**Biogeosciences**
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Discussions

# *Interactive comment on* "Strong stoichiometric resilience after litter manipulation experiments; a case study in a Chinese grassland" *by* C. W. Xiao et al.

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*Answer to comments from the reviewers.*

*Comments from the reviewer were left intentionally in this document and written in roman font. Our answers are written in italics.*

Anonymous Referee 1

General comments: The manuscript entitled "Strong stoichiometric resilience after litter manipulation experiments; a case study in a Chinese grassland" focuses on the evolution of C, N and P pools and ratio among several grassland ecosystems compart-

ments (aboveground biomass, belowground biomass, litter and microbial biomass). This study is well designed and the statistical analyses well conducted. Even if it is limited to one particular type of grassland and therefore needs to be completed with forthcoming studies, my recommandation for this manuscript is accept with minor revisions.

Specific comments: Introduction: Page 3 line 17: Previous studies also considered the microbial biomass in soils under litter addition experiments (e.g. Chemidlin Prevost-Boure et al., Applied Soil Ecology, 2010). This should be indicated in the introduction.

*This reference is now added in the resubmitted version.*

Methods: Litter addition was done with sieved fragmented litter. Could the authors explain why they chose to do like that. I understand that this was to mimic the activity of soil fauna. However, according to the relatively high sand content and low C content (for a grassland), one might expect a relatively low faunal activity. Was it the case or not?

*Actually, we used fragmented and sieved litter mainly to standardize the litter area available to microbes and therefore reduce the variance among plots and treatments. We have no data on soil faunal activity, even though we acknowledge that this is likely the most important control on nutrient mineralization.*

P7 line 22: Why did the authors perform a 24h incubation step at 60% of water holding capacity before the fumigation-extraction procedure. This is not usual for that kind of measurement which can be done directly on fresh soil samples.

*Fresh soil samples were immediately transported to the laboratory with a portable ice box and stored at 4 °C before analysis. Therefore, to reactivate soil microbes, we performed a pre-treatment incubation at 60% of water holding capacity before starting the fumigation-extraction. This procedure is indeed not commonly done, but does follow the original procedure published by Vance et al. (Soil Biol. Biochem., 19, 703–*

*707, 1987). To avoid any misunderstanding, we rewrote the sentence in the revised manuscript.*

Minor comments

*All the minor comments listed below were taken into account in the resubmitted version.*

Figures are not very reader friendly because of the numerous barplots they are constituted of but I do not ask to change this.

P6 line 6: "15, 30,..." should be "0, 15, 30,..." since the control did not experiment any litter addition.

P7 line 24: Please rephrase. It is unclear wether this is only the non-fumigated sample or both fumigated and non-fumigated samples that were extracted with K2SO4.

P9 Title 3.2 is unclear. Please rephrase

P9 line 16: delete "for" in "year for on aboveground"

P13 line 9: "was N limited" in "community N limited"

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Interactive comment on Biogeosciences Discuss., 11, 10487, 2014.