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Earth System Science Data Discussions

Interactive comment on "Subglacial landforms beneath Rutford Ice Stream, Antarctica: detailed bed topography from ice-penetrating radar" *by* E. C. King et al.

Anonymous Referee #1

Received and published: 20 November 2015

To the editor: It would be nice to have line numbers on each page that differed from page to page for ease of editing.

General Comments: This manuscript presents a novel dataset covering a relatively large portion of an Antarctic ice stream bed at a fine enough resolution to pick out individual bedforms. It clearly builds on the past work done by the authors. I do not have any big issues with the manuscript as it is except for one: the interpretation of landforms. Philosophically, I wonder if any interpretation should be included here or if it should be saved for a follow-on publication, as is indicated to be coming. But more specifically, there is little detail provided about how the interpretation was done. What

sets apart these different features – is it size? elongation? There is no discussion as to why the previously identified MSGL is now called a drumlin. Is that because smaller features are now observable? Additionally, there is mention of how the features taper in cross-section, but these data are not provided – to what resolution can you detect that a feature tapers or not? Could the MSGL also taper, but be out of the resolution of the data? Further, how are grooves identified?

I think it might be good to remove this interpretation altogether and simply provide the dataset without it, but perhaps include some figures showing how individual landforms differ in cross section and/or plan view.

Specific Comments: 1. How did the authors choose their smoothing resolution? Were other values tried initially? 2. How is curvature calculated? Is there a quantitative value that designates "High" curvature vs. "Low"?

Technical Comments:

Pg. 919; Line 11: Reference needed for Fresnel zone-based estimates of resolution.

Pg. 921; Line 1: I have no idea what a "cow catcher" is!

Line 921; Line 20: Correction – these landforms are interpreted, not identified.

Pg. 921; Line 23: where is the NE trough? On Fig. 3, the authors have labelled Eastern and Western troughs. Do they mean the northern part of the eastern trough? Similarly, what is the "left" margin. I know what the author's mean from Fig. 5, but it would be nice to be consistent.

Pg. 922; Line 1: It would be nice to see profiles of the drumlins since this is mentioned in the text. Also, in this paragraph it would be good to refer to the figures occasionally.

Pg. 922; Line 7: what is an elongation ratio? I assume a ratio of length to width?

Pg. 922: Seems like the section on limitations to the data should be presented after discussing acquisition. Also, some of the information presented in this section (eg. lack

of firn correction) is repeated from earlier parts of the manuscript.

Pg. 923; Line 25: Actually, this is the 2nd publication to provide such data. The first was the earlier one by King and others.

Fig. 1: Perhaps a better inset map showing Rutford in context of regional glaciology would be helpful. The authors could then show where the seismic surveys from Andy's work were located. Perhaps the seismic data were acquired in the same region as Fig. 1, but I couldn't tell from Andy's publication.

Fig. 4: add some scale bars

Interactive comment on Earth Syst. Sci. Data Discuss., 8, 913, 2015.