Dear Reviewer,

We appreciate your comments on the preprint (in black). We believe that your contribution will lead to improvement of the quality of our manuscript. Please find our detailed response to your comments below (**in green**).

General comments:
This study is ambitious and the specific topic is highly relevant for the glacial dynamical development of the Fennoscandian ice sheet. The manuscript is of a suitable length and its structure is proper, making it easy to crasp. However, I agree with the comments of the anonymous referee and interactive comments by Greenwood et al. The mapping procedure quality issues (misinterpretations), lack of use of geological maps and the need for re-evaluation of some interpretations cause a need for major revisions.

The idea of mapping procedure is to map as many features as possible to build a larger story – from single landform to flowset, to single ice stream, to particular margin, to retreat pattern, etc. We agree, that in some cases our final database of mapped features still contains some mistakes. But the biggest advantage of the mapping approach is that even if we lose one piece (misinterpreted landform) the other pieces show us the final puzzle image/story. Our mapping includes 22,500 features, and so even if there are a few mistakes (a natural consequence of large-scale mapping – no one will be 100% correct), we still believe the conclusions hold. We were not aiming for 'definitive geological survey standard' mapping, but rather to gather enough information to act as a basis to build information about ice flow and ice margins. Indeed, we note the recent publication of Greenwood et al. (now online in press, Boreas) - although these papers proceeded entirely independent of each other, it is apparent that there is a very large degree of similarity in the findings. Thus, we believe the landform misinterpretations are more technical problems that do not substantially affect the main conclusions of our paper.

Specific comments:
(in order to minimize duplication, I will mainly comment only those points not mentioned by Greenwood et al. or Anonymous referee).

L25 (Abstract): "…broad changes in ice flow geometry, ranging from SE-NW to N-S and then to NWSE."
<> Ice flow direction replacing ice flow geometry? And maybe with description of the flow areas, for example: SE-NW in the western (SW of Malmö) area.

Thank you for that comment, we would correct this.

L139_L146: terminology to be clarified: The unconsolidated sediments versus sedimentary rocks. Also it is unclear what is meant with "soft sediments"

Agree, this should be changed to unconsolidated when writing about sand and till, and sedimentary rocks when relevant.

L150: Elevation data => Bathymetric data?

Yes, would be changed.

L205: Soft sediment => unconsolidated sediment?

Here, soft sedimentary rocks and unconsolidated sediments. We would change this to make the sentence more specific.

Technical corrections:

L77: “…from the south…”=> from towards the south
L134 and L138: “…north-western Baltic…” and “…SE Baltic…” => north-western Baltic main basin and
SE Baltic main basin?

Figure 3B and 3D: conglometare => conglomerate (Is there a better word, for example bathymetric data type margin etc.?)

L429: could passed => could have passed

Thank for all the detailed technical correction, that will be implemented in the revised version.

Best regards,

Izabela Szuman-Kalita,
Jakub Kalita
Christiaan Diemont
Stephen Livingstone
Chris Clark
Martin Margold