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Interactive comment on "Vulnerability of soil organic matter of anthropogenically disturbed organic soils" *by* Annelie Säurich et al.

Anonymous Referee #1

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The article deals with decomposition of organic matter in disturbed organic soils. In general the article is too long, authors could consider to make the article concise and focused on key results. In the current form it is too hard to get bottom of the core results found. In addition to this, I have the following issues regarding the article 1. According to the authors, soil samples from Soil Inventory were used for the analysis, but did not mention the year of the sample collection. How old the samples were and was the van Post's disturbance class was identified during sample collection? Or did the authors assign the disturbances classes of the archive soils they used? It seems from Table A1 the disturbance classes need to be identified in field condition. 2. The description of results is confusing; for example "D0B samples had significantly lower ($p < 0.01$) SBR rates than the classes D4F," was it from the statistical analysis done with GLS model described in statistics section? Or from ANOVA and TukeyHSD?

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Discussion paper

The experimental design was unbalanced, authors need to describe how they handle "unbalanced" issue. What are the explanatory variables involved in ANOVA. Another example (not limited to) of confusing description of results can be found in L231-236. Were those correlation coefficients significant? Need to mention the step wise variable section using GLS to identify the variables that explained most variation. Authors need to think about making their description and presentation less convoluted for the readers. L249-251 was it based on Spearman's rank correlation? L253-259 need to rewrite in clear concise manner. Figure 2 and 3: was there any difference in data presented? Or same data repeated. 3. It would be better if the authors used the macromolecular quality not only CN ratio of organic matter to assess the effect of disturbance on SOC decomposition. 4. Equation in L149 doesn't make sense 5. what does L143-144 refer to?

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