Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.

Supplementary information for

Organosulfates in aerosols downwind of an urban region in central Amazon

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Table S1. Overview of suggested molecular structures and precursors of organosulfates detected in this study.

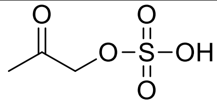
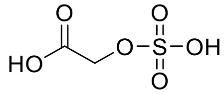
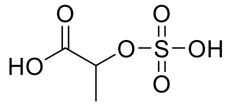
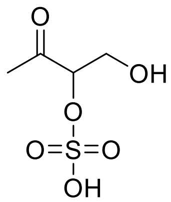
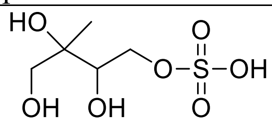
Compound	**Molecular formula**	**Suggested structure**	**Suggested precursor**
Acetone sulfate (OS 154)	$C_3H_6O_5S$		hydroxyacetone[1]
Acetic acid sulfate (OS 156)	$C_2H_4O_6S$		hydroxyacetic acid (glycolic acid)[2, 3]
Propanoic acid 2-sulfate (OS 170)	$C_3H_6O_6S$		2-hydroxy propanoic acid[2, 3]
OS 184 (hydroxy-butanone-sulfate)	$C_4H_8O_6S$		methyl vinyl ketone[2,4]
OS 200	$C_4H_8O_7S$	Multiple isomers possible	2-methylglyceric acid[1], MBO[5]
OS 212	$C_5H_8O_7S$	Multiple isomers possible	isoprene[6]
OS 214	$C_5H_{10}O_7S$	Multiple isomers possible	isoprene[6,7]
IEPOX OS (1,2,4-hydroxy-2-methyl-butyl-3-sulfate, OS 216)	$C_5H_{12}O_7S$		isoprene[1,6]

Table S2. Correlation coefficients (R^2) of individual organosulfates, sulfate and organic PM_1 (OA) (measured by AMS) during wet season (a) and dry season (b). Correlations > 0.75 are highlighted in bold font.

a. Wet season (n=28)	**OS 154**	**OS 184**	**OS 200**	**OS 212**	**OS 214**	**OS 216**
OS 154	1	**0.92**	0.14	**0.85**	**0.91**	**0.84**
OS 184	**0.92**	1	0.24	**0.85**	**0.84**	**0.80**
OS 200	0.14	0.24	1	0.20	0.09	0.16
OS 212	**0.85**	**0.85**	0.20	1	0.73	0.65
OS 214	**0.91**	**0.84**	0.09	0.73	1	**0.87**
OS 216	**0.84**	**0.80**	0.16	0.65	**0.87**	1
Sulfate	0.70	0.71	0.07	0.64	0.71	0.50
Organic	0.50	0.41	0.01	0.48	0.37	0.29

b. Dry season (n=70)	**OS 154**	**OS 156**	**OS 170**	**OS 184**	**OS 200**	**OS 214**	**OS 216**
OS 154	1	**0.78**	0.56	0.71	**0.87**	**0.83**	0.45
OS 156	**0.78**	1	0.64	0.61	**0.81**	**0.76**	0.39
OS 170	0.56	0.64	1	0.61	0.58	0.41	0.11
OS 184	0.71	0.61	0.61	1	0.63	0.61	0.29
OS 200	**0.87**	**0.81**	0.58	0.63	1	**0.77**	0.36
OS 214	**0.83**	**0.76**	0.41	0.61	**0.77**	1	0.67
OS 216	0.45	0.39	0.11	0.29	0.36	0.67	1
Sulfate	0.25	0.24	0.08	0.21	0.16	0.43	0.69
Organic	0.17	0.23	0.25	0.11	0.15	0.12	0.06

