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Comment on nhess-2021-74

Anonymous Referee #2

Referee comment on "Debris flow event on Osorno volcano, Chile, during summer 2017: new interpretations for chain processes in the southern Andes" by Ivo Janos Fustos-Toribio et al., Nat. Hazards Earth Syst. Sci. Discuss.,
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This paper is mainly focused on the back-analysis of a debris flow event occurred in 2017 at Osorno volcano (Chile). The analysis was carried on by collecting field data and by numerical simulations with the r.avaflo model. The authors found a possible range of initial water content of the debris flow with an uncertainty related to the adopted DEM (ASTER vs SRTM). Moreover, the trigger mechanisms and a "Liberation Zone" of the debris flow were identified, which represent an important input for evaluating the hazard from future events, both on Osorno and to other similar volcanoes.

Minor corrections:

Equation 1:

Please, define the symbol "A" and the underscore symbol.

Figure 6: It would be useful to report the boundaries of the real debris flow for comparison with the simulations.

Table 1 reports parameters with different units respect to those used elsewhere in the text. I suggest the following corrections:

Natural unit weight -> Natural density

Dry unit weight -> Density density

Unit weight after consolidation -> Density after consolidation

Concerning the last to lines of Table 1, "shear force" and "normal force" are actually "shear stress" and "normal stress". Moreover, I suggest to adopt SI units and convert the stress unit from kg/cm² to N/m² or N/cm².

Table 2 reports the density in kg/m³, differently from Table 1, which reports densities in g/cm³. This is not an error, but it would be better to adopt the same units across the paper (See previous comment on Table 1). I propose to maintain the units adopted in Table 2 and modify those of Table 1. Moreover, in Table 2, the decimal separator (dot) is intermixed with the decimal separator (comma). I suggest to uniform the separators by using the dot for separating the decimals.

Typos

Header of Table 2: usd -> used

Line 78: "routethe" -> "route the"

Line 125: cannel -> channel

Lines 234-235: It seems that a reference cannot be found

Line 342: 105 -> 10⁵