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Production of ice-nucleating particles (INPs) by fast-growing phytoplankton

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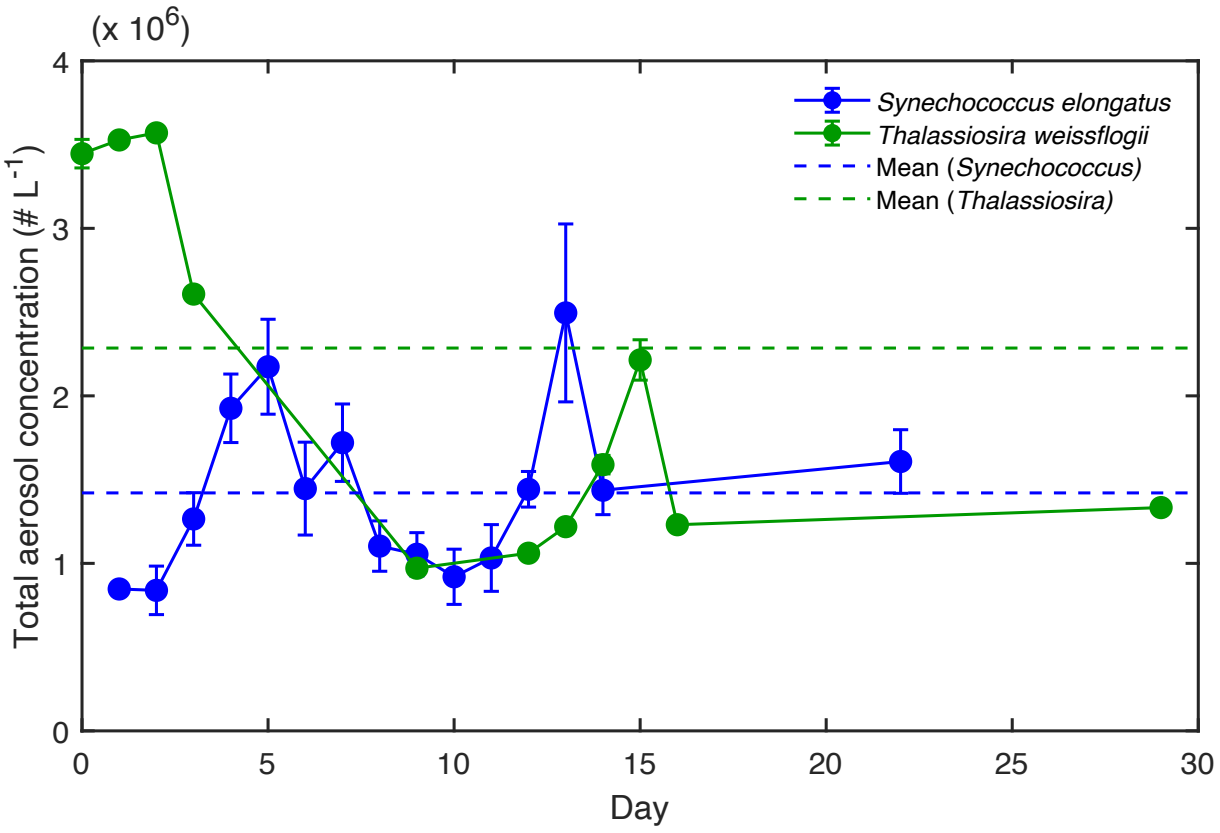

Figure S1. Aerosol number concentration (N_p) with time in the headspace above phytoplankton cultures in a marine aerosol reference tank (MART). Time series represent two experiments in which *Synechococcus elongatus* (cyanobacterium) (blue data points) and *Thalassiosira weissflogii* (diatom) (green data points) were grown in batch culture. Sea spray aerosol (SSA) generated by a plunging waterfall in the MART. Data points show mean ± SD (n = 360). Note that on 6 days during the *T. weissflogii* MART, n < 360 (ranging from 140 (day 11) to 347 (day 13). Dashed horizontal lines show the mean aerosol concentration in the two experiments, which were 1.43 x 10^6 L^{-1} for *S. elongatus* (blue line) and 2.43 x 10^6 L^{-1} for *T. weissflogii* (green line).