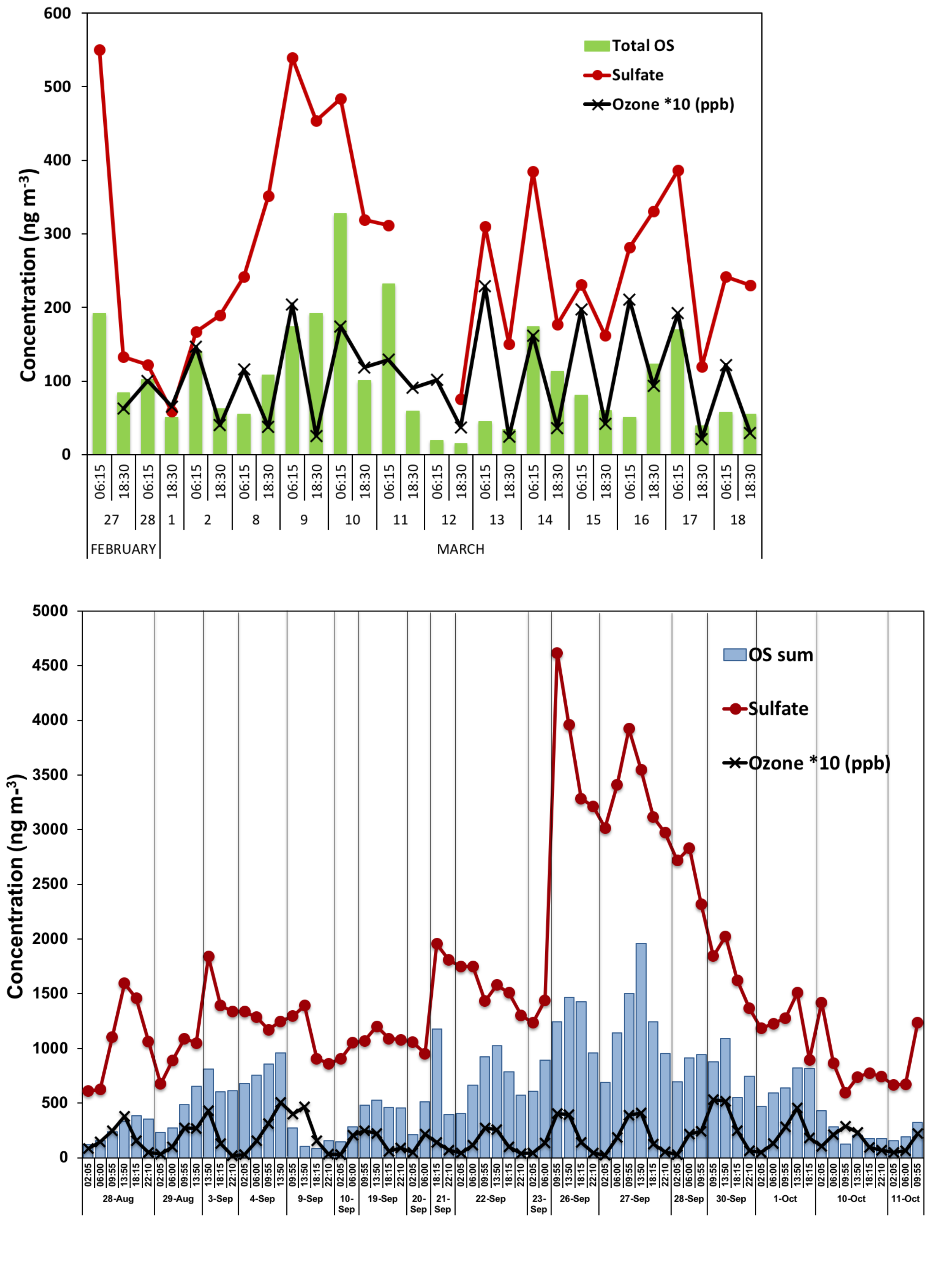


Figure S1. Concentrations of OS in aerosol samples collected during the wet season (upper panel) and dry season (lower panel), as well as sulfate and ozone. Note that the timeline is not continuous, and lines have been added to guide the eye.

