

Interactive comment on “Development and validation of the Terrain Stability model for assessing landslide risk during heavy rain infiltration” by Alfonso Gutiérrez-Martín et al.

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We maintain that the manuscript is well within the aims of NHESS. We provide in the attached supplement, the contestations and contributions to the questions raised by you.

Thanks for your comments

regard greeting GENERAL COMMENTS

(1) The aim of this work/manuscript is the development of a software for single slope stability. A case study and a comparison with another software is presented. In my

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opinion, the main originality of the paper is represented by the inclusion in the software of the infiltration effects, according to the lacking in other software slope stability based, but the used theory (Spencer's method) and the way to calculate the interstitial pressure on the slice base is well known. Therefore, the proposed model is not innovative and the authors should give more emphasis to the originality of the developed software, clarifying the advantages also in term of time simulation.

(2) We appreciate the interest in our work and thank you for your encouraging comments. Your suggestion of making more emphasis to the originality of the developed software is very important.

(3) failure curve and surface area, including the infiltration effects.”

(1) I Suggest the authors to include a block diagram of the software in order to explain better their algorithm from the user definitions to outputs/results.

(2) It seems to us a very good suggestion for the understanding of the proposed algorithm. We have developed the block diagrams, according to the following figure:

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Figure 11. Sequential TS algorithm (block diagrams). Numbers in parentheses refer to numbers in the text.

(1) Moreover, a sensitivity analysis of the parameters is missing: I suggest for example to add some plot, e.g., the safety factor varying the interstitial pressure coefficient r_u , the center of failure curve, the number of slices, the density of soil, etc.

(2) A sensitivity analysis has not been considered here as we have introduced a 3.Terrain stability (TS) model behaviour tests.

(1) To me, in conclusion, the paper needs some improvements and major revisions should be required.

(2) We conduct all the improvements suggested by the reviewer and, we have made

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changes to the SPECIFIC COMMENTS section as indicated by the reviewer, which substantially improve the final result of the manuscript.

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2018-192/nhess-2018-192-AC3-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-192>, 2018.

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