

## ***Interactive comment on “A detailed radiostratigraphic data set for the central East Antarctic Plateau spanning the last half million years” by Marie G. P. Cavitte et al.***

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The manuscript by Cavitte and others presents a data set of dated internal reflection horizons in the Dome C region of the East Antarctic Ice Sheet. The data set will be very valuable in the future, for both, ice-dynamic considerations as well as projects aiming for retrieving old ice from ice coring. As the manuscript will be included in the inter-journal Special Issue Collection "Oldest Ice", e.g. [https://tc.copernicus.org/articles/special\\_issue968.html](https://tc.copernicus.org/articles/special_issue968.html) for which I am acting as a coordinating editor, my review should be considered and editor review.

Overall I find the manuscript very readable, the descriptions clear and the methodolog-

C1

ical approach state of the art, especially the estimates of uncertainties. Something which went utterly wrong is the automatic LaTeX referencing of tables throughout the manuscripts. The authors should have a close look at fix those. Other issues are ambiguities in mathematical formulas and typesetting. A number of comments and annotations for improved clarity are provided in the attached pds. A short version is listed below.

Overall I find this manuscript to be acceptable given that the minor changes highlighted in the pdfs will be implemented. Both pdfs should be consulted for a complete and unambiguous response of suggested changes.

Regards, Olaf Eisen

Page: 2 item: 1 at the time item: 2 conductivity item: 3 reference to report

Page: 3 item: 2 fix reference item: 3 you should include now reference to Lilien et al, TCD, 2020

Page: 4

item: 1 MCoRDS - specify which version item: 2 section 2.2. - 2.2.3 is just DELORES

Page: 5 item: 1 wouldn't it be more appropriate to provide the center frequency for an impulse system and 1-sigma bandwidth? It is not defined in the same way as a chirp. item: 2 Onboard Presumming - which is equivalent to vertical stacking? item: 3 2.2.3. Doesn't exist, probably Table 2. Please fix your latex labels and refs.

Page: 6 item 1: for better readability, I suggest to use italic pik1, foc1, foc2 throughout the manuscript item 2: lengths item: 3  $\circ$  instead of o item: 4  $\circ$  item: 5 include reference

Page: 8 item: 1 where is footnote 1? item: 2 where is footnote 2? item: 3 2.2.3

Page: 9 item: 1 the item: 2 Does that mean lower SNR = larger window? What does that information help here, how did you use it? item: 3 reads as if the wind redistribution

C2

acts on deep horizons. Clarify. Moreover, does the process matter which influences the quality of the horizon? Only the fact counts that it cannot be traced at some point. item: 4 are item: 5 Footnotes belong to the table. Consider to change footnotes to table comments, which appear directly underneath the table - makes it more easily understandable. item: 6 don't use multiplication signs unless it is a particular multiplication (e.g matrix).

Page: 10 item: 1 is shown item: 2 three-letter-variable should not be used in mathematical equations.  $t$  would be enough.  $twtt$  in the text is fine, so why  $tw$  now? item: 3 electromagnetic velocity: above you use wave speed. Only use one term through the whole manuscript. item: 4 relative permittivity!

Page: 11 item: 1 no new paragraph after one sentence item: 2 Grammar seems wrong in this sentence item: 3 2.2.3 item: 4 delete item: 5 again I suggest to switch to a single-letter variable, e.g.  $p_w$  item: 6-8 delete item: 9 you could express  $\lambda$  directly here as a function of  $c$  and frequency, as you only provide those in the table. You could also consider to add  $\lambda_{ice}$  in the table in addition to  $\lambda_{air}$  (as ice is more relevant). item: 10 what the  $*$  symbol now? Multiplication, as you used it above? item: 12 For this equation to make sense SNR is given in a linear scale; or is it dB or something else? Clarify. item: 13 . item: 14 IRH with a SNR  $>1$  item: 15 permittivity item: 16 3 it should be?

Page: 12 item: 1-2 delete item: 3 consider to mention both values here again so that the reader gets that right away without having to look it up again. item: 4 we assume that this factor item: 5 the official name of the drill site is BELDC. Please use that throughout the ms.

Page: 13 item: 1 and item: 2 . item: 3 3 item: 4 km item: 5 kilometers item: 6 2.5.1 item: 7 above you mentioned surface redistribution, which does not fit to this statement to maintain layer integrity. Seems a bit inconsistent. Unclear in the text what cold ice has to do with this (and what is very cold ice? Quantify). item: 8 in which direction?

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item: 9 unclear what you mean item: 10 we can then item: 11 We can then ... yes, you can, but if you do it, you should also write We calculate ... we sample ... etc. item: 12 then

Page: 14 item: 1 BELDC item: 2 severe item: 3 This paragraph should go into the discussion, not in your results. item: 4 we assume so, but we do not know. Rather other dynamic properties. Therefore you should reduce this implications of this statement. Cite Lilien et al. 2020 TCD, which describe this layer. item: 5

Page: 15 item: 1 unclear now if you used the radar returns or BedMachine (as stated above). Or is BedMachine identical? Please clarify in text. item: 2 navy blue item: 3 navy blue item: 4 implying that there is no overlap between the DAS areas and THIS data set? Clarify.

Page: 16 item: 1 Bedrock seems saturated in white, thus losing details. Please adjust the greyscale. Geographical coordinates required, as in Fig. 5. item: 2 navy blue item: 3 a competition between decreasing advection from above and increasing conduction ... item: 4 So what's the influence on your data here? Reduced SNR?

Page: 17 item: 1 tractable, trackable or traceable? Up for a native english-speaking coauthor to decide. item: 2 60 ns

Page: 18 item: 1 BELDC item: 2 The formulated goal of the AntArchitecture community is to make a item: 3 2019). Eventually, item: 4 connecting to item: 5 should be connected item: 6 in a long-term data repository

Page: 19 item: 1 HiCARS item: 2 and thus lower SNR. item: 3 This statement goes beyond what is necessary in this paper and, in fact, what you showed. That's done by Lilien et al 2020 TCD. Therefore delete this sentence. Rather you could state that your data set provides the basis for a regional assessment of age at larger depth for other planned deep drillings in this region (e.g. Australia).

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Please also note the supplement to this comment:  
<https://essd.copernicus.org/preprints/essd-2020-393/essd-2020-393-RC1-supplement.pdf>

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Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-393>, 2020.