

Interactive comment on “Soil nitrogen transformation responses to seasonal precipitation changes are regulated by changes in functional microbial abundance in a subtropical forest” by Jie Chen et al.

Anonymous Referee #1

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General: In this M.S., the authors took advantage of in-situ two-year rainfall manipulation experiment combining with monitoring of soil chemical, biological properties and nitrogen mineralization rates and N₂O fluxes to study the features and determinants of nitrogen transformation. They found that more than 20% of the soil net nitrification and N mineralization rates variation could be explained by the effects of microbial abundance, SWC, soil C and N substrates. AOA abundance was the main factor in regulating these two N transformation processes, while as much as 42% of the total variation in N₂O emission was attributed to the total effects of SWC, nitrification rate, MBC and nosZ gene abundance. The results suggested that predicted seasonal pre-

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cipitation changes in subtropical forests might result in less N₂O emission while more NO₃- leaching. The study is of significant for efforts to understand the features and determinants of nitrogen transformation responses to the predicted precipitation change in subtropical area.

Specific: Line 44-45: it is not a proper conclusion Line 96: no verb of the sentence Line 123: reference? Need a brief introduction of SEM model. Lin 127-129: add the reason for the third hypothesis Line 137-139: add the data or reference Line 174-175: why not add rainwater? Line 183: in brackets, is that the instrument model of meteorological station? Line 255-292 too many sentences for the introduction of Nitrous oxide (N₂O) fluxes measurement Line 297-298 :why not use paired sample T test? Line 395-402: Need further explanation why the precipitation addition treatment decreased soil water contents. How this SWC change will affect functional gene results. Fig. 1: precipitation change Fig. 2 mark the meaning of the blue bar; why the SWC is significantly lower under the precipitation addition treatment than the control in wet season? Fig. 4 why not use log transformed number? Fig. 5 add symbols a,b,c in the figure and M.S. Fig. S2 why analyze the relationships between nirK+nirS and archaeal amoA; between nosZ and nirK+nirS?

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