

Reviewer #2

Dear Chris Clark,

Thank you very much for reviewing our manuscript and for your suggestions on improvements. We are very happy about your positive assessment of our work. The following table lists our responses to your comments.

Kind regards,

Jacob Hardt et al.

Reviewer	Authors' response
<p>Yes you say the applied load is unrealistically high and is mostly to speed up the experiments which seems fine. But maybe you could tell us by what rough factor; take a typical low parabolic surface profile from an ice sheet margin and estimate the likely ice loading.</p>	<p>Yes, the load is several orders of magnitude higher than it would be in the real world. From the start of the planning of the experiments, we decided not to scale the load, as this would have introduced an unknown number of new uncertainties to the models. We wanted to solely concentrate on the processes, not on absolute rates.</p> <p>We think it is a pretty complex endeavour to model the ice volume near the LGM ice margin in northern Germany. However, we think there are ways to do it, but it will require a lot of thought and dedication.</p> <p>Now that we have the “base work” done, we feel confident enough to introduce more complexity to our future models on this subject – and one aspect is for sure finding useful ways for a proper scaling of the ice-sheet load.</p> <p>In the revised version, we emphasize even more that the applied load was drastically exaggerated, but we would like to refrain from going into details on how much – simply because it was not part of the model design and because we do not want to give room for any misinterpretations that could arise from the indication of an order of magnitude.</p>
<p>The percentage z movements appear large compared to the dimensions of the ‘sediments’ in the sandbox. You tell us that this is likely unrealistic which is why you don’t fully explore the absolute Z movements, but could you say more on this; the extent to which they likely arise from viscosity and loading scaling issues vs, static ice margins against mobile ones which might not have enough elapsed time for bulges to develop.</p>	<p>We have added a new section to the discussion section that addresses the issue of the loading scaling (“remarks on the scaling of our models”). We will have to examine a dynamically scaled load in future experiments – it was outside the scope of our initial models and their possible impacts are hard to elucidate on basis of our current knowledge.</p>
<p>It would help to tell the reader early in the paper what you actually mean by pillow vs domes, later on I gathered it was combination of factors relating to size and</p>	<p>Thanks for this remark, we added a brief definition in the section “study area”:</p> <p><i>“The main structure types in the NE German sector of the CEBS are salt pillows, although several</i></p>

depth, but am still a bit unclear, and yet you often distinguish between them.	<i>domes exist, too. Salt pillows have a parallel contact with suprasalt strata, whereas salt domes have discordant contacts with their upper strata (Jackson & Hudec, 2017b)."</i>
Line 195 stage 1 growth. Suggest to make clearer in wording that this stage is a 'relaxing' stage such that the materials initialise prior to your experiment. Use of the word 'growth' first implied to me that stuff was responding to an advancing ice load.	Agreed! We now termed it "initial growth stage" and added as first sentence: "Preparation of the model environment before start of the actual experiments"
Explain what the white lines are in fig 1b	OK, added to the figure caption: "White lines in B are German administrative borders plotted for orientation."
The salt dome stipple is not very visible in fig 1b	Thank you! I changed the stipple color to white in order to improve visibility (see below).
Explain in fig caption what the grey is in fig6A? no data or a value I cant see in colour bar?	Thanks! We added to the caption that these are "no data" areas.

Revised Figure 1

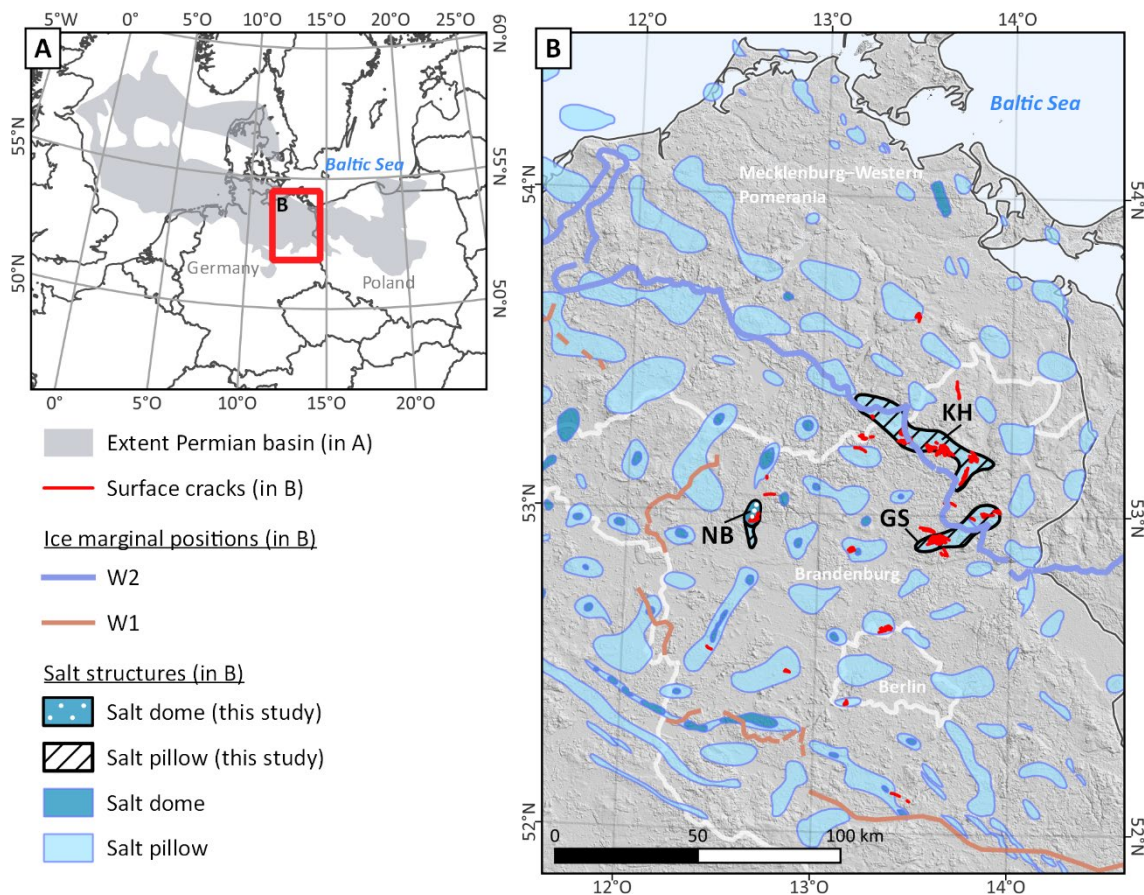


Figure 1: Overview map. Bright blue polygons: salt pillows; dark blue polygons: salt domes (InSpEE, 2015). Polygons with black outline: Salt structures investigated in this study (see Figures 2 – 5 for detail maps). GS – Groß Schönebeck study site; KH – Klaushagen study site; NB – Netzeband study site. Brown line: LLGM (W1) ice extent, blue line: gLGM (W2) ice extent (Lüthgens and Hardt, 2022; Lüthgens et al., 2020). White lines in B are German administrative borders plotted for orientation.