

Dear editor(s),

Thanks for your comments for our revised paper BG-2016-40, submitted on Oct. 16, 2016.

Our responses are given in red, as follows.

Thanks,

Genxing Pan

The corresponding author

2016-11-11

Thank you for submitting your revised manuscript to BG.

Most comments of both reviewers have been adequately addressed, and I also side with reviewers that the data is of excellent quality, novel and, as such, provide important insights on soil organic matter turnover in paddy soil under different rice cultivation regime. The unique point is that conversion of tidal marsh to rice cultivation at different historical stage resulted in a series of soil chronosequence. The soil chronosequence thus serves as a valuable source to document the dynamic changes of organic carbon in differentially-sized fractions.

Thanks again for your great patience and constructive comments for improving the manuscript quality.

However, I do concur with one major concern raised by both reviewer, i.e., the coexistence of an increase in microbial activity and contribution of physically protected labile organic matter to C accumulation in paddy soils. For example, provided that microbes had little access to “the physically protected labile carbon”, the accumulation of the physically protected labile carbon could would have made microorganisms starved, leading to lower microbial activity. I also agree with your reasoning of C allocation in different aggregate size fractions. However, the ms might be revised to facilitate the understandings of general readers without reading the text in detail.

Considered. Our understanding is so far not sufficient of microbial community and activity with soil organic matter allocated in different aggregate size fractions. We no long insist to use “physically protected”, instead, use “Accumulation of organic carbon in macro aggregates.” The title is now changed as “Promoted microbial activity with organic carbon accumulation in macro-aggregates of paddy soils under long term rice cultivation “. Hope this may be suitable for general readers without reading the text in detail. Accordingly, we made a few minor changes in the text of the last part discussion section and also in conclusion.

(1) The term of “physically protected organic carbon” can be removed from the title by using more general term. By the way, rice appears twice in the current “rice soils under long term rice cultivation”, pls remove one.

Accepted and revised, as mentioned above. The first “rice” replaced by “paddy”, and leave the second unchanged. See the title of the present version.

(2) In the abstract please indicate the age of soil chronosequence soil, i.e., rice cultivation for 0, 50, 100, 300 and 700 years.

Accepted and followed.

The language usage could be improved further by a professional company before publication

We have again carefully corrected typos and inadequate sentences throughout the text. Hope the ms is now much improved for scientific and language quality. All papers published so afr by my group have relied on our own efforts, with help of our foreign visiting professor when needed.

We enjoy the interaction through the BG discussion platform.