We would like to thank the editor for his time spent reviewing this manuscript. We reproduce here below, as asked, our detailed responses to each review, in order, from RC1 to RC3 (already submitted as ACs).

Response to RC1 comments on the submitted paper *A detailed radiostratigraphic data set for the central East Antarctic Plateau spanning from the Holocene to the mid-Pleistocene*

We thank the reviewer/editor for his constructive comments and detailed review of our manuscript. We have responded to all of them and have modified the paper accordingly, our point-by-point answers follow. Review comments are in grey italics while our answers are not.

Please note that Fig. 8 was moved up in the manuscript following Reviewer 3's suggestion. It now features as Fig. 4 and all subsequent Figs have been renumbered.

Answers to RC1

Page 2, item 1
Answer: We have removed "at the time".

Page 2, item 2
Answer: We replaced "ice core chemistry variations" with "conductivity variations". And have modified slightly the the second radar return origin description given above to: "(2) ice chemical composition variation, and therefore conductivity variation, resulting from the successive..."

Page 2, item 3
Answer: We have added a reference to the official first Report of AntArchitecture Workshop, July 2017, entitled "AntArchitecture: Archiving and interrogating Antarctica's internal structure from radar sounding" here.

Page 3, item 1
Answer: We have made this subsection into a new section (Section 2).

Page 3, item 2
Answer: The reference has been fixed.

Page 3, item 3
Answer: We have added the Lilien et al., TCD, 2020 reference.

Page 4, item 1
Answer: We now specific it is MCoRDS, version 2, that was used to collect the data.

Page 4, item 2
Answer: There was an issue with the table typesetting. We have now corrected all the table numbers appropriately. Here, it now reads "Table 1 and 2".

Page: 5 item 1
Wouldn't it be more appropriate to provide the center frequncy for an impulse system and 1-sigma bandwidth? It is not defined in the same way as a chirp.
Answer: We prefer to keep the same notation for all three systems. From the range given, the center frequency and the bandwidth can be back calculated.

Page 5, item 2
Onboard Presumming - which is equivalent to vertical stacking?
Answer: We are very specific here in our choice of vocabulary because we refer to the horizontal stacking that happens onboard, *before recording*. For consistency, we have changed it to "onboard stacking", term that was used in the Young et al., 2016, Phil. Trans. R. Soc.
Ref: Young D. A., Schroeder D. M., Blankenship D. D., Kempf Scott D. and Quartini E. 2016The distribution of basal water between Antarctic subglacial lakes from radar sounding, Phil. Trans. R. Soc. A. 374:20140297, http://doi.org/10.1098/rsta.2014.0297

Page 5, item 3

Answer: Same issue with table typesetting. Here, it now reads "Table 2".

Page 6, item 1
For better readability, I suggest to use italic pik1, foc1, foc2 throughout the manuscript
Answer: We agree and have made the suggested change throughout the manuscript.

Page 6, item 2
Answer: Pulse length and pulse width are synonyms. We prefer to retain pulse width, which we and co-authors have also used in previous papers (Peters et al., 2005, Gogineni 2014, etc).

Page 6, items 3 & 4
Answer: This has been changed.

Page 6, item 5
Answer: Same table issue. This has been fixed.

Page 6, item 6
Answer: Space has been added.

Page 6, item 7
Answer: The two references (Arnold et al., 2020; CReSIS, 2016) were added.

Page 8, items 1 & 2
Answer: The two footnotes have now been fixed.

Page 8, item 3
Answer: Table number has been fixed. It now reads "Table 2".

Page 8, item 3
Answer: Table number has been fixed. It now reads "Table 2".

Page 9, item 1
Answer: Removed.

Page 9, item 2
Does that mean lower SNR = larger window? What does that information help here, how did you use it?
Answer: This window is the picking window that the software uses to find the maximum return in amplitude. Depending on the roughness of the IRH traced, the window (in twtt) is adjusted. We have reworded slightly this sentence for clarity to: "...as a function of the local roughness of the specific...".

Page 9, item 3
Answer: We have clarified that it is wind redistribution, subsequently buried, and have generalized the processes that can act to truncate an IRH: "A traced IRH can start off looking bright and easy to follow, but due to various processes (e.g. wind redistribution of surface snow which then gets buried, enhanced ice flow, ...), can get truncated further along a survey transect.".

Page 9, item 4

Answer: Added.

Page 9, items 5 & 6
Answer: Footnotes have been fixed.

Page 9, item 7
Answer: Multiplication sign has been removed.

Page 9, item 8
Answer: Changed to: 3 x 10^8 m s^{-1}.

Page 9, item 9
Answer: Modified as suggested.

Page 10, item 1
Answer: Added.

Page 10, item 2
Answer: twt was a typo, it should have been twtt. We prefer to keep the acronym "twtt" in the equation for clarity for the readers, rather than define a new variable "t" that we would then have to equate to twtt.

Page 10, item 3
Answer: We have chosen to retain "electromagnetic velocity" everywhere.

Page 10, item 4
Answer: Changed as suggested.

Page 10, item 5
Answer: Changed.

Page 10, item 6
Answer: The sentence has been modified accordingly as follows: "Since all our IRHs are below the firn transition, temperature and ice fabric variations have a small effect, i.e. we can ignore variations in ε'_{ice} with depth and use a constant value."

Page 10, item 7
Answer: This transect is now highlighted in grey on Fig. 1 and in the figure caption as follows: "The HiCARS MCM/JKB1a/EDMC01a radar transect is highlighted in dark grey.". We have added the Cavitte et al., 2016 reference.

Page 11, item 1
Answer: Paragraph removed.

Page 11, item 2
Answer: Indeed. The start of the sentence has been modified to: "The first source of depth uncertainty comes from the vertical resolution..."

Page 11, item 3
Answer: Table number fixed.

Page 11, items 4, 6, 7, 8
Answer: Multiplication signs removed.

Page 11, item 5
Answer: We have changed "pw" to "p_w".

Page 11, item 9
Answer: We have chosen to add lambda_ice in Table 1.

Page 11, items 10 & 11
Answer: We wanted to retain the same typology as in the Cavitte et al. (2016) paper, but for clarity, we have chosen to modify $\sigma(r*)$ to σ_r.

Page 11, item 12
Answer: Indeed, the SNR needs to be converted to a linear scale. This is now mentioned right after equation 4: "with SNR given on a linear scale". There was a typo in Eq. 4 that we have now corrected.

Page 11, item 13
Answer: Not sure why a full stop is asked at the end of "SNR" in the equation. We have left it as is.

