



Supplement of

Is there an aerosol signature of chemical cloud processing?

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This supplemental information includes:

Table S1: Initial gas-phase mixing ratios [ppb] used as input for the parcel model. Data are from SEACR⁴S for six different air masses.

Figure S1: Predicted relative mass concentration increase due to cloud processing in six air masses as identified during SEAC⁴RS. Black symbols show the measured, initial size distributions; colored symbols are model results, color-coded by absolute mass increase / ng m^{-3} .

Figure S2: Predicted relative mass concentration increase due to cloud processing in six air masses as identified during SEAC⁴RS. Black symbols show the measured, initial size distributions; colored symbols are model results, color-coded by O/C ratio.

Table S1: Initial gas-phase mixing ratios [ppb].

	Marine	Urban	Biomass Burning	Agric biomass burning	Back- ground	Biogenic
SO ₂	0.43	0.56	0.252	1.44	0.64	0.582
NO	0.028	0.2	0.137	0.352	0.112	0.062
NO ₂	0.066	1.196	0.311	2.37	0.521	0.283
HCHO	0.883	2.64	4.04	14.4	2.8	4.2
H ₂ O ₂	1.172	2.58	3.72	4.3	2.6	2.8
O ₃	27	57	68	63	57	50
Isoprene	0.003	0.14	0.18	1.13	0.147	1.61
Monoterpenes	0.007	0.03	0.098	0.328	0.039	0.123
Methylvinyl ketone ¹⁾	0.008	0.124	0.113	0.33	0.18	1.1
Methacrolein ¹⁾	0.008	0.124	0.113	0.33	0.18	1.1
Toluene	0.009	0.07	0.125	0.243	0.041	0.056
Xylene ²⁾	0.005	0.035	0.067	0.12	0.02	0.028
Ethylene	0.0486	0.215	0.842	2.68	0.212	0.191

¹⁾ The total of methyl vinyl ketone and methacrolein was measured by PTRMS. For model purposes, the total was equally split between the two compounds.

²⁾ Xylene measurements were not available. The mixing ratio was assumed to be 50% toluene.

