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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Construct and evaluate the classification models of six types of geological hazards in Bijie city, Guizhou province, China" *by* JieQing Shi et al.

Anonymous Referee #1

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The paper is not acceptable for the review: the English form is very bad and some of the geological hazards are unclear. The writer stopped the review at the end of the introduction.

Other spotted errors and comments are as follows:

Line 1 "ground collapse, collapse and ground collapse" ??????????????????

Line 5: "manual field survey"?????

Line 6 place "the" before "inventory"

Line 7 ratio or percentage?

Lines 9-12 "In order to select the optimal subset of the conditioning factors, the multicollinearity of these factors was assessed using tolerances and variance inïňĆation factors(VIF) and Pearson's correlation coefïňĄcient, and factors with multicollinearity were excluded to optimize the model. Subsequently, ten classiïňĄcation models were structured, and the models were veriïňĄed and compared by using the receiver operating characteristic(ROC), precision, sensitivity, Kappa coefïňĄcient and F1 values.I" Unclear sentences

Lines 15-18 "Among them, the average AUC value(0.941), AUC values for individual geological hazards (collapse: 0.949, ground crack: 0.907, ground collapse: 0.952, landslide: 0.830, displacement ïňĆow: 0.963, slope: 0.922),Kappa coefïňĄcient (0.845), Macro F1(0.851) and Micro F1(0.878) of SVM all had the highest values." Very unclear period in which different quantities are mixed together.

Lines 20-24 "Most cities in China are located in regions that are extremely vulnerable to a wide range of natural hazards, particularly geological hazards, and the assessments for hazardousness, vulnerability and risk of natural hazards for China shows that on the whole, high hazardousness regions concentrate in western (Wang et al., (2008), Liu et al., (2012),Zhuang et al., (2016)). Guizhou province, located in the plateau region of southwest China, not only has extensive carbonate rock distribution (70%) and karst development; In addition, due to the large crustal uplift and severe deformation recently, as well as the induction. . .. ." Very unclear period

Lines 25-26 "Among them, debris ïňĆow, landslide, unstable slope, ground collapse, collapse and ground crack are the main geological disasters in Guizhou." What are ground collapse? And collapse? Perhaps the author mean the land subsidence or something else?

Line 28 The references of Cannon et al. 2007-2010 and Staley et al. 2017 concern post-wild-fires debris flows, a very particular category that in China is rare. The writer supposes that debris flows occurring in Guizhou province be runoff-generated debris

flows (Imaizumi et la, 2006; Gregoretti and Dalla Fontana, 2008; Kean et al. 2013) as those occurring in other parts of China (see Ma et al., 2018; Chen et al, 2019; Liu and He, 2020)

Lines 28-30 “And the debris ïňĆows in Guizhou province are mainly distributed in the western part of the province , ranging from several hundred thousand to several million in size.” Size of what?

What do the authors mean for landslide and collapse?

Lines 35-36 “.As for ground collapses and cracks, most of the ground collapses areas that have been found in the province occur in carbonate areas.” Unclear sentence

Lines 45-60: the introduction of the learning machine methods is too long, redundant and confused. Moreover, before introducing machine learning method, it must clearly explained the reasons of using them.

Lines 60-64. The disaster conditioning factors are introduced without any explanation about their use and their possible links with the machine learning method.

The writer suggests the authors to re-write the paper, better explaining the phenomen, linking the factors to the physics of debris flow occurrence and widening the discussion of results.

Chen, M., Liu, X., Wang, X., Zao, T., Zhou, J., 2019. Contribution of excessive supply of solid material to a runoff-generated debris ïňĆow during its routing along a gully and its impact on the downstream village with blockage effects. Water 11, 169. https://doi.org/10.3390/w11010169.

Gregoretti, C., Dalla Fontana, G., 2008. The triggering of debris ïňĆow due to channel-bed failure in some alpine headwater basins of the Dolomites: analyses of critical runoff. Hydrol. Process. 22, 2248–2263. https://doi.org/10.1002/hyp.6821.

Imaizumi, F., Sidle, R.C., Tsuchiya, S., Ohsaka, O., 2006. Hydrogeomorphic pro-

cesses in a steep debris ïňĆow initiation zone. Geophys. Res. Lett. 33, L10404. https://doi.org/10.1029/2006GL026250.

Kean, J.W., McCoy, S.W., Tucker, G.E., Staley, D.M., Coe, J.A., 2013. Runoff-generated debris ïňĆows: observations and modeling of surge initiation, magnitude and frequency. J. Geophys. Res. 118, 2190–2207. https://doi.org/10.1029/jgrf20148.

Liu W, He S. 2020 Comprensive modelling of runoff-generated debris ïňĆows from formation to propagation in a catchment. Landslide https://doi.org/10.1007/s10346-020-01383-w

Ma, C., Deng, J., Wang, R., 2018. Analysis of the triggering conditions and erosion of a runoff triggered debris ïňĆow in Miyun County, Beijing, China. Landslide https://doi.org/10.1007/s10346-018-1080-3.

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