

## ***Interactive comment on “Data of hydraulic properties of North East and Central German soils” by U. Schindler and L. Müller***

**Anonymous Referee #1**

Received and published: 8 June 2010

The paper is a report about a regional data collection of soil physical and hydraulic properties. The database appears to have a good design, and it is especially favored that the authors followed the structure of a known European scale database. The manuscript is reasonably well written and structured. The manuscript presents important information, however, I think the description/summary of contents and measurement techniques is a bit too shallow. I see a lot of potential for discussion/comparison of/to alternative soil classification and description systems (e.g. PSD, structure, organic soils – see below). I recommend that the manuscript is extended to cover such information. That way the manuscript should draw even larger interest, since potential users could cite this paper because of methodology issues and classification issues, not simply for the data.

C48

I have the following comments and suggestions:

1. Have there been any predecessors to this database? Is there any listable advantage to the presented data base compared to any prior versions (text, Excel, etc.)?
2. I think a short section about the advantages and disadvantages of the evaporation method would be appreciated and it would be a good addition.
3. I strongly advise that the system (and representation) of soil structure is given in detail. Soil structure information is scarce in large databases, while such information is increasingly sought. It would do good service for the authors as well as potential users if such information is given. The existence of such information is just barely mentioned now. A comparison/discussion on alternative representations (US system?) description of soil structure would especially be beneficial.
4. Since the organic soils part of the database covers soils that are rarely assembled into a database (and especially not as a separate collection of data), this section is of very special interest! I suggest that you add a lot more about that part. The different degrees of decomposition and mineralization are certainly of interest. You can give a brief summary on how those different degrees are reflected in the underlying data.
5. Data ranges – especially for the organic soils! - would be useful and informative to present.

Specific suggestions, corrections:

P132, L2: soil physical and hydrological

P132, L4: information on geo-reference

P132, L6: ...and the applied measurement techniques are described.

P132; L8: at the appropriate place in the manuscript, the definition of organic soils should be provided.

C49

P132, L10: 'vary in dependence' is unclear. Do you mean that they represent different states of decomposition and mineralization? Please clarify this sentence.

P132, L15: methods exist for the determination

P133, L3: provided that the

P133, L12-13: Information on applied methodology and measurement techniques is given in the following.

P133, L14: Materials and methods

P133, L17: carried out

P133, L19: definition of 'organic soils' is needed

P133, L22: cite Table 1 here

P134, L3: The basic structure is the same as that of the HYPRES database. Further, I suggest using the Wosten et al 1999 Geoderma reference to the database. Journal citations are preferred over hard-to-access reports.

P134, L10: sidewise → horizontally at depths of 1.5 and 4.5 cm above the bottom of the core.

P134, L11: Cores were

P134, L13: delete extra space

P134, L14: delete comma after 'both'

P134, L14-15: put commas after 'varied' and after 'rate'

P134, L14: depending

P134, L15: near the end of

P134, L18: reached

C50

P134, L21: what interval?

P135, L8: in the given time interval

P135, L 11: tensiometers from each other.

P135, L11-12: At the end of the measurement, the amount of water that remained in the sample was determined by drying the in a 105C oven and weighting the dry sample.

P135, L17: please clarify 'measuring interval'. Time?

P135, L21-22: this is repetition from half a page above. I recommend deleting it.

P135, L22-23: The initial water content is determined using the sum of the water content (loss by evaporation plus the residual water after the last measurement) and the volume of the core.

P136, L5: Isn't this vice versa?

P136, L5-6: Figure 2 presents an example of a pair of measured hydraulic functions, as obtained using the evaporation method.

P136, L10: Particle-size measurements took place using the gravitational...

P136, L11: according to

P136, L13: It relies on... at a given depth...

P136, L9-19: I wonder if these details are really needed. A reference to the method should do most of that job.

P136, L20: Two conditions need to be met before running the measurements: (1)... and (2)... Add brief reasoning why these conditions are important.

P136, L24: coarse silt. Also, move bracket to after 'sand'

P137, L1: wet sieving? - say so

C51

P137, L1: Add a sentence that warns for the mismatch between the German PSD system and the internationally frequently used FAO/USDA system. Just to recognize it. It can also be added that the provided data conforms with the ISSS PSD system. As a next step, interpolation techniques could be mentioned for use, but I don't insist.

P137, L4-7: ??? Write this section up in the same text-style as the rest of the manuscript has been written.

P137, L10: hydraulic conductivity function is costly and time consuming.

P137, L11: North East and Central or North East and North Central? Be sure to change it in the title too, if that is a better reference to the source area.

P137, L13: replace 'companies' with 'organizations and individuals'

P137, L17: which cover a wide range of textures, bulk densities and organic matter contents.

P137, L20-21: . . . that cover a wide range of soils with different degrees of decomposition and mineralization as well as wide ranges of bulk density and porosity.

P138, L30: replace with Wosten et al 1999, Geoderma

Table 1: mark (e.g. use bold face) fields that are linking fields between tables.

Figure 1: As suggested above, a warning about the non-comparability of the German PSD system with the USDA/FAO system should be included. This triangle does not directly translate into the USDA triangle.

Figure 2: In line with my prior general comment above, I think it would be more useful to present ranges of the covered data. An intermediate solution would be to plot all available data in grey, over-laid with this one example series in black (ie. highlighted).

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