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Interactive comment on "Comparing soil biogeochemical processes in novel and natural boreal forest ecosystems" *by* S. A. Quideau et al.

Anonymous Referee #3

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This discussion paper compares the nutrient availability, the organic matter quality and the microbial diversity of various anthropogenic ecosystems established after open-cast mining for oil extraction with a vast range of natural ecosystems from the boreal forest ecosystems of northern Alberta. Nutrient availability was determined by commercial resin probes, organic matter quality by NMR and microbial diversity by PLFA analyses. In details,15 natural ecosystems and 26 reclamation sites exhibiting contrasted materials and land cover were investigated. Stastical analyses of the obtained results were performed. They demonstrated that nutrient availability in natural ecosystems is dependent on tree cover rather than on soil type, and that anthropogenic ecosystems strongly differ from natural ones, especially by the OM quality.

This paper provides nice results together with interesting interpretations. It also high-

lights the importance of characterising the range of natural diversity when comparing the difference between the functioning of natural and novel ecosystems, despite it is not /can not be always achieved in studies on anthropogenic ecosystems.

Only statistical analyses of the obtained data are presented: I miss a table presenting all the raw data acquired on the 41 sites. I also strongly regret that the authors did not explain how to understand the statistical analyses that were performed, as statistics represent a key point in this paper. With my basic knowledge in statistics, I cannot understand Tables 2, 3 and 4. I may think that my case would not be a single one: it would help providing the meaning of the parameters generated by the MRPP procedure and explaining a bit more what is the indicator value.

Specific comments

p7524, l8 : many 'disturbance' words

p7524 : 'We addressed this objective by concurrently assessing several key soil attributes that we used as surrogates of ecosystem biogeochemical functioning, namely . . . ' could you simplify a bit this sentence ?

Tables 3 and 4: related to my lack of knowledge in statistics, I don't understand the right part of the table. As in the left part, it shows mean, indicator value and the significance with a monte carlo test, what are the differences between right and left? Why is the group 4 represented in this right part and not in the left part of the table? Also in Table 3, why is there no data for NO3 in the right part of the Table?

Interactive comment on Biogeosciences Discuss., 10, 7521, 2013.