

## ***Interactive comment on “Metazooplankton diversity, community structure and spatial distribution across the Mediterranean Sea in summer: evidence of ecoregions” by A. Nowaczyk et al.***

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The authors would like to greatly thank the referee for its relevant comments. The referee's comments concern mainly the regionalisation aspect of the epipelagic zooplankton in the Mediterranean Sea. The authors will answer point by point. Changes in the reviewed manuscript are written in red.

Referee: I don't think however that these results are really a revision, and I would recommend to re-write this paper and resubmit – to this or to another journal – as a

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work of original research, instead of a review of ecoregions.

Answer: You are fully right that this paper is not a review of ecoregions. It was even not our intention to do it, because our data concern only one season. Our intention was to just use our results to discuss how they fit or not to ecoregions defined elsewhere. We realize that our presentation emphasize too much the ecoregions and deliver a wrong message. Consequently, we changed the presentation in many parts of the document.

Referee: Title. This work are only done on epipelagic zooplankton, so deep-sea or high sea, in concrete zooplankton species distributed below 200 m, were not sampled and ignored. This important matization should be in the title.

Answer: The authors agree with the referee that this study is only based on epipelagic zooplankton for a single period and the title was modified accordingly: “Distribution of epipelagic metazooplankton across the Mediterranean Sea during the summer BOUM cruise”.

Referee: I don't think that this transect can be used to discuss about ecoregions. The sampling was not random at different regions of the Mediterranean but each stations are dependent of the next because there was a pre-established track from E to W. I also think that further (comparable) data for this approach is required. Also the transect was performed in summer and can vary seasonally, at least between homogenized or stratified periods.

Answer: Our study gives a synoptic view of spatial distribution of epipelagic zooplankton in summer carried out 17 stations located both western and eastern Mediterranean basin. Authors agree with the referee that a single analysis of 17 stations distributed all over the Mediterranean Sea is not sufficient to define (or redefine) “Ecoregionalisation”. It was not at all our goal, and the text has been changed to avoid misunderstanding. However, our data allow discussing “spatial pattern of zooplankton assemblages”, and to discuss how these assemblages, observed in summer, fit with proposed Mediterranean ecoregions.

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Referee: Clustering is not a convincing method for this objective. In spite the strong gradient introduced (from E to W) groups were not clear (there were a low segregation of groups), high similarity among groups (up to 70%) and any test comparing the significance among groups was used. PRIMER with PERMANOVA is a useful tool to establish this in parallel to the use of MDS analysis (See Cartes, Fanelli, Papiol, Zucca, 2009 Deep Sea Res as example of how this method can be used for zooplankton composition data). Cartes, J.E., Fanelli, E., Papiol, V., and Zucca, L. (2010) Distribution and diversity of open-ocean, near-bottom macroplankton in the western Mediterranean: Analysis at different spatio-temporal scales. Deep Sea Research Part I: Oceanographic Research Papers

Answer: Authors agree that the Bray Curtiss similarity distance is not sufficient to define the different groups. We choose to replace the cluster analysis by the co-inertia analysis which highlights the spatial distribution of the zooplankton taxa and the associated environmental characteristics.

Referee: There was not any meta-analyses here, only a discussion in where most of the conclusions were in agreement with those found by previous studies, so the current study seems not open any novel hypothesis on the current knowledge of epipelagic zooplankton. In general all results confirmed tendencies already found in previous studies.

Answer: This study on the epipelagic zooplankton is based on a transect with 17 sampling stations which gives a synoptic view of both western and eastern Mediterranean basins. The study investigates the spatial distribution (horizontal and vertical) including small size zooplankton neglected in previous study. We attempt to define the links between the spatial distribution of metazooplankton and the environmental characteristics. Of course, we agree with the referee that "regionalisation" is not appropriate in our study.

Referee: Particularly, results in the point 4.6 (ecoregions) were not conclusive. It seems

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that mesoscale structures are more important defining assemblages than possible influence of surface productivity depending of regions. Authors should give a clearer conclusion here in this way (if I interpreted this correctly) or in another. In any case, discussion on regionalization of zooplankton is not conclusive and the main aim of this revision is rather weak. I insist in the interest of the current data as new, for an original research paper that sure could be published in Journal Plank. Res., as a review is far of a consistent approach.

Answer: This paper characterized the variations of abundance and biomass distributions as well as the taxonomic assemblages of epipelagic metazooplankton across a 3000 km transect both western and eastern Mediterranean basins. We propose here a new version where we included all your remarks. To our point of view, this new revised version of our paper is truly part of the work presented in the special issue "Interactions between planktonic organisms and the biogeochemical cycles of biogenic elements in the Mediterranean Sea during intense summer stratification: the BOUM experiment".

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