Reviewer 2

The authors are presented a study about influence of cyclonic and anticyclonic eddies on plankton in the southeastern Mediterranean Sea. This work relies upon an extended dataset in two hydrologicaly different sites in the SEMS deep waters. The presented results are interesting and offers useful background for future investigations of Mediterranean biodiversity and introduction of non-indigeous species as well as in general ecosystem status due to impact of cyclonic and anti-cyclonic eddies on abiotic and biotoic factors. Therefore, this manuscript deserve to be published but the ms needs the following correction before it can be recommended for publication. Detailed comments.

Reply: We would like to thank the reviewer for the hard work invested in reviewing our paper and the overall very positive view on it (manuscript os-2021-124). We have gone over all of the issues raised and revised the manuscript accordingly. These comments provided much assistance with reshaping and clarifying the manuscript. We hereby present point-by-point answers to the issues raised by the reviewers. Our answers are in blue.

Title According to my opinion better option for title is: „Influence of cyclonic and anti-cyclonic eddies on plankton in the southeastern Mediterranean Sea" by Belkin et al.

Reply: We revised the title as suggested by both reviewers. The title now reads: "*Influence of cyclonic and anti-cyclonic eddies on plankton in the southeastern Mediterranean Sea during late summertime*".

Remove „PERLE" from keywords

Reply: The word PERLE was removed as suggested.

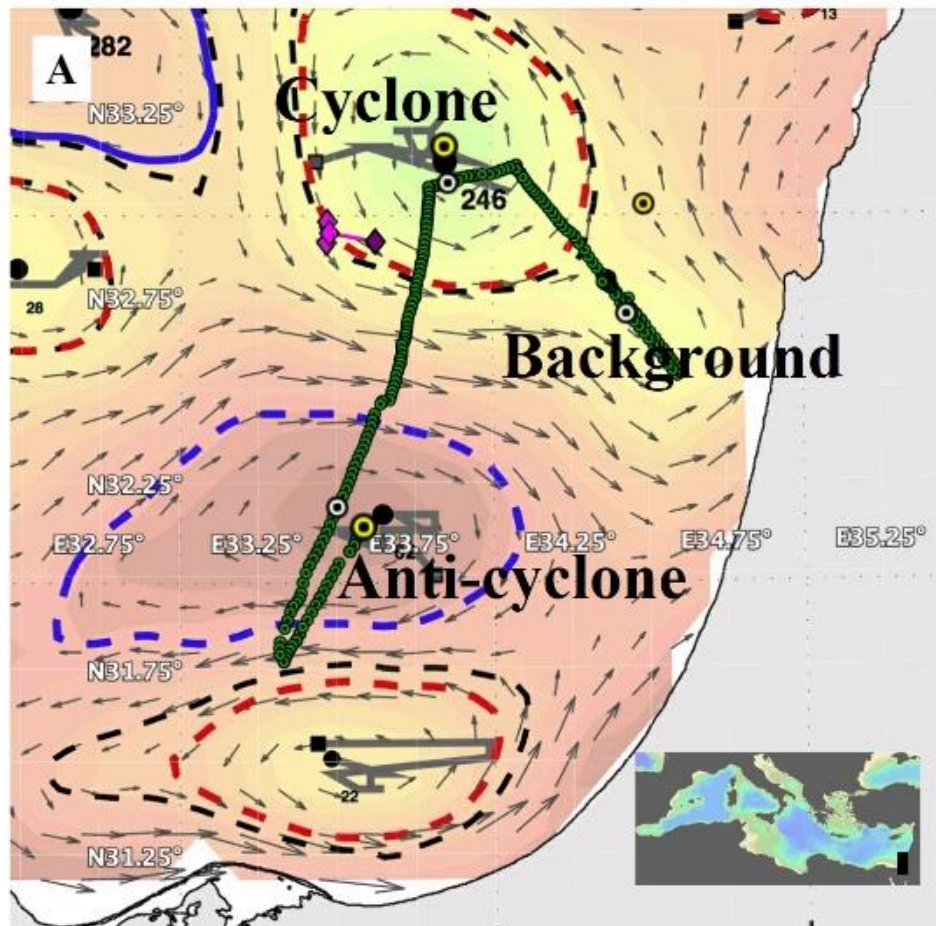
Abstract

Abstract is too long.