Page 11, item 14
Answer: Changed as suggested.

Page 11, item 15
Answer: Modified as suggested.

Page 11, item 16
Answer: Modified to "Table 3".

Page 12, items 1 & 2
Answer: Here, we want to make it clear that we are providing a depth error and an age error, which is $\pm$ the value given.

Page 12, item 3
Answer: We have added the information here: "...considering the radar resolutions (4.30 m minimum) and the surface accumulation rate ($\sim$25 mm yr-1, Stenni et al. 2016), we assume..."

Page 12, item 4
Answer: Modified as suggested.

Page 12, item 5
Answer: The name has been added here and in several other places in the manuscript where the chosen site was mentioned.

Page 12, item 6
Answer: The Lilien et al., 2020, TCD has been added.

Page 13, item 1
Answer: Modified.

Page 13, item 2
Answer: We did not understand the suggested addition.

Page 13, item 3
Answer: Fixed.

Page 13, items 4 & 5
Answer: Changed

Page 13, item 6
Answer: It now references Table 3.

Page 13, item 7
Answer: By cold ice, we mean that surface conditions are very cold, which implies good preservation of the internal stratigraphy (good specular returns). We have slightly modified this sentence for clarity as follows: "The LDC is a region where the combination of the very flat internal stratigraphy (due to the low surface velocities) and very cold surface conditions ($\sim$-54.5°C on average year-round, EPICA community members et al., 2004) results in good preservation of the internal stratigraphy and therefore all 19 dated IRHs continuously traced over the whole area."

Page 13, item 8
Answer: We choose to not specify which direction because this is true for all directions, as soon as the IRHs are no longer over the LDC massif.

Page 13, item 9
Answer: We have reworded it to "become difficult to trace"

Page 13, items 10, 11 & 12
Answer: We have simplified the "we can then" heavy sentence structure as follows: "From the measured undated IRHs depths, we sample the simulated age-depth field and assign a modeled age to every trace along the radar transects (Fig. 8). We then calculate a mean modeled age for each undated IRH, provided in Table 4, as well as the age standard deviation,...". Note that it should have stated "Table 4" and not Table 3. It has been corrected as well.

Page 14, item 1
Answer: Modified

Page 14, item 2
Answer: Modified

Page 14, items 3 & 4

Answer: This paragraph has been moved to the discussion, and the Young et al (2017) and Lilien et al (2020) papers, as well as the Cavitte 2017 published thesis, that all mention this stagnant ice have been added as follow: "Note that there is now evidence that there is a layer of ice just above the bed, and in particular over the LDC highland plateau, with different electromagnetic properties, which is assumed could be stagnant (Young et al., 2017; Cavitte 2017; Lilien et al., 2020). The Parrenin et al. (2017) ice flow model version used does not take this stagnant ice into account, which could make the basal ages, and therefore the seven bottom IRHs, too young in the present modelling. A new version of the 1-D model that takes into account this stagnant layer has been developed and it will be interesting to compare the new ages obtained (Fred Parrenin, pers. comm.)."

Page 14, item 5

Answer: We have added this information as follows: "cold surface temperatures year round ($\sim$-54.5°C on average, EPICA community members et al, 2004, and therefore absence of melting at the surface) and the lack of..."

Page 15, item 1

Answer: We have added "(HiCARS, MCoRDS or DELORES)" after "radar returns" to be explicit. BedMachine is shown on the figure as a basemap only.

Page 15, items 2 & 3

Answer: Added.

Page 15, item 4

Answer: We have added " which show no overlap" to be explicit.

Page 16, item 1

Answer: The basemap greyscale has been adjusted, and geographical coordinates have been added.

Page 16, item 2

Answer: Added.

Page 16, item 3

Answer: The insulating thick ice above and the GHF do not compete but rather act together to increase the basal temperature. We have left this sentence unchanged.

Page 16, item 4

Answer: Yes, we mean a lower SNR. We have added this information: "Temperature affects the dielectric permittivity of the ice and can result in a strongly attenuated radar return and a lower signal to noise of the IRHs".

Page 17, item 1

Answer: Tractable is the correct word here, in the sense of "possible".

Page 17, item 2

Answer: Added.

Page 18, item 1
Answer: Changed

Page 18, items 2-5
Answer: We agree with the changes but have written a slightly modified form: "The formulated goal of the AntArchitecture community is to have a joint community effort to build an Antarctic-wide IRH data set to check the match between all previously traced and published IRH data sets that can be directly connected for the East Antarctic Plateau region (to name a few, Siegert et al., 1998a; Winter et al., 2019). Eventually, the aim is that IRHs from currently disconnected surveys (e.g. Steinhage et al., 2001; Leysinger Vieli et al., 2011; Steinhage et al., 2013) are also connected after the collection of additional radar campaigns in the gap areas."

Page 18, item 6
Answer: Added.

Page 19, item 1
Answer: Added.

Page 19, item 2
Answer: Added.

Page 19, item 3
Answer: We have chosen to change the sentence to relate to the historical use of these data instead, and add the information suggested. The sentence now reads : "This data set was used to corroborate suspicions of 1.5 million-year-old ice in the Little Dome C region (Van Liefferinge and Pattyn, 2013; Parrenin et al., 2017), and will also provide the basis for a regional assessment of age at depth for other planned deep drillings in this region (e.g. Australia)"

Response to RC2 comments on the submitted paper *A detailed radiostratigraphic data set for the central East Antarctic Plateau spanning from the Holocene to the mid-Pleistocene*

We thank the reviewer for his detailed and constructive comments which have helped clarify our manuscript, as well as improve our figures for the readers. We have responded to all comments and have modified the paper accordingly, our point-by-point answers follow. Review comments are in grey italics while our answers are not.

Please note that Fig. 8 was moved up in the manuscript following Reviewer 3's suggestion. It now features as Fig. 4 and all subsequent Figs have been renumbered.

Answers to RC2

Minor comments:

Section 2.2.1: The processing methods for the HiCARS data presented in this section is important but the order of the sentences and paragraphs is confusing (see my line-by-line comments). Additionally, the order of the table is not sequential and the naming of these tables is not consistent between the text and the actual table numbering. There is also no mention of Table 1 in the text, although as pointed below, the authors could perhaps shift this table to the supplementary materials as it is of lesser importance compared with Table 2.

