RE: NHESS 2020 294R1 Liang et al. Exploring the potential relationship between the occurrence of debris flow and landslide

Unfortunately, this revised version is not acceptable for pubblication. The text is not clear and redundant. Moreover, in some parts the train of though seems missing. Grammar should be also revised. The reader stopped the revision at section 2.

The details below:

Debris flows are not landslides (see lines 11 and 13). Debris flows and landslides are gravitational mass transport phenomena. Moreover, statements at lines 13 ("An inventory map consisting of 448 landslides (399 soil slides and 49 debris flows") and 16 ("constructed for landslide and debris flow") are in contrast.

Lines 11-12 " occurred commonly" this is not an English form.

Lines 21 "with two kinds of disaster" this expression is not suitable, "with the two considered hazardous phenomena" could be better.

Line 22 "Two models" which models? "The two used models"?

Lines 23-25 "The loose sources need by the debris flow were not necessarily brought by the landslides although most landslides can be converted into debris flow. The area prone to debris flow did not promote the occurrence of landslide." Which is the sense or scope of this period? Moreover, are these outcomes from field surveys or from the model results? In the first case how are they related to susceptibility maps?

Lines 41-42 "Most of debris flows are runoff generated (Ma et al., 2018)." Such statement is misleading. Ma et al. (2018) do not state that most runoff are generated debris flows. In the previous review the writer suggested other references to confirm it. Therefore, at least the following references should be added: Imaizumi et al. (2006), Coe et al., (2008), Gregoretti and Dalla Fontana (2008), Theule et al. (2020).

Lines 44-46 "Debris flow usually occurs on a channel bed for the entrainment into abundant runoff of debris supplied by deep or shallow slides of slopes incised by the channel (Imaizumi et al.2019;

Zhou et al., 2019)" Again at least other two references should be added to provide a base to this statement: "Hurlimann et al. (2014) and Simoni et al. (2020)" .

Line 47 "and most of the slides are accompanied by debris flow" please add some reference

Lines 47-49 "In the past, it is not clear the way the potential relationship between debris flow and landslide is approached through the separated susceptibility analysis (Alessandro et al., 2015; Guzzetti et al., 2005)" Unclear period.

Lines 49-56 "In addition, some scholars made separate evaluations of slides and debris flow (Park et al., 2011; Haydar et al., 2016). Some scholars have proposed a coupled model of landslide-debris flow (Chiang et al., 2012; Gomes et al., 2013). However, not every slide has evolved into a debris flow and the material source of the debris flow is not necessary coming from slides. The formation and manifestations of different types of landslides are different, especially debris flow, which is a kind of "wet flow" (Varnes, 1978). In other words, there is no determined connection between debris flow and other types of landslide." Very confused and ill organized period. It should be rewritten in a more concise, clear and synthetic form. In addition, "not every slide has evolved into a debris flow" seems to contradict what written at line 47 "and most of the slides are accompanied by debris flow".

Lines 58-59 "Besides, the conditioning factors and mapping units involved in the susceptibility assessment different kinds of landslides are not identical." Another confused and unclear sentence.

Lines 61-62 "As an example, one landslide inventory map includes only one type of landslide, as does debris flow." Useless sentence: the same concept has been introduced at the previous line.

Lines 63-69 "The methods of susceptibility assessment can be broadly classified as qualitative or quantitative (Aleotti et al., 1999). Several methods and approaches have been proposed and tested to ascertain susceptibility, such as physical-based approaches (Carrara et al., 2008), heuristic methods (Blais et al., 2016) and statistically-based approaches (Reichenbach et al., 2018). In addition, new machine learning models, such as neural networks (Park et al.,2013), support vector machines (Colkesen et al.,2016) and random forest (RF) (Zhu et al., 2020a), have also been applied." This period is full of redundancy and as written does not merge with the text: it is not linked to the previous and following text. The following a proposal for rewriting it "The methods

used for the susceptibility assessment can be broadly classified as qualitative or quantitative (Aleotti et al., 1999). About the quantitative methods there are those physically-based (Carrara et al., 2008), those heuristic (Blais et al., 2016) and those statistically-based (Reichenbach et al., 2018). Recently new machine learning models have been used for susceptibility analysis: neural networks (Park et al.,2013), support vector machines (Colkesen et al.,2016) and random forest (RF) (Zhu et al., 2020a).

Lines 70-71 “The Longzi County in Southeastern Tibet is always exposed to slides and debris flow hazard because of climatic and topographic conditions, which is chosen as the study area The purpose of the present study is to explore the potential relationship between the occurrence of debris flow and soil slide by establishing susceptibility zoning maps separately with the use of random forest. It also provides a reference for the study of landslide-debris flow, a common disaster chain” Again all this period is not properly written and seems a collage of sentences, in the sense that a train of though is missing.

Line 83 “belongs” too many repetitions.

Lines 111-112 “First-order sub-catchments, which is also called watershed unit, was applied to the susceptibility of debris flow” sub-catchments is plural, therefore, it should be “are” and “were” instead of “is” and “was” respectively.

Lines 118-119 “there area lot of difference between the factors used by different landslide susceptibility assessments.” Unclear sentence and “a” before “lot” is missing.

Lines 123-124 “Moreover, availability, reliability, and practicality of the factor data were also considered (van Westen et al., 2008).” Which is the sense of this sentence and its scope in the paper?

Line 119-130 All this period should be rewritten in a more organized and concise form. At the beginning it should be stated that 11 and 12 controlling factors are selected for landslide and debris flow susceptibility assessment respectively.

Line 142 “reclassified” why reclassified? Was it previously classified?

Line 148 “Basin area was reclassified into four classes and main channel length are represented” Unclear and grammatically incorrect sentence.

Line 158 “have” instead of “has”.

Line 161 “The values of 18 controlling factors were classified by processing the raw data in the ArcGIS” At the previous lines 11 and 12 controlling factors are introduced for landslides debris flows respectively: please explain the new 18 controlling factors.

About rainfall: rainfall triggering debris flows is much different from those triggering landslides. The former is usually a short duration precipitation, while the latter is a long duration precipitations. Therefore, considering the annual rainfall depth for both the phenomena could not have a physical base.

Line 449 The reference is bad written: Francesco is a name, not a surname

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