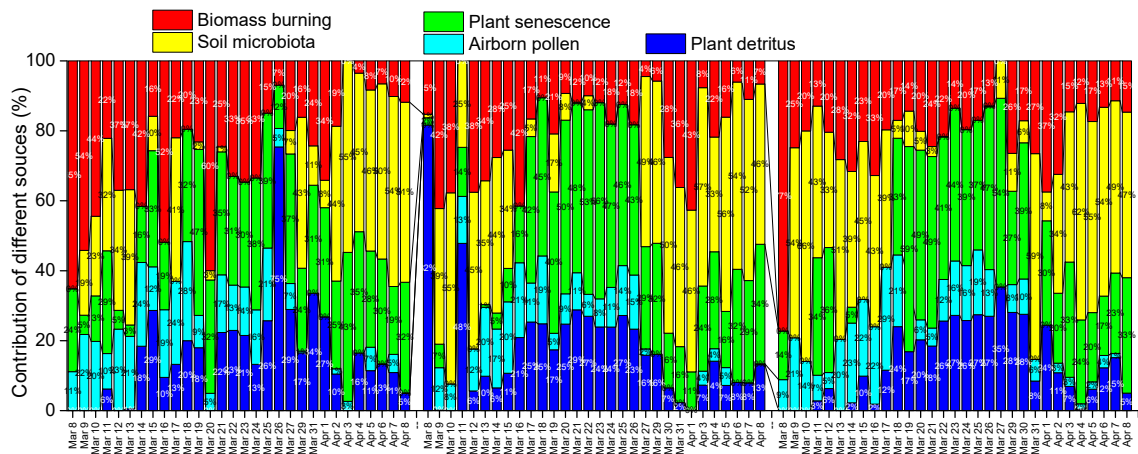


Figure S5. Daily variations in the proportion of the five factors to the total saccharides in PM_{2.5} sampled at Datian, Dashu and Yakoutian sites during the sampling periods.

Table S1. Concentrations of the carbonaceous components and soluble inorganic ions in PM_{2.5} during the sampling periods of spring 2019.

