

***Interactive comment on “Interactions between the accumulation of sediment storage and debris flow characteristics in a debris-flow initiation zone, Ohya landslide body, Japan” by Fumitoshi Imaizumi et al.***

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Dear Editor,

Please find here below my review of the paper nhess-2017-20:

This study is an analysis is an attempt to characterize better the source zones of debris-flow in relationship with the storage slope angle and precipitations. The data were acquired in a catchment, which includes a large landslide. The monitoring was performed using TLS, video cameras, rainfall gauges and pressure sensor. In addition, field works were performed. The paper tries link saturation of the sediment, the volume

of the initiation zones, the type of flow and slope angles.

In conclusion, the flow characteristics be explained by the interplay of rainfall patterns saturating or not large or small volume of sediment. The slope gradient can be linked with the above conditions by the Takashi formulas. It shows that the fully saturated debris-flows create low gradient profile with breaks, while the partially saturated ones create constant steeper gradient.

## General comments

The paper presents interesting results, but sometimes it is rather difficult to follow. It was difficult for me to write a summary, maybe the findings are not enough underlined and strengthened. In my opinion the authors have to read there paper carefully again simultaneously with a colleague that is not involved in the paper in order to clarifies make the text easier to read.

The abstract is as well no very informative.

The figures about the site are often too small and too dark.

Information about rainfall are lacking such as IDF or other information. In addition, the relationship of the debris flows with the landslide is not really described.

In my opinion if the author clarify the text and make more easy to read this will be valuable paper about debris-flow behaviours.

## Specific comments

P2 line 1: “debris” instead of “decries”

P2 line 4: “Hungr” instead of “Hunger”

P4 line 14: this must be explained.

P4 lines 18-19: more explanations about dispersion

Fig 1 caption: remind the letters meanings.

P6 line 10-14: to introduce this subject reference to Theule paper in NHESS can be introduced in the introductive section.

Figure 2: limit of the landslide are missing or unclear.

Page 7 line 13- p8: line 4: more explanations are needed to explain how these parameters are evaluated.

P8: this page is not well structured difficult to follow. For instance the ultrasonic sensor are used to measure the surface height are explained at the end but already introduced at the beginning of the page.

P8: line 23: where are installed the pressure sensor.

P9 lines 9-10: this accuracy was checked or it is it the manufacturer data?

P10 line 4: only two target were used ???? not 3 minimum?

P10 first lines are repeated.

Table 1: please add the point spacing of the cloud points.

P10 line 10: original density of points is needed here

P10 lines 21-23: unclear please clarify.

P11 line 5: how the photographs are used to define volumes?

Section 4.3: a map is probably needed to illustrate this paragraph.

P11: lines 15-19: papers form Hungr can be cited.

Section 5.1: why to not present IDF to characterize rainfall and debris flow initiation or some other information about rainfall.

P 12: lines 13-16: what do you mean?

Table 2 caption: remind TLC meaning.

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P14 lines 5-8: it is inconsistent.

P14 line 14: because of the boulders?

P14 lines 15-24: this is well known, you can find in NHESS paper about that (for instance Loye et al.)

Figure 8b: are sure that the integrals of the histograms have identical surfaces? If not why explain!

P16: instead of using deformation, it is better to use change of the bed topography or something similar. . . P16 line 17: how do you know that it is partially saturated?

Figure 10 and page 21 line 20: clarify the meaning of length ratio

P 20 line 13-15: I do not understand

P21 lines 14-19: what does mean exactly the percentage: gradient or proportion of something?

Page 22 line 5-8: fine sediment were not discussed before, why?

P 22 line 10: Meunier instead of Meunie

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