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Interactive comment on "A ten-year record of supraglacial lake evolution and rapid drainage in West Greenland using an automated processing algorithm for multispectral imagery" *by* B. F. Morriss et al.

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Thank you for your detailed reading and comments; we now realize some of our phrasing needed to be reexamined and ideas clarified.

Swiss Camp is <1 km from the flow band's centerline in the across-flow direction and <5 km in the along-flow direction. For a single point, single parameter analysis, this site is appropriate. We have made this clearer in the revised manuscript. A rasterized analysis of temperature, radiation balance, winter snowpack, and summer precipitation

would yield a more complete interpretation of the surface water balance but is outside the scope of this work. The distribution of cumulative PDDs is, indeed, particularly important and will be further clarified in the revised manuscript.

The GPS stations used lie on the study area's center flow band. They were not deployed to instrument the lakes but were chosen for use in this analysis because of their proximity to drainage events in 2011. An analysis of bed hydraulics is beyond the scope of this study.

Distant upstream drainages could potentially influence the system by providing water or through flow coupling, the effective range of these effects is relatively short (<5 km, Price et al., 2008; Hoffman et al., 2011). Unfortunately, there are not any detected drainages upstream of those plotted in Figure 6 to explore this further. While we hoped to investigate the timing and causal relationship of drainages and speedups, the temporal resolution of the record does not allow this. Even in extended periods of cloud free imagery, daily images cannot reliably tease out this relationship. Additionally, time between usable images can range from ∼0.5 days to over a week.

An analysis of lake volume and area using all ETM+ scenes from 2002-2011 showed that these properties are highly correlated within lake basins (and nearly 1 km3:1 km2). Substituting area analyses for volumetric analyses simplifies images processing, particularly when using multiple imagery sources, and does not compromise our interpretation.

Now to address your list of comments/suggestions (as you numbered them):

P2 L7: Fixed.

P2 L11: Elevation focus-regions clarified.

P3 L4: Fixed.

P3 L4: Fixed.

L3 L7: Fixed.

P4 L4: Clarified.

P4 L7-13: Clarified.

P4 L16: Fixed.

P5 L6: Fixed.

P5 L8: Fixed.

P5 L10: Fixed.

P5 L12: Fixed.

P5 L13: Clarified.

P6 L13: Yes.

P6 L19: Fixed.

P6 L24: Clarified.

P7 L9/P7 L19: Done.

P7 L22: We did not.

P8 L7: Clarified.

P8 15: Fixed.

P8 L18: $\sim$2.5 days (ranging from 2 images/day to 1 image/week).

P8 L21: Field observation.

P8 L24: Fixed.

P8 L25: Fixed.

P8 L26: See above. We observed no particularly deep lakes (at least compared to

their long axes).

P9 L1: At this temporal resolution, the distinction cannot be made between noisy data and a rapid refill. I also haven't seen lakes refill on this time scale and only very rarely in the same water year (perhaps because I'm only watching through MODIS).

P9 L5: Clarified.

P9 10: Fixed.

P9 L14: Clarified.

P9 L15: Fixed.

P10 L21: We do not take the transition from volume to area lightly but have no reason to believe they are not very closely related, particularly at this scale.

P10 L22: Clarified.

P10 L26: Surface basins are low amplitude translations of topographic basins. Clarified.

P11 L6: Clarified.

P11 L6: Clarified.

P11 L26: Clarified.

P12 L2: Fixed.

P12 L6: Added.

P12 L7-9. Clarified.

P12 L6: Fixed.

L13 L1: See above.

Interactive comment on The Cryosphere Discuss., 7, 3543, 2013.