

Interactive comment on “Dangerous degree forecast of soil and water loss on highway slopes in mountainous areas using RUSLE model” by Yue Li et al.

Yue Li et al.

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Dear P. Panagos,

We are very pleased to learn from your letter about revision for our manuscript which entitled “Dangerous degree forecast of soil and water loss on highway slopes in mountainous areas using RUSLE model”. We greatly appreciate your suggestion concerning improvement to this paper, and it is our honor to get your help to improve us! Thank you for your patience and advises. We have revised the manuscript according to the every single comment which made by the editor. Moreover, we have made some correction so that we hope meet with your approval. We are sending the revised manuscript ac-

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ording to the comments of the reviewer. We have marked the major changes in red in this revised version.(See the manuscript)

Thank you for your consideration! Sincerely yours, *Corresponding Author: Shi Qi P.S.

Reviewer’s 1 comments: Comment 1: Please make an overview image to know where exactly this area is in China. An overview image helps non-local scientists to realize where the study area is.

Response 1: We greatly appreciate your valuable suggestion concerning improvement to this paper. We have followed your advise to adjusted it. Details are in following paragraph and MS.

Comments 2: Why you don’t use the algorithms proposed in original RUSLE for calculating the R-factor since you have very high resolution rainfall data (Renard et al, 1997). You can also take into account the recent published Global Erosivity paper which includes also R-factor data produced in China with high resolution rainfall data (and also compare with yours): Panagos, P., Borrelli, P., Meusburger, K., Yu, B., Klik, A., Lim, K.J., Yang, J.E., Ni, J., Miao, C., Chattopadhyay, N., Sadeghi, S.H., Hazbavi, Z., Zabihi, M., Larionov, G.A., Krasnov, S.F., Gorobets, A.V., Levi, Y., Erpul, G., Birkel, C., Hoyos, N., Naipal, V., Oliveira, P.T.S., Bonilla, C.A., Meddi, M., Nel, W., Al Dashti, H., Boni, M., Diodato, N., Van Oost, K., Nearing, M., Ballabio, C. Global rainfall erosivity assessment based on high-temporal resolution rainfall records (2017) Scientific Reports, 7 (1), art. no. 4175

Response 2:Thank you for your patience and careful work! We are grateful to the reviewer for pointing out this comment. According to your comment, we explained it, details are in following paragraph.

Rainfall erosivity is an important parameter for predicting and evaluating soil erosion by using USLE/RUSLE model, it is also a common indicator of soil erosion under the effect of regional rainfall runoff. In the USLE/RUSLE model, the EI30 index should be

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used to calculate the rainfall erosivity. However, in practical application, EI30 index has a high requirement for the observation and reorganization of rainfall data, which limits the popularization of the model to some extent. And because of the significant differences of natural and geographical factors, such as rainfall, terrain and vegetation in all parts of the world, the criteria for erosive rainfall are also different. Not only that, the raindrop characteristics of natural rainfall are closely related to geographical location and rain type, the structural form or coefficient of the formula for calculating the kinetic energy of rainfall is not the same.

A large number of studies have shown that: The formula selected in this paper has high stability and prediction accuracy in the southern region with rich precipitation, and also takes into account the rainfall characteristics of the study area.

References: Panagos, P., Borrelli, P., Meusburger, K., Yu, B., Klik, A., Lim, K.J., Yang, J.E., Ni, J., Miao, C., Chattopadhyay, N., Sadeghi, S.H., Hazbavi, Z., Zabihi, M., Lariionov, G.A., Krasnov, S.F., Gorobets, A.V., Levi, Y., Erpul, G., Birkel, C., Hoyos, N., Naipal, V., Oliveira, P.T.S., Bonilla, C.A., Meddi, M., Nel, W., Al Dashti, H., Boni, M., Diodato, N., Van Oost, K., Nearing, M., Ballabio, C. Global rainfall erosivity assessment based on high-temporal resolution rainfall records. *Scientific Reports*, 7(1): 4175, 2017.

Wang, W. Z., Jiao, J. Y., Hao, X. P., Zhang, X. K., Lu, X. Q., Chen, F. Y., Wu, S. Y.: Study on Rainfall Erosivity in China. *Journal of Soil and Water Conservation*, (4):7-18, 1995 (in Chinese) Liu, W. Y.: Preliminary Study on R Index of Zhaotong Basin. *Yunnan Forestry Science and Technology*, (2):24-26, 1999 (in Chinese)

Yang, Z. S.: A Study on Erosive Force of Rainfall on Sloping Cultivated Land in the Northeast Mountain Region of Yunnan Province. *SCIENTIA GEOGRAPHICA SINICA*, 19(3):265-270, 1999 (in Chinese)

Comment 3: Please correct the citation Panos et al 2015 and change to (by mistake you have copied the first names instead of last names).

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Response 3: Thank you very much for your reminding. At the same time, I feel very sorry for my mistakes and negligence. We have followed your advise to adjusted it. Details are in following paragraph and MS.

Panagos, P., Ballabio, C., Borrelli, P., Meusburger, K., Klik, A., Rouseva, S., Tadić, M.P., Michaelides, S., Hrabalíková, M., Olsen, P., Aalto, J., Lakatos, M., Rymaszewicz, A., Dumitrescu, A., Beguería, S., Alewell, C.: Rainfall erosivity in Europe. *Science of the Total Environment*, 511:801-814, 2015.

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2017-406/nhess-2017-406-AC1-supplement.pdf>

Interactive comment on *Nat. Hazards Earth Syst. Sci. Discuss.*, <https://doi.org/10.5194/nhess-2017-406>, 2017.

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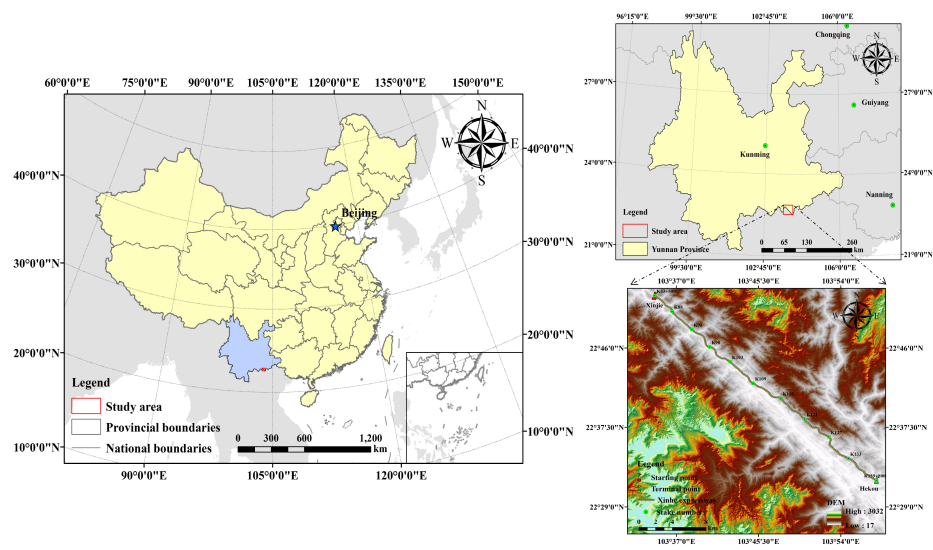


Fig. 1.