

SOIL Discuss., referee comment RC1
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Comment on soil-2021-118

Anonymous Referee #1

Referee comment on "Effects of environmental factors on the influence of tillage conversion on saturated soil hydraulic conductivity obtained with different methodologies: a global meta-analysis" by Kaihua Liao et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-118-RC1>, 2021

Dear editor and authors, I read carefully the manuscript.

I think that the topic (a global meta-analysis about effects of different factors on Ksat) is suitable for the journal, interesting, and novel. However, I have several serious concerns. Mainly about the election of the factors, and about data analysis. For that reason, and the comments that you can see in "Reviewer blind comments to author", I think the paper needs major revisions before is ready for publication.

I think that the paper is in general well written. However, I have some serious concerns about the election of factors that you relate with Ksat. Mean annual temperature does not affect Ksat, neither elevation does. The fact that you find a correlation between Ksat and MAT does not mean that mean annual temperature affects Ksat. It is probably a spurious correlation. You can say that Ksat and MAT were statistically correlated, but it does not mean that MAT controls Ksat. Otherwise, you should find and mention in the introduction several studies finding the same relation.

You should select the factors to correlate with Ksat based on previous studies (in the introduction section there are not references relating Ksat to temperature nor to elevation for example).

Probably, grouping the data in clusters could be helpful as well. There are several factors that were found to correlate with Ksat that were not considered as clay type, soil parent material, crop rotation, etc. This is a problem.

Other minors' details as references order and mistakes are marked in the text.

I think that the manuscript needs a deep revision, new analyses of some data, and better justification of factors to be ready for publication.

Please also note the supplement to this comment:

<https://soil.copernicus.org/preprints/soil-2021-118/soil-2021-118-RC1-supplement.pdf>