Answer: (Note that Section 2.2.1 is now Section 3.2.1.). We have reworked the processing methods for the HiCARS data section as suggested in the line-by-line comments, which indeed makes it much clearer and easy to follow. Thank you for your suggestions. We had a glitch with the automatic table numbering in LaTex, this is now fixed and all tables are properly references. As for Table 1, we prefer to keep it in the main manuscript as (1) we now reference it in the main text, (2) it contains important information for comparing the different radar systems and (3) we do not currently have a supplement and adding a supplement just for one table seems awkward.

Figure 3: Throughout the discussion and the conclusion, the authors mention that the main limitation to the tracing of deep IRHs in the region is impeded by rugged bedrock that induces dipping geometries and attenuation of the radar return. As this is one of the main argument provided to explain why the authors were unable to extensively trace and directly date IRHs 20-26, it would indeed be useful to provide a direct example of this. However, I'm not convinced that this is adequately shown in the manuscript. The authors refer to Figure 3 as an example of this, but I think a much better example could be provided such as a radar image passing over the Concordia Subglacial Trench, which as the authors mention in the paper is an area where basal processes affect substantially IRH geometry in the area and thus would link well with your main conclusion. With regards to Figure 3 in its current state, is difficult to assess the continuity of the IRHs at depths. As a starting point, it would be much clearer if the authors could replace the continuous lines which result from the picking algorithm for something more subtle like crosses or circles at regular intervals. Additionally and as I show in my comments below, I feel this figure could be much improved, first by replacing the screenshot view for a proper figure with axes. There is a lot of unnecessary information in this figure at the moment, especially the different tools and menus from the Landmark Desktop which complicate unnecessarily the presentation of this figure. In my understanding, the point of this figure is three-fold: 1) Show how IRHs can be intersected with other data at crossover points, 2) the vertical position of each of the 24 IRHs (highlighted those that were dated and those that were not), and 3) the fact that tracing IRHs at depths is impeded by rough topography and radar attenuation. Whilst this figure shows these to some extent (mainly point 1 and 2), it lacks heavily in clarity and simplicity and may confuse easily the reader. I would suggest replacing this for a much more standard radar figure, with perhaps a zoomed-in view of the bottom ∼20% of the ice thickness where IRHs become discontinuous. More details on this can be found in my line-by-line comments.

Answer: We completely agree that our choice of radar transect for Figure 3 was perhaps not the most useful with regards to our discussion. We really like your suggestion and have decided to replace this radargram with the one going across the Concordia Subglacial Trench (OIA/JKB2n/X57a). We now provide a proper figure with axes showing depth instead of two-way-travel-time, and provide a zoomed in view of the bottom section of the ice column where IRHs drop out. We have removed the basemap view, and highlight this transect on Fig. 1 instead. Finally, we now highlight the depths of the IRHs as circles

instead of continuous lines for better visibility.

Published dataset: I'm also interested to know why the authors chose to place NaN values in the IRH depth column for each of their IRH in the csv files (data accessible at: https://www.usap-dc.org/view/dataset/601411). If there are no values for IRH depth, then why placing these rows in your dataset files? If this because you provide IRHs at regular 1-km intervals (for mcords and HiCARS) and 250-m for DELORES, then wouldn't it make more sense to provide all the other values (i.e.surface elevation, ice thickness, bed elevation) separately? If your aim is to provide IRH depth (and the values for ice thickness, surface elevation, bed elevation) plus all the ice thickness/surfelev/bedelev values along the flight line, then why not creating two separate csv files, one with all these values along the flight line, and one for when you only have IRH values? Also, I'd suggest to add somewhere in your paper that the IRHs are provided along regular intervals depending on which radar system you used.

Answer: For the data release, we wanted to have a single file per IRH that contains all relevant information for any users in a convenient format. This is why we prefer to keep the ice thickness/surfelev/bedelev values with the IRH depth values so that each IRH data point has a corresponding ice thickness/surfelev/bedelev value. The way we managed our IRH depth NaN values is as follows: if the IRH is completely absent from a radar transect, that radar transect is ommitted from the file. However, if the IRH is present in part along a radar transect, we provide all ice thickness/surfelev/bedelev values for that transect and complete untraced sections of the IRH with NaN values. This was of publishing the data seemed most thorough. That way, NaN sections can easily be dropped out by users. But if, e.g. for modeling purposes, upstream conditions of bedrock topography, ice thickness, etc are needed, they are de-facto provided.

Line-by-line comments:

L06: Could you provide an age range for your IRHs here? You could be more accurate when you say 'beginning of the holocene' and provide the age of your shallowest layer. Perhaps, it would also be useful to provide the percentage depth of your shallowest and deepest IRH in the abstract too.

Answer: We have now added this information in the abstract: "Through direct correlation with the EPICA-DC ice core, we date 19 IRHs that span the past four glacial cycles, from 10 ka, beginning of the Holocene, to over 350 ka, ranging from 10% to 83% of the ice thickness at the EPICA-DC ice core site."

L27: 'The IRH' should be 'The IRHs'

Answer: Corrected.

L34: Extra reference to this methods point is this recently accepted paper on IRH dating over Pine Island and Thwaites glaciers in JGR-Earth Surface by Bodart et al. (2021). Full ref: Bodart, J.A., Bingham, R.G., Ashmore, D.W., Karlsson, N.B., Hein, A.S., and Vaughan, D. G. (2021). Age-Depth Stratigraphy of Pine Island Glacier Inferred from Airborne Radar and Ice-Core Chronology. Journal of Geophysical Research: Earth Surface. doi: 10.1029/2020JF005927.

Answer: We are very happy to add this reference. It was not yet published at the time of submission.

L35: Extra reference to this point: Karlsson et al. (2014) in Journal of Glaciology. Full ref: Karlsson, N.B., Bingham, R.G., Rippin, D.M., Hindmarsh, R.C., Corr, H.F. and Vaughan, D.G., 2014. Constraining past accumulation in the central Pine Island Glacier basin, West Antarctica, using radio-echo sounding. Journal of Glaciology, 60(221), pp.553-562. doi: 10.3189/2014JoG13J180

Answer: This reference has been added.

L40-41: Yes, but not only due to its sheer size. Different types of data acquisition methods (e.g. system frequencies, survey objectives), different processing regimes, and the multitude of institutes who collected the data must also be mentioned as a comparison to why it's so much harder to create an Antarctic-wide product like over Greenland.
Answer: We agree that this is an important point to specify. The sentence has been expended as follows: "An extensive internal stratigraphic data set has already been obtained for the Greenland Ice Sheet (MacGregor et al., 2015). However, due to its sheer size, but also the wide variety of data acquisition platforms and processing algorithms applied to the data as a result of the multitude of institutes involved in data collection, the Antarctic Ice Sheet will require more time and the acquisition of additional ice-penetrating radar data in order to: (1) connect existing surveys and (2) extend coverage to under-surveyed parts of the ice sheet."

