

## ***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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My comment relates to only a small section of the manuscript - the post-processing of the ICESat data to gain ice shelf "freeboard". They may not all be completely relevant to the application (L1, p351), but should be considered.

1. OSU91A is now regarded as being a very inaccurate geoid model. It should no longer be used for glaciological applications (the same also applies to EGM96). There are many modern easy to access geoid models located at the International Center for Global Earth Models (<http://icgem.gfz-potsdam.de/ICGEM/ICGEM.html>). It could be that OSU91A is in error by many metres (3-5 metres would certainly be possible). I would suggest either EGM2008 (currently offline) or EIGEN-GL04C (both GRACE-based geoid models with higher resolution gravity data). The above link provides an

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online computation service to derive grids.

2. an important geodetic/oceanographic point is that applying such a geoid-ellipsoid separation will get you to the geoid, but this is not the same as the sea surface - to get there you need a mean dynamic topography correction, which is of the order of 0.5-2m around Antarctica. There are various sources of estimates of these, including <http://gracetellus.jpl.nasa.gov/dot.html>

3. The statement about no tidal observations for the WIS seems correct ([http://www.esr.org/antarctic\\_tg\\_index.html](http://www.esr.org/antarctic_tg_index.html)), but were comparisons made to a range of ocean tide model estimates to see if one or more fit the observed height changes (see, for example AntPen04.01 via the above link)? At the moment it seems like the data were not de-tided, but an explicit statement is not included, nor an assessment of its likely consequence. The same question applies to the InSAR data.

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

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