

SOIL Discuss., author comment AC2  
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## Reply on RC2

Ulrich Weller et al.

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Author comment on "An open *Soil Structure Library* based on X-ray CT data" by Ulrich Weller et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-96-AC2>, 2022

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Thank you very much for your positive and very helpful review. We will try to include a meaningful example how to utilize the structure library in the study of processes like anaerobic microbial activity.

For the specific comments I would like to give an answer for each:

P3 Would it not be meaningful to also by default inquire whether a soil core was repacked or collected undisturbed?

We have discussed that. In the start we wanted to only have the library for undisturbed (or better minimally disturbed) soil samples. But as many soil scientists work with repacked cores we were asked to open the analysis tool for these also. We will do so and add the meta-information on repacked/undisturbed cores.

P4 L71 So does this then mean that ROIs cannot be confounded to a selection of horizontal slices? Not entirely clear

The ROI cannot be a single (or several single) planes as some of the metrics are defined in 3D only. Apart from that it can have any form if the full 3d ROI mask is given. Giving a 2d ROI image means that it will be interpreted as being used for each plane (so if a circle is given it will be interpreted as cylinder). We will make this clear in our revised version.

P6 L99 What is intended by 'intensive properties' this requires further explanation

Extensive properties do change their value if the studied object changes its size (e.g. weight or gas particles). Intensive properties do not change with size (e.g. temperature, mass density). We will add an explanation.

P6 L 106, so  $n_i$  is expressed in number of voxels then?

Yes. We will add this.

L120-123 the 'medial axes transform' is not offered, and so its brief mention here is only confusing -> suggest to omit these two sentences.

We are often asked why we do not use the medial axis transform and therefore want an explanation here why we preferred the local thickness transform.

L131-132 this mention of benefits for a certain public domain is redundant for this paper; in fact the power of Dash becomes soon evident when reading through the following lines.

Ok, we will shorten here.

In 2.2.4 it is not clear how to interpret several of the pore metrics as a function of pore diameter  $m_{0-3}(d)$ : does such a metric represent all pores with local pore diameter  $<d$ ,  $>d$  or with  $d$  in between to pore size classes -> the latter would be of most interest to users. Please clarify

The number is given in local pore diameter  $> d$ , from this distribution it is easy to calculate the desired interpretation. We would like to keep it this way, as this is the way it is directly defined and the class wise distribution is derived from that number.

From the conclusions section it would seem that the actual 3D datasets are also accessible via the Soil Structure Library. Not clear if that is really the case? Please clarify in the manuscript.

Yes, this is the case. We will clarify this.

For the technical comments we thank the reviewer and will correct our manuscript.