A comparison of two N-irradiance interaction models of phytoplankton growth

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ABSTRACT: The N-photoacclimation interaction models of Geider et al. (GM) and Flynn et al. (FM) are compared by tuning them to data from a light-shift experiment for a diatom. Both the original model constructs have failings, GM in its Nassimilation component and FM in its photoacclimation component. However, both of these models can be modified readily to overcome these problems. In addition, hybrid models that use the N-assimilation component of FM and the photoacclimative component of GM work well. For situations where a model is required to simulate the interaction between a single N source and light, the use of the revised GM structure should be considered first. The revised FM is better suited for more complex environmental scenarios[]for example where detailed simulations of ammonium-nitrate interactions are required. GM and FM are to be preferred over models that use a fixed Chl : C, because they may both be tuned directly to real chlorophyll a data in ecosystem simulators.