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Discussions

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Comment on nhess-2021-254

Anonymous Referee #1

Referee comment on "Geographic information system models with fuzzy logic for susceptibility maps of debris flow using multiple types of parameters: a case study in Pinggu District of Beijing, China" by Yiwei Zhang et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-254-RC1, 2021

The paper entitled "Regional-scale GIS-models with fuzzy logic for Susceptibility Maps of debris flow: A Case Study in Pinggu District of Beijing, China", focused on the debris flow susceptibility map computation of a series of drainage basins of the Pinggu District of Beijing. The authors proposed a methodology based on GIS-models, combining diverse methods: grey relational method, data-driven and fuzzy logic methods. The manuscript deals with the application of susceptibility analysis on debris flow. The topic is interesting and is suitable for the journal. The model used in the manuscript not only considers the scientificity and accuracy, but also considers the application in engineering practice. I think the article can be acceptable after some revisions are made.

I have two main questions for the authors to explain:

- In ArcGIS, the watershed algorithm is to obtain the sub watershed units of the whole Pinggu region. How can the author select these specific watersheds in the article? How are other unqualified units excluded?
- How to explain the similarities and differences between models R6-R17?

Specific comments are listed as follows:

- The ***introduction*** needs a section concerning susceptibility methods.

- The ***Results and Discussion*** needs to be more detailed and organized.

-The language in this article should be polished by a native speaker. The English is in some cases not good enough for the reviewer to understand the points the authors are trying to make, or follow their descriptions of the research.

-Line 26 by the results ☐ by results

-Line 26 validated by the other two ☐ validated by two other

-Line 27 the method to ☐ a method to

-Line 47 significance to establishing ☐ significance to establish

Line 76 disaster chain and that the geomorphic ☐ disaster chain and the geomorphic

Line 76 rather than simple data fitting ☐ rather than simply data fitting

Line 80 account for ☐ accounts for

Line 90 1. Data and Methodology ☐ 3 Data and Methodology

Line 99 watershed characteristics factors ☐ watershed characteristic factors

Line 103 our primary assumption here are ☐ our primary assumptions here are

Line 103 First ☐ Firstly

Line 105 Second ☐ Secondly

Line 114 by professional team--- by professional teams

Line 138 factors (Type B) factors ☐ factors (Type B)

Line 159 a effective method ☐ an effective method

Line 169 3.4 fuzzy memberships ☐ 3.4 Fuzzy memberships

Line 217 can be used to derived their fuzzy ☐ can be used to derive their fuzzy

Line 238 order to use properly ☐ order to use it properly

Line 247 Compared with other four fuzzy operator ☐ Compared with other four fuzzy operators

Line 247 Fuzzy Gamma (Eq.6) ☐ Eq.5

Line 261 seventeen results were compared (Table.6) ☐ Table.5

Line 278 the results is not comprehensive ☐ the results are not as comprehensive

Line 282 there are total 135 basin ☐ there are total 135 basins

Line 306 uncertain factor compared with factors compared ☐ uncertain factors compared

Line 309 bedrock fracture flow; and root strength--- bedrock fracture flow, and root strength

Line 334 in which all factors as a single---in which all factors are considered as a single

Line 362 nonlinear methods is consistent ☐ nonlinear method is consistent

Line 377 clear and the data easy to obtain ☐ clear and the data is easy to obtain