

## ***Interactive comment on “Carbon turnover in cell compartments and microbial groups in soil” by Anna Gunina et al.***

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Received and published: 20 August 2016

# Thank you very much for the evaluation of the ms!

General comments Materials and methods: There is no information on bulk density of the soil in the paper. Provide this information, as it is not clear how you calculated soil mass in cylinder

# The bulk density is 1.36 g cm<sup>-3</sup>. This will be added into materials and method section.

Check all links to figures, equations and tables and present them whether in full text or shortened form (fig, eq., etc), but the same through the whole manuscript.

# Thank you for the comments. Corrected.

Specific comments L 180 – 183 I recommend to change “due to” in “Due to fumigation–C1

extraction technique allows. . .” for “As fumigation–extraction technique allows. . .”

# Was corrected: “ As fumigation–extraction technique allows to obtain not only soluble components, but also cell organelles and cell particles, we named pool of C in fumigated extracts as cytosol only for simplification of terminology.”

L 186 Revise sentence: In After organic C concentration were measured → After organic C concentrations were measured OR After organic C concentration was measured

# Corrected “ After organic C concentrations were measured, the K<sub>2</sub>SO<sub>4</sub> extracts were freeze-dried and the  $\delta^{13}\text{C}$  values....”.

L 295 Clarify if it was 50th day of experiment or after 50 days in the sentence “<sup>13</sup>C in amino sugars increased two fold during the 50 day experiment (p<0.05)”

# Corrected: “ In contrast, <sup>13</sup>C in amino sugars increased two fold on the 50th day of experiment (p<0.05)”.

L 301-302 Paraphrase the sentence, as it is difficult to read: “The enrichment was the highest in PLFAs (Fig. 2) and was 5–8 times lower in the cytosolic pool. The <sup>13</sup>C enrichment in amino sugars was the lowest (Fig. 2) “

# Corrected: “The pool enrichment was the highest for PLFAs and the lowest for amino sugars (Fig. 2)”.

L 427- 429 Substitute “we used agricultural soil” on “we conduct experiment on agricultural soil”. In your paper you wrote about field experiment, not incubation one with agricultural soil. It is not correct “to use” soil in this situation.

# Thank you for the comment, it was corrected: “Because we conduct experiment on agricultural soil with pH close to neutral (6.6), the predominance of bacterial PLFAs was expected”.

L 450-451 Revise sentence “However, replacement of PLFAs C by glucose derived

13C is only a proxy of microbial activity and only partly confirms the real mechanisms.”

# Corrected: "However, replacement of PLFAs C by glucose derived 13C is only a proxy of microbial activity and can only partly estimate the real activity of microbial groups".

L 486-487 What long-term sampling points mean? Maybe, you suggest conducting long-term experiment for turnover time calculation? Or add sampling points to existing experiment?

# Corrected: "To calculate C turnover time in this pool, conducting of long-term experiments is necessary".

L 526- 527 Substitute "our the site" on "experimental site or site" in "the environmental conditions of our the site, namely, long-term agricultural use. . ."

# Corrected: "...the environmental conditions of the site, namely, long-term agricultural use, which promotes the dominance of bacterial communities".

Tables L 809 It will be better to write "Data present mean of three replicates" instead of "Data present mean of three time points".

# Corrected: "Data present mean of three time points (with four replications for each time point)  $\pm$  SE".

Figures L 887 It is difficult to read graphs for Ac. Expand the space between Ac and second scale for VAM and Fungi.

# Will be corrected in revised ms.

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Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2016-214, 2016.