

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 #2

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Work like this is needed especially in places perceived as stable to understand baseline changes in bedforms and compare against dynamic changes in more unstable environments Overall a very solid work, well organized and smart. Indeed the release of this great represents the beginning of a new era for the development and testing of models of basal processes. While I would not have minded seeing more writing on the possibilities this dataset offers, I understand this to be primarily a data release paper and so leave such tasks to the work that follows. “Major” issues A. There appears to be a “hole” in the survey grid, near (-1280000, 140000). I assume it had something to do with surface crevassing, but I had trouble locating text explaining why the area wasn’t covered. Section 3.1 is a great place to add this. B. Given previous studies citing

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rapid evolution of bedforms, what reassurance do we as the reader have that the bed did not change significantly over the course of this survey? C. Perhaps label the axes units in km rather than meters (I get lost with all the zeros) D. Also have the authors considered offering a version of the data set projected in structure parallel/structure perpendicular Cartesian projection? E. Migrating is definitely the way to go. I'd like to see a pre migration and post migration image in one of your figures. Line by line comments: Page 914 line 23: Maybe I'm picky, but would it not be better to say "10's of meters" or "several meters" rather than "a few meters"? You're still a few orders of magnitude more detailed than previous work in such environments and your horizontal / vertical resolution was 7.5 / 8.8m respectively. Page 914 line 25: Include a sentence or two explaining why processes that occur over small spatial scales can have major implications for larger scale ice dynamics. Page 915 line 1: this felt like a jump from the previous section. Some sort of connecting material is recommended. Page 915 line 5: It would be good to see some language mentioning that MSGLs have been seen in many formerly glaciated areas, but that work described in this paragraph is the first time detailing their existence in an actively evolving subglacial environment. Page 915 line 19: The paragraph would do well to begin with a sentence along the lines of "The Rutford Ice Stream has been the site of considerable investigation over the previous XX years" Page 918 Line 4: To the best of my knowledge "Wow" cannot be induced, only inspired. That you brought "wow" to an antenna is a particularly noble accomplishment. Perhaps explain a bit more about this transcendence of known reality. Page 921 line 1: Not everyone knows what a "cow catcher" is, though given the high crossover between readers of ESSD and the popular magazine "Elephants and Trains" I'm sure the reference will work just fine. P 921 lines 3-7: It took me a few read-throughs to get that you applied a high pass spatial filter to the data and then subtracted the filtered data from the original.

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

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