Dear Joanna Davies,

thank you for the last revision of your and your co-author's manuscript "130 years of sea-ice conditions on the Northeast Greenland continental shelf: a biomarker and observational record comparison", and for your responses to reviewer and editor comments. I appreciate very much all your work put into this, and I am happy to accept it for publication in "The Cryosphere", subject to a few, mainly technical corrections, see as listed in the following:

Thank you for accepting our manuscript, we are very grateful for the time spent reviewing our work. We have gone through all the notes below and responded in red.

List of comments (all line numbers refer to the ATC3 version of the manuscript):

• Lines 1, 16, 19, 73: The updated description of the time span the manuscript addresses; I appreciate that the time span description was adjusted, but I see still some inconsistencies with that. If you round to full 10er numbers it would be 140 (but I can understand that you did not chose that since it could be understood as an exaggeration). I suggest using in the title something more descriptive: “Sea ice conditions from 1880 to 2017 on the … “. In the abstract you could write “137 years” instead of “130 years”, and “137-year study period”. At the end of section 1, I suggest writing “to the last ca. (or tilde symbol) 140 years, spanning from …”, because here you connect to now (2024), which is 144 years after 1880.

Thank you for raising this point, we have updated the title of the manuscript according to your suggestions. However as the age constraint on sediment cores, and thus the biomarker data is somewhat uncertain we have removed reference to 130/137/140 years in the abstract. We agree that putting the number to 140 is an exaggeration of the study period length in this instance.

As the dataset extends only to the date of sediment core collection, 2017 rather than 2024, we have kept the numbers the same at the end of section 1.

• Line 4: A comma is missing after “Ruediger Stein” in the author list.

Corrected

• Line 8: The country for the address of affiliation #4 is missing.

Corrected

• Line 126: The paragraph on samling (3.2) does not contain information on any samling on core 92G, but later (lines 137 and 216), grain size and Hg content analyses on this core are mentioned, respectively. I suggest adding some brief information in 3.2.

• Line 139: I suggest adding the country after Aarhus University.

Corrected

• Line 139: I suggest writing (NaPO3)6 with lower 3 and 6 as in other cases for chemical formulas.

Corrected

• Line 216: You wrote earlier (line 120) you would just use 92G when addressing this core in the further text. So, you could avoid the full name of this core here.

Corrected

• Line 374: I suggest adding a comma after “dramatic”.

Corrected

• Line 442: I suggest to here write “landfast” in one word.

Corrected throughout the manuscript

• Line 494: Instead of the tilde symbol I suggest writing “about” ahead of “1970”. I assume “about” represents what the authors want to express. Tilde is also used several other places in the manuscript. Usually it fits, but in the conclusion statement I would find using “about” more suitable.

Corrected

• Line 509: I suggest adding the country after Plymouth.

Corrected

• Line 524: There are some technical issues with the reference Ananicheva et al. 2011: For the SWIPA 2011 report (https://www.amap.no/documents/doc/snow-water-ice-and-permafrost-in-the-arctic-swipa-climate-change-and-the-cryosphere/743), I have seen other citation forms, such as “AMAP, 2011”, and for any subchapter of the report one may choose the authors and title of that. After the author list (which I cannot connect with the author listing to the entire SWIPA 2011 report or a specific part of it), three words in Russian meaning “Publication title, page, citation” are listed, and after that, not a full publication title is listed - some text seems to be missing here.

Corrected

Note also that in the author list, a comma is missing after “Van Oort”, and the connected initials “B. E. H.” should all be capitalized. Please check what was supposed to be cited, and correct accordingly.

Corrected

Thank you again for your efforts with this manuscript.

Regards

Sebastian Gerland