Table S1 Aerosol number concentrations (N_p) (cm^{-3}) in a seawater blank marine aerosol reference tank (MART).

Day	**conditions**	**Aerosol number concentration (N_p) (cm^{-3})**
1	ASW	680
2	ASW	921
4	ASW + L1	1011
5	ASW + L1	1053

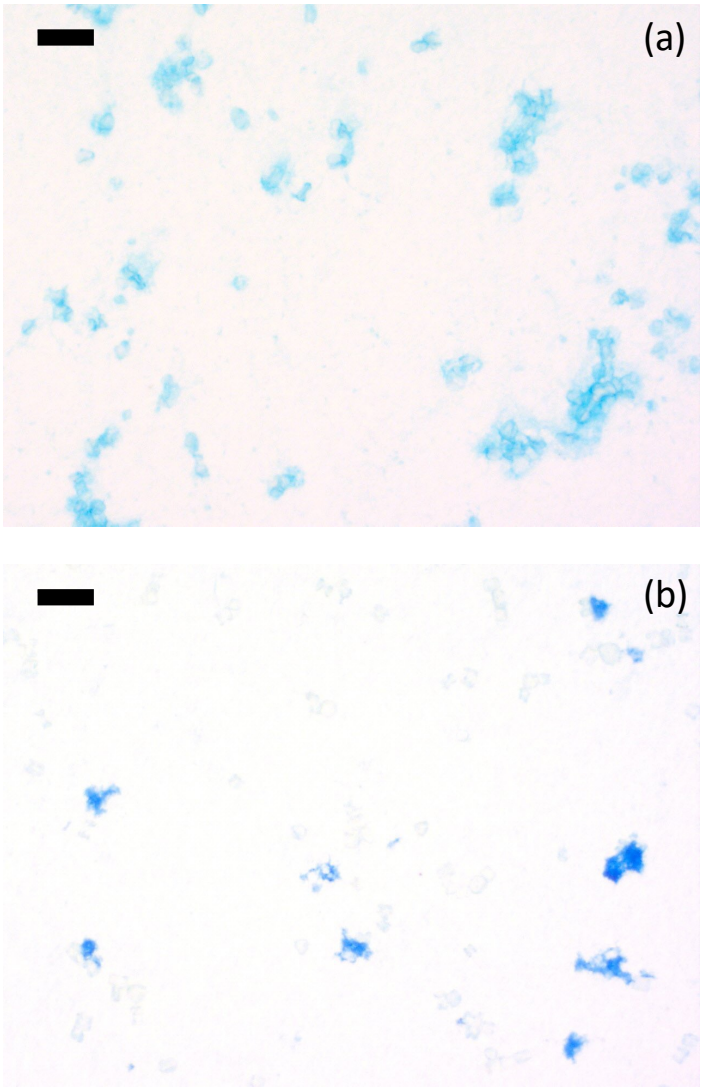

Figure S2. Examples of unprocessed colour images of stained exopolymer particles collected onto on 0.4 μm pore size polycarbonate filters from water in the marine aerosol reference tank (MART). Samples were collected during the growth experiment with *Thalassiosira weissflogii* (diatom). (a) transparent exopolymer particles (TEP) stained with Alcian blue. (b) Coomassie stainable particles (CSP) stained with Coomassie brilliant blue. TEP and CSP are collected and processed on different filters. Black scale bars are 100 μm long in both images.