Component (unit)	Mean of three sites (n = 91)			Datian site (n = 30)			Dashu site (n = 30)			Yakoutian site (n = 31)		
	Range	Mean	Std.	Range	Mean	Std.	Range	Mean	Std.	Range	Mean	Std.
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	13.7-87.8	41.8	14.8	17.4-85.4	44.4	16.8	22.3-87.8	40.1	14.2	13.7-66.3	40.9	15.3
OC ($\mu\text{g}/\text{m}^3$)	2.5-22.4	8.4	4.0	3.4-22.4	8.9	4.8	3.3-17.3	7.7	3.4	2.5-18.2	8.7	3.7
EC ($\mu\text{g}/\text{m}^3$)	0.3-4.3	1.7	0.8	0.3-4.3	1.9	0.9	0.7-3.4	1.6	0.7	0.6-3.1	1.8	0.7
Σ Ion species ($\mu\text{g}/\text{m}^3$)												
K ⁺	0-2.8	0.7	0.4	0-2.8	0.8	0.6	0.1-1.6	0.7	0.3	0-1.4	0.7	0.3
Na ⁺	0-0.9	0.6	0.2	0-0.9	0.6	0.2	0.1-0.9	0.6	0.1	0-0.8	0.6	0.1
Ca ²⁺	0-2.7	1.0	0.4	0-2.7	1.1	0.7	0.1-1.6	0.8	0.3	0.1-1.6	0.9	0.3
Mg ²⁺	0-0.4	0.1	0.1	0-0.4	0.1	0.1	0-0.3	0.1	0.1	0-0.2	0.1	0.1
NH ₄ ⁺	0-4.8	2.6	1.1	0-4.8	2.5	1.2	0.3-4.2	2.6	0.9	0.1-4.2	2.5	1.1
Cl ⁻	0-1.1	0.3	0.2	0.1-0.6	0.2	0.1	0-1.1	0.3	0.2	0.1-0.9	0.3	0.1
NO ₃ ⁻	0-3.9	1.9	0.7	0.4-3.7	1.9	0.8	0-3.9	1.7	0.7	0.3-3.2	1.8	0.6
PO ₄ ⁻	0-0.6	0.4	0.1	0.1-0.5	0.3	0.1	0-0.6	0.4	0.1	0.1-0.5	0.4	0.1
SO ₄ ²⁻	2.6-13.0	7.8	2.5	3.5-13.0	8.4	2.4	2.6-11.6	7.7	2.2	2.8-11.9	7.4	2.6
Σ Saccharides (ng/m^3)	244.5-1291.6	638.4	205.8	244.5-1183.9	674.6	178.5	359.3-1228.0	624.6	236.7	293.2-1331.3	616.6	191.9
Glycerol	42.1-221.1	123.7	50.1	42.1-200.2	118.0	54.4	42.5-221.1	128.9	54.0	47.0-184.7	123.4	48.3
Erythritol	0.4-19.8	11.1	4.6	0.4-17.9	10.3	4.8	3.7-19.8	11.4	4.9	4.1-16.5	10.9	4.3
Inositol	0-22.8	5.1	6.8	0-16.9	5.1	6.8	0-18.5	5.0	6.9	0-22.8	5.4	7.3
Arabitol	0-21.1	5.8	2.3	0-9.6	6.1	1.6	2.9-8.2	5.2	1.3	2.9-21.1	6.3	3.2
Mannitol	0-38.6	14.7	11.2	0-27.9	12.5	11.0	0-32.2	15.7	11.5	0-38.6	14.9	11.4
Mannose	0-5.4	2.7	1.8	0-5.4	2.7	1.8	0-3.2	3.2	2.4	0-4.7	2.5	1.3
Trehalose	0-60.1	13.8	13.4	0-32.0	10.6	9.5	0-60.1	16.4	16.9	1.1-44.8	14.5	12.5
Glucose	7.9-62.1	31.2	11.1	7.9-62.1	32.4	11.3	15.9-61.0	28.9	11.5	17.2-61.0	32.3	10.7
Fructose	0-122.9	24.6	17.0	0-122.9	25.5	20.3	13.3-111.3	25.9	21.0	10.6-38.4	22.5	7.2
Sucrose	8.4-254.8	86.8	59.6	10.8-254.8	96.0	74.0	16.8-206.4	83.6	48.8	8.4-197.2	80.8	54.8
Levoglucofan	95.6-714.7	287.7	142.0	95.6-649.2	315.7	150.1	124.3-793.3	268.4	146.3	118.3-714.7	279.4	127.0
Mannosan	0-134.7	31.6	19.7	8.9-96.9	38.9	22.0	11.3-57.9	24.5	10.3	0-134.7	31.3	22.1
Galactosan	0-5.5	0.3	1.2	n.d.	n.d.	n.d.	0-5.5	0.45	1.2	0-5.4	0.46	1.3

Note: "Std." represent standard deviation. The "n" indicates the number of samples, and "n.d." means "not detected".

Table S2. Correlation matrix for the dataset of the determined saccharide compounds in PM_{2.5} samples. The R-values >0.3 are displayed in bold character with those of R > 0.5 being underlined.

	Inositol	Glycerol	Erythritol	Arabitol	Mannitol	Trehalose	Glucose	Mannose	Fructose	Sucrose	Levogluconan	Mannosan
Inositol	1											
Glycerol	-0.48	1										
Erythritol	-0.58	<u>0.65</u>	1									
Arabitol	0.46	-0.21	-0.25	1								
Mannitol	0.28	0.03	-0.15	0.38	1							
Trehalose	0.18	0.15	0.01	0.32	<u>0.79</u>	1						
Glucose	0.06	-0.06	0.08	0.44	0.05	-0.10	1					
Mannose	0.24	-0.06	-0.02	-0.05	-0.13	0.07	<u>0.51</u>	1				
Fructose	-0.06	0.17	0.30	0.27	0.04	0.07	0.38	<u>0.52</u>	1			
Sucrose	0.01	-0.23	0.02	0.08	-0.44	-0.32	<u>0.52</u>	0.48	0.29	1		
Levogluconan	0.42	-0.12	-0.01	0.03	-0.14	0.03	0.15	0.24	0.10	0.25	1	
Mannosan	0.46	-0.33	-0.21	0.30	-0.20	-0.18	0.15	0.14	0.02	0.17	<u>0.81</u>	1