Supporting Information
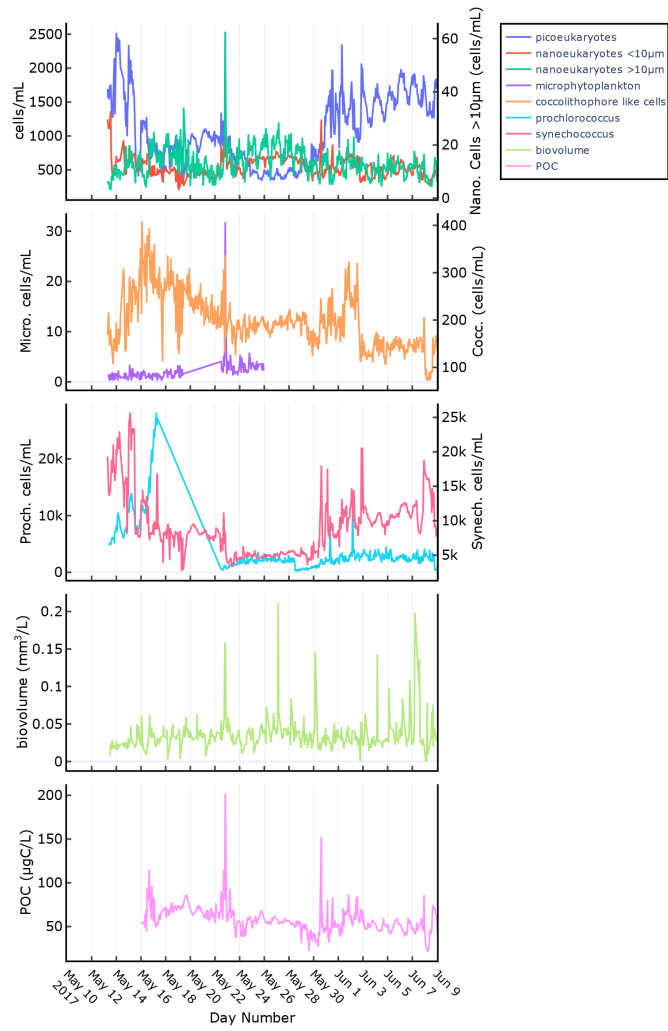
Figure S1. Underway measurements.
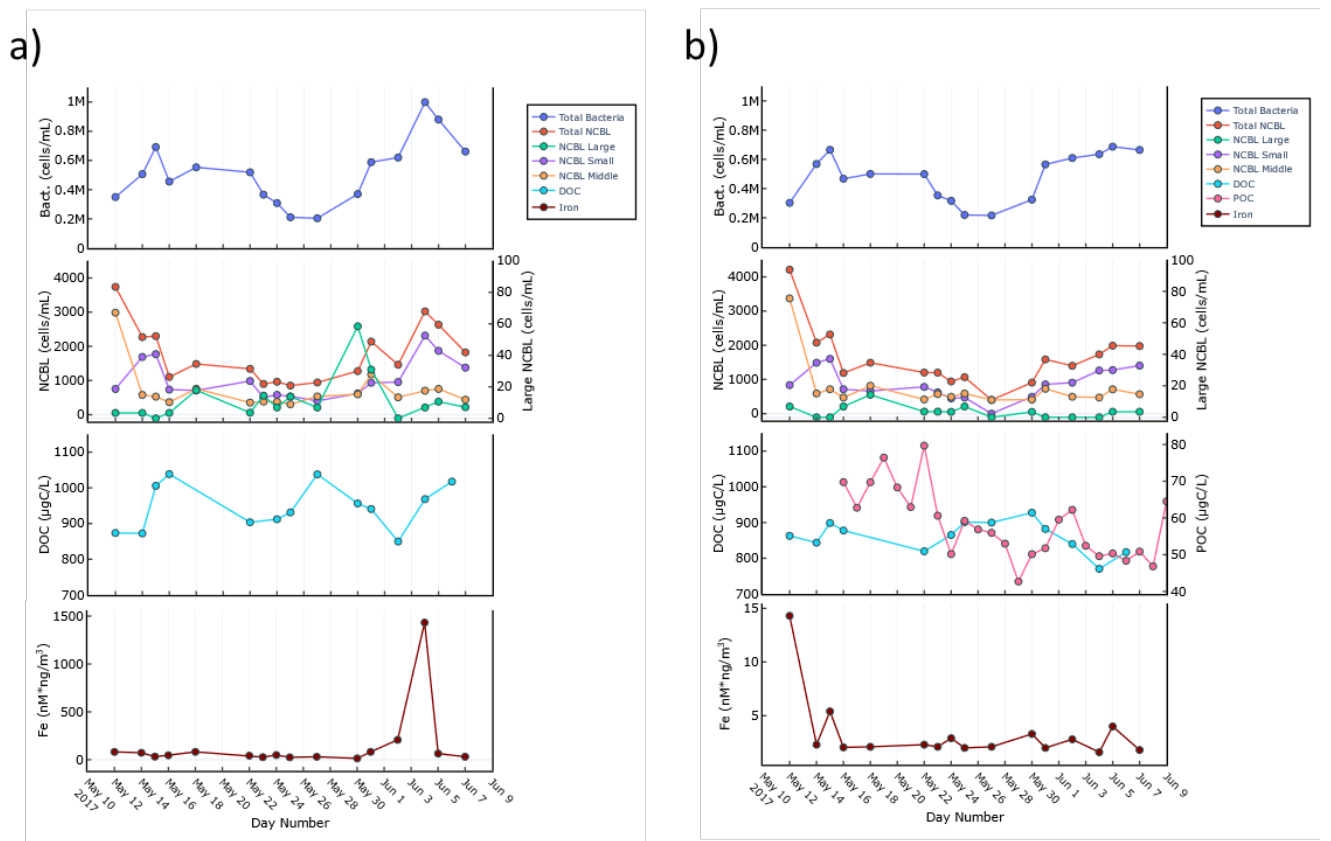
Figure S2. Various biogeochemical