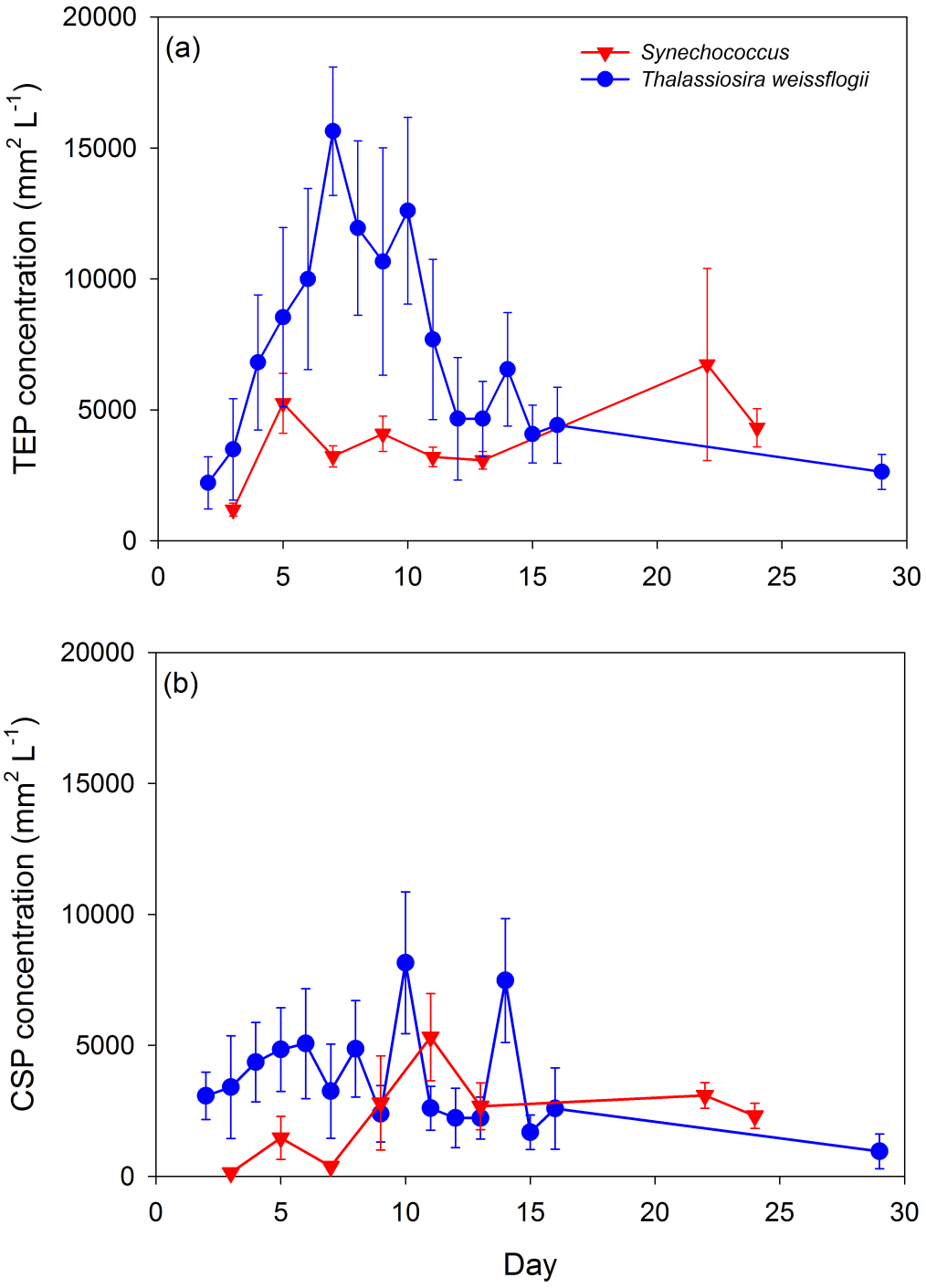

Figure S3. Concentration of exopolymer particles in cultures of *Synechococcus elongatus* (cyanobacterium) and *Thalassiosira weissflogii* (diatom) grown in a marine aerosol reference tank (MART). (a) Concentration of transparent exopolymer particles (TEP) with time. (b) Concentration of Coomassie stainable particles (CSP) with time. Data points show mean (± SD, n = 3).

