Natural Hazards
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Sciences

Discussions

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EGU

Interactive comment on "Landslides distribution at tributaries with different evolution stages in Jiangjia Gully, southwestern China" *by* Xia Fei Tian et al.

Anonymous Referee #1

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Overview and general comments:

Authors try to link the landslide distribution to the evolution stage of the sub-catchments of their study site. They state the landslide concentration increases towards younger sub-catchments. Additionally, they claim that the Weibull distribution reflects the relationship of evolution stage of the catchment and the observed landslides. Motivation of the study is of interest to the landslide research community and it is adequate for NHESS. However, both the figure content (i.e. presentation and content of information), and the main text is poor the convey the message of the study, which make it really hard its scientific quality. It lacks discussing the findings and linking them to the

existing literature. The existing literature is criticized frequently to praise the current work, though majority of those critics lacks a robust foundation. The manuscript is certainly not edited properly before submission, which will help shortening the text and making it more understandable. In its current preliminary stage this manuscript is not publishable although the scientific content deserves publication.

I recommend authors to critically review their work, and reproduce their figures in a way that could explain their approach and convey their main findings. Retry submitting it to a local journal.

Minor comments:

Structure of the sentences are somewhat odd. Authors should consider getting assistance to increase the fluency of the text. It is rather hard to follow the manuscript in its current stage. There are several sentences that does not convey any message, e.g. "Geomorphic evolution has been one of the important research topics in geomorphology,...", which is indeed correct but obvious. Some statements are followed by serial of citations, about 4–7, authors either should go into the detail of those articles or cite only the most relevant research.

Abstract

Abstract lacks a clear motivation; it is rather generic about the importance of landslide susceptibility. There is a nice take-home message at the last sentence of the abstract, but only the readers, who are familiar with the integral of the hypsometric curves (the meaning of 0.5, 0.6? is not given), could understand without reading the entire manuscript. Hence the authors should rewrite the abstract for a bit more general audience at least within the landslide research community.

A few acronyms are used without definition.

Introduction

The introduction involves several critics to the existing literature and only indirectly

leads to the research question, which is not mentioned. It is written like a book chapter. An introduction should concisely lead to the research question of the manuscript. Hence authors should consider rewriting the entire introduction omitting several non-relevant statements.

A few terms that are used frequently in the paper are not well defined, e.g. flow regime, surge, surge density.

Line 41–42: "In addition, the relationship between EI and tributary characteristics changes with scales." –> I could not understand the sentence.

Line 50–53: "However, the research of these methods was mainly focused on the gully scale. At the same time, these methods did not focus on the specific principle of material storage, but statistical or comprehensive analysis on the main factors affecting the landslides distribution is carried out." –> this is quite strong statement against the existing literature, There are several susceptibility examples that work on the DEM resolution scale, as well as slope unit scale. The link from landslide susceptibility to hypsometric curve is vague.

Line 57–63: this paragraph is designed to convey the message the EI is mostly ignored. Will the authors investigate this particular lack of interest? Otherwise this paragraph has no useful information for the manuscript.

There are several example of a simple message being given with several sentences. For example, Lines 66–73 just want to say that debris in downstream are sourced from different tributaries; however we don't know why it is important for the current work.

2 Study area and data collection 2.2.1

Line 96–98: What is the source of the DEM? Line 98–101: Any reference for this statement? Line 102: Which GIS Tool? Line 104: Why it does not make little difference? Line 106: The differences are not obvious, as claimed.

2.2.2

C3

Could the computation process of the Hypsometric integral be explained schematically with a generic figure? It would help understanding it.

Line 113: "Hypsometric curve for each tributary is calculated." → this sentence give no important information. Line 122–130: Passive voice increases the length of the sentences, I recommend authors to use active voice throughout the manuscript. The computation process in this paragraph is vaguely explained, please be more specific.

3 Evolution division of JJG

This section is dedicated to the EI analyses of the study area, however, there are several details that do not contribute to the final goal of the paper. Hence I recommend either to remove those excessive information and focus only on the key attributes that matter. For example, Information given in lines 163–167 should be incorporated in the figure 4. Additionally it could be merged with the next section.

4 Landslides distribution in relation to EI

Duozhao is mentioned several times, but I cannot see it in the figures (except figure 1), it is hard to relate.

Information in lines 225–231 are either directly given in the table, so it is mentioned in second time, or linked to some specific regions, which are not shown in the figures, one needs to continuously return back to figure 1 to follow. Lines 249–250: "landslides are more scattering in Duozhao and more concentrated in Menqian." –> I don't see this in the figures, they look more or less equal, or at least really hard to distinguish. Lines 260–265: This paragraph is so far the only real result paragraph of the entire section 3 and 4. Authors should consider rather focusing on this point and expand it, and reduce the volume given to the rest.

5 Discussion

The discussion is rather superficial, authors should focus on their own results and critically review it. In the meantime in this section, they should highlight the main finding

C4

and relate it to the existing literature.

Line 268–270: The power law relation of landslide frequency-magnitude is a commonly used metric. Hence there are several papers from recent years, instead the authors refer to papers that are nearly 20 years now, is there specific reason? In the meantime, it is really hard to believe there is no paper that worked in a smaller scale, nearly all co-seismic landslide papers study frequency-magnitude relation in 20km2 scale. For example: - https://doi.org/10.1007/s10346-019-01136-4 - https://doi.org/10.5194/se-10-463-2019

Line 280: "maximal average slope", is it ever shown somewhere? Line 318–322: criticizes the existing literature that has no contribution to the current paper. Authors should not attack existing work in order to praise the current manuscript, instead focus on the findings/contribution of the paper.

Line 323–327: I have the impression that the cited work as geographically constrained and rather old. There are several published papers that focuses on debris flows from recent years. For example: - https://doi.org/10.1016/j.scitotenv.2018.01.172 - https://doi.org/10.1016/j.geomorph.2016.10.007 - https://doi.org/10.1007/s10346-020-01540-1

Line 326: "The factor of precipitation will be the next study to consider and understand the formation mechanism of debris flow surges." –> there is no need to refer to the next study.

Line 330–334: I don't see any difference in the current paper, it also ignores the landslide distribution mechanism and focus rather on the factors that could control it in the catchment scale.

Line 342: this difference in parameters is a good point to focus on, obviously this parameters are hard to globalize and rather catchment specific. Authors should analyze this point more to put their research on a global framework.

Conclusion

Conclusion is really focused and briefly states the key findings of the paper. It could give a bit more general information. However, it is much better written compared to the rest of the paper.

Tables:

Table 1: is this table important to understand the messages of the Manuscript? Could it go to appendix? Table 2: This table can be converted to a visually appealing figure to give the key message easier.

Figures:

There several figures that show the study site with different information, which is really hard to get, I recommend authors to reconsider their figures and merge/combine some and provide instead more informative figures.

Figure 1: Font size varies between subplots, in subplot a, it is nearly unreadable. Main map does not have a subplot number, is it "d"? Elevation data is given in cm scale, it is unnecessary for the current work, meters are enough. Figure 2: Subplots are not marked: what they show, where they are taken from? Figure 3: What are the numbers in parenthesis in subplot b. Figure 5: Does it matter for the study that the EI follows a Weibull distribution? I feel it is important only if shown together with Figure 16. Figure 10: simply overlays the figure 9 on figure 4. It is really hard to see anything, an histogram would be more informative Figure 11: it looks quite random in subplot b?