

Response to comments from referee Nicolas Young

We are grateful for NA's valuable and involved comments on both the first and second edition of our manuscript. As can be seen, the comments from NA and other referees have led to substantial changes in the revised ms. A somewhat depressing experience we have gained from this study is the role of ^{10}Be inheritance in the bedrock surface, even in areas which have suffered intense glacial erosion. However, we still believe that the "cluster method" is viable for bedrock dating, but it requires many more dates from each site, which in most cases will probably be prohibitive for its application.

Specific comments:

Ad 1) "...The ice margin history in the Sisimiut area...glossed over...": We don't quite understand this comment. We are of course aware of the excellent recent study by NA and co-authors on the Holocene deglaciation history in this region, and as a response to the NA's comment on our first edition, with reference to this work, we added a Preboreal ice margin at the coast to signal that the YD ice margin here was further out on the shelf, implying (ad 2) that the Fiskebanke moraine here is older than Preboreal (which has never been contested). However, where the ice margin was, its behaviour during the YD climate oscillation, and the age of the Fiskebanke moraine remains unknown (as was also the case for the SE Greenland coast, and probably also other areas without a record).

Fig. 4 "...The well constrained ice margin readvance in Disko Bugt...": Yes, we have added a blue arrow on the Disko Bugt shelf, and give in the text some more details of this dramatic and enigmatic advance/retreat event. (We must admit that we find the original authors' arguments for a glacio-dynamic cause for this singular event quite convincing, as detailed in the new version).

As to the typos and figures: a number have been corrected, and the figures were designed for easy handling in e-mails. They will be better in a published edition. We will of course gladly submit our data to the database.

We have been glad to see that our small contribution to the YD problems was able to raise discussion at a high level. We would be even more glad, if it could be an inspiration to climate-independent dating of some of the features on the shelf (moraines, GZWs, and other), which have been attributed to YD glacier behaviour on climate grounds only. Understanding how the Greenland ice sheet reacted to climatic change in those turbulent times is essential for evaluating what is now about to happen.