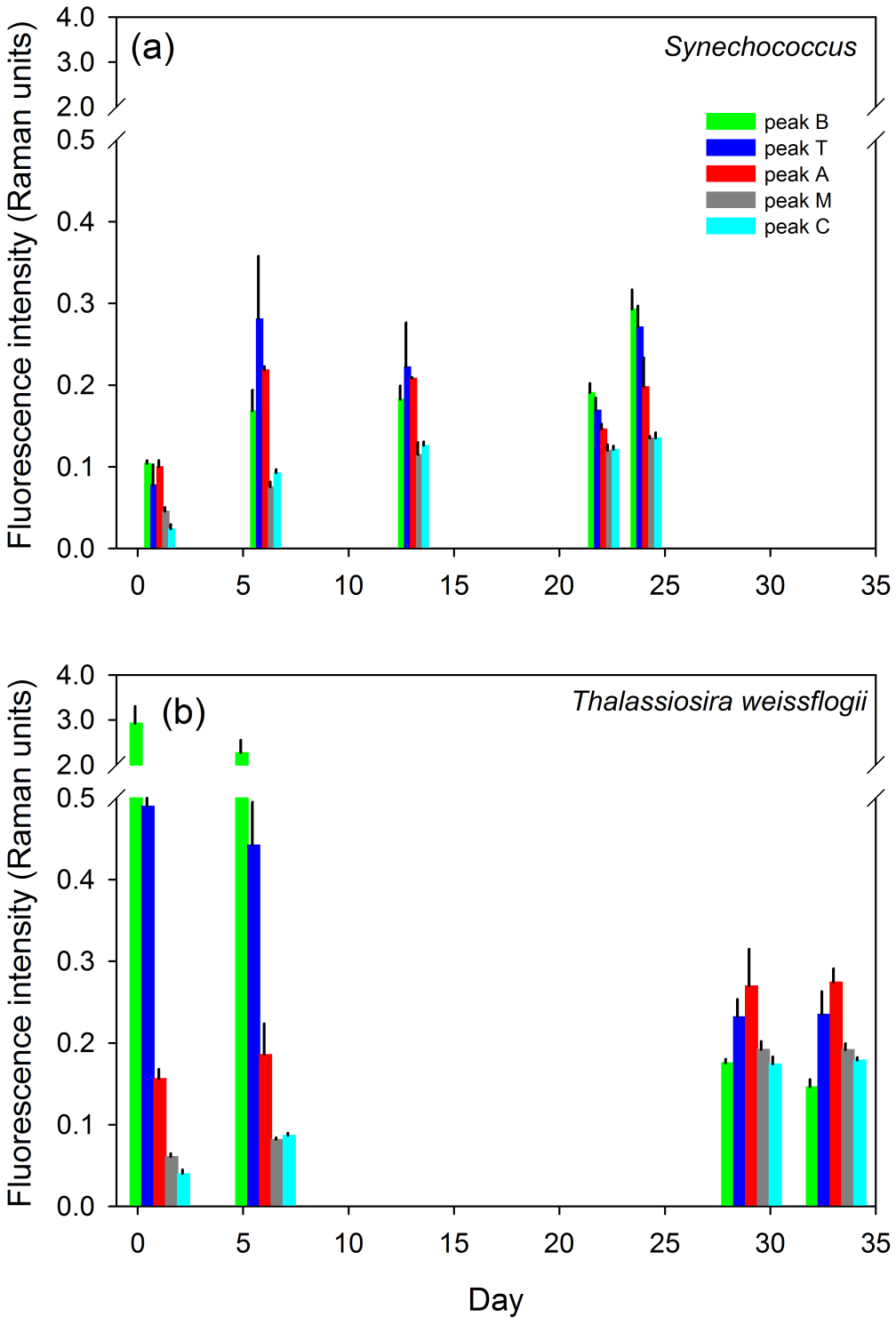

Figure S4. Concentration of fluorescent dissolved organic matter (FDOM) with time quantified by the fluorescence intensity of Coble's peaks in phytoplankton cultures grown in a marine aerosol reference tank (MART). **(a).** *Synechococcus elongatus* (cyanobacterium) **(b)** *Thalassiosira weissflogii* (diatom). Bars show mean + SD, (n = 3).

