

Interactive comment on “Reduced glacier sliding caused by persistent drainage from a subglacial lake” by E. Magnússon et al.

Anonymous Referee #2

Received and published: 5 November 2009

This paper presents interesting results derived from InSAR showing variation in flow speed and water storage between and during jokulhlaups events. Overall the work seems technically sound and the interpretation fairly straightforward. My main problem with the paper is that its readability could be greatly improved. I have included numerous comments below, any of which could be ignored, but I encourage the authors to make use of these comments. In addition, I suggest they spend additional time word-smithing the text. While I consider this important some extensive editing is needed, I would classify this as minor revision in terms of the technical content.

Minor Points, typos, etc

Page 562

C331

Line 4 – add “a” before 50%

Line 13 – make “part” plural.

Line 21 – Throughout document Paterson is 2006. Maybe this is a a second print run, but I normally see the 3rd edition with a 1994 date.

Page 563

Line 1 – replace “, providing” with “, which provides”

Line 2 – Start new sentence with “These data when combined with ...”

Line 9 – replace “it” with “this drainage”

Line 9 – Split sentence “. . . glacier motion. We accomplish this by by using ERS 1/2. . .”

Line 13 – replace “lake” with “lake’s”

Line 24 – remove “of the radar beam”

Line 27 – add “coherent” before phase and replace “of the radar beam in” with “between”

Page 564

Line 8 – add “the” before LOS

Line 22 – Modify to “The InSAR data from the upper part. . .”

Line 24 – This sentence could use some rewording.

Line 27 – hyphenate degree-day

Page 565

Line 4 – 1.9 cm LOS is not half a fringe (1.4 cm)

Line 23 Change to “Our analysis focuses on the central. . .”

C332

Page 566

Line 4 – remove “as we go” and use “farther” instead of “further” since referring to physical distance.

Line 6 – by “motion rate”, do you mean “speed”, if so then I think this substitution here and elsewhere would improve the readability.

Line 8 – add a “,” between “1996, the”

Line 23 – Try “This allows the total volume of each jokulhlaup to be used as a natural. . .”

Page 567

Line 4 – add “,” before “causing”

Line 5 – this sentence tends to run on, consider rewording.

Line 9 – remove “some” before “water”

Line 14 – change “however” to “, however, “ or remove.

Line 20 – try after instead of “gives . . .” “corresponds to a volume of water that drained from the lake between jokulhlaups at an average rate of $\sim 9 \text{ m}^3 \text{ s}^{-1}$ ”.

Line 24 – would be good refer to a figure here, perhaps parenthetically.

Line 25 – “related” be a little clearer here. Do you mean “that we believe are related to”

Line 25 – Sentence starting with “It” and the later “it” in the sentence. Be more specific. Do you mean something like “The water volume starts. . .”

Page 568

Line 5 – again a pointer to the figure would help.

Line 13 – Replaced “Estimation of” with “estimated”

Line 15 – “,” before “we”

C333

Line 21 - “,” before “we”

Line 25 - “,” before “these”

Line 27 – This sentence launches in to “conductivity” Reword to first explain what conductivity is being discussed e.g., A conductivity of glacial runoff above 100. . .” This may not be the right wording, but something along these lines.

Page 568-569 – paragraph that straddles these pages. I am not sure where this paragraph is going. Is the main point you can’t learn anything from conductivity. In this case, it could be stated more directly.

Page 569

Lines 11 and 13 – replace “firstly” and “secondly” with “first” and “second”

Line 25 – clarify “upper part” “upper part of the glacier”??

Page 570 – clarify “at higher elevations drainage. . .” do you mean surface melt at these elevations draining to the bed, or do you mean drainage beneath the regions at higher elevations.

Line 10 – replace “however” with “, however, “

Line 10-14 – This sentence needs some work to make point.

Line 20 – replace “damaging” with “damaged” and “produced” with “, and thus, produced”

Line 24 and 25 – a reminder about using glacier motion – speed would be preferable. Keep in mind you observe both horizontal and vertical glacier motion, so using terms that distinguish the two would help.

Interactive comment on The Cryosphere Discuss., 3, 561, 2009.

C334