L49: 'using the AICC2012 chronology'. Suggest adding 'ice-core chronology' as it is the first time you mention AICC2012 in your paper.
Answer: Agreed, this has been added.

L58: Suggest removing the double parenthesis and 'participants are listed alphabetically'
Answer: The reference was fixed, it now reads: (EPICA commmunity members et al., 2004)

L75: Could you add on Figure 1 where the Concordia Station is?
Answer: At this scale, the ice core site and the station location are coincident. This information has been added in the caption as follows:
"Note that Concordia Station is coincident with the EDC ice core site at this spatial scale." and Fig. 1 is now referenced at the end of this sentence.

Fig 1: Could you switch the colours for the ice divide (purple) and the HiCARS <2016 (black) around? It would be easier to keep all the radar surveys in colour and make the ice divide black
Answer: We have now switched the colors for Fig 1: HiCARS is now in magenta, the ice divide is in gray (so it can be differentiated from the surface elevation contours which are in black).

Fig 1 caption: 'shown as solid lines whose colour is a function of the radar system'. This is an odd phrasing. Maybe replace by 'whose colour is shown in the figure legend'.
Answer: We have changed the sentence as suggested.

L82: The table order in the manuscript is not sequential and does not correspond to the actual tables in the text. The authors refer to Table 2.1 for the radar system characteristics but this is labelled as Table 1 in the main manuscript. Also, is there really a need to have two tables for system characteristics before and after processing in the main text? Table 1 ('ice-penetrating radar system characteristics before focusing and migration') is useful but maybe more suited to the supplementary materials, especially since the authors don't mention it in the main text. The frequency range could be mentioned in the text as this is maybe the most useful information here. Table 2 is much more useful when it comes to quantifying uncertainties in your dataset.
Answer: We had a LaTex glitch, all the table numbering has been fixed. We do think it is useful to have Table 1 in the main manuscript as it provides a convenient summary of the three radar systems. But we have added references to it in the main text: once line 87, and again at the end of the paragraph as follows:

"For comparison, the MCoRDS radar system uses a center frequency between 180-210 MHz and a compressed pulse width of 51 ns (Table 1)."

L101: Again, table 2.2.3 does not exist. Please amend this. If you're referring to Table 2 as above, then this suggests again that Table 1 is better suited to the S.I. as it is not mentioned in the text and is relatively less important than Table 2. Also, below this line, you have a reference to Holschuh et al. (2014) in footnotes. I believe this is a glitch from using LaTeX and should be removed.
Answer: Indeed, there was an issue with the LaTex file. All table references have been fixed, as well as the footnotes. Thank you.

L106-110: The connection between the two paragraphs is not very clear and leads to misunderstanding. Particularly, the link between L108 and L109 is confusing. I suggest rewording as follows: 'To improve along-track geometries and produce foc 1 and foc2, we use the matched filter-focusing approach of Peters et al. (2007) by interpolating the data to 1 meter records along track and filter out coherent noise. For Foc1, [. . .] etc.
Answer: We agree that upon re-reading the paragraph, the transition was not very clear. We have taken your advice and have modified the start of the paragraph as follows:
"To improve along-track geometries and produce the foc1 and foc2 radar products, we use the matched filter-focusing approach of Peters et al. (2007) by interpolating the data to 1 meter records along track and filtering out coherent noise. For *foc1*,..."

L116: I did not understand the beginning of this sentence starting with 'our primary processing approach for IRHs was foc2'. Please rephrase. Again this could be improved using the suggestion above. I think putting this and the previous paragraph together would make more sense here.
Answer: We meant that foc2 radar products are preferentially used when tracing IRHs. But we agree the wording was unclear. We have now merged this paragraph with the previous one, and made the structure more parallel with the description of the foc1 products. Changes are:
"... but is not appropriate for deep IRH tracing (Holschuh et al., 2014). For *foc2* ('2-D focusing'), we accommodate range variation of up to 1 μs, allowing our matched filter to track echoes for each point for synthetic apertures of over 2 kilometers. By doing so, ..."

L122: Again the authors are referring to Table 2.2.3 which does not exist. Please amend all the other mentions of this table and others as well.
Answer: Apologies for the confusion. The numbering has been corrected

L123: This is confusing. You mentioned Pic1, foc1 and foc2 but only used Pic1 and Foc2. Why did you not use foc1 and is it worth mentioning it here if you did not use it at all?
Answer: We did not use foc1 here as foc2 provides the best results for tracing sloping IRHs. As stated a little further above in the paragraph: " The *foc1* processor often produces good results for the bed (particularly in the presence of surface scattering) but is not appropriate for deep IRH tracing(Holschuh et al., 2014)". However, we prefer to keep the description of the foc1 radar product as it is used, in addition to foc2, to measure the ice thicknesses and bed elevations for the transects. We have therefore added the following sentence in the paragraph:
"The foc1 product was not used to trace the IRHs as foc2 provides the best results for tracing sloping IRHs in comparison to foc1."

L126: Please rephrase this sentence as it is confusing.

Answer: We have rephrased it to:
" We explicitly state in the published IRH data set which processing type (*pik1* or *foc2*) was used for IRH tracing."

Table 2: The 2nd reference for DELORES in the table (i.e. Lindsey 1989) is obscure. Perhaps King et al. (2016) is more appropriate for this dataset and the processing methods are well described in this paper. Full reference: King, E.C., Pritchard, H.D. and Smith, A.M., 2016. Subglacial landforms beneath Rutford Ice Stream, Antarctica: detailed bed topography from ice-penetrating radar. Earth System Science Data, 8(1), pp.151-158. doi: 10.5194/essd-8-151-2016
Answer: We have added the King et al. (2016) reference. But we have kept Lindsey (1989) here as this reference provides important information on how to calculate the horizontal resolution of a signed waveform system, which is the case of the DELORES system.

L150: The abbreviation of two-way travel time (i.e. TWTT) needs to be in capital letters and consistent throughout the text and figures.
Answer: We now make sure to use "TWTT" throughout.

L168-170: I'm not certain these sentences are appropriate for this section as they sound similar to L157 where a similar issue is mentioned. I suggest removing sentences on L168-170 and combining with section 2.3. Section 2.4.1. could then start with 'One of the HiCARS survey line [. . .] etc.'
Answer: We have followed the advice given here. The paragraph now begins at:
"One of the HiCARS survey lines...".
Lines 168-170 have been moved to Section 2.3.