Reply: We have shortened the abstract by ~20%. It is to be noted, that our study is highly multi-disciplinary (as both reviewers mentioned) and includes physical (e.g., CTD, gliders), chemical (nutrients) and biological (biomass, physiology, diversity) information. Therefore, the abstract is indeed a bit long to cover all of these aspects, yet meets the journal's guidelines.

Methods

Please, in Figure 1 present wider area of the east mediterranea (with countries) where study sites are.

Reply: We added a map of the whole Mediterranean Sea as a reference location for the study site. We wish to leave the enlarged map showing the easternmost Mediterranean where our stations were at, as we believe it is clearer to the reader that way.

Line 195 to 198, miss reference.

Reply: Reference added to the list.

The main objection is methodology for zooplankton sampling. Meso-zooplankton were sampled using vertical WP2 hauls (Ø-57cm, 50- μm mesh. This mesh size and diameter are not appropriate for mesozooplankton (not representative), only for microzooplankton (see some zooplankton methodology). In the plankton rich environment (cyclonic) due to clogging of the pore of mesh of this size only a fraction of the water volume will actually have passed trough the net. Also, in this circumstances, water goes out of the net and many specimens will not be caught in the sample. I addition, diametar of 50-μm mesh is too small for catch representative samples of mesozooplankton in plankton poor environment (anticyclonic) because they are rare in the oligotrophic conditions. Finally, samples collected only from the upper 300 m in anticyclonic eddies could also be wrong because it is possibe that due to downward of water organisms are deeper. As we can see from the figure 8., many groups of zooplankton have not been recorded in the AC eddies, like for example chaetogntaha, which is not possible (for my opinion). So, please, give some explanation (if you maybe can provide any citation) for this method for mesozooplankton or some kind of calculation (approximation).

Reply: We agree with the reviewer; a 50-μm mesh size is more appropriate for microplankton assessment than mesozooplankton. That being said, the southeastern Mediterranean Sea is an extremely oligotrophic region, with very low zooplankton densities, especially in the large-size fraction (Koppellmann et al., 2009). A similar trend was found in a recent cross-Mediterranean study (Feliú et al., 2020). It was therefore stressed that the standard 200-μm is underestimating the mesozooplankton abundance and community structure in this region. In the manuscript, we have not compared the absolute zooplankton concentrations obtained in our study to studies from other regions, but rather compared the concentrations between our sampling sites (i.e., background vs. cyclone vs. anticyclone). Moreover, we have used vertical hauls, restricting the filtered volumes. Furthermore, the nets collected low biomass (a total of 112-1300 mg C m^{-2} or 303-3045 mg dry weight m^{-2} over the whole column of the upper 300m). This biomass of plankton did not result in net clogging. Indeed, the nets came up relatively "clean", and the samples did include two species of large-sized chaetognaths (*Flaccisagitta enflata* and *Pseudosagitta lyra*).

We added the M&M:

"…*The southeastern Mediterranean Sea is an extremely oligotrophic region, with very low zooplankton densities, especially in the large-size fraction (Koppellmann et al., 2009). It was therefore stressed that the standard 200-µm is underestimating the mesozooplankton abundance and community structure in this region (Feliú et al., 2020) and therefore we used the 50-µm mesh-size*…*" (Lines 108-113).

References In the reference list miss Motoda, 1959.

Reply: Reference added.

Please check references carefully.

Reply: We have gone over the references list again and made sure everything is cited properly.

Discussion From lines 685 to 700 are very similar conclusions like from line 814 till end.

Reply: In lines 685-700 we introduce for the first time the hypothesis on cyclones as refugia for native species and anticyclones as vectors for dispersal of thermophilic Red Sea species, based on temperature anomalies. After providing more evidence based on biodiversity differences between eddies, we conclude (lines 814-end) that this hypothesis is supported by our findings, although further studies are needed to reinforce it.

What means > 100 um samples?

Reply: The obtained net samples were sieved via a 100-µm sieve and therefore represent >100-µm size fraction. The information is already presented in the M&M: "…*Ethanol-preserved zooplankton samples were sieved using a 100-µm Nitex sieve, washed with distilled water to remove ethanol residuals, and homogenized by vigorous vortex and pipetting…*" (L242-245).