

Interactive comment on “Variation of soil hydraulic properties with alpine grassland degradation in the Eastern Tibetan Plateau” by T. Pan et al.

Anonymous Referee #1

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This study investigated the variation of soil hydraulic properties (soil field capacity and saturated hydraulic conductivity) in different degraded alpine grassland fields in the Tibetan Plateau. The basic soil properties and hydraulic properties were compared, and the dominant soil factors of soil hydraulic properties were identified. This study is important for the hydrological modeling and ecosystem management in alpine mountainous regions. My main concern is that this study seems like a local study and the novelty is somewhat lower than the standard of HESS. The current version needs major revision.

1. In the Introduction section, the authors should substantially review the relevant studies in alpine mountainous regions, not just Tibetan Plateau of China. The main findings, discrepancies and weaknesses of previous studies and the motivations of this study should be addressed in detail.

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2. The authors indicated that "large discrepancies still exist in the obtained conclusions and knowledge gap remains". However, in the Discussion section, the authors pointed out several times that most results of this study were consistent with previous studies, (such as P.7, Line 25, "in agreement with", P.8, Line 19, "is consistent with", P.8, Line 31, "The similar", P.9, Line 10, "consistent with"). What are the new and different findings of this study with respect to those in Tibetan Plateau of China, and more important other alpine mountainous regions in the world. What is the reason and mechanism for the differences? The authors should substantially address them and improve the highlights.

3. The authors only investigated the effects of soil properties on hydraulic properties. I think the role of vegetation characteristics including roots should be included in the analysis. The degradation changed both vegetation and soil characteristics to affect soil hydraulic properties.

4. If the authors also measured soil moisture, it is necessary to compare soil water content among different degraded alpine grassland fields.

In summary, the novelty of this study should be improved, and the comparisons and discussions with studies in other alpine mountainous regions in the world should be addressed.

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