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# ***Interactive comment on “Responses of nitrous oxide emissions to nitrogen and phosphorus additions in two tropical plantations with N-fixing vs. non-N-fixing tree species” by W. Zhang et al.***

**Anonymous Referee #1**

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This paper show differences in N<sub>2</sub>O emission from N-fixing vs non-N-fixing dominated forest. A full factorial N, P addition experiment is applied in both forests with the aim to elucidate differences in P limitation and N excess relationships among the forest. The experiment is well designed and a lot of data has been collected. The paper is for most parts well written, though with some language deficits. The discussion could make better use of the data obtained. Major comments 1) From reading a previous paper from the group, I understand that the stands are established on eroded lands and the two types of forest used for restoring forest on degraded lands. This is not at all mentioned in the site description. It is very important and also briefly mentioned in the discussion (l. 378). The land use history need to be described and should also be

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discussed along with the results. 2) The full factorial nature of the N and P addition experiment and its analysis (Table 3) is not in full focus by the authors. They discuss many detailed differences between the individual treatments instead of the overall results for N P and the interaction. I suggest focusing more on the overall results in table 3 and reducing some of the details on individual treatments. 3) All soils data in Table 1 and 2 is not used for interpretation of the N<sub>2</sub>O fluxes in a quantitative way. I would suggest regression analysis to see if the variation soil parameters among plots can explain N<sub>2</sub>O emission (using the observed gas flux from the measurement closest to the soil sampling. 4) The analysis in Fig. 3 need to be accompanied by information on the relationship between temperature and WFPS, since they are likely highly correlated in a monsoon climate. A regression  $N_2O = a \text{ Temp} + b \text{ WFPS} + c$  could show if Temp is the most important or looking at data above a certain threshold WFPS not affect N<sub>2</sub>O emission.... Minor 5) Nothing is mentioned in Methods on extraction before measuring mineral N 6) When numbers have high variability we do not need accuracy on decimals, see suggestions in attached annotated pdf, but authors please also look critical on this aspect. It will be much easier to read your text and tables if you skip the unneeded details. 7) Text annotations in attached pdf

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/11/C262/2014/bgd-11-C262-2014-supplement.pdf>

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