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Interactive comment on “Nitrous oxide emissions from soil of an African rain forest in Ghana” by S. Castaldi et al.

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One of the main results from the study is the correlation between N₂O emission and soil respiration (CO₂ efflux), for which a regression is conducted (Fig. 2). However, it should be noted that the two fluxes are not independent from each other, as they were simultaneously measured from the same chambers (p. 16570, line 7). This though violates the assumptions of the regression analysis.

Irregardless of that, care must be taken in interpreting the results from regressions. The regression in Fig. 2 has a correlation coefficient of 0.4 (even though that you should show the coefficient of determination) means that soil respiration explained only 16% of the variation in N₂O emissions. Therefore, even though that the relation is statistically significant one could question the biological significance. This is also true e.g. for the

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multiple regression presented on p. 16573, line 5-7, in which a linear combination of WFPS and CO₂ flux explained only 13% of the variation in N₂O emission from the lowland site. Again one has to ask if there is a biological significance.

One additional minor point: as I understand your study was conducted in a hilly area with a maximum altitude of 90 m a.s.l. Therefore, the terms upland and lowland for the two study areas are somewhat confusing. Consider an alternative terminology, e.g. top hill and valley bottom.

Finally, I would like to draw your attention to the paper by Gharahi Ghehi et al. (2012; Biogeosciences 9, 1451-1463), which has certainly some importance for your discussion.

Interactive comment on Biogeosciences Discuss., 9, 16565, 2012.

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