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Interactive comment on "Differential effects of redox conditions on the decomposition of litter and soil organic matter" *by* Yang Lin et al.

Anonymous Referee #3

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The present manuscript investigate the differential effects of redox conditions on the decomposition of litter and SOM over 44 days. The results indicate that substrate sourceâĂŤfreshly added litter vs. native organic matterâĂŤplays an important role in the redox sensitivity of organic matter decomposition. I have two major comments: 1. Bhattacharyya et al. (2018) have reported the coupled cycling of iron and carbon using the same redox microcosm experiments. Results indicated that redox effected the specie of Fe and the Fe−OM interactions in tropical soils, thus effect the bioavailability of SOM. I would like to see some results and discussions about the the transformation of Fe during redox fluctuations and its role in the decomposition of litter and SOM. Especially, the chemical component of WEOM may be highly influenced by iron cycle during redox fluctuations.

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Discussion paper

2. I don't understand why the author use G-test to delete so many identified molecular formulas (over 60%).

3. It seems from Table S2 that the repeatability of the FT-ICR MS results is poor. Three of the 12 samples showed significant outliers. I think this is very likely due to the extraction method used in this study. It is very hard to guarantee the representation of the bulk soil and litter samples only using 100 mg soil in WEOM extraction. And it is impossible to control the DOC concentration in FT-ICR MS analysis for all samples. So it is cannot exclude the differences induced by DOC concentration in FT-ICR MS analysis.

In all, I don't think the manuscript can be published in its present form.

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