**Geoscientific
Model Development
Discussions**

Interactive comment on "Vegetation height products between 60deg; S and 60deg; N from ICESat GLAS data" *by* S. O. Los et al.

Anonymous Referee #2

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p2331 line18-27: I would suggest you to add the GLA14 fields after each statistics. For example, ...the area under the 6 Gaussians (i_Garea),...

p2331 line20-24: confusing when you mention saturation elevation correction without introducing what saturation elevation correction is, which you did later on p2334

p2331 line24-26: why do you have to conform to the SRTM 4.1 tiles?

p2332 line6: which GLAS elevation: centroid, signal start, start-end ...? This is a piece of key information missing and not being well clarified at least. You mentioned that i_elev in Table 1 is called "waveform reference elevation". In the ICESat website, i_elev of GLA14 represents "Surface elevation with respect to the ellipsoid at the spot location determined by range using the land-specific fitting procedure after all instrument

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corrections, atmospheric delays and tides have been applied". Is "waveform reference elevation" the same as that definition? If yes, why is called "reference elevation"?

p2333, line23-26: Different lasers and laser periods have different level of energy. I wonder how well the filtering criteria developed using L1A can be applied to other laser periods.

p2334, line8: which geoid? EGM96 geoid of SRTM? Which website can you find the geoid ht of EGM96 relative to TOPEX/Poseidon ellipsoid? Note that EGM96 geoid height relative to WGS84 ellipsoid is easily accessible.

p2334, line12, where does this equation come from? Maybe it is a well-known equation in geodesy. But it is useful to add the reference for readers not in geodesy.

p2334, eq (2): This equation was developed for a site in UK. How well can this equation be applied to global scale, considering the complexity of topography and vegetation.

p2335, line12-13: It seems that you assume that eq(2) is able to detect tree height properly and any unrealistic tree heights are caused by spurious waveform data. But the unrealistic tree height estiamtion is very likely due to the use of Eq2 itself. For example, the detection of signal start is critical and is affected by background noise. rA1,2 might not be able to detect the true ground elevation. So, the rationale of your analysis is questionable. This is a fundamental fault in my opinion.

p2335, line21-23: why did you use the max slope instead of one overall calculated from the focal cell and its neighborhood? You can find the equation from a GIS book easily.

Fig1a. What are the gray lines? Political boundaries?

Interactive comment on Geosci. Model Dev. Discuss., 4, 2327, 2011.