

Interactive comment on “Soil erosion by snow gliding – a first quantification attempt in a sub-alpine area, Switzerland” by K. Meusburger et al.

Anonymous Referee #2

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In general, empiricism is not an evil, but a means. Especially because the authors explicitly acknowledge many of the uncertainties associated with RUSLE and FRN and claim attention on the weaknesses and uncertainties of In general, empiricism is not an evil, but a means. Especially because the authors explicitly acknowledge many of the uncertainties associated with RUSLE and FRN and claim attention on the weaknesses and uncertainties of the methodology, this paper is in my opinion as a first attempt an interesting and significant contribution. RUSLE estimates underwent a simple but replicable uncertainty assessment; errors associated with the spatial variability of FRN are taken into account. Probably estimated errors may be undervalued or are somewhat

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arbitrary (e.g. assumed error of static friction coefficient ± 0.1), but weaknesses and uncertainties of the methodology are pointed out and illustrated. Therefore I agree to the authors' results "Even though all presented data are subject to high natural variability and methodological uncertainty the results imply that (i) the observed discrepancies between the RUSLE and ^{137}Cs based soil erosion rates are indeed related to snow gliding and (ii) snow gliding is an important agent of soil redistribution". Of course, a larger quantity of sediment sampling would be desirable, but as a first quantification attempt, the data indicate the applied hypothesis.

In my opinion some minor revisions should be done:

Chapter 2.1: *Agrostis capillaris* instead of *Agrostis capillaries*

Chapter 2.3.2: (US Department of Agriculture, 1977) is missing in the references

Chapter 3.3: The difference of ^{137}Cs and RUSLE ranges from minus 3.3 to 31. Minus values should be explained (no erosion)

Chapter 3.3 p3691 line 13: a dot is missing ...*Alnus viridis* stocking.

Table 1: sites p should be labelled p1 and p2

Table 2: ^{137}Cs values for pw1 and pw2 are probably interchanged (compared to table 3)

Fig 4: resulting from several sediment measurements instead of resulting from sediment several measurements

Fig 5: It is not clear if the data are plotted accurately. Within the data, there is no value found for ^{137}Cs -RUSLE at -7 and snow glide distance of A2N should be 28cm according to table 1. Regression lines should be described.

Fig 8: It seems that winter precipitation of 2009/10 was used instead of using long-term average winter precipitation as mentioned. Using formula 8 the hayfields should reach distances longer than 300cm applying 430mm?

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