

Anonymous Referee #6

Received and published: 24 June 2015

GENERAL COMMENTS:

In this manuscript, the authors analyze how C3 and C4 vegetation influences soil organic matter (SOM) dynamics in ecosystems in West Africa. The paper presents some new insights into the usability of carbon $\delta^{13}\text{C}$ and ^{14}C isotopes for identification of undergoing changes in vegetation cover and assessing the influence of those changes on SOM dynamics. Obtained results are novel and contribute to the research aimed at understanding the carbon cycle, one of the biogeochemical cycles understanding of which is very important in context of climate change studies. The paper is well written, the methods used are adequately described and the appropriate literature is provided. My only concern is related to conclusions, which are weakly pointed out. This paper fits well within the scope of Biogeosciences and therefore my recommendation is to accept it after minor corrections.

We thank the reviewer very much for his/her comments and provide answer to the specific and technical comments below. Our comments are in bold font.

SPECIFIC COMMENTS:

page 8092, lines 18-19 – can authors explain whether there were any particular reasons for collecting three soil samples from 0-0.05m depth and only one from 0-0.3m?

This was also a query from Reviewer #3: In the section 2.2 (Soil sampling), we now state that: ‘Three replicate samples were collected at 0-0.05 m to smooth out local heterogeneity, which is generally more pronounced closer to the soil surface compared to deeper locations’.

page 8107, section Conclusions – conclusions are rather weak, they should summarize and emphasize new findings of the work. As the discussion presented in paper is multi-threaded and sometimes hard to follow, it would be of benefit for the manuscript (and finally for the reader) to point out the most important results.

We have modified the conclusions. We now recall the three main objectives of the paper, and then highlight the novel findings of this study.

TECHNICAL COMMENTS:

page 8088, line 21 – should be “Boutton, 1996” instead of “Boutton and Yamasaki, 1996”,

The reference is now amended.

page 8090, line 21 – there is some inconsistency in citation here and in references, I’m aware that “Veenendaal et al., 2014” has been published on 24 March 2014 in Biogeosciences Discuss. and final version of revised paper has been published on 21 May 2015, but authors should decide either to change to “Veenendaal et al., 2015” or change the literature to “Veenendaal, E. M., Torello-Raventos, M., Feldpausch, T. R., Domingues, T. F., Gerard, F., Schrod, F., Saiz, G., Quesada, C. A., Djagbletey, G., Ford, A., Kemp, J., Marimon, B. S., Marimon-Junior, B. H., Lenza, E., Ratter, J. A., Maracahipes, L., Sasaki, D., Sonké, B., Zapfack, L., Villarroel, D., Schwarz, M., Yoko Ishida, F., Gilpin, M., Nardoto, G. B., Affum-Baffoe, K., Arroyo, L., Bloomfield, K., Ceca, G., Compaore, H., Davies, K., Diallo, A.,

Fyllas, N. M., Gignoux, J., Hien, F., Johnson, M., Mougin, E., Hiernaux, P., Killeen, T., Metcalfe, D., Miranda, H. S., Steininger, M., Sykora, K., Bird, M. I., Grace, J., Lewis, S., Phillips, O. L., and Lloyd, J.: Structural, physiognomic and aboveground biomass variation in savanna-forest transition zones on three continents. How different are co-occurring savanna and forest formations?, *Biogeosciences Discuss.*, 11, 4591-4636, doi:10.5194/bgd-11-4591-2014, 2014.”

The latest work published in BG has now been introduced and edited accordingly.

page 8091, line 13 – see remark above,

The publishing date for this work has been edited.

page 8094, line 21 – change “as described by (Reeuwijk, 2002)” to “as described by Reeuwijk (2002)”,

Revised as suggested.

page 8099, line 19 – “Menaut and Cesar , 1979” is not listed in references,

The reference is now listed.

page 8100, line 13 – change “Brady and Weil, 2012” to “Brady and Weil, 2007”,

Revised as suggested.

page 8108, lines 3-4 – “Menaut and Cesar , 1979” is not listed in references.

The reference is now listed.