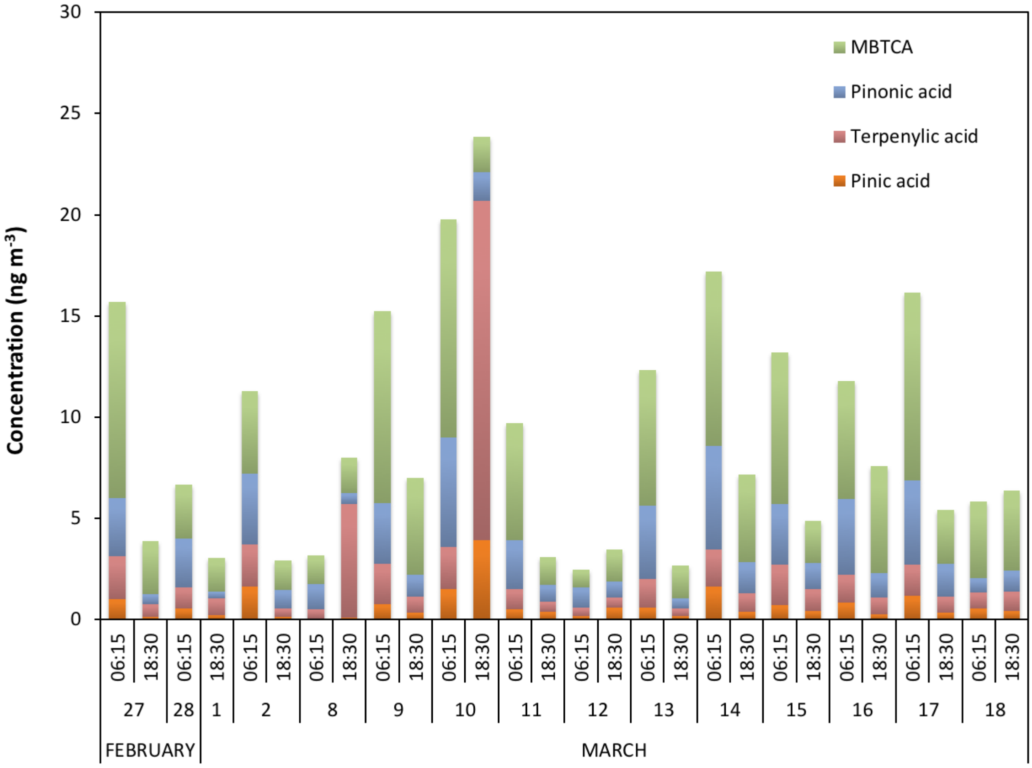


Figure S2. Concentrations of carboxylic acids derived from α-pinene and β-pinene in aerosol samples collected during the wet season. MBTCA is 3-methylbutane tricarboxylic acid.

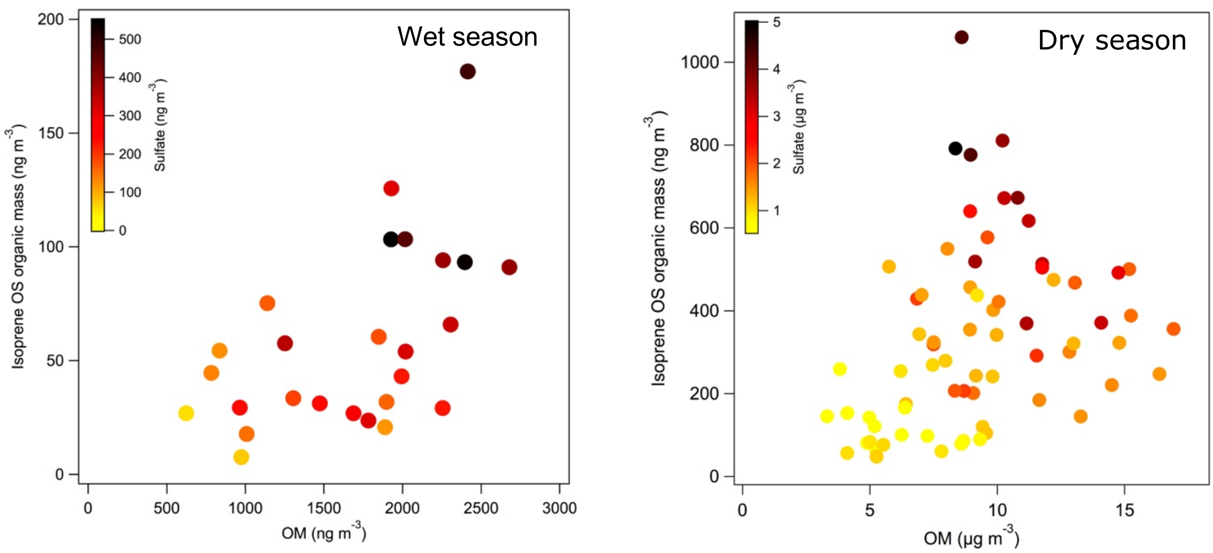


Figure S3. Summed OS organic mass (i.e. excluding sulfate) plotted against OA (from AMS) and color-coded for total sulfate in samples collected during the wet season (IOP1) and the dry season (IOP2).

References for supplementary information

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