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Interactive comment on "A decade of supraglacial lake volume estimates across a land-terminating margin of the Greenland Ice Sheet" *by* A. A. W. Fitzpatrick et al.

Dr. Colgan

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Dr. Fitzpatrick,

I thank you for acknowledging our recent work on Greenland supraglacial lakes in a changing climate (Liang et al., 2012). Your statement (P1390 L5) "Previous remote sensing studies (e.g. Liang et al., 2012) have presented lake area estimates which, although more reliable to attain, are not as representative of lake dynamics or contribution to the ice sheets water budget as volume estimates" is not an entirely comprehensive characterization of our work.

While our focus was indeed on generating remotely sensed lake area estimates, we

did convert our lake area estimates into lake volume estimates using the assumption of conical geometry. With previously observed depth ratios (alpha), we posited that the volume (V) of water in a lake of a given area (A) can be approximated by V = (2*alpha/3/piˆ(1/3))*Aˆ(3/2). While this is clearly a zeroth order approximation to lake volume, it is subtly different than implying we did not account for volume.

I see you are already garnering many (generally positive) comments, so my apologies for burdening you with another!

Thanks, William Colgan

Reference:

Liang, Y., W. Colgan, Q. Lv, K. Steffen, W. Abdalati, J. Stroeve, D. Gallaher and N. Bayou. 2012. A decadal investigation of supraglacial lakes in West Greenland using a fully automatic detection and tracking algorithm. Remote Sensing of Environment. 123: 127-138.

Interactive comment on The Cryosphere Discuss., 7, 1383, 2013.