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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Quantification of basal friction for glide-snow avalanche mitigation measures in forested and non-forested terrain" *by* T. Feistl et al.

Anonymous Referee #2

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Overall comment: It is an interesting work addressing the issue of glide-snow avalanches and defence measures (structures and forest in the release zone). In particolar, it is interesting the comparison of field data, model and guidelines, from which it results that guidelines related to the forest management (size of the clearings) should be improved taking into consideration also the surface roughness in defining the maximun size of the clearings within protection forests. Some comments are reported below, however the paper is acceptable after minor revisions.

Specific comments: Text: Pag. 2948, line 24: what do you mean with artificial defense structures? Usually it is enough to call them defense structures. . . or you use artificial

to more stress the difference between human-made defence structures and natural ones as forests? I think it is clear enough without artificial, and actually I would delete natural before forests. Pag. 2951, line 2: glide-snow avalanche prevention Pag. 2951, line 10-11: concerning the precision of the delineation of the release areas: were the photos georeferenced? were you able to really identify the stauchwall of the release areas? See also comment to page 2953, lines 8-10. Pag. 2952, line2 13-15: This is already an interesting result! It is good that you mentioned it again in the conclusion (page 2961, lines 17-20). Pag. 2952, line 21: which other environmental variables? Just add something: ". . .environmental variables, such as for ex. . . .." Pag 2953, title of section 2.2: I do not understand well the word "segregation"... isn't this a simple choice, selection, of data to be used for the model? They are sinonimous, but segregation remind me more a physical process. . .

Pag 2953, lines 8-10: again then it is important the precision of the localization of the release areas from photos to GIS... see comment before. Just add a sentence to highlight that some uncertainty exists, if the identification of the relase area was done not with georeferenced photos.

Pag. 2955, line 14: it seems to me that the definition of lg and lm is the same. . . which is the difference between lm (length of the sliding zone, defined at pag. 2954 ,lines 1-2 and Fig. 7) and lg (length between the crown and the sauchwall, defined here) ? Infact later you write : "These comparisons should also hold for the mechanical model" . . . why this distinction? It is only that one (lm) is for the model and the other (lg) is for field data?

Pag. 2955, line 13: here I understand that lg comes from field measurement, while ls ?

Pag. 2956, lines 14-15: ok to union the two classes, but only if no other analysis are done concerning the lenght of the gliding zone, as this parameter is different between the two classes: 42m for short grass and 28 m for shrubs.

Pag. 2956, line 16 and Table 1: you write that hv is 15 cm for strong lignified shrubs,

but in Table 1 is written 0.5 in autumn and 0.15 in winter... I guess there is a typing error, as probably the strong lignified shrubs do not change their height too much from autumn to winter. At line 19 I would therefore write "... short grass and low dwarf shrubs, while for strong lignified shrubs remain in the range 10-20 cm." Check this!

Pag 2956, line 24: "....We note that, in autumn, only 5 cm separates..." Pag 2956-2957: actually in winter the difference between the classes is smaller for the first classes (all hv around 0.01-0.04 m), but higher btween the first three classes and the last one (hv = 0.15 m). Pag. 2957, lines 3-15: this part describes results that are sometimes well shown in one of the three mentioned tables but sometimes are hidden and cannot be found in the tables. It is not straitforward the combination of the info written in the text with the data shown in the Tables... Maybe it is just enough to move the reference to Table 3 later, at lines 16-17 (or even move this sentence later, as it is probably functional to what it comes later in section 3.3...) (see two comments below). Pag 2957, line 18: here for Fig. 8 do you consider only avalanche release areas with stauchwall or all? Before in the section you used all data, I guess the same here... probably in Fig. 8 the points are less only because some of them overlap. If instead the choice of using only data with clear stauchwall was done, please write it. Just put the number of data in the caption of Fig. 8? Pag 2957, lines 18-27: again here you do not address the new classes made by vegetation+terrain, but the original ones... it is confusing (see two comments above). Pag. 2963, lines 3-7: I think this is not necessary, it is a repetition: you started the conclusion saying the importance of surface roughness... Either you add there somethin written here or you just delete this last sentence.

Figures and Tables: Fig. 4: put letters in the different photos to have a better correspondence to the caption. Fig 10: I would use more different colours between the three categories of data.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 2947, 2014.