

Interactive comment on “Brief communication: Mapping river ice using drones and structure from motion” by Knut Alfredsen et al.

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The authors have presented an interesting paper regarding the use of unmanned aerial vehicles to map river ice extent and ice properties such as ice thickness and volume. It has also been our group's experience that UAVs can be very helpful for this purpose, as well as to quantify surface ice concentration and ice pan velocities. Their methodology should be useful for many other researchers in the field as well. I have a few minor comments, followed by some grammatical suggestions. It would have been helpful to have additional detail regarding the specifics of what constitutes a high quality image vs a low quality image, and how one might be more likely to achieve the former. Any practical tips for a successful flight would be appreciated by the readers. It also would have been nice to see whether the chosen number of control points was actually nec-

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essary. Is it a coincidence that the number of points only varied between 9 and 11? Would the error have been significantly increased if only 5 control points had been used? Are there any suggestions for the placement of these points? For instance, had the opposite bank been easily accessible, would it have been better to have the control points more evenly spaced throughout the measurement domain?

Specific Comments: Pg. 1, Line 23 – Difficulty rather than difficult Pg 2, L8 – “area covered by imaged area” could be reworded. Pg. 2, L21 – be consistent with either ‘freeze-up’ or ‘freeze up’. Pg. 2, L24 – control, rather than controls Pg. 2, L32 – unnecessary comma Pg. 3, L8 – Clarify the meaning of annual mean annual flow. Pg. 3, L21 – increase the number of images, rather than cameras? Pg. 4, L1 – I'd like to know more about what constitutes a quality index of 0.8. Pg. 4, L5 – 14 – There are four instances where the word ‘are’ or ‘was’ should be replaced with ‘were’. Pg. 4, L27 – ...mechanisms that form ... Pg. 4, L32 – delete the word ‘were’ Pg. 5, L1 – the shear wall heights were ... Pg. 5, L5 – Figure rather than figure Pg. 6, L12 – snow cover develops Pg. 7, L7 – Though rather than thought Table 1 caption – control rather than Control. Caption Figure 3 – “shows and the two sections” should be reworded.

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