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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Saturated Hydraulic Conductivity and Textural Heterogeneity of Soils" *by* Carlos García-Gutiérrez et al.

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Dear referee:

we are grateful for the insightful review and the useful comments.

We did not try to develop pedotransfer functions in this work. We set the objective as the "exploration of relationships between Ksat values and entropy metric of soil texture heterogeneity using different size limits of coarse intermediate and fine fractions." In other words, we tried to develop and inspect a physics-inspired possibility of relationships between the Ksat and the proposed heterogeneity parameter in the attribute spaces determined by various soil texture representations. For that reason, we did not do the common steps of PTF development, i.e. split of data into development and

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testing datasets, cross-validation, comparison with other PTF results, etc. We did not intend to do Ksat predictions.

There undoubtedly are interesting PTF-related research questions regarding the use of IE in PTF development. It is quite possible that if the IE will be used as a PTF input, additional inputs, e.g. organic matter content, will be needed and useful. It is also possible that the performance of PTF with IE as input may be database-dependent in comparison with existing PTFs. Computing IE from different textural triplets may affect its efficiency as a PTF input. Using various textural triplets may stimulate the re-use of existing databases in PTF development sine these databases include more detailed representation of sand fraction in comparison with the representation that is commonly used in PTF and does not differentiate between different sand fractions. Overall, your suggestion of possible use IE as a effective input to pedotransfer functions is most interesting. We took the liberty to include your suggestion in the Discussion section as the possible avenue for the future research.

We are very thankful for the detailed comments on the supplement. The manuscript was modified by taking into account all of them.

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