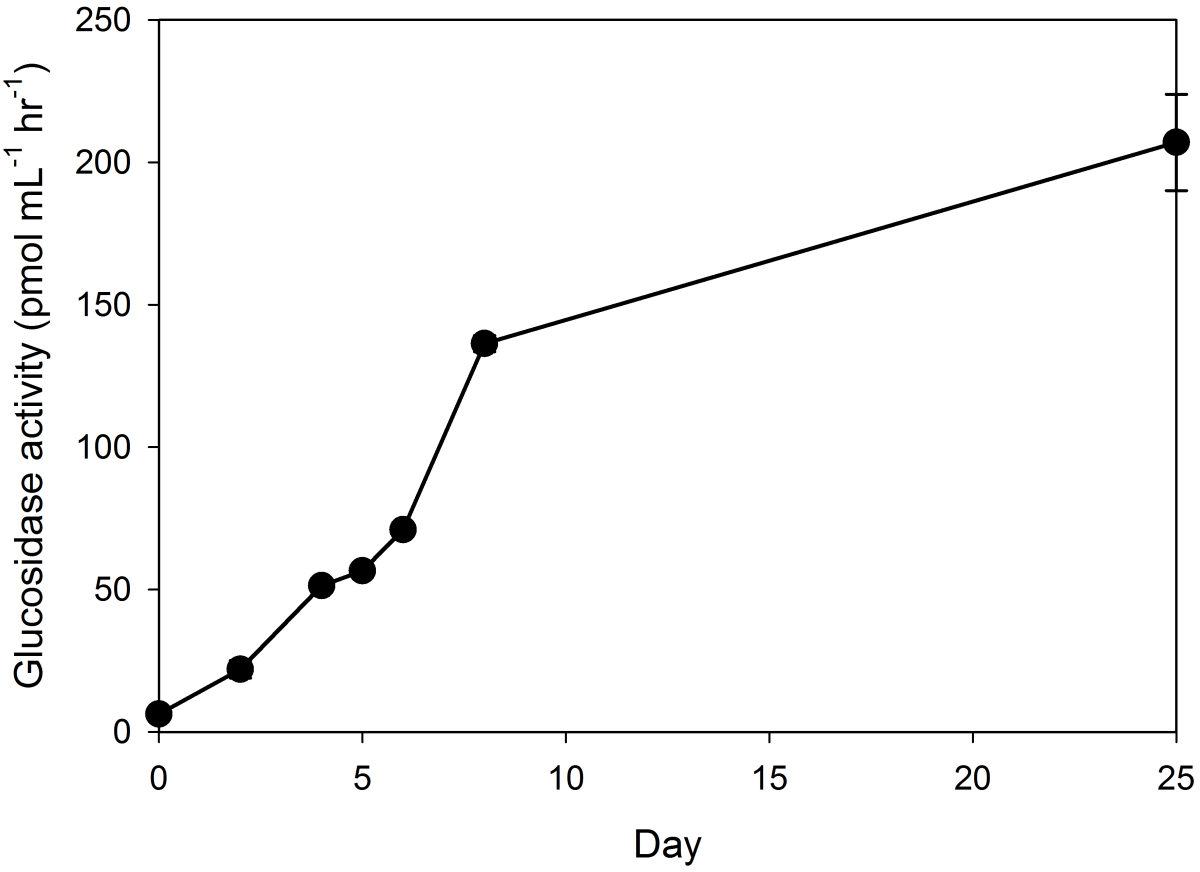

Figure S5. Glucosidase activity as a proxy for heterotrophic activity with time in a culture of *Thalassiosira weissflogii* (diatom) grown in a marine aerosol reference tank (MART). Data points show mean (± SD, n = 12).