

General comments:

I believe the authors' revisions have considerably strengthened this manuscript. The added sections about the subglacial conditions strengthens the discussion about the implications of this study. The new opening sentences at the beginning of the sections also provide improved readability of the manuscript. I have a list of minor technical comments that would provide further improvements throughout the manuscript.

Technical comments:

Note: Line numbers correspond to the track changes document

Line 21: "High-gain Yagi antennae were used to improve the antenna beam directivity and thus attain a significant decrease in features of unfocussed along-track diffraction hyperbolae in the echoes from mountainous ice-bedrock interfaces." → "High-gain Yagi antennae were used to improve the antenna beam directivity by significantly decreases hyperbolic features of unfocussed along-track diffraction hyperbolae in the echoes from mountainous ice-bedrock interfaces."

Line 29: "...between sets of the data" → "...between datasets".

Line 29: "Recognizing the improvement in data quality and comparing existing topographic products, we suggest that widely available bed topography products should be validated with in-situ observations where it is possible." → "Our analysis suggests that widely available bed topography products should be validated with in-situ observations where it is possible."

Line 88: "For identifying suitable sites for drilling very old ice, gaining knowledge of the subglacial topography and englacial layering is crucial." → "To identify suitable drilling sites for very old ice, it is crucial to gain knowledge of the subglacial topography and englacial layering."

Line 181: "The experimental variogram is fitted to a linear model whose parameters are determined by minimizing the average squared difference..." → "The experimental variogram is fitted to a linear model, and the model parameters are determined by minimizing the average squared difference..."

Line 185: "The uncertainties were assessed in terms of three error components, namely (1) the vertical..." → "The uncertainties were assessed in terms of three error components: (1) the vertical..."

Figure 3 caption: (a) change to "Gridded ice thickness (0.5km resolution)"? Maybe also add what the spacing of the contours are.

Line 252: "The total uncertainty of ice thickness on the interpolated map consists of three factors. Two of them are associated with individual measurements, and another one is associated with interpolation." → "The total uncertainty of ice thickness on the interpolated

map consists of three factors: two of them are associated with individual measurements, and the third is associated with interpolation.”

Figure 6 caption: Typo? “...shown in (a) were merged two data...” doesn’t make sense to me

Line 297: consider replacing the word “point”... maybe 2D” or just say ice thickness survey?

Line 307: Again, consider replacing “point”.

Line 355: consider replacing “aids” with “influences”

Line 386: → “...due to basal melting, which could eliminate the past climatic record”

Line 394: → “Driving stress correlates spatially with...” In this paragraph there are inconsistencies in the use of “driving stresses” vs. “driving stress”

Line 406: missing “the” → “from the bedrock surface”

Line 426-429 could use a reference to figure 8d about where we can see this evidence in the figure.

Line 459: → “and that the ice over troughs is subjected”