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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Shear rate effect on the residual strength characteristics of saturated loess" *by* Baoqin Lian et al.

Baoqin Lian et al.

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-Reviewer #1

This paper provides interesting data on soils obtained from three landslides and could be of interest to many readers. However, I feel some additional work is required prior to it being suitable for publication in the journal.

Reply: Thank you for your encouraging comments on our work.

1. Some more details need to be provided on the soils (Djg, Ydg and Dbz), e.g. particle size distribution curves.

Reply: Implemented. See Figure 2 of the revised manuscript.

2. Line 91, "their relationships" could be changed to "the relationship between the residual strength parameters".

Reply: Implemented. See lines 98-99 of the revised manuscript.

3. Line 146, "crushed", does this affect results?

Reply: Implemented. The procedure "crushed" would not affect results. The purpose of crushing with a mortar and pestle is to to disintegrate aggregate. Crushing samples has been found suitable to determine the residual strength of the remoulded soils (Stark et al., 2005). This should be done with care so as not to destroy silty-dominated loess. See details in lines 154-159 of the revised manuscript.

4. Line 169, to keep consistency with the text body, change "moisture water content" to "moisture content", please revise it.

Reply: Implemented. See line 184 of the revised manuscript.

5. Lines 172-173, there are 2 main types discussed in the literature, the Bromhead device and the IC/NGI device, which one is this? Please point out it in the paper.

Reply: Implemented. SRS-150 used in this study is a type of Bromhead ring shear apparatus. See lines 197-198 in the revised manuscript.

6. Line 198, please give more detail about compaction.

Reply: Implemented. See lines 229-232 of the revised manuscript.

7. It seems that you do not need to mention the shearing process in lines 203-204 again since you have mentioned the procedure in Lines 176-177.

Reply: Implemented. We have deleted the contents in original lines 203-204 according to the review's suggestion.

8. Line 207, "the sampling rate was increased to 1 min", please check the sampling rate unit.

Reply: Implemented.

9. Line 209, in my opinion, “the samples were subjected to shear” could be changed to “the samples were subjected to shearing”.

Reply: Implemented. See line 241 of the revised manuscript.

10. Lines 209-210, how do you define the residual state was achieved?

Reply: Implemented. In this study, following the Bromhead (1992), the residual state was defined when a constant shear stress is obtained for more than half an hour. See lines 242-243 in the revised manuscript.

11. Lines 238-239, The authors should clearly define what are low and high shear rate.

Reply: Implemented. See lines 272-274 of the revised manuscript.

12. Lines 375-376, the authors do not need to write Liquid limit (LL) again since you have mentioned that in lines 372-373, just use LL in lines 375-376.

Reply: Implemented. See line 453 of the revised manuscript.

13. Line 400, change “Figs. 7, 8 and 9” to “Figs. 7-9”, please revise it.

Reply: Implemented. See line 403 of the revised manuscript.

14. In Table 1, units missing on the header. Feel PSD curve is necessary. Please revise it.

Reply: Implemented. See Table 1 in the revised manuscript. With regards to PSD curve, we have added the PSD curves in the revised manuscript, see Figure 2 in the revised manuscript.

15. The use of the English language needs some work. I really recommend the authors to send the manuscript to be reviewed thoroughly by a native English speaker.

Reply: Implemented. The revised manuscript has been reviewed thoroughly by a native

English speaker to improve the grammar and readability.

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