L170: Please improve the formatting of the equations. There is a weird line (linked to LaTeX formatting) which needs to be removed and a footnote in the middle of the text which also needs to be removed.
Answer: It was the footnote of the table that was appearing somewhere it should not be. Thank you. This has now been fixed.

L171: "with a gap of 94 m between the ice core site and the point of closest approach" – in the description of your dataset on the USAP portal (https://www.usap-dc.org/view/dataset/601411; see abstract and 'read_me' files), you state that the distance between the ice-core and the radar transect is 110 m: "Ice core ages are transferred onto the IRHs on radar transect MCM/JKB1a/EDMC01a at distance = 110.153 m along the transect." Please amend whichever value is erroneous.
Answer: Our syntax was misleading. The gap is of 94 m between the ice core site and the point of closest approach. The 110.153 m refers to the value of the *distance along transect* column in the data set corresponding to that point of closest approach. We will reword the abstract and read_me in the USAP portal to be clearer.

Fig 3: This figure is poor. It looks (is) like a screenshot of the Landmark desktop with quick annotations on it. I am not convinced that this choice of presentation helps support any particular point made in the text. I think showing crossovers and the ticks representing the depth of a same IRH across crossovers is very useful, but I don't see why this has to be presented in its current form as a screenshot of the desktop. I suggest re-working this figure substantially (see minor point above), starting with adding a depth axis in meters as opposed to the TWTT on the left hand-side of radargram and moving from a screenshot to an actual figure showing a crossover point and the depth of your IRHs at

this point. It would be good to have coordinates on the map to the left and a clearer choice of colours (I can't see the yellow marking on the white background). It is also not clear why some IRHs are red and marked as (isochrones) and some are yellow and marked as (horizons) until you read the caption. Also, nothing tells you that the yellow IRHs are not isochronous, so why are they called differently? If this is due to the fact they are undated, then it would make more sense to change the annotations to: IRHs (dated) in red and IRHs (undated) in yellow.

Answer: Our aim with this figure was to show the environment that these IRHs are traced in, so you are right that this is a screenshot of the Landmark Desktop. But upon reading your comment, it seems it does not have the added value that we had anticipated. It has now been changed to a real depth radargram of a transect that runs across the Concordia Subglacial Trench. We chose to remove the map on the left, as we now locate this transect on Fig. 1. We now refer to "dated IRHs" and "undated IRHs" rather than "isochrones" and "horizons", as this it indeed mistakenly suggests the horizons are not isochronous when they are. This new vocabulary has been adopted throughout the manuscript, and in this figure. We also adopt the suggested marking of IRHs with circles and crosses. And we provide a zoomed view of the bottom half of the ice column where undated IRH are traced but rapidly drop off.

L184-188: You state that the IRHs that cannot be traced all the way to your radar transect remain undated. But you do date them using the 1-D model. They might not be directly dated at the ice-core, but you still attempt to date them. Since this sub-chapter is titled Age attribution, I'd expect that you include the information on the 1-D modelling here too. Currently, this section implies you have several undated IRHs. . . but you do date them (although indirectly)! Some details on the 1D model would therefore be useful here.

Answer: We have now moved part of the 1-D modelling description here. We have added the following at the end of the paragraph:

"We can however provide an estimate of the age of these "undated IRHs" using the 1-D pseudo-steady (Parrenin et al., 2006) ice flow model described in Parrenin et al. (2017). We use the dated IRHs as age and depth constraints to calculate a steady state age-depth modeled field for each radar transect. The ages simulated for the bottom 20% of the ice sheet, i.e. older than the deepest dated IRH, are therefore extrapolated ages. From the measured undated IRHs depths, we sample the simulated age-depth field and assign a modeled age to every trace along the radar transects (Fig. 8). We can then assign a mean modeled age for each undated IRH.".

We have therefore shortened the paragraph in the Results section accordingly.

L219: Could you provide an approximate figure for the amount of snowfall in the 10 years of data collection? Even though this can be neglected as it will like be of the order of a few meters and much smaller than the maximum uncertainty from the radar systems, it would be good to state this here for sake of transparency.

Answer: We now provide the yearly snowfall at Dome C right after this statement, which indeed is much smaller than the depth uncertainties calculated for the IRH depths:

"$\sim$25 mm/yr, Stenni et al., 2016."

Table 3: I think this table would be better placed under 2.5.2 as you haven't yet explained how you calculate age uncertainties. Also, would it not be more accurate to round the depth and depth uncertainties to the nearest meter? The uncertainties in IRH depth from the radar are unlikely to be of sub-meter accuracy, particularly with the older radar datasets used here. This is also particularly true for the much deeper IRHs (see Table 4)

Answer: This is a good point and Table 3 has now been placed under 2.5.2. (now 3.5.2 as a result of

other changes made in the manuscript). We now keep two significant figures for both the depth and age uncertainties and have removed the trailing zeros for the depths (also applied to Table 4)

L232: Again, be careful with the order of your tables. You state the age uncertainties for each IRH is summarized in Table 2.5.1. Do you mean Table 3?
Answer: Yes, this has been rectified (LaTex glitch).

L237-238: This is fairly wordy. Do you mean that you normalised the depth of your IRHs?
Answer: Not exactly: we provide the depth anomalies of each IRH with respect to its average depth below the surface. By doing this, all the IRHs can be on the same color scale in the figure which allows the reader to identify which IRHs are steeper/more rough than others, always with respect to their average depth. We have reworded this slightly to make this point clearer as follows:
"Figure 6 shows, for each dated IRH, the depth anomaly of the dated IRH with respect to its average depth from the ice surface, as a percentage anomaly. It shows where the IRH is deeper or shallower locally than on average."

L238: The transition between the sentences above and this paragraph is not very clear. Could you make anything below L238 a separate sub-chapter? As it describes IRH stratigraphy, perhaps you could name this 'Characteristics of Internal Stratigraphy'?
Answer: We have followed your suggestion and made everything below L238 in the results section into subsection "Characteristics of internal stratigraphy".

Fig 4: I can't easily distinguish between the magenta colour representing the IRH and the pink vertical bounds that represent the IRH age uncertainties. Instead of a colour, could you maybe change the linestyle to '- -' or something similar? Also could you add the units in the caption for δD?
Answer: We have chosen to restructure the figure (now Fig. 5) a little for clarity. The grey shading that was used to highlight the interglacials is now replaced by horizontal light red bars at the top of the figure (to avoid cluttering), while the IRHs are represented by vertical dashed lines with a light blue shading for the uncertainties. We did not change the uncertainties to a '- -' because it would not be visible for the shallowest IRHs that have a small uncertainty. The caption has been modified appropriately and the δD units have been added in the caption: "... δD variations in per mil Standard Mean Ocean Water (SMOW)"

L267: 'Interest' should be 'of interest'
Answer: This paragraph has been changed slightly, following reviewer 1's comments, and appears further down in the Discussion.

