## General comment:

The authors address the combined effect of ocean acidification, nutrient availability and presence of UV irradiation on the marine diatom *Phaeodactylum tricornutum*. Previous studies have considered the single effect of the tested factors on phytoplankton. This work goes a step further by analysing (using a set of appropriate and well described methods) the effects of the interactions between factors. According to the results presented, the expected suit of environmental changes might have important implications for primary production and biogeochemical cycling. Thus, the manuscript gives important insight on an actual subject, calling attention to the importance of species response to multiple stressors. *Phaeodactylum tricornutum* isn't a sensitive and typical diatom. However, existing information on this species provides a good basis to a study such as this with so many variables. Although, this manuscript reveals important data such as that ocean acidification and UVB showed a stronger effect under low nutrient concentrations, it would benefit from synthesizing and clarifying the most significant conclusions in the Abstract. Moreover, the manuscript would benefit from additional references in the introduction and discussion sections to support statements concerning the various effects of ocean acidification on natural communities and / or other diatoms.

## Specific points:

The title reflects the content of the paper. The Abstract of the manuscript could be more clear on the main results and their repercussions. Finally, figures have a considerable amount of information, becoming difficult to quickly understand.

## Technical points:

### Introduction

- **P. 5, lines 81 to 85:** Introduce $CO_2$ range or the concentration of the referred enhanced $CO_2$ for comparison.
- **P. 7, lines 111 to 121:** The connection between the sentences should be more fluid.

### Material and Methods

- **P. 8, line 143 to 144:** Provide information on nitrate range during the 24h of incubations between dilutions. This will be useful to show nitrate limitation throughout the experiment.
- **P. 9, line 165:** Subtitle "2.3 Radiation treatments" should be more ambiguous in order to include all treatments referred in the text ($CO_2$ and nitrate).
- **P. 9, lines 171 to 175:** Facilitate understanding of the nomenclature given to the treatments by inverting their order of appearance in the text.
- **P. 10, line 181:** Specify "middle of the photic...".
- **P. 12, lines 238 to 240:** Order of the parameters of subtitle 2.6 could follow their corresponding order in the subtitle.

### Discussion

- **P. 18, line 370 to 373:** Explain reasoning and potential causes for this statement.
- **P. 20, line 398:** UVR would be easier to read as presented in other parts of the text, specifically "UV radiation".

**Figure captions**

- **P. 36, Figure 1 (Line 734):** Replace "in *P.tricornutum*" by "of *P. tricornutum*"
- **P. 36, Figure 1 (Line 735):** a of Chl a should be in italic and one space after Chl a should be removed
- **P. 36, Figure 1 (Line 738):** Standard errors are commonly referred as SE not SD.
- **P. 36, Figure 1 (Line 739):** Provide further information concerning the letters that indicate significant differences.
- **P. 36, Figure 2 (Line 747):** Explain meaning of dashed line.