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Biogeosciences Discussions

Interactive comment on "Carbon fluxes forced by anticyclonic mesoscale eddies generated by islands at the subtropical NE Atlantic Ocean" *by* S. Lasternas et al.

Anonymous Referee #3

Received and published: 15 November 2012

The paper of Lasternas et al. is an account of a sampling effort to investigate the role of eddies on the dynamics of carbon within eddy systems, when compared to control non-eddy sites. The aim of the study is stated on page 10244 (starting line 22) and outlines that the goal is to establish the link between phytoplankton and heterotrophic physiological health, and downstream processes such as nutrient depletion.

The paper is fairly well written, but there is room for imporvement. My comments and suggestions are detailed below.

Main comments

1) There are frequent grammatical errors throughout the paper. I began to detail them

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below but found that there are too many to list. Please make sure the manuscript is thoroughly proof read as these errors do detract from the paper.

2) The methods section if too long and overly detailed. The authors should attempt to shorted the methods to make them as concise as possible, citing methodological techniques were appropriate.

3) Page 10249, the 3 hour incubation period for 14C seems overly short. Please explain the rationale for this incubation period.

4) Page 10256, I am unclear as to the meaning of “rs”. Is this the same as “R2”? If so, please keep the notations consistent.

5) The regression in figure 9 is the same as data in figure 8, but is just plotted in a different way. I am also particularly concerned about the regression in figure 9. The single data point in the top right of the plot is most likely driving the regression and consequently is causing the very low p-value associated with the dataset. It is probably unwise to present this regression as it is. The regression could be validated by performing a second regression analysis on the cluster of data points to the lower left of the plot and comparing this with the regression of the whole data set. I suggest that figure 8 is deleted from the manuscript.

6) I recommend starting the discussion section with a short paragraph to remind the reader of what the study aimed to find out, and what hypotheses were to be tested.

7) Page 10261, line 6 - It was unclear to me how the authors have come the conclusion that eddies have influenced carbon flux. There is no carbon flux data contained in the manuscript, which thus make this statement somewhat hard to justify. Furthermore, the title of the manuscript states that the paper is about carbon flux. There are a couple of approaches the authors may use to address this issue. If carbon flux data exists for this project I would strongly encourage the authors to include it, or reference it if it is being written up as another manuscript. Alternatively, the authors could re-focus the

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manuscript to better describe the datasets contained within the manuscript. This would include rewording the title and any parts of the manuscript that make direct reference to carbon fluxes.

Specific comments

Page 10424, line 21: suggest rewording “Mesoscale eddies dynamics” to “The dynamics of mesoscale eddies”

Page 10242, line 25: check abbreviation “Oceanic Vertical Pumping (VOP)”

Page 10243, line 15: “other considers” should be “others consider”

Page 10243, line 18: remove “and”

Page 10243, line 19: insert “a” to become “pumping as a consequence”

Page 10243, line 28: word order “suggests probably” should be “probably suggests”

Page 10244, line 11: “evidences” should be “evidence”

Page 10246, line 15: “bathythermograph” should be plural “bathythermographs”

Page 10243, line 16: “provide” should be past tense “provided”

Page 10254, line 8: suggest word alteration “but” should be changed to “except”

Page 10255, line 8: word order “observed also” should be “also observed”

Please ensure the manuscript is thoroughly proof read.

Interactive comment on Biogeosciences Discuss., 9, 10241, 2012.