measurements in the SML (left) and SSW (right).
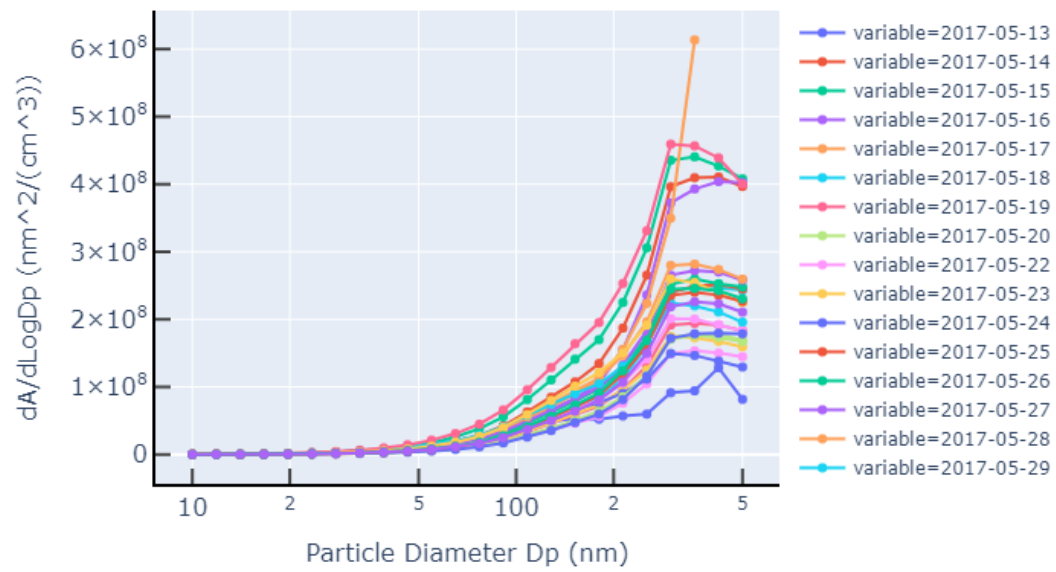
Figure S3. Daily average surface area distributions of SSA as observed by scanotron.
