



EGUsphere, referee comment RC1  
<https://doi.org/10.5194/egusphere-2022-1092-RC1>, 2022  
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## **Comment on egusphere-2022-1092**

Nicolas P.A. Saby (Referee)

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Referee comment on "The QuantiSlakeTest, dynamic weighting of soil under water to measure soil structural stability" by Frédéric M. Vanwindekens and Brieuc F. Hardy, EGU sphere, <https://doi.org/10.5194/egusphere-2022-1092-RC1>, 2022

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The manuscript presents a very interesting study on a new laboratory method to measure soil structural stability. The subject is well introduced, the statistical analysis is thoroughly executed using a nice and robust dataset.

The manuscript is very well written, well organised, interesting and very clear. There is also a very interesting discussion on the mechanisms controlling soil disaggregation.

the paper addresses a relevant scientific question within the scope of SOIL by providing new soil health indicators determined by a new and simple method. The results are compared with results obtained using a reference method (MWD).

Moreover, the authors paid particular attention to the publication of FAIR data and codes.

I have very little comments

In the summary, l8, it is not clear that you use some indicators based on the curves to the derive information on soil structural stability. Maybe you could add one sentence to specify this point.

L89, 'in field conditions', it is not clear to me. SLAKES mobile application should be use in a lab or a room.

L100 there is a repetition of the definition of the QST acronym?

Is Table 1 published on a data repository? If yes, add the DOI in the caption and the text.

L230-240, the choice of the different indicators could appear arbitrary and in particular for the time (ii) or the threshold value (iii). I don't think it is discussed. More generally, the use of the QST curves could be discussed in terms of statistics. You may use functional data analysis or curve modelling instead. Fajardo et al. use a Gompertz model and interpret the parameters of the curves. Maybe this point could be mentioned for future research. I think there is only one short sentence in the conclusion (l495).

Figure 4 and 5 I think we are missing some results on the MWD here to be able to compare.

L286 and Fig 3, yes there is a clear relationship but also there is a residual variability. I think this should be acknowledged in the text.

L344 some QST indicators. It is possible to be more specific?

L386. Add reference to figure 3 for clarity?

L410: something wrong with the reference.

L450 the use of a large soil volume facilitates the soil sample preparation compare to MWD.

L500 this sentence is right only for soils of central Belgium for the moment.