

## ***Interactive comment on “Scale-dependent relationships between soil organic carbon stocks, land-use types and biophysical characteristics in a tropical montane landscape” by Marleen de Blécourt et al.***

**Anonymous Referee #1**

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Review comments soil-2016-66 Scale-dependent relationships between soil organic carbon stocks, land-use types and biophysical characteristics in a tropical montane landscape The current rise in atmospheric CO<sub>2</sub> concentration and associated climate change is believed to be partly mitigated by carbon sequestration in soils, primarily because the soil carbon pool comprises the biggest soil organic carbon (SOC) pool on Earth and because it exhibits direct and very dynamic exchanges with the atmosphere through photosynthesis and organic matter decomposition. This being said, the international community is seeking to identify land use and/or land management that will provide improved carbon sequestration in soils. This is where the present study by de

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Blécourt et al comes in. By conducting their study in a 10,000-hectare landscape of SW China, the authors intended to estimate the link between the variability in SOC and land-use cover and topography. From the sampling of 27 one-hectare plots the authors showed that SOC concentration and stocks did not differ significantly across the land-use types from forest to tea plantation, through grasslands. However, the SOC stocks to 0.9 m increased from  $177.6 \pm 19.6$  Mg C ha<sup>-1</sup> in tea plantations,  $199.5 \pm 14.8$  Mg C ha<sup>-1</sup> in regenerating or highly disturbed forests,  $228.6 \pm 19.7$  Mg C ha<sup>-1</sup> in mature forests, and  $236.2 \pm 13.7$  Mg C ha<sup>-1</sup> in grasslands. I found the research of great value and the manuscript well written. However, before publication can be granted I would advise the authors to: 1. Ensure the conclusions are not flawed, by recalculating SOC stocks by equivalent soil mass, which is common practice; 2. Show the sampling design (plots) on a map; 3. Better consider the impact of soil type (with discussion on its correlations with topography and land use) on SOC<sub>c</sub> and SOC<sub>s</sub>. Test of variance could for instance be added to Table 4.

Finally, the abstract structure is skewed to me with half of its length on methods. I would suggest the following to be considered: Abstract A. Topic sentence (s) on the subject (its importance) and research question(s): what is(are) the research gaps in this field of research? B. Objectives of the study C. Materials and methods used in the study D. Main results (with quantitative information, tests of significance) E. Conclusions: how these results respond to the objectives; general implications of the research

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