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Interactive comment on "Iron and aluminum association with microbially processed organic matter via meso-density aggregate formation across soils: organo-metallic glue hypothesis" *by* Rota Wagai et al.

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Thank you for the through review and valuable comments.

First of all, I appreciate your overall comment on our work ("to bring together knowledge on the mechanisms of organo-mineral interactions with aggregation processes"). That was exactly what we attempted to do.

Second, all of your specific comments are well-taken. We think we can address all the points.

One question raised was our interpretation of "microbially-processed OM" in the title and other parts on the ground of relatively low C:N ratio alone. We agree that we have to cautious on this and debated on how to describe this. We think the OM in the meso-density fractions are the mixture of both plant- and microbially-derived OM as depicted in Fig. 7b (glad that you liked this!). That was why we did not call it "microbially-derived". We have N-15 results from these samples that showed the enrichment in the meso-density relative to bulk and low-density fractions for each soil (this data is more complex and the current manuscript was already too long. we work on a new manuscript for this). So, both C:N and N-15 suggest strong "microbial influence". Do you think it is more appropriate to remove "microbially-processed"?

Al+0.5Fe: This expression is also something we debated. I agree with the reviewer that atomic (molar) expression is more scientific/general. This would make it easier to compare results across different systems (e.g., aquatic system). On the other hand, OC is often expressed on wt basis and readers are not so familiar with C content on atomic mass basis. So when we compare OC and metal, we have to choose. In main text, we included molar ratio information (e.g., Al/Fe). But maybe we should change expression more. Let us think a bit more.

We should be able to address other points easily. We will prepare an official response letter which explains how we address each point.

Thank you again for the through review and constructive comments.

Rota Wagai

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