

Supplementary

# Modeling Biomass Burning Organic Aerosol Atmospheric Evolution and Chemical Aging

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**Table S1.** Vertical model structure.

Layer number	Bottom height (m)	Top height (m)
1	0	55
2	55	135
3	135	240
4	240	370
5	370	540
6	540	750
7	750	1000
8	1000	1450
9	1450	1900
10	1900	2500

**Table S2.** Volatility distribution of organic compounds emitted by the fire in the base case.

$C_i^*$ ( $\mu\text{g m}^{-3}$ )	$\xi_i$ ( $T = 298 \text{ K}$ )	Concentration		
		Total ( $\mu\text{g m}^{-3}$ )	Particle phase ( $\mu\text{g m}^{-3}$ )	Gas phase ( $\mu\text{g m}^{-3}$ )
$10^{-2}$	1	160	160	0
$10^{-1}$	1	0	0	0
1	1	80	80	0
10	0.99	80	79	1
$10^2$	0.9	160	142.2	17.8
$10^3$	0.47	80	35.6	44.4
$10^4$	0.08	400	29.7	370.3
$10^5$	0.01	400	3.2	396.8
$10^6$	0	640	0.5	639.5
Total		2000	530	1470