

SUGGESTIONS:

P9-10: Is it better to say “We used an inverse approach to retrieve GF from radar-inferred distribution of wet and dry beds”? The current writing sounds like that the authors made a complicated analysis of the radar data in their own work to tie the magnitude of the bed reflectivity and GF.

We agree with this more specific formulation, and changed for the proposed sentence.

L12: local distribution “of radar-inferred basal melting”

Changed

L15-16: It is said “two main subregions” at L15 but then “a third one” at L16.

The sentence is reworded this way :

“Three main subregions appear to be free of basal melting, two because of a thin overlying ice, and one north of Dome C, because of a low GF.”

L49: “parameter’s”

Changed

L68: typo? “are rare in Antarctica...” Delete “East”

Changed

L70: Add a reference supporting a typical length scale of 10 km.

We now explicit this comes from the work of Carson et al 2014.

L70-75: Melting spots can be found as spots with anomalously high bed return power, only if the study area includes both melting and freezing regions. If the entire study area has melting bed, then the radar data are not necessarily capable to show the melting spots.

The new sentence is specified by a new beginning :

Over a study area covered both by frozen and melting basal ice, radio echo sounding (RES) measurements may help infer the basal conditions at regional scale, since the presence of water at the ice-bed interface is responsible for a remarkable increase in the amplitude of the reflected echoes.

L110: add “today” after “melting occurs”

Changed

L145: remove the first “and”

We rather think a comma was missing :

“(in particular bedrock and surface heights, and ice thickness)”

L428: what is the basis to argue “probably up to 3 mW/m²” here?

The sentence is split and specification is added :

“As the difference in critical ice thickness does not generally exceed 150 m, and as 1 mW m⁻² has the same thermal effect as 60 m in ice thickness, the GF is probably overestimated up to 2.5 mW m⁻², which is consistent with the uncertainties produced by our method (inversion and interpolation).”

L436-L437: Do you mean “Hence, considering the duration of deglaciation and strong dependence

on the ice thickness, the thermal state of the basal ice may ...”?

The sentence is reworded this way :

“Hence, considering the duration of deglaciation, the thermal state of the basal ice may correspond to very different climatic periods depending on the ice thickness”

L445: “positive GF anomaly”

Changed

L469-470: Do you mean “highest (with thinnest ice) DRY points and the lowest (with thickest ice) WET points”?

No, we mean the highest point (with thinnest ice) for which the conditions are *still wet*, and the lowest point (with thickest ice) for which the condition are *still dry*. We here refer to the way the critical thickness is evaluated, so we just add to refer to §3.

“between the highest wet points and the lowest dry points at a given spot (see §3).”

L532: will now be performed?? Do you mean “is being performed” or “will be performed soon”?

Changed for “Is now being performed”

L577: “state”

Changed

Table 1 caption: GHF -> GF

Changed

Table 1: make the column header consistent; Hc should be Hc +/- sigma.

Changed

Fig. 1 caption: change the second dry to “(red)” in the first line.

Changed

Fig. 2: GHF to GF.

Changed

Fig 3: Add “shape parameter” in front of the italic p.

Changed

Fig. 5: change to “Geothermal flux”. Also change the legend in the figure accordingly.

Changed

Fig. 6: Change the x axis. Add italic “m” after Basal melt rate”. Again, geothermal flux. Add “shape parameter” in front of the italic p.

Changed

Fig. 7: “Averaged past” remains not clear enough.

Specified this way : “Past basal melt rate, averaged over 400 ka.”

Fig. 8: Geothermal flux.

Changed

L12, 35, 46, 52, ..., 548 (and at many other places): Geothermal flux -> GF
Occurrences checked and changed

Non-public comments to the Author:

It is completely up to the authors, but I feel very happy if the authors acknowledge reviewers' work explicitly in the paper. Sorry for slow process to handle this paper, while I was absent from the office and with very narrow internet at a summer destination.

Be sure that we had no bad intent ! We just waited the end of the editing process to thank every person and organization that allowed this work to be lead. Now complete acknowledgement is added.