

### Editor comments

I would like to thank the authors for addressing all comments on the previous version of the manuscript. In particular, the interpretation of your results is much clearer and your overall conclusions are more robustly justified.

In light of your edits, there are two points that require additional clarification:

- 1) Page 10, lines 26-27: you mention that your results are based on the assumption that the samples close to the present ice surface have “experienced only one period of exposure during the past ~30 kyr”. This implies that you assume the samples were previously covered, but the timing or duration of this coverage is not clear. Please address this. In addition, in light of the text on lines 24-25 please make it clear which “pair of samples” you are referring to on line 26, and if appropriate adopt the terminology introduced above that refers to a “simple exposure age”.
- 2) Page 12, lines 34-35: In the previous paragraph you mention that it is possible the samples were not <sup>14</sup>C-saturated when they were last covered, i.e. they could have been briefly covered during the LGM, then uncovered, and covered again at 15 ka BP. Given this possibility, please re-consider the robustness of your statement that the “constraints demonstrate that the WAIS at the Whitmore Mountains was the same thickness or thinner than present during the LGM”. Please also clarify what time period you are referring to when you talk about the LGM (apologies if I have missed this).

I list below a number of minor technical points that also require attention. Once these and the issues above are addressed, I would be happy to review a revised version of the manuscript.

Kind regards,

Pippa Whitehouse

### Minor technical points (suggested edits in **bold**)

- Page 2, line 29: delete ‘also’ as there is no previous mention that data are scarce
- Page 3, line 17: ‘isolated **glacial** deposits’
- Page 6, line 12-13: ‘of **the** UW standards’
- Page 8, line 13: ‘was **at** least’
- page 10, line 25: revise back to ‘130 m **above the ice surface**’
- Page 10, line 31: delete one instance of ‘our’ and edit ‘initial’ -> ‘initially’
- Page 11, line 19: clarify what type of deformation you are referring to, presumably ice
- Page 11, line 22: the reference to Hall et al. (2015) seems a little out of place in this sentence that specifically talks about the Heritage Range and Pirrit Hills. It may sit more appropriately with the other references listed on page 2, line 19
- Page 12, line 28/fig. 6b: in line with an earlier edit, remove references to Mt. Waesche
- Figure 2: refer to (a) and (b) in the first sentence of the caption
- Figure 7: add labels (a) to (d) on appropriate panels