

Technical comments:

Page 1, L21: add Parrenin et al., 17 as a paper to cite

Page 2, L1: add Parrenin et al., 17 after the Fischer et al., 2013 citation

Page 2, L1: change “largely” to “strongly”. And I would actually reword that sentence a little. It currently reads with difficulty

Page 2, L6: change “asses” to “assess”

Page 2, L7: change to “The internal stratigraphy responds to ice sheet dynamics and retains the integrated history of changes in flow...”

Page 2, L8: provide a citation for your statement.

Page 2, L11: change to “...constraints for the evaluation of ice flow...”

Page 2, L21: change to “...has only been obtained over finite areas...”

Page 2, L22: change to “continent-wide”

Page 2, L23: change to “...and the lack of investigations into how...”

Page 2, L26: change “complete” to “whole”

Page 2, L27-28: change to “ice sheet, as demonstrated by MacGregor et al (...) for the Greenland Ice Sheet”

Page 2, L29: first sentence, add some info already about *where* you’ll be focussing on... else it feels like a very vague statement

Page 2, L32: remove “with” after “the IRHs are assigned”

Page 2, L33: remove the s from “age scale”

Page 3, L9: add “in **the** vertical”

Page 3, L12: add “processing is” after “migration”

Page 3, L16: change to “...we measure depth below the surface and sacrifice the absolute elevation of...”

Page 3, L17: add “as” after “regions”

Page 5, L5: change “relatively” to “most”, or if it is not the most recent, leave off “relatively recent”

Page 5, L7: change to “age scale to assign ages to the IRHs. We use the mean age from the DF and EDML age scales for the respective IRHs.”

Page 5, L10-12: change to “Uncertainties **in** xxx”

Page 5, L21: change “has” to “have”

Page 5, L24, 25: change to “Uncertainties **in**” or “IRH depth uncertainties”

Page 7, L6: remove one “with”

Page 7, L11: why are ages here given without uncertainties, compared to the other times the authors provided IRH ages?

Page 7, L13-14: the sentence is awkward. Rephrase?

Page 7, L18-19: The wording is unclear. I don’t think until now the concept of “normalized thickness” has been defined. Is it the layer thickness divided by the ice thickness? It would help to clarify. Also, is the normalized layer thickness = layer thickness/their thickness at the cores? Or are we shown the normalized layer thickness / their thickness at the cores? This is unclear to me (Also unclear in Fig.2. caption).

Page 7, L22: The last sentence is too vague.

Page 8, L5: I would use “juxtaposed to” rather than “concatenated with”.

Page 8, L7: Saying it is the **same** deepening occurring towards South Pole is confusing, because yes it is deepening at the coast and at South Pole, but the pattern described just a sentence before is one where IRHs become deeper toward the coast. I would say just “A deepening also occurs toward south pole”.

Page 8, L15: remove “a compilation” or reword slightly. In my mind, compilation and map are the same thing here?

Page 8, L31: distribution should be plural

Page 8, L34: change to “also induce deepening of the IRHs”.

Page 10, L10: I wasn’t clear as to what the lowest three IRHs are. Could their names be added here in brackets referring to the Tables?

Page 10, L11: I believe it should be referring to Table 1 from Cavitte et al., 2016?

Page 10, L14: change to “AGAP data, and at the intersections between both data types”

Page 10, L16: change to “, and is relatively easy for radar systems that have a similar..”

Page 10, L22: remove “dip”

Page 11, L3: change to “across these regions would be to use unmigrated”

Page 11, L4: flip “also” and “can”

Page 11, L8: change “with” to “for” and perhaps add that these are not shown in the tables here?

Page 11, L10: Is it “and” or “or” that you meant to use?

Page 11, L15: what is a “zonal” section?

Page 11, L22: Something like “is hampered by the steepness of the IRHs over the steep bed topography” might be clearer.

Page 11, L23: change to “features indicative of past”

Page 11, L25: change to “On large scales, our results indicate shallower IRHs..”

Page 11, L29: change to “is achievable by combining radar data interpretations from..”

Page 11, L30: this is well demonstrated here but also in Cavitte et al., 2016.

Page 12, L7-9: this conclusion could be more clearly worded. Age resolution is a bit vague, I’m assuming it is the age resolution determined by the number of IRHs. This final sentence would benefit being as clear as possible.

Fig.1. The location Ridge B mentioned on Fig.2. should be added to Fig. 1.