

Interactive comment on “Ocean acidification mediates photosynthetic response to UV radiation and temperature increase in the diatom *Phaeodactylum tricornerutum*” by Y. Li et al.

Anonymous Referee #2

Received and published: 20 July 2012

This paper examines the interactive effects of some key global change parameters (ocean acidification, temperature and UV radiation) on the physiological performance of a diatom. It is becoming increasingly recognised that the complex interactions between environmental drivers govern the overall response of phytoplankton to global change, so this manuscript makes a welcome addition to the body of work in this field.

In general the work is well designed and the data properly interpreted. I do though have a few queries:

Replication of experimental measurements is well described, but it was not clear to me whether samples were taken from independent cultures under each treatment condi-

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tion or whether a single culture was used from which multiple samples were withdrawn. This needs to be clarified in Section 2.1

On p 7206, In 2 states that a simple exponential equation was used to model the decrease in effective quantum yield. (incidentally a,b,c are not simple ‘adjustment parameters’ but important parameters that need to be defined). However, determination of the repair and damage constants (r, k) require application of the Kok model (see e.g. Heraud and Beardall 2000 cited in the manuscript) but this is not mentioned. This information should be added.

Rather than just present r/k ratios it would have been instructive to show trends in the individual parameters as well. The authors clearly appreciate that repair is more likely than photochemical damage to be stimulated by temperature but why not show the data rather than refer to Ishigaki et al (1999)

These matters aside, this is a useful contribution to the literature on climate change impacts on algae.

Interactive comment on Biogeosciences Discuss., 9, 7197, 2012.

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