Natural Hazards
and Earth System
Sciences
Discussions

Interactive comment on "Forest damage and snow avalanche flow regime" *by* T. Feistl et al.

Anonymous Referee #3

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General comment

In this manuscript, an identification and quantification of different forest parameters is conducted in order to improve avalanche simulations, which are a crucial tool for hazard planning in mountainous regions. Valuable avalanche and forest information was gathered from recent avalanche events in the Alps of Switzerland and Germany. I have not checked the formulas for their accuracy, as this not my field of expertise.

Specific comments

1 Introduction

P. 537, lines 4-6: although references have been given above, I suggest to provide some basic information about the different flow regimes.

P. 537, line 22 to P. 538, line 6: first you indicate that "The tree breaking threshold depends on both the avalanche loading and tree strength". And in the end of the paragraph it is mentioned that "Destruction is defined by the dynamic impact pressures". It is not clear to me the relationship between the two of them. Please clarify.

P. 538, line 10: please clarify what is meant by "intermittent".

P. 538, line 20: in 2009?

3 Modeling and results

3.1 Forest destruction modeling

P. 550, lines 16-17: please clarify this sentence: "In total we documented 1120 destructed or non-destructed trees in the avalanche paths", i.e. differentiate between the two classes.

3.2 Wet snow avalanche Monbiel, 2008

As the avalanche event was filmed, I wonder if this was an spontaneous or released event? Please clarify.

P. 551, lines 5-6: was the snow density not possible to be measured?

P. 551, lines 7-10: this means there was not much forest destruction at this avalanche track? Please clarify. I suggest to indicate for each track the number/proportion of destructed vs. non-destructed trees.

P. 551, lines 10-11: it's unclear to me why you calculate the bending stress with the CPM and the SBM just for one tree.

3.3 Powder snow avalanche Täsch, 2014

P. 551, lines 19-21: this is certainly useful information; however, it is not mentioned the number/proportion of living trees after the impact.

P. 552, lines 10-14: it would be more clear to follow the same listing order for the

avalanche core and the powder cloud.

P. 552, lines 21-23: please indicate why the model could not simulate the levee formation.

3.4 Powder snow avalanches Germany, 2009

P. 553, lines 7-9: please rephrase, i.e. release height and snow entrainment are not meteorological conditions.

P. 553, lines 11-12: and how did you estimate this? did you date some dead trees?

References

I have not checked the references.

Tables and Figures

Table 1: in the flow regime, what comes in the intermediate line?

Figure 2: in the second line of the legend, do you mean saltation layer?

Figure 7 and 8: please enlarge.

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