Nat. Hazards Earth Syst. Sci. Discuss.,
doi:10.5194/nhess-2016-348-AC2, 2017
© Author(s) 2017. CC-BY 3.0 License.

Natural Hazards and Earth System Sciences
Discussions
Open Access
EGU

Interactive comment on "A physics-based probabilistic forecasting model for rainfall-induced shallow landslides at regional scale" *by* Shaojie Zhang et al.

Shaojie Zhang et al.

sj-zhang@imde.ac.cn

Received and published: 16 March 2017

Dear Reviewer,

Thanks a lot for your kind comments on our paper, I will reply your comments one by one, as follows:

(1) Reviewer: L 88: Mohr-Coulomb is misspelled.

Authors: Thanks for your careful checking, the Mohr-Coulomb was misspelled. We will use "Mohr-Coulomb" to instead of "Mohr-Column" in our paper.

(2) Reviewer: L 92: c is a stress.

Printer-friendly version

Discussion paper

CC BY

Authors: Yes, c is a stress. We will use “c is a stress” to instead of “c is the cohesion force”.

(3) Reviewer: L 92: “(which)” instead of “(Which)”

Authors: we will use “which is close to the internal friction angle φ” to instead “Which is close to the internal friction angle φ”.

(4) Reviewer: L 133: “dependent on the variable r” instead of “dependent on the a variable r”

Authors: Thanks for your careful checking, the authors made a mistake, we will delete the word “a”, and use the finial sentence: “dependent on the variable r”.

(5) Reviewer: L 145: add “to” before “identify”

Authors: Thanks for your careful checking, we missed this word “to” and we will add this word before “identify”.

(6) Reviewer: L 193-194: I suggest to re-formulate this sentence.

Authors: Yes, these two sentences are indeed not clear to understand. The authors will rewrite these sentences in the next following revision process.

(7) Reviewer: L 228: “takes” instead of “take”

Authors: The authors will use “takes” to instead of “take”.

(8) Reviewer: L 305: the depth of the shear plane has a crucial influence on the FOS. It seems that the depth of the shear plane was assumed to equal the depth of the soil. Is this correct? Please comment (also in section 5) on the consequences of this assumption (sensitivity of model outcome) and on the accuracy of the spatial soil depth distribution assumed in this study.

Authors: if the depth of the shear plane was assumed to equal the depth of the soil, it is indeed not correct. In our model, we actually calculated FOS of each layer within

CC BY

each pixel. As described in L 307, each pixel was divided into 10 layers with the same soil depth. For example the depth of each layer was equal to 0.2m if the total soil depth was 2m. So if the FOS of ith layer within a pixel was less than 1, then our model will consider that the instable depth was i*0.2m. The authors are so sorry for not clearly describing this issue and made the reviewer misunderstanding; we will add some detailed information to clear it.

(9) Reviewer: L 307: please explain the discretization process in more detail

Authors: According to the finite difference principle, the larger number of divided soil layers within one pixel, the more accurate simulating results for water movement between each soil layer. So the water soil content that has an important influence on the FOS will be more accurate, which will finally influence the accuracy of the model outcome. However, confined by the computer capacity, the soil layer of each pixel was set to be 10 in our paper, which is a general practice by using a certain layer number to discretize the soil depth. We will add some more details in L307 to explain the discretization process.

(10) Reviewer: Section 4: add information of the size of the investigation area could be given earlier.

Authors: we will add the size of the investigating area in Section 4.1.

(11) Reviewer: Figure 9: right: what does the star mean?

Authors: The authors are sorry for this mistake; we will delete this red star in Fig.9b.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-348/nhess-2016-348-AC2-supplement.pdf

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-348, 2016.

CC BY