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Biogeosciences Discussions

Interactive comment on "Biochar carrying hydrocarbon decomposers promotes degradation during the early stage of bioremediation" *by* P. Galitskaya et al.

Anonymous Referee #2

Received and published: 22 August 2016

The paper reports data from an interesting and important experiment on bioremediation of oil contaminated soils. The authors compared different strategies of bioremediation such as aeration, the amendment of biochar and two bacteria species. The experiment was carefully performed and the results promise potential for future application. The manuscript is well written, well-structured and I recommend publication after some corrections.

General comments:

You mentioned that you removed the plants from the contaminated soil. If you can, please provide the data about plant species and the ground cover.

Please provide information how you measured the soil parameters (pH, C/N, texture). Which texture system you use, the international or the Russian?

Did you sterilize the biochar before inoculation with the bacteria? Was the inoculation and adjacent storage conducted under sterile conditions?

Please describe how you took the soil cores from your incubated soil (volume, mass, etc.) at the sampling day.

Did you applicate a correction factor for the CFE method? If not, rather write microbial biomass carbon instead microbial biomass.

How was the moisture level of control E? Was it also maintained during the incubation?

Provide the stress factor for your MDS and the reason for using the Bray-Curtis matrix. The vegan package offers a method to test the best fitting matrix.

In Figure 2 and 3 the lines between your measuring points are smoothed. Please describe which numeric function you used.

Table 2 is not very helpful. To complex and requires much time for the reader to understand. It would be a great benefit for your study to summarize the data of table 2 in a graph.

Technical notes: L 12-14 Please rewrite the sentence. The information comes not clear to me.

L 21 and 22: "between 2.5 to 3.1 times"

L 27: remove "indeed"

L 54-55: please rewrite the sentence. It is not clear if the mentioned study provide poor data or in general data are poor on this topic

L 98: I think you measured the HC content not "estimate"

L 122: punctuation missing

L 141: in general use SE as abbreviation not S.E.

L 142: space before “The” and between pus-minus

L 161: please provide the LSD test parameters

L 200: You conclude that biochar can overcome the problem of pure cultures which are not adapted to stress. As far as I understand you isolated your cultures from previously restored soils. So your stains were already adapted to stress. Because of that, it could be that your cultures was more efficient in HC recycling and your experiment did not include a variant without biochar but with bacteria treatment. Please be careful with your argumentation.

L 321: Please add the significance test results.

L 340: The plot is not showing test results for significant differences between your treatments. As far I can see in the graph the blue lines showing the confidence intervals of your sampling days. The vegan package offers a method called “adonis” in order to test if our compared treatments are different or not. You come possibly to a missleading conclusion if you only interpret Figure 6 visually. Statistic testing is highly recommended.

L 624 I guess the blue ellipses show confidence intervals? Please describe in the text below the graph. Also add the stress factor.

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