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Interactive comment on “Changes of Wilkins Ice Shelf over the past 15 years and inferences on its stability” by M. Braun et al.

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I would like to comment on your use and application of ICESat satellite laser altimeter data. I am on the ICESat Science Team and it is great to see the data being used in the community outside of the ST. However care needs to be taken when using these data. I have recently analysed all the repeats of all tracks that cross the Wilkins Ice Shelf. This is a very cloudy region, there are a total of 13 repeats possible for most tracks (campaigns L2a through L3j), and of the 8 tracks across the main part of ice shelf, the number of "good" (i.e. no clouds) repeats varies from 2 to 5. That means we lose approximately 80% of the possible data over this region. Campaign L3d has almost no valid shots over Wilkins. It appears from the paper that you do not filter for clouds, and you must (you can do a simple gain filter, keep shots with gain < 50, which

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is crude, but helps). The impact on surface elevation due to clouds can be large (it can "lower" the surface by several metres).

It is stated in the paper that there are no tide corrections applied to ICESat data. This is incorrect: a tide model is applied to the elevations during processing. The tide model used is currently a global tide model (GOT99.2) that is not accurate around Antarctica. On ice shelves, it must be removed and a better tide model then applied. This tide model is going to be replaced in Release 29 by an better global model (TPX07.1). For precise repeat-track work on ice shelves, however, I would not rely on this tide model either, and apply a better, regional model.

I do not understand why you needed to calculate a histogram to calculate shot-to-shot spacing – it is ~172m. Nor do I understand the "base" point from which to calculate distance.

One final point: please state what ICESat data product and Release you are using (GLA12, Release 428).

The gain filter and tide issue are both discussed in Fricker and Padman (2006):

FRICKER, H. A., and L. PADMAN (2006) Ice shelf grounding zone structure from ICE-Sat laser altimetry, *Geophys. Res. Letts.*, 33, L15502, doi:10.1029/2006GL026907.

Interactive comment on *The Cryosphere Discuss.*, 2, 341, 2008.

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