

Supporting Information

Environmental controls on coastal coarse aerosols: implications for microbial content and deposition in the near-shore environment

M. ELIAS DUEKER^{*†}, KATHLEEN C. WEATHERS[‡], GREGORY D. O’MULLAN^{§†}, ANDREW R.
JUHL[†], MARIA URIARTE^{**}

Supporting Information Summary: 3 pages; 2 tables and 2 figures

^{*} Corresponding author email: med2109@columbia.edu

[†] Lamont Doherty Earth Observatory

[‡] Cary Institute of Ecosystem Studies

[§] Queens College CUNY

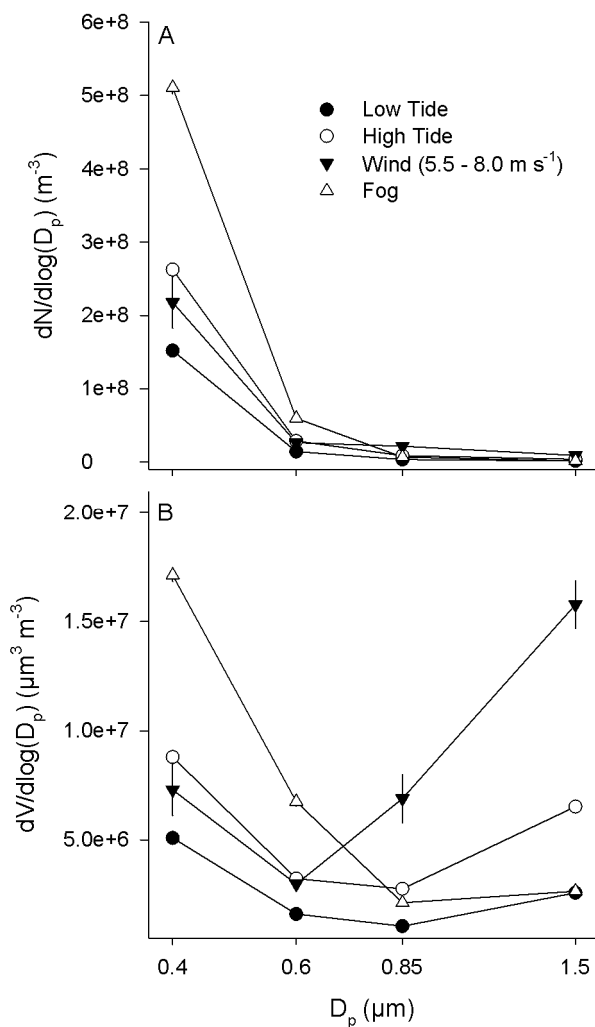
^{**} Columbia University

Supplemental Table 1. Data subset scheme for Figure 1, plotting impacts of tide (high and low), wind speed and fog presence on coarse aerosol size distributions.

