Phytoplankton sinking rates through time-resolved fluorescence plate spectroscopy

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Abstract

We established a method for parallel, large scale analysis of multiple phytoplankton sinking rates through top-view monitoring of chlorophyll *a* fluorescence in microtitre well plates. We verified the method through experimental analysis of known factors that influence sinking rates, including exponential versus stationary growth phase in species of different cell sizes; *Thalassiosira pseudonana* CCMP1335, chain-forming *Skeletonema marinoi* RO5A and *Coscinodiscus radiatus* CCMP312. We fit decay curves to an algebraic transform of the decrease in fluorescence signal as cells sank away from the fluorometer detector, and then used minimal mechanistic assumptions to extract a sinking rate (m d^{-1}) using an RStudio script, SinkWORX.

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Materials

96 well plate by Contributed by users

Protocol

Step 1.