Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2017-343-RC2, 2017


Biogeosciences Discussions

# *Interactive comment on* "Coupling physics and biogeochemistry thanks to high resolution observations of the phytoplankton community structure in the North-Western Mediterranean Sea" *by* Pierre Marrec et al.

**Anonymous Referee #2**

Received and published: 3 October 2017

This paper presents a solid dataset collected during a cruise in the northwestern Med Sea, when a fine-scale physical structure (eddy) occurred. The authors describe the structure from different points of view and obtain a pretty exhaustive picture of its features, also tackling the potential functions exerted and providing rates estimates. The manuscript is interesting in its approach and provides useful information on biological functioning of eddies. In my opinion, the authors put too much emphasis on the technology used rather than on the results obtained, which could be eviscerated more. As a suggestion, they should make a stronger effort in building a global picture from their



data about how these eddies work and what contribution they bring to global ocean budgets. Specific comments follow: Abstract Line 15 – please define "fine-scale" Line 21. Synechococcus detection is not novel with these cytometers Line 23. It is not clear whose 1 m resolution belongs to. For a CTD is not much... Line 27 – replace "characterized with "and was marked"

Introduction In general, this section needs a reorganization to better harmonize the different topic presented Page 2 Line 17-18. This sentence is not clear, maybe you intend "Phytoplankton assemblages are highly..."? Line 26. Fine-scale variability of phytoplankton is known since more than a decade, e.g. work by Jim Mitchell, Laurent Seuront, just to name two. Page 3 Lines 7-8. I suggest to move "Eddy stirring...McGillicuddy) before "Mesoscale..." at line 3. Check spelling of McGillicuddy. Page 4 line 8. Should read "...depletion in surface waters..." Lines 12-22 I suggest to move this to page 3 line 16 and insert the info that you found a patch of cold water Lines 22-end. I would describe here the scientific aims of the cruise, not the list of ethodologies used Page 5 line 6. Delete "in relation with their environment" Results Page 13 line 16. Should define Case I waters or insert a reference Page 14 line 22. I suggest to modify as "A post-campaign validation against conventional flow cytometry showed a good fit of data (Student....Supplements)" Discussion Page 21 about the ecotypes of Prochlorochoccus. I am surprised that with the fine sampling resolution the two ecotypes are never seen together, as a bimodal distribution of red fluorescence. You may insert a short comment on this lack and possible explanations (have you observed them with conventional flow cytometry?)

---

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2017-343, 2017.