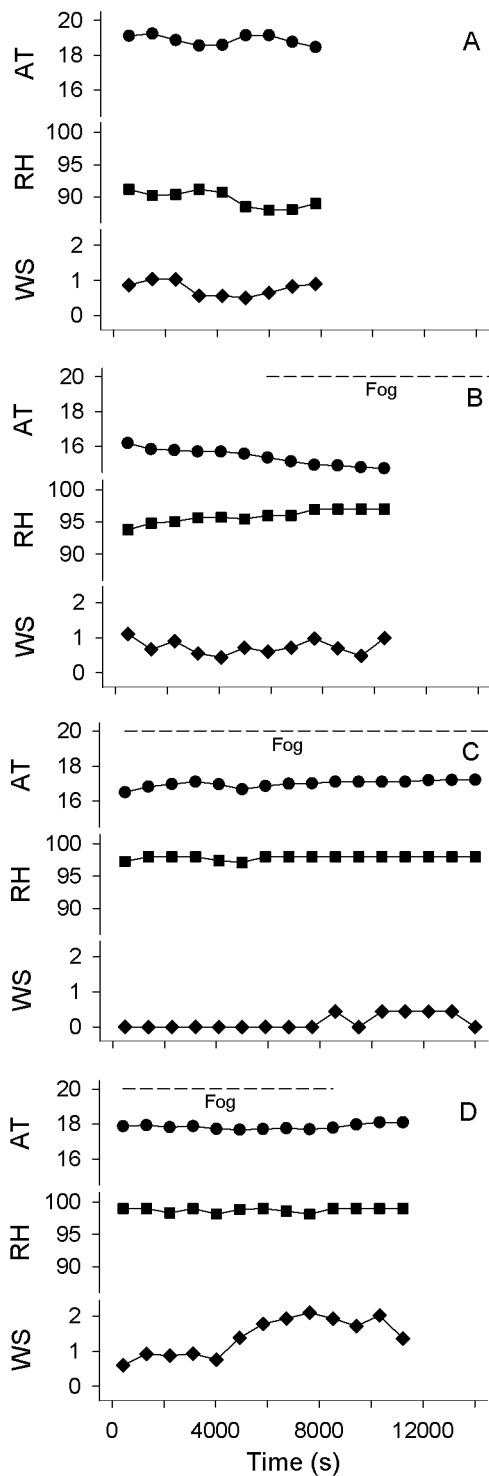
		Data Subset Values		
		Fog	Wind Speed	Tidal Height
Physical Factors	Low Tide (Reference)	No Fog	0	< 1 m
	High Tide	No Fog	0	> 2.5 m
	Wind Speed	No Fog	5.5 - 8.0 m s ⁻¹	< 1 m
	Fog	Fog	0	< 1 m

Supplemental Table 2. Model parameters for the relationship of log-transformed coarse aerosol concentrations to tidal movement (proximity to water's edge) fit to $\ln(y) = ax+b$ using linear regression.

Wind Speed (m s ⁻¹)	n	R ²	a	p-value	b	p-value	Half-deposition distance (m)
Low (< 2)	7118	0.02	-0.009 ± 0.001	<<0.001	0.05 ± 0.03	0.057	77.0 ± 9.6
2.0 - 3.0	806	0.10	-0.026 ± 0.003	<<0.001	1.20 ± 0.10	<<0.001	27.1 ± 3.6
3.0 - 3.5	342	0.39	-0.044 ± 0.003	<<0.001	2.09 ± 0.103	<<0.001	15.8 ± 1.2
3.5 - 4.0	240	0.33	-0.041 ± 0.004	<<0.001	2.03 ± 0.132	<<0.001	16.7 ± 1.7
4.0 - 4.5	293	0.1	-0.022 ± 0.004	<<0.001	1.37 ± 0.134	<<0.001	32.1 ± 6.5
4.5 - 5.0	76	0.26	-0.021 ± 0.004	<<0.001	1.56 ± 0.171	<<0.001	32.8 ± 7.8
5.0 - 5.5	63	0.37	-0.019 ± 0.003	<<0.001	1.65 ± 0.105	<<0.001	36.9 ± 7.3
5.5 - 8.0	69	0.29	-0.015 ± 0.003	<<0.001	1.56 ± 0.090	<<0.001	47.6 ± 10.9



Supplemental Figure 1. Comparison of observed fine aerosol number (A) and volume (B) size distributions under differing environmental conditions (see text and Supplemental Table 1 for detail on data subsets), coastal Maine, USA. Note the log scale of both x-axes. Vertical bars represent the standard error of the geometric mean of 1-minute fine aerosol concentrations (if not visible, the interval is smaller than the plot point character). Because the standard error is calculated from a geometric mean, error bars may be uneven.



Supplemental Figure 2. Event-based comparisons of 1-minute wind speed (WS, m s^{-1}), relative humidity (RH, %), and air temperature (AT, $^{\circ}\text{C}$) measurements during plate exposure events plotted in Figure 4. The presence of fog is indicated by a horizontal dashed line above the horizontal axis.