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Interactive comment on "Microbial biomass and basal respiration in Sub-Antarctic and Antarctic soils in the areas of some Russian polar stations" *by* E. Abakumov and N. Mukhametova

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Dear anonymous referee # 2! Thank You very much for your comments to my paper "Microbial biomass and basal respiration in Sub-Antarctic and Antarctic soils in the areas of some Russian polar stations" As for Your comment that paper itle should be changes, I agree and I have specify it, namely like follows: "Microbial biomass and basal respiration of selected Sub-Antarctic and Antarctic soils in the areas of some Russian Polar Station" Details of soil sampling, depth, manipulation were given in paragraphs 2.2 and 2.2. It is emphasized that soils where air dryied before chemical and biochemical manipulation. This was caused by 2 reasons: only dry soil can by homog-

enized and seiwed and different moisture of initial stored soils should be reduced to common denominator. We have use the same method for basal respiration for acid (pH âĂź 7,5) and neutral soils (pH âĂž 7,5), because there were not soil samples with the pH level more that 8,5, it is known that this pH level is caused by carbonates, which can provide the CO2 emission under the laboratory measurements of respiration. It is substantiated that the BR rate were calculated on the base of CO2 emission in the closed laboratory chambers. As for experiment design ranks of data for Sub-Antarctic and Antarctic soils were compared for statistical analyses of differences of soil, formed in different climatic conditions. Significant differences were considered as a $P < 0.05$ by using of parried t-test and one way Anova. No differences between soil horizons and their depth were assessed while the amount of soil samples was not enough to conduct this type of comparison. While the soil respiration and microbial biomass were measure in described laboratory conditions, data obtained in this experiment cant be interpolated directly to field conditions, but can be used only for comparison of soil microbiological activity in the same experimental conditions. It is posted that $\pm$ after the individual data means the standard deviation Methabolical quotient usually have not the units, because it is the result of dividing of BR to Cmic – mgg day-1 / mmg. That is why this is dimensionless value. We don't use the Cmic ratio to TOC in g/g values because those values were to less (0,01 -0,03 %), this is not valuable for discussion and interpretation, we think that the most preferable to use the data scale in mgg-1 . On the same reason we didn't discuss the extractable forms derived in K2SO4 solutions. We think that it is more reasonable to compare Cmic/TOC in well developed soils of temperate climate. In those case there is an essential portion of colloidal humus which can be compared with amounts of microbial biomass. In case of Antarctica, different soils contain the SOM of different quality; some of them contain the row humus in upper layer, while the humified colloidal one is a part of lower ones. In this case the comparison of Cmic with the TOC values is not really correct, especially in case of very low portion on Cmic in soils. But we agree that this is good approach for soils of temperate climate. More detailed interpretation has been added to Results and Discussion es-

pecially in sense of terms of experiment and terms of soil data comparison in different climatic zones. Paper was reedited according reviewer suggestions and was corrected by American manuscript editors.

With Kind Regards Corresponding author Evgeny Abakumov

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/6/C489/2014/sed-6-C489-2014-supplement.pdf

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Interactive comment on Solid Earth Discuss., 6, 869, 2014.