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Interactive comment on “How accurately can soil organic carbon stocks and stock changes be quantified by soil inventories?” by M. Schrumpf et al.

Anonymous Referee #1

Received and published: 21 March 2011

Dear Editor,

In the submitted paper, Schrumpf and colleagues deal with a very important topic related to soil carbon studies i.e. the accuracy in determination of soil Organic carbon stock changes. The argument is well within the topics of BG. One very important topic addressed by the paper is the use of PTF and associated errors to estimate BG. To me this topic is very important and not discussed previously elsewhere. As demonstrated by the authors, considering or not the errors associated with the application of PTF can affect the ability to detect changes in soil C stocks. To me the reached results are sufficient to support the interpretations and conclusions. The methods are sound and

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the initial soil sampling design was accurately planned. The language is fluent and precise. Also the data seems to be correctly processed from the statistical point of view.

In my opinion the paper is suitable for publication in BG.

Minor comments:

*It doesn't seem that you refer to data normality. Was it tested on the initial data and eventually accounted for in the statistical analysis? Usually soil-related parameters are non-normally distributed.

*Eq.(1): can you add a reference?

*Page 732, line 12: can you add a reference for PTF?

*Page 735, line 7: convert the data in kg/m² since later it is so (page 740, line 5). Check that all the reported values have consistent units: i.e. stocks in kg/m² and MDD in g/m².

*Page 743, line 3: be aware that most literature reported PTF were developed for agricultural soils.

*Please also see Ellert, B.H., H.H. Janzen, and B.G. McConkey. 2000 (ref. below): they state that the equivalent soil mass technique should be applied to agricultural soils only. Can you comment on that?

I would suggest to add these additional references that could enhance and strengthen the paper itself:

Ellert, B.H., H.H. Janzen, and B.G. McConkey. 2000. Measuring and comparing soil carbon storage. p. 131–146. In R. Lal et al. (ed.) Assessment methods for soil carbon. Lewis imprint of the CRC Press, Boca Raton, FL.

Rodeghiero et al., Forest Ecology and Management, 259: 1093-1101.

Saby et al., 2008 – Will European soil-monitoring networks be able to detect changes

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in topsoil organic carbon content? GCB, 14: 1-11.

Interactive comment on Biogeosciences Discuss., 8, 723, 2011.

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