

***Interactive comment on “Soil Infrastructure,  
Interfaces and Translocation Processes in Inner  
Space (Soil-it-is): towards a road map for the  
constraints and crossroads of soil architecture  
and biophysical processes” by L. W. de Jonge  
et al.***

**Anonymous Referee #1**

Received and published: 10 May 2009

General comments: The manuscript portrays to suggest a new paradigm to investigate soil structure. The authors do a very nice job of outlining their “soil-it-is” framework, which I find an interesting framework and one that I had not given much thought too. Therefore, I find the manuscript a novel contribution. However, I would not see it is per se a new paradigm. I do have some suggestions with regard to improving the manuscript (see below), but I think that manuscript is acceptable with minor revisions.

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Specific comments: P 2638 In 13-15: you seem to argue further in the text that there is some use to isolating soil structural components (such as aggregates) to investigate the inner space. So, why do you say here that it is not useful? I agree that some measures should not be done on aggregates, but totally dismissing the approach seems a bit drastic.

P 2640 In 23-25: I am surprised here and further in the text that you do not mention at all the papers by Hassink (1996; 1997), Six et al. (2002), and Baldock & Skjemstad (2000) in regard to carbon saturation.

P 2642 In 9: Again I am surprised that this whole section is written without any reference to the saturation concept as described in Hassink (1997) and Six et al (2002). Furthermore a referring to the monolayer concept by Mayer (Mayer, 1994; Mayer and Xing, 2001) would be appropriate, I think.

P 2643 In 4-6: I assume that was done on wet soil and not air-dried soil. Consequently, the process of slaking, which is directly related to OC content, was not induced. I think this is an important fact to consider in the interpretation given here.

P 2649 In 5: are these primary or secondary particles that are isolated? This needs to be known for correct interpretation.

P 2649 In 17: A paper of potential interest to this section is: Hallett et al. (2001)

P 2650 In 3-5: this statement is based on the fact that only the clay content determines C saturation, but saturation also happens at other levels within the soil matrix. See Carter et al. (2003); Stewart et al. (2007); Six et al. (2002); Baldock and Skjemstad (2000).

P 2650 In 15-20: Very nicely put!

P 2653 In 3: should the reference here not be to figure 13 instead of figure 14?

References: Baldock, J.A., and J.O. Skjemstad. 2000. Role of the soil matrix and

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minerals in protecting natural organic materials against biological attack. *Organic Geochemistry* 31:697-710. Hallett, P.D., T. Baumgartl, and I.M. Young. 2001. Subcritical water repellency of aggregates from a range of soil management practices. *Soil Science Society of America Journal* 65:184-190. Hassink, J. 1996. Preservation of plant residues in soils differing in unsaturated protective capacity. *Soil Science Society of America Journal* 60:487-491. Hassink, J. 1997. The capacity of soils to preserve organic C and N by their association with clay and silt particles. *Plant and Soil* 191:77-87. Mayer, L.M. 1994. Relationships between mineral surfaces and organic carbon concentration in soils and sediments. *Chemical Geology* 114:347-367. Mayer, L.M., and B. Xing. 2001. Organic matter-surface area relationships in acid soils. *Soil Science Society of America Journal* 65:250-258. Six, J., R.T. Conant, E.A. Paul, and K. Paustian. 2002. Stabilization mechanisms of soil organic matter: Implications for C-saturation of soils. *Plant and Soil* 241:155-176. Stewart, C.A., A.F. Plante, K. Paustian, R.T. Conant, and J. Six. 2007. Soil carbon saturation: Concept, evidence and evaluation. *Biogeochemistry* 86:19-31.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 2633, 2009.

**HESSD**

6, C643–C645, 2009

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