L274: 'some 500 km away' is vague. Can you be more accurate?
Answer: The exact distance is not really relevant, only the point that there are hundreds of kilometers separating the two ice cores sites. But we have measured the distance more accurately modified as follows:
"Difficulties mostly arose in approaching the Vostok ice core site, located $\sim$550 km away, due to wind-driven snow redistribution buried beneath the surface, ..."

L278-282: Please rephrase these sentences and add some examples of what you mean as it is vague. You say that modelling efforts have brought to light the influence of basal processes on internal stratigraphy. Can you be more specific? You state that these effects can be seen on Figure 3, but it's not very clear what you mean. I think a new figure highlighting these different processes would be useful here,

as I showed earlier. Especially as you go further in depth in the next sentences and provide an example over the Concordia Subglacial Trench. This figure would also link up well with L238-242.
Answer: To be more specific, we have expanded this section to include examples of processes that can impact the IRH geometries. The paragraph now reads as follows:
"Most difficulties in tracing IRHs arise for the deepest IRHs (Fig. 3). Robin and Millar (1982) first described how the effect of the bedrock topography has the strongest impact on the internal stratigraphy immediately above the bed, and decreases with distance from the bed, while modeling efforts have brought to light the influence of basal processes on internal stratigraphy. Variations in basal geothermal heat flux, the presence/absence of basal lubrication, or the roughness of the bedrock topography can cause the folding or the down-/up-draw of the IRHs which all complicate the continuous tracing of their geometries (e.g. Leysinger Vieli et al., 2011; Vieli et al., 2018). This increasing complexity of the IRH geometries is obvious, even visually, in the IRHs presented here (Fig. 3). Because the deepest IRHs are generally the steepest, their coverage is spatially limited (Fig. 8). "
In addition, we have changed Fig 3 to show, as suggested, IRHs flowing over the Concordia Subglacial Trench.

Fig 5: It is relatively hard to see the percentage depth of each IRH. Could you make it bold and bigger? Also the star representing the EDC ice-core site is fairly difficult to see; it's very small and color navy is too dark for the background.
Answer: (Now Fig. 6) We have made the percentage depth bigger and have changed the EDC ice-core site marking color to yellow for better visibility.

Fig 6: I think it would help if you had a consistent naming for all your IRHs. Throughout the text and in Figure 5, you use the word IRH or ISO but then in Figure 6 you use the abbreviation H (=horizon?). It would be clearer if you kept the naming convention you've used in Figure 5 and name the IRHs on Figure 6 as ISO20 to ISO 26. This point could also be said of Figure 7 and Table 4 where different abbreviations are used to refer to the same sets of IRHs.
Answer: (Now Fig. 7) Now that we have changed the vocabulary to "dated IRH" and "undated IRH", we have changed the naming convention on the figures to "IRH"+number corresponding to their number in Tables 3 and 4. And it now also matches the USAP data set naming convention.

L290: Remove the indent before 'In using'
Answer: We prefer to keep the indent here, as it indicates the beginning of a different point of discussion. After inserting reviewer 1's comments, the discussion has also been modified further.

L292: 'tractable'. Can you be more specific?
Answer: We have changed it to "achievable".

L299: 'very good one-to-one match'. I'm not sure this figure shows a 'very good' match. This is perhaps pedantic but 'a good match' is probably more accurate.
Answer: We agree it was perhaps over confident. We changed it to "good match".

Fig 8: I'm not sure why this figure is in the conclusion. Can you move it up in the results or discussion section? It would also be useful if you could provide the location of where these crossovers are (e.g. in Figure 1). If you didn't know they were crossing each other, you could easily assume they are from different locations (i.e. the layers on the DELORES radargram don't always look exactly like the layers on the OIA radargram even considering system resolutions; especially the bottom two). It

would also perhaps be useful to remove the continuous lines from the automatic tracker as they mask the true layer, and instead show the layer as circles or crosses (see similar comment for Figure 3)
Answer: (Now Figure 4) We have moved the figure up into Sect. 3.3, following Reviewer 3's advice. We have also labelled the relevant radar transects on Figure 1, and detail better in the Fig. 4 caption that these are crossover locations so that it's clear to the reader. And we have changed the IRH markings to circles either side of the intersection, as suggested. Note that we changed the color map to an inverted grey scale as it shows the IRHs better at this zoom. The caption now reads:
"Zoomed-in view of radar transect intersections between different radar systems: (a) between the HiCARS OIA transect OIA/JKB2n/Y77a and the DELORES transect 2H30E-H30B (both marked on Fig. 1), and (b) between the HiCARS OIA transect OIA/JKB2n/Y77a and the MCoRDS transect 20121227_01 (red line on Fig. 1). The traced IRHs are highlighted by red circles either side of the crossover point (marked by a red vertical line). The vertical scale is the true vertical depth (TVD) in meters. Note that in this color map, IRHs (maximum amplitudes in radar returns) are displayed in white."

L307: You could add a reference to Bodart et al. (2021) here too.
Answer: Yes! It wasn't published yet at the time.

L318-319: I don't think that the arguments provided in the paper show that this is the case so I think this sentence should be removed. Nothing tells you that the 10% of the ice column contain 1.5 m year old ice based on your analysis. You even state above that the fact the 1-D model does not account for stagnant ice could lead to the modelled ages being off but you remain vague on how much this could be. Thus there is no real evidence that you could find 1.5 M ice there. We assume this is the case, but your results don't show that clearly
Answer: We agree, and together with reviewer 1's suggestion, we have now changed this sentence to:
"This data set was used to confirm suspicions of 1.5 million-year-old ice in the Little Dome C region (Van Liefferinge and Pattyn, 2013; Parrenin et al., 2017),and will also provide the basis for a regional assessment of age at depth for other planned deep drillings in this region (e.g. Australia)".

L320-323: Data Availability: I think it would be useful if you could provide links to where the readers can access the CReSIS, HiCARS and DELORES data. Are the last two stored in an open repository?
Answer: We now provide a link to where the readers can access the CReSIS, HiCARS and DELORES data.

