

Response to RC2

In this manuscript, entitled as “Postglacial environmental changes in the northwestern Barents Sea caused by meltwater outbursts”, you tried to detect events of meltwater outburst and/or paleo-tsunami in the northwestern Barents Sea during the last deglaciation period. Your results by using multi-proxies are enough to explain phenomena, but the descriptions for the discussions and conclusion are still unclear.

Thank you for your feedback. We will work on improving the clarity of the discussions and conclusions in the revised manuscript according to your suggestions below.

Major correction

Introduction

You mentioned several proxies to clarify your evidences. However, you didn't deeply explain about proxies and examples of their usages. If you can, please add these descriptions to Introduction (or Discussions). Otherwise, readers cannot follow your discussion anymore.

Thank you for your suggestion. We will add descriptions of the usage of the different proxies used for interpretation in the revised manuscript.

Organic geochemical analyses.

You used the response factor provided by Belt et al. (2013) for biomarker analysis. However, response factor is different between the machine condition/setting of GC-MS. You used exactly same machine and method to analyze it. If not, it is better to analyze IP25 using GC for making your own response factor to calculate concentrations from GC-MS data.

In our work, we quantified IP₂₅ in the study sediments following the procedure proposed by Belt et al. (2012). However, we did not use the response factors determined by Belt et al. (2012). Instead, IP₂₅ concentrations were quantified based on response factors derived from daily GC/MS measurements of relevant standards performed in our laboratory. We will modify the statement in the manuscript (lines 176-177) as follows,

“The concentrations of IP₂₅ were determined following the procedure described by Belt et al. (2012).”

There is no introduction for biomarkers such as alkenone (especially C_{34:4}), IP₂₅ and steroids. It seems that you choose more critical indicators among several biomarker proxies. However, the reasons to choose those indicators are still unclear for reader. Especially, you choose C_{34:4} and PBIP₂₅. Please carefully explain why you choose them for paleoenvironment description.

We will add an explanation of the biomarkers used, particularly focusing on alkenone (C_{37:4}), IP₂₅, and steroids in the revised manuscript.

Reference

Belt, S. T., Brown, T. A., Rodriguez, A. N., Sanz, P. C., Tonkin, A., and Ingle, R.: A reproducible method for the extraction, identification and quantification of the Arctic sea ice proxy IP 25 from marine sediments, *Analytical methods*, 4, 705-713, 2012.