

Interactive comment on “Impacts of UV radiation on plankton community metabolism along the Humboldt Current System” by N. Godoy et al.

Anonymous Referee #2

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Godoy et al. Biogeochemical Discussions 8, 5827-5648, 2011

Godoy et al. evaluate the impact of UV radiation on net community metabolism at 5 stations in the Humboldt current system off the coast of Chile, South America. They compare the net community production (measured via oxygen measurements) of UV treated samples with samples that only received the visible fraction of light.

Particularly from microbes it is known that the lower wavelength of the UV irradiation, i.e. UV-B, is damaging their DNA and thereby decreases their metabolic capabilities. UV-A with a wavelengths range of 315-380 nm is able to repair this damage and thus the microbes may recover their metabolic activity.

I don't know of any marine study examining the effect of UV irradiation on net commu-

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nity production of phytoplankton. Thus, from this perspective the study is novel and timely.

General and Overall Comments:

I am in line with reviewer 1 that the text has to reflect what is presented in the table. Furthermore it is unfortunate that the amount of data is very low, which prevents a decent statistical evaluation of the UV effect. As reviewer 1 points out the inhibitory effect of UV could be either way, positive or negative. This is not a good basis for a study that could have the potential to initiate follow up investigations.

The data itself seems good, particularly the oxygen measurements where many replicates have been used. The PUV usually is reliable instrument, however, as with any other radiometer the measurements depend on its calibration. There is no mention of it in the text. I also miss a discussion of the irradiance data comparing it to other environments. It would have added to the story to separate the effects of UVB and UVA irradiation, to see the impact of the different fractions.

Many comments I had were the similar to reviewer 1. Thus in the following I will only mention some additional comments.

Detailed comments:

Methods:

page 5831, line 1-5: Why were UV experiments not also conducted in the Patagonian channels?

page 5831, line 18 onwards: I suggest to mention the calibration date and if possible give an indication on the quality of the measurements.

page 5832, line 1 onwards: Maybe I missed it but what has been really done with the light absorption measurements and how do they contribute to the findings?

Results:

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I miss the presentation of the pCO₂ data which is shown in the table but not in the text.

Discussion:

page 5837, line 8-9: I suggest to indicate the station numbers also in the table.

page 5837, line 10-15: I am not sure whether this statement reflects the authors finding or the one of the citations at the end.

page 5837, line 17-19: I would find it useful to present the data of other authors (in this case the average of Robinson and Williams measurements) if it is used to compare to the own data.

page 5839, line 2-6: Is there a citation that measured the tropospheric ozone destruction in the southern hemisphere?

Technical issues:

page 5836, line 23-24: There are suddenly commas in the numbers instead of dots to indicate decimal points.

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