

Interactive comment on “Glacial history of Inglefield Land, north Greenland from combined in-situ ^{10}Be and ^{14}C exposure dating” by Anne Sofie Søndergaard et al.

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I'm curious as to how the authors selected the modeling constraints in Figure 5. The authors recognize that sample GL1701, with an in situ ^{14}C age of 14.2 ka, is likely influenced by inheritance and model an exposure-burial history that results in their measured ^{14}C concentration. The authors state that they use a "known glacial history of the GrIS in north Greenland".

I think the younger constraint (6.7 ka) is from this manuscript, and this makes sense, but their model starts at 45 ka and it is unclear where that number comes from. The model also includes burial (no nuclide production) between 23 and 6.7 ka. The end

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result is a modeled ^{14}C concentration that is still below what they measured.

I think key here is that the ^{14}C concentration at 23 ka (^{14}C produced between 45 and 23 ka) is not quite at saturation, and this seems heavily dependent on starting the model at 45 ka. Why not start with a saturated concentration and then bury the sample between 23 and 6.7 ka? I guess using this simple exposure-burial scenario, this would mean starting your model at something closer to 50-53 ka. Seems reasonable and would end up with a ^{14}C concentration closer to what you measured. If there is a solid reason for starting the model at 45 ka and not having the ^{14}C concentration reach saturation prior to 23 ka, then how do you account for the remaining excess ^{14}C ?

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