

## Response to reviewer 2

We thank reviewer 2 for the comments and suggestions. We have addressed the suggested revisions to the text and figures. Below we show the reviewer comments in black, and our response in red.

General Comments: This manuscript reports the first ice thickness measurements on Schiaparelli glacier, Chile. The paper is well-written and presents a succinct account of recent in-situ measurements performed with a portable, commercial-grade ground penetrating radar system operating at a center frequency of 10 MHz. These are relevant and timely results because studies (and data) on the glaciers of Tierra del Fuego are limited. Glaciers in the Darwing mountain range are hypothesized to respond differently to climatic changes and thus ice thickness measurements such as these are needed to model and understand them better. Specific comments: I only have the following small suggestions/corrections:

1) Please include a few "A-scope" plots (power vs. depth) for a few range lines shown in the echograms of Fig. 3. It would be helpful to do this for (1) shallow ice (<100 m) as well as (2) the thickest ice sounded. Such plots will be helpful to estimate the ice attenuation and help guide the performance requirements for future radar surveys of these glaciers.

The presented radargrams are the resulting image of series of processes that include filters and gain adjustments. We agree that an estimation of the attenuation adds up to the work already presented, however the "A-scope" of the resulting processed image would not help to estimate the ice attenuation. We would prefer to keep this figure simplified to the raster and have added the numeric estimation of attenuation.

2) Please include an estimate of the ice losses in dB/km from the above. Comparisons with attenuations observed in other temperate ice glaciers should be included.

An estimation of depth-average attenuation rate was made based on the method described by Jacobel (2009) and a new paragraph was added in Results from Line 10 to Line 16.

3) Small suggestion: Fig. 4, the ice bed profiles are displayed going from B to A (red trace) and then from B to C (blue trace). This helps making a comparison of the bed topography in the first 200 m (where the paths overlap). However, in Fig. 3, the echograms are shown going from A to B and then from C to B. I would recommend orienting the echograms in Fig. 3 to be consistent with the direction shown in Fig. 4.

Revised. Figures are now consistent.

4) Please confirm that the resolution of the ADC is 32 bits or otherwise clarify. Most commercial ADCs for ~100 MSPS are 14-16 bits (that I am aware of). There are some 24-bit ADCs around, but they have lower sampling rates

Yes, we apologise for this error, the ADC is 16 bits and it has been corrected in the text.

5) Page 3, line 7. There is a missing space between the number and the unit. It should read 24 m instead of 24m.

Revised

6) In Fig. 2(b), please mark the operators carrying the transmitter and receiver, respectively.

Figure updated.