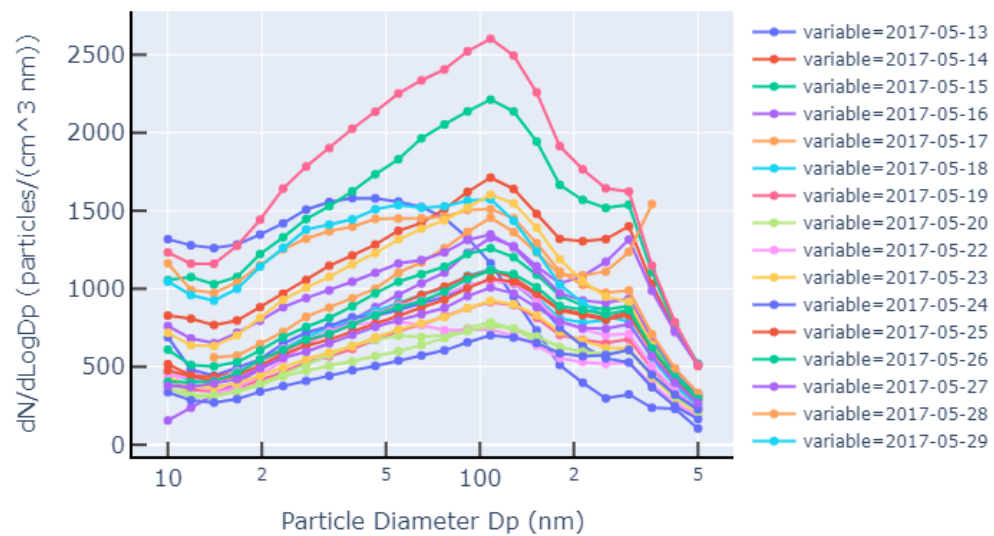
Figure S4. Daily average number size distributions of SSA as observed by scanotron.
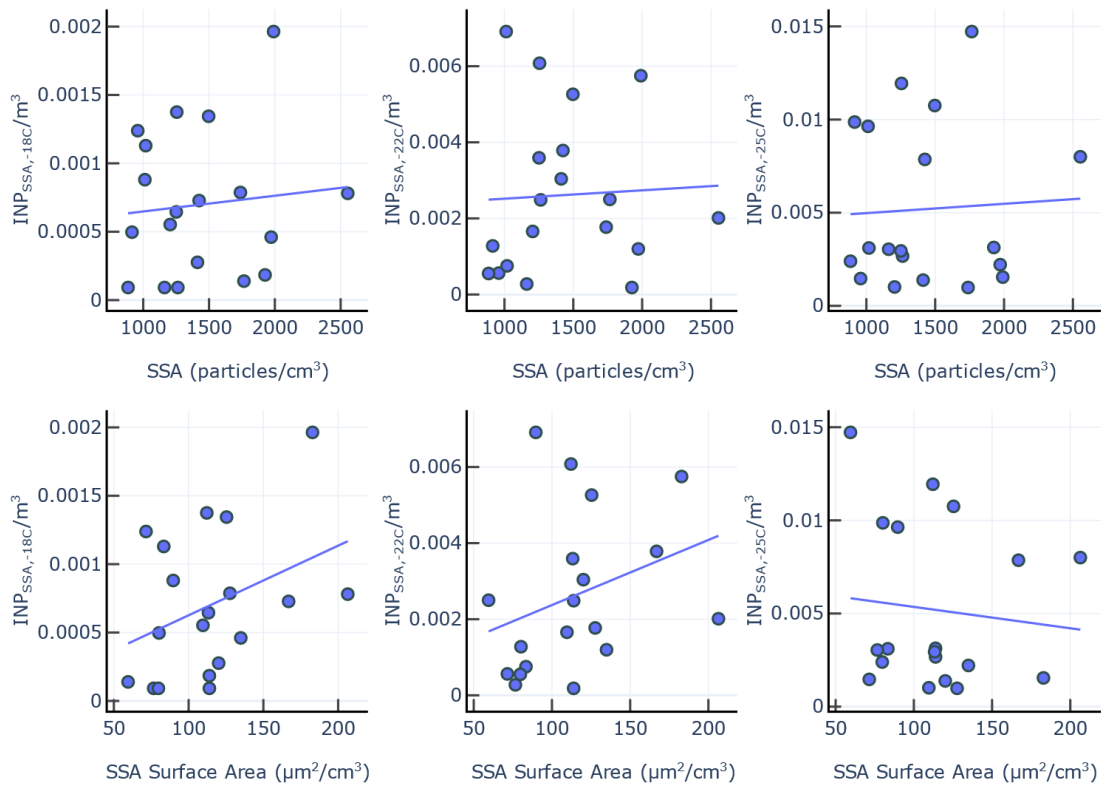
Figure S5 Correlation matrix for SSA particle concentration and surface area with INP$_{SSA}$ at -18C, -22C, and -25C.

Table S1. Significant Correlations for INP$_{SSA,-22C}$

Variable	p	R (R^2)	n
SSW			
Micro NCBL	.01	0.68 (0.46)	12
Prochlorococcus	.002	0.59 (0.35)	16
POC	.04	0.51 (0.26)	16
SSA			
OC	.01	0.66 (0.44)	13
WSOC	.03	0.51 (0.26)	19