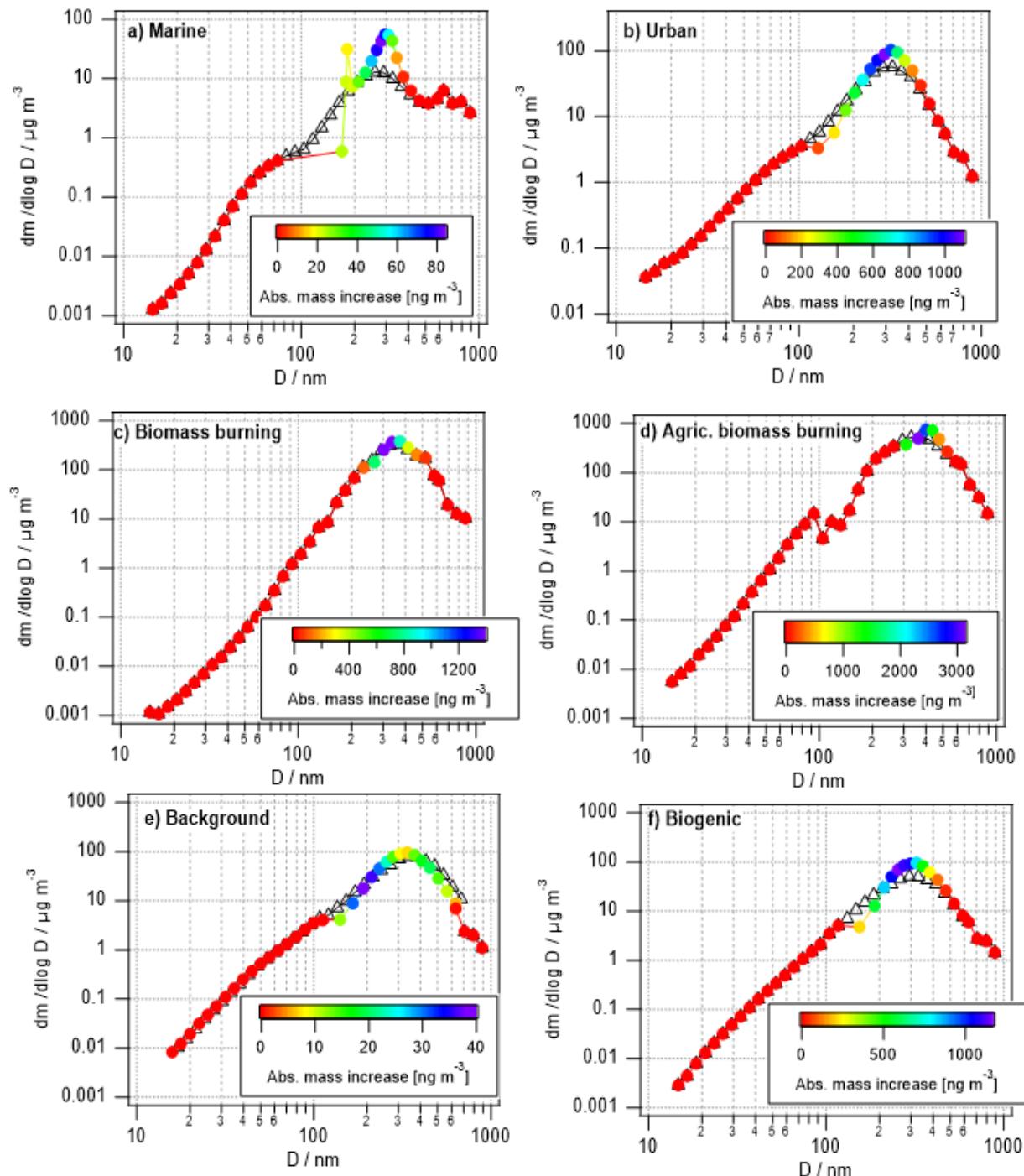


Figure S1: Measured initial (black) and predicted cloud-processed (colored) mass distributions of aerosol particles in six air masses as identified during SEAC⁴RS. Color-coding refers to the predicted absolute mass increase.

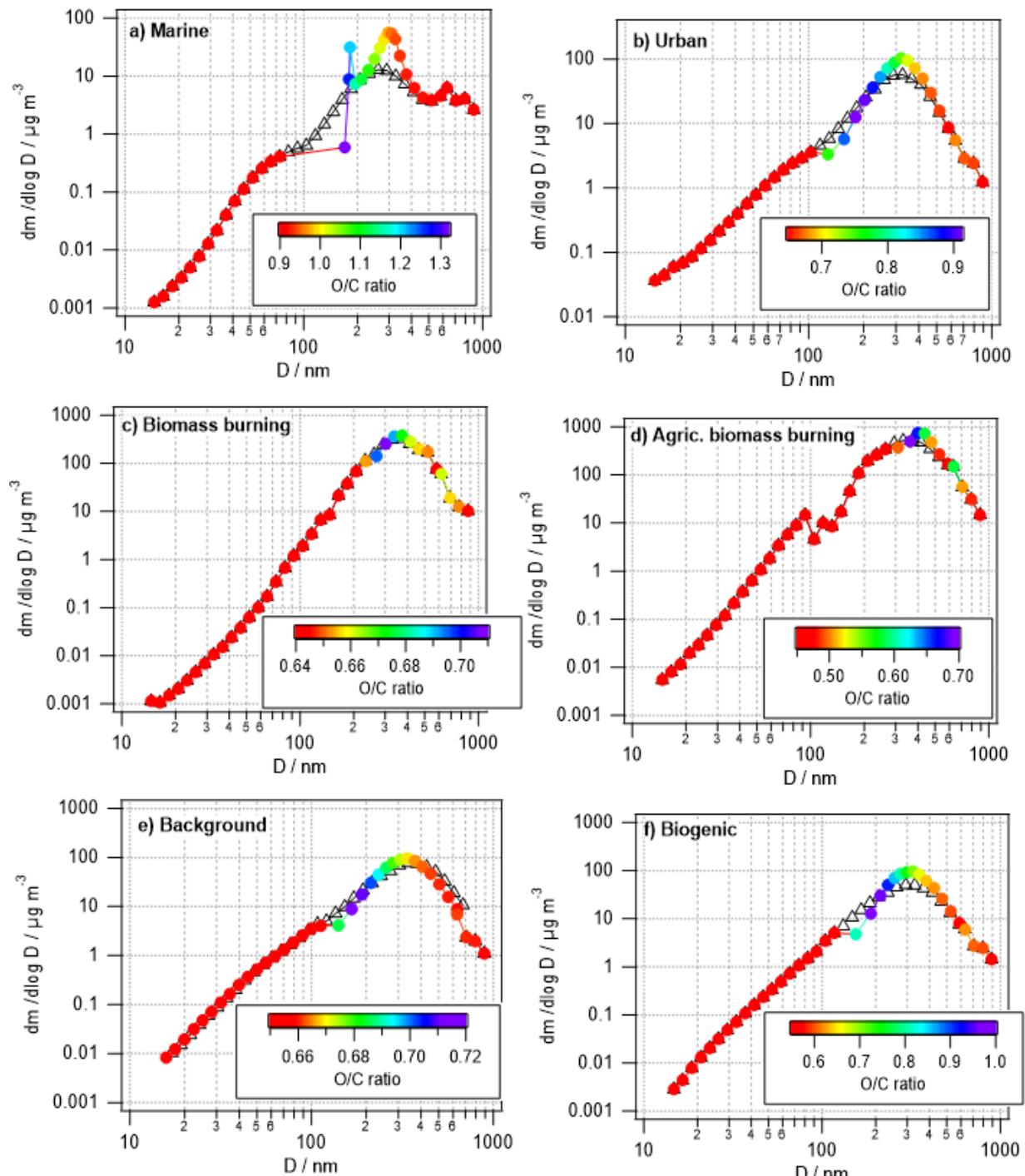


Figure S2: Measured initial (black) and predicted cloud-processed (colored) mass distributions of aerosol particles in six air masses as identified during SEAC⁴RS. Color-coding refers to the predicted O/C ratio.