

Interactive comment on “Short-term changes of the mesozooplankton community and copepod gut pigment in the Chukchi Sea in autumn” by K. Matsuno et al.

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We are grateful to your comments and useful suggestions that improved our manuscript greatly. As described below, we have revised our manuscript.

Specific comments Title Could it better reflect the changes related to the strong wind event that occurred during the field work? On the other hand, I understand that the chosen title fits with that of a companion paper addressing the case of microplankton community during the same field campaign.

Answer: We changed the title to “Short-term changes of the mesozooplankton community and copepod gut pigment in the Chukchi Sea in autumn: Reflection of strong
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wind event” (p3879).

Abstract The abstract is too wordy. The content could be synthesized, and multiple uses of words limited. A lot of results reported but few conclusions in comparison.

Answer: We shortened the abstract (p3880 L2- p3881 L3).

Line 6: Change “high-frequent” to “high-frequency”, here and elsewhere in the text.

Answer: We changed to “high-frequency” through the manuscript (p3880 L6).

Line 12: “dominant” and not “most dominated”

Answer: We changed to “dominant” (p3880 L12).

Line 20: If you decide to keep this part add the value of the C:Chl a ratio, although I don't think that this is necessary to mention in the abstract the assumption of this ratio in the calculation of the estimate.

Answer: We deleted “Assuming C:Chl. a ratio” (p3880 L20).

Introduction More emphasis should be put on *Calanus glacialis* in the Introduction since it is clearly the dominant species in terms of biomass and one focus of the study with the gut content analysis. My suggestion is to move one paragraph on this species from the Discussion to the Introduction.

Answer: We moved one paragraph of *C. glacialis* from Discussion to Introduction.

Line 6. Mesozooplankton are secondary producers everywhere. This trivial statement can be removed.

Answer: We deleted “is a secondary producer and” (p3881 L5-6).

Line 11: “dominate” and not “dominated”

Answer: We deleted this part owing above change.

Line 13: Maybe “origin” would be better here than “formation”

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Answer: We deleted this part owing above change.

Materials and methods Page 6, line 6: replace “with” by “of”

Answer: We changed to “by” (p3884 L6).

Page 6, line 8: replace “with” by “to”

Answer: We changed to “to” (p3884 L8).

Results For section 3.1, I am not sure that “Hydrography” is the right title since chl a, a biological feature, is described there also. Description of vertical distribution of chl a (Figure 2c) could be relevant for the study.

Answer: We changed the title as “Hydrography and chlorophyll a” (p3885 L9).

Section 3.3 on *Calanus glacialis* I would start by describing population structure instead of DVM right away. Swap the paragraphs.

Answer: We swapped the paragraphs (p3886 L8-20). Owing this change in text, Figs. 3 and 4 are also swapped (p3901, 3902).

Detail the composition of the population by giving the percentage of other stages than CV. Mention that the young copepodites abundances are underestimated due to the coarse mesh net used.

Answer: Concerning underestimation of small zooplankton, we added short note in Materials and methods (p3882 L20).

Page 8, line 16: “their population” by “the population”

Answer: We changed to “the population” (p3886 L8).

Discussion Page 9, line 8: Greater spatial and temporal change than what? I did not get the meaning of the sentence. It should be clarified. In fact, the whole paragraph needs to be rewritten as it's difficult to differentiate what's comes from this study and what are Matsuno et al (2012) findings.

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Answer: We changed the word from “greater” to “large” (p3887 L8). Concerning comparison with Matsuno et al. (2012), we rewrote this part (p3887 L10-22).

The structure of the sentences should be simpler and more direct. Most sentences should start simply with the subject for sake of clarity. As an example: “Comparing the above characteristics by Matsuno et al. (2012), the zooplankton abundance of this study was nearly half (mean: 34 059 ind.m⁻²), there was a low abundance of small copepod *Pseudocalanus* spp. and cyclopoid copepods, and no occurrence of Arctic copepod *Metridia longa* was remarkable (Table 1).” could well be: “Total zooplankton abundance in this study was approximately half (mean: 34 059 ind.m⁻²) the abundance reported by Matsuno et al. (2012) on the Chukchi shelf (mean: 75 683 ind.m⁻²), with low abundance of small copepods (*Pseudocalanus* spp. and cyclopoids) and the remarkable absence of the Arctic copepod *Metridia longa*.”

Answer: We changed the sentence following referee's comment (p3887 L19-22).

Page 10, line 5: Again, this sentence is not clear. What does the addition of holoplankton mean?

Answer: We deleted the sentence “the addition of holoplankton and” (p3888 L5).

Page 10, line 8-11: “Benthic barnacle adults released their larvae when they met phytoplankton blooms (Crisp, 1962; Clare and Walker, 1986), and their larvae spent two to three weeks at water columns and then settled (Herz, 1933).” If this is usual behavior on the part of adult barnacles, present tense should be used. Furthermore, replace “at water columns” by “in the water column”.

Answer: We changed to “Benthic barnacle adults release their larvae when they meet phytoplankton blooms (Crisp, 1962; Clare and Walker, 1986), and their larvae spend two to three weeks in the water column and then settle (Herz, 1933).” (p3888 L8-11).

Page 10, line 17: replace “several limited” by “a few”

Answer: We changed to “a few” (p3888 L17).

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Page 10, line 18: this issue has been already addressed in the previous paragraph.

Answer: We deleted the sentence on barnacle larvae (p3888 L18-20).

Section 4.2 Population structure of *Calanus glacialis* The first paragraph belongs to the Introduction section. It's a description of the status and life cycle of this important arctic shelf copepod, which is a focus of the work.

Answer: We moved this paragraph into Introduction. (p3889 L2-11).

Page 13, line 9-11. What is the value measured by Tande and Bamstedt (1985)? Why make this comparison with the situation in the Barents Sea in spring-summer if it's not interpreted further. Wouldn't it be more relevant to try a comparison with grazing impacts estimated by Campbell et al (2009) for roughly the same region? At least conclusions of this study should be better addressed in the present work.

Answer: We deleted sentence comparing with Tande and Bamstedt (1985).

Page 13, line 18. Change "proportion" for "potential contribution"

Answer: We changed to "potential contribution" (p3891 L18).

Conclusion Page 14, line 3. In fact, grazing impacts was only estimated for the dominant stage of *C. glacialis*, excluding other dominant copepods such as *Pseudocalanus*. The sentence should be changed accordingly.

Answer: We changed from "dominant copepods" to "*C. glacialis*" (p3892 L3).

Page 14, line 12. This conclusion is rather trivial. We certainly could not expect metazoan plankton demography to respond so fast to a short surge in phytoplankton stock. However, it would be particularly interesting to speculate on the cumulative effects of late summer-early autumn strong winds in a region more and more impacted by the reduction in sea ice cover. Could some zooplankton benefit from an extension of the primary production season with more turbulence and later freeze-up of the Chukchi Sea?

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Answer: Yes, the case is expected. Owing to comment, we added short note on this issue at end of the conclusion.

Tables Table 2. Some information given in the legend for the calculations should be moved to the Materials and methods section.

Answer: Since this Table 2 is only cited in Discussion (note that not in Results), we remained that the legend of this Table as it was.

Figure 1. No need to mention in the legend that the depth contours are superimposed since it's obvious.

Answer: We deleted the sentence.

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