Response to RC3 comments on the submitted paper *A detailed radiostratigraphic data set for the central East Antarctic Plateau spanning from the Holocene to the mid-Pleistocene*

We thank the reviewer for her detailed review and constructive comments that have helped, we believe, to increase the impact of this manuscript. We have responded to all comments and modified the paper accordingly, our point-by-point answers follow.

Please note that review comments are in grey italics while our answers are not.

Answers to RC3

Overall questions

I am not very familiar with the standards for data release that may have been put out by the AntArchitecture program in order to facilitate bringing together different data sets in the future, but is the main piece that is new that these data are now available, or that they have been processed in a way that allows them to be used all together? Or, it seems likely both. Does the way that these data are archived follow a standard that was either established by previous data contributions, or does this set one that future archival efforts should follow? What are the ways that ensure that these data can be used together with other data sets in order to advance the goal of assembling a continent-scale radiostratigraphy? Perhaps this is not the paper to describe the protocols and how fields are archived, but given the focus on contributing to AntArchitecture, it would be interesting to mention.

Answer: No protocol was defined for archiving IRH data in a consistent way under the AntArchitecture program so far. It is an important task of the program, but until then, contributions to the AntArchitecture continent-wide data set require the IRH data to be open-access. However, we have followed the structure of other published IRH data sets so that there is some uniformity in the data structures across data releases. We have added the following sentence at the end of the introduction:
"We archive this data set based on the standards established by previous IRH data contributions (e.g Winter et al., 2019; Bodart et al., 2021; Beem et al., 2021), adapted to fit the information available for this specific data set."

The point in the discussion about tracing the same IRH in radar data from different systems may be worth mentioning earlier. It could even be that this discussion and Fig 8 make sense to move up in the manuscript when the data are being discussed, since what is discussed strikes me as more of a statement of the reality of the problem. The discussion section also includes multiple different points and it could be worth using sub-sections or considering to restructure some of that text elsewhere in the manuscript.

Answer: We agree and have moved this discussion up to Sect. 3.3 Internal Reflecting Horizon, where tracing the IRHs across transects is being discussed. Fig 8 (now Fig. 4) has also been moved up). We find that the discussion section now reads more sequentially, after removing this point about tracing the same IRH in radar data from different systems. It now focuses on the geometry of the IRHs, how easy/complicated they are to trace in the region, discusses new model developments for which these IRHs would be interesting and ends with considerations for the AntArchitecture project.

Given it's prominence in the figures, how accurate are the Zwally et al. (2012) drainage divides? I assume these are from ICESat data, but one version used ERS, and regardless there would be higher resolution data products from which to designate the divide. Would this matter? Does the divide appear where it is expected from the LDC survey?

Answer: The Zwally et al (2012) divides used were indeed from ICESat data, from `https://earth.gsfc.nasa.gov/cryo/data/polar-altimetry/antarctic-and-greenland-drainage-systems`. The divide position is not discussed in this data release paper: it is only shown to impress upon the readers that the BE-OI search focused on the divide area. But we have now replaced the drainage divides with the Rignot et al (2019) more recent positions, which differ a little, but not significantly across the LDC region. Given that the overall slope is of the order of a meter or two across the DELORES LDC survey region, the divide line does not move in any discernible way in the small area of the DELORES survey region using the higher resolution DELORES radar data.

The title mentions "last half million years" but the deepest layer is ∼700 kyr. Is it preferred to exclude credit for these deepest layers in the compilation because they are dated only with the age model? In that case the title should reflect the past 350 ka - I didn't follow why half a million was referred to in the title.

Answer: Although the ages defined of the oldest IRHs are estimates, they are relatively robust. E.g. the 1D age model was updated recently to include a stagnant ice layer (unpublished) and ages predicted are still on the order of half a million years. Lilien et al (2021) used another 1D model over the LDC region and they agree that isochrones can be dated to at least half a million, (they have isochrones between the age of 71 and 565 ka), and their deepest continuous isochrone is dated at 465 ka. We can therefore reasonably assume that our IRH data set goes back half a million years. The choice of title is supported by the modelled deep isochrone ages. But since the deepest isochrone age is an estimate, we have chosen to modify the title to reflect this to: "A detailed radiostratigraphic data set for the central East Antarctic Plateau spanning from the Holocene to the mid-Pleistocene".

Minor Points

Line 40: Perhaps also indicate that accessibility is an issue to radar-data collection in Antarctica (not just size – though of course that is the major challenge)

Answer: We have now added this information at this line, which now begins with:
"However, due to its sheer size and much lesser accessibility,...". Further changes have been made based on Reviewer 2's comments.

Line 43: It would be worth being consistent with how AntArchitecture is referred to, as the manuscript uses "AntArchitecture project", "program", "community", and "action group", yet I think nearly all of these uses refer to the same. Perhaps "action group" is best since that is how it is referred to on the SCAR page. Would it be appropriate to cite the white paper or link to AntArchitecture page?

Answer: We agree and "action group" has now been adopted throughout. The White paper is under way but not published yet, so instead, we include a link to the AntArchitecture report (AntArchitecture, 2017)

Line 45-48: "potentially reducing the lack of unique solutions, a persistent problem until now . . ., as well as solving the problem of modeling 3D data in simple 1-D or 2-D models. . ." – I would suggest revising this sentence as it isn't completely clear what is being stated. And, my read of this is to say that a continent-scale radar data set would in itself help to constrain parameter values and would facilitate solving 3-D problems that are better than 1-D or 2-D problems. I may not be understanding the point but I would caution that radar data are one part of the problem, and the ability to use them to solve an inverse problem or constrain a 3-D model and get a robust solution depends on the problem as it is set up (not only including the data). Unfortunately, a 3-D radiostratigraphy won't on it's own make all ice-sheet problems well posed.

Answer: We agree. Our wording was awkward and we only meant that a more extensive data coverage (spatially and temporally) can help reduce the uncertainties of modeling experiments that forward or inverse model IRH data by providing more tuning targets. We have reformulated this section as follows:
"The construction of a comprehensive Antarctic-wide IRH data set will both play a key role for projects such as the Beyond EPICA - Oldest Ice European search for million-year-old ice (Van Liefferinge and Pattyn, 2013; Parrenin et al., 2017) and provide valuable additional constraints for inverse models, potentially helping in cases where a unique solution could not be found due to a lack of data constraints (a persistent problem until now, e.g. Morse et al., 1998; Eisen et al., 2008; Koutnik et al., 2016; Parrenin

et al., 2017; Muldoon, 2018), or providing large-scale constraints 1D, 2D and 3D ice flow models (e.g. Leysinger Vieli et al., 2007, 2011; Passalacqua et al., 2018; Muldoon, 2018; Sutter et al., 2020)."

