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## ***Interactive comment on “Integrated survey of elemental stoichiometry (C, N, P) from the Western to Eastern Mediterranean Sea” by M. Pujo-Pay et al.***

**M. Pujo-Pay et al.**

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On behalf of my co-authors, here are the revised version of our manuscript and the answers to the Referee #2's comments. We thank him for his review that helps us to improve the quality of the manuscript. We have taken into account all his remarks and modified deeply our manuscript according to his comments. The revised has also been corrected for English by a native speaker (UK). We hope these modifications will correspond to his attempts.

1. This choice was made on purpose, after discussion with the physicists of BOUM cruise. The aim was to avoid introducing a pure physical criterion which is obviously

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relevant for circulation and export, but not for biological functioning of the ecosystems. For example in figure 1 (below), the Levantine Intermediate Water moves in the east from surface (high oxygen concentration, low density), to  $\sim$ 500-1000 m depth in the western basin (minimum in oxygen). As we aimed to discuss the differences and similarities in biological functioning between the Eastern and the Western basins, we chose the oxygen criterion which is directly linked to biological activity, but also coupled to the general circulation. This choice certainly includes water masses with different origins and/or ages, but we have tested that the range of density was narrow for ML and DL (figure 1). The ML is quasi isopycnal, at least in the eastern basin, and roughly corresponds to the LIW in the western basin (see fig. 1 added). We have now justified this choice in the revised version of our manuscript.

2. We have taken into account all these recommendations of the reviewer. We have deeply modified these 2 sections and we have reorganised the paper around scientific questions. Also we separated the discussion in subsections and titles and added a conclusion to the manuscript. The key paper of Arrigo (2005) have been added.

Minor points: 3.-line 20-21 (see above) We changed the sentence into “along an east-west transect across the Mediterranean Sea” instead of “the whole Mediterranean Sea”.

4.-ex-line 19 We changed all “ammonia” in “ammonium” throughout the text

5.- We changed all “NO<sub>3</sub>+2” in “NO<sub>3</sub>+NO<sub>2</sub>” throughout the text and in the figures and tables

6- We agree that by definition it can be true. The detection limit is the lowest concentration that can reliably be measured with the analytical method used. However, even if we cannot measure concentrations below this limit (traces of elements for example) with the analytical procedure we used, this does not mean that the concentration is really zero all the time. That is why we have chosen this terminology (that is very often used in many papers to reflect more the reality), writing below the detection limit in-

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cludes “real” zero concentrations but also trace of elements that we cannot measure but that recent nanomolar methodologies (using optical fibres for example) could have.

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Interactive comment on Biogeosciences Discuss., 7, 7315, 2010.

**BGD**

7, C4975–C4977, 2011

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