

Interactive comment on “A new bed elevation dataset for Greenland” by J. A. Griggs et al.

Anonymous Referee #2

Received and published: 10 January 2013

Review of "A new bed elevation dataset for Greenland" by J. A. Griggs Journal: TC MS
No.: tc-2012-171

Griggs and co-authors present a new geometric dataset for Greenland, which integrates a large amount of new data compared to the last release from the same group in 2001. It represents an important improvement by adding more detail especially in regions close to the ice margin. The paper is clearly written and describes the used methods in sufficient detail. For me, it can be published almost as is pending some minor revisions in text and figures:

Title: Since the data set also contains ice thickness and surface elevation, shouldn't the title reflect that as e.g. "A new geometric dataset for Greenland"?

4831.1 Should add "the third power of the surface elevation gradient and .." at the beginning of the line to add this other important dependence.

C2773

4831.5 Should be ".. genesis *of* landforms .."

4831.28 Should be "release of the product."

4833.5 and .6 It may not be clear to the reader what Level 2 and Level 1b refer to, could the authors clarify with additional information.

4833.25 Could add that this is also an airborne instrument. The heading of 2.1 makes that clear, but all other 2.1.? subsections indicate it again explicitly.

4834.11 There seems to be something wrong with this sentence. Maybe missing an "and"? "It was operated by the NASA Jet Propulsion Laboratory (JPL) on an Air Greenland Twin Otter *and* as an IPY deployment on the NASA Twin Otter."

4834.21 A lot of information about Antarctica here. Should add something specific for Greenland and/or remove the Antarctic information for the context of this paper.

4835.25 Should be ".. i.e. as far *as* the maximum .."

4842.7 I think this geoid referencing deserves some more explanations and weight in this section. If I understand well, the former 2001 data set has not been referenced to the geoid. Nevertheless, many former ice sheet modelling studies have directly used the 2001 data set without correction (e.g. SeaRISE). The authors should indicate here what magnitude the geoid correction has and where it is most important. Also clarify e.g. in the caption what has been done for Fig 4. Are both data sets corrected for geoid or not?

4842.14 Maybe "The data includes features which were not visible in previous compilations as well as *it improves* the representation of features previously observed."

4848.29 Reference Fahnstock et al. should be corrected. "High geothermal heat *flow*, basal melt, and the origin of rapid ice *flow* in Central Greenland"

Figures:

C2774

Many labels are too small and hardly legible, especially the color bar and tick labels but also x-axis and y-axis labels in Figs. 2, 4 and 6. This should be changed.

Fig.2: Maybe "Elevation relative to sea level (m)" is a better label here. Same in Figure 3.

Fig. 3: Missing data in lower left corner should be indicated as such. Contrast between grid and color bar labels and background could be increased.

Interactive comment on The Cryosphere Discuss., 6, 4829, 2012.

C2775