Natural Hazards
and Earth System
Sciences

Discussions

Interactive comment on "The influence of land use and land cover change on landslide susceptibility: A case study in Zhushan Town, Xuanen County (Hubei, China)" *by* Lixia Chen et al.

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Dear Referee, Thank you for your comments concerning our manuscript. These comments are all valuable and helpful for revising and improving our paper. Please note that the revised manuscript has been attached in supplement file. The main corrections in the paper and the point-by-point responses to the your comments are as following (the page number and line number in this letter refer to the revised ms):

General comment 1: This paper is too long, you should compress some sections and use a more concise description. Responses: Thank you for this suggestion. According to this comment, we have compressed some contents in our ms to make it more

concise. The detailed change includes as follows: (i) We deleted one sentence in the abstract section; (ii) We deleted some sentences in the introduction section; (iii) We deleted some sentences in the methodology section. Moreover, we made some sentences more concise. After the changes, we think the existing contents also can express our meanings.

General comment 2: Study area and data sources needed to be described separately from the section of methods. Responses: Thank you for this suggestion. In the revised ms, we separated the study area and data sources from the section of methods. Now, the second section of the ms is materials section (see page 4 line 96), including study area and data sources, whereas the third section is the methodology section. (see page 6 line 141)

General comment 3: In 3.1 section, you have defined human engineering activities land (HEAL) and grassland and arable land (GAL), so please add a better differentiation/definition of other land use categories: forest land and arable land. Responses: Thank you for this comment. We are sorry for this carelessness. In the 4.1 section of the revised ms, we added the contents to defined the forest land and arable land. (see page 16 line 366-368)

General comment 4: Please add websites of the analysis software used in the ms. Responses: Thank you for this comment. According to your suggestion, we added the websites of the software used in this paper, including Google Earth (see Table 1 in page 6), ENVI (see page 7 line 155) and eCognition software (see page 7 line 161).

General comment 5: In the Topographic factors section, why is "the landslides mainly occurred in the moderate slope" (Ln 315)? Please clarify it. Responses: Thank you for this comment. About this result, I want to give some clarifications as follows: (i) Generally, the steep areas are the highest in elevation, so few human activities and disturbance on the natural conditions can be seen in such areas. Hence, it is hard for landslides to be triggered here. Additionally, due to they are sparsely populated areas,

it is therefore difficult for people to detect landslides here. (ii) There are also some literatures obtaining the similar results like us, such as Zhou et al. (2018), the contents is as followings: "The slope was divided into ïňĄve classes: very gentle (0–6°), gentle(6–18°), moderate (18–30°), steep (30–39°), and very steep (>39°). The colluvial landslide mainly occur in the gentle and moderate slope, and the moderate slope shows the highest promotion inïňĆuence on it, whose information value is 0.911". Also Cervi et al. (2010): "The results of this preliminary analysis show that over 36° threshold, no soil slips have been detected in the inventory". We added some sentences to clarify this situation (see page 13 line 305-307) and we have cited these papers to strength the persuasiveness of this point. References in this response: Zhou, C., Yin, K., Cao, Y., Ahmed, B., Li, Y., Catani, F., and Pourghasemi, H. R.: Landslide susceptibility modeling applying machine learning methods: A case study from Longju in the Three Gorges Reservoir area, China, Comput. Geosci., 2018, 112: 23-37. Cervi, F., Berti, M., Borgatti, L., Ronchetti, F., Manenti, F., and Corsini, A: Comparing predictive capability of statistical and deterministic methods for landslide susceptibility mapping: a case study in the northern Apennines (Reggio Emilia Province, Italy), Landslides, 2010, 7, 433-444.

General comment 6: categories/classes (land use) should always use identical names (in text and in figures). But this is not the case for "forest land" in your paper. Both "forest" and "forest land" exist in the ms. I suggest the latter one. Responses: Thank you for your comment. According to this suggestion, we used identical name for "forest land". We have changed all the terms of "forest" to "forest land".

General comment 7: Concerning the reference list: about the NDVI and NDWI obtained from ENVI software, you did not cited any paper. Please kindly cite 1-2 papers in the 2.3 section. Such reference can be used to strengthen your introduction about the analysis of RS techniques. Responses: Thank you for this good comment. As you said, we have added two references about the NDVI (see page 7 line 154) and NDWI (see page 7 line 154) obtained from ENVI software, which are

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as follows. Both of them were published on the top journals in the field of remote sensing and engineering geology: Huang, F., Chen, L., Yin, K., Huang, J., and Gui, L.: Object-oriented change detection and damage assessment using high-resolution remote sensing images, Tangjiao Landslide, Three Gorges Reservoir, China. Environ. Earth Sci., 77, 183-201, https://doi.org/10.1007/s12665-018-7334-5, 2018. Li, Z., Feng, Y., Dessay, N., Delaitre, E., Gurgel, H., and Gong, P.: Continuous monitoring of the spatio-temporal patterns of surface water in response to land use and land cover types in a Mediterranean lagoon complex, Remote Sens., 11, 1425-1443, https://doi.org/10.3390/rs11121425, 2019.

Minor comment 1: Ln 15: change "susceptible to landsliding" to "susceptible to landslides" Responses: We changed "susceptible to landsliding" to "susceptible to landslides". (see page 1 line 15)

Minor comment 2: Ln 39: change "literature" to "literatures" Responses: We changed "literature" to "literatures". (see page 2 line 38)

Minor comment 3: Ln 39: delete "by researchers" Responses: We deleted "by researchers" in this line.

Minor comment 4: Ln 136: change "creating various levels" to "various levels" Responses: We changed "creating various levels" to "various levels". (see page 6 line 132)

Please also note the supplement to this comment:
https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2019-203/nhess-2019-203-AC2-supplement.pdf