Line 48: Perhaps indicate here that Cavitte et al. 2020 is the citation to the data set as it otherwise could read like part of this work was already published elsewhere in a manuscript
Answer: Now modified to read: (data set release: Cavitte et al., 2020, https://doi.org/10.15784/601411)

Line 50: I think "the umbrella" could be cut since these projects were not necessarily connected
Answer: Agreed, removed.

Line 55: This may just be American English usage, but I use "farther" when referring to physical distance ("further" for figurative distance)
Answer: Good to know! Changed

Page 5: I wasn't sure why there was a footnote for Holschuh et al. (2014), seems like that goes more naturally with the table
Answer: There was a glitch with the LaTex formatting, it has now been changed.

Figure 1: It took me a moment to see the black lines well outside of the grid indicating the locations of the HiCARS prior to 2016. Since the grid is on, perhaps make those a different color? Or, swap blue and black since those lines in a tight grid will stand out?
Answer: We have changed the colors around so that the HiCARS prior to 2016 are in magenta, i.e. colored like the other radar data sets.

Figure 3: I wasn't sure of the need for the Landmark software interface to be included in the figure, especially since the font is too small to read for the tracing settings. Given that this is proprietary software, what is the message to the reader about the value of this interface? Would it be just as informative to share the figure without the Landmark panel view?
Answer: We agree, and based on reviewer 2's suggestions, we now show the figure without the Landmark panel view. Furthermore, we now display an OIA transect that cuts across the Concordia Subglacial Trench and therefore displays what is discussed later in the manuscript: that the deepest IRHs drop off due to basal process influence, in particular as we move away from LDC.

Line 173 and previous: May be better to write out two-way travel time in this case, or perhaps use "TWTT"? Or, "twtt"? Is there a convention?
Answer: We have changed it to TWTT everywhere (it is the most common usage.

Line 184: What does "applied equally" mean in this sentence?
Answer: We meant that it could also be used. The sentence has been changed to "could also be applied to...".

Line 230: Perhaps use "and" instead of ";" between references
Answer: Changed.

Line 267: Are the ages archived with the radar data set? Is there a way to update the data archive in the future if different ages are considered more realistic)?
Answer: The ages are archived with the radar data set. This data set can be updated easily or additional

files can be added easily: the USAP data center simply needs to be contacted to make changes/additions.

Figure 4: Is this figure here just to show where the IRHs fall with respect to climate cycles, or is there any information about the distribution over time and why these layers can be detected by the radars that relates to climate? I wasn't quite sure why this figure was included (though it is interesting to see)
Answer: We thought it was interesting to show the temporal spread of the IRHs of this data set with respect to the glacial-interglacial cycles. We have slightly reformulated the sentence that refers to this figure under the Results section to this effect. "The depths and ages, as well as the uncertainties associated, of the dated IRHs are summarized in Table 3, and their temporal spread is displayed in Fig. 4."

Line 281: "Leysinger" was dropped from "Leysinger Vieli" for 2018 reference, and same issue in the reference list
Answer: Corrected.

And, on this line I did not find that "This effect is obvious, even visually. . ." – I don't see the influence of basal processes here (?)
Answer: (see response to earlier comment) As we now show a transect going across areas with ongoing basal processes e.g. the Concordia Subglacial Trench, this sentence is still relevant.

Line 284: "fall into nulls" seemed like awkward phrasing, but perhaps I am not familiar with this language. In either case, if there is a way reword that could help make the point more clear
Answer: We have changed this to: "...similarly, reflections from surfaces dipping across track can be nulled by the across track antenna beam pattern structure. ".

Lines 301-309: I think there may be an unintended simplification of the goals for Antarctica in relation to what has been achieved for Greenland. For Greenland, it is a huge advantage to have significant coverage from the same system. Antarctica has the challenge of being bigger, more remote, and the existing data sets have been collected for decades using many different systems. I didn't think that came across in this paragraph so would suggest revising to make it more clear how radiostratigraphy generation for Greenland and Antarctica compare.
Answer: We have added the details that you mentioned, and these lines have been changed to the following:
"The formulated goal of the AntArchitecture action group is to have a joint community effort to build an Antarctic-wide IRH data set to check the match between all previously traced and published IRH data sets that can be directly connected for the East Antarctic Plateau region (to name a few, Siegert et al., 1998a; Winter et al., 2019). Eventually, the aim is that IRHs from currently disconnected surveys (e.g. Steinhage et al., 2001; Leysinger Vieli et al., 2011; Steinhage et al., 2013) are also connected after the collection of additional radar campaigns in the gap areas. The Greenland Ice Sheet already benefits from an325ice sheet-wide IRH data set (MacGregor et al., 2015). For Greenland, it is a huge advantage to have significant coverage from the same system. Antarctica has the challenge of being bigger, more remote, and the existing data sets have been collected for decades using many different systems. However, several studies have already demonstrated this is achievable at the scale of the West Antarctic Ice Sheet (Muldoon, 2018; Ashmore et al., 2020; Bodart et al., 2021)."

Line 307: When "previously rare" is mentioned, I wasn't sure if it was meant for 3-D cases or for continent-scale cases? The citations refer to very different types of work (and many other examples

could fit into this by my read, so perhaps use "e.g.") and the statement isn't correct that radar data themselves are rarely available for modeling efforts, but of course most of the surveys are local – but models have been integrating these data for decades, and different problems can be tackled as the radar data sets become more spatially extensive. It may be worth elaborating slightly here, or possibly deleting this point as I don't find that it adds much as a single sentence. The authors can decide what is best.

Answer: We liked the wording that you used and have elaborated this section slightly as follows: "Models have been integrating IRH data for decades, but until now, most of the surveys used had been local (a few square kilometers to a few ice catchments in size) (e.g. Koutnik et al., 2016; Beem et al., 2018; Drews et al., 2015). As the radar data sets become more spatially extensive, different problems can be tackled (e.g. Medley et al., 2013; Muldoon, 2018; Sutter et al., 2020)."

Line 318: Should be "confirm", but I would suggest "corroborate" – there is still dependence on age models

Answer: We changed this to "corroborate". The sentence has been further changed to:
"This data set was used to corroborate suspicions of 1.5 million-year-old ice in the Little Dome C region (Van Liefferinge and Pattyn, 2013; Parrenin et al., 2017), and will also provide the basis for a regional assessment of age at depth for other planned deep drillings in this region (e.g. Australia)"