EGUsphere, referee comment RC2
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Comment on egusphere-2022-632

Anonymous Referee #1

Referee comment on "Plant mercury accumulation and litter input to a Northern Sedge-dominated Peatland" by Ting Sun and Brian A. Branfireun, EGUsphere, https://doi.org/10.5194/egusphere-2022-632-RC2, 2022

Commons:
Sun et al. "Plant mercury accumulation and litter input to a Northern Sedge-dominated Peatland" investigated the foliar Hg concentration and flux via Sedge plant in peatland. In addition, they also carried out a leaching experiment to explore the Hg behavior in leaching process driven by DOM. I think this MS is important research to understand the Hg biogeochemical cycle and well written. However, I think this discussion is not enough in this MS, especially in relationship between DOM and Hg. I hope more effective discussion should be added in the revised MS. Moreover, the figures should be revised fully.

Introduction: It is too divergent. The author should focus on the Hg specific behavior in Hg cycles at peatland, highlighting the importance in global Hg cycles and differences from forest ecosystems. Add more recent references.
Line 23: While should be revised.
Line 27: It is inconsistent.
Line 70: It is confused. Further explain it.
Line 71-72: Plant decomposition turnover time should be mentioned as you talked about the Hg biogeochemical cycles.
Line 73-83: I cannot get the significance of this section. I agreed with those points, but global warming has nothing to do with this research. Only one sentence is enough to highlight the importance of peatlands.
Line 105: Offer the percentage of each dominate species.
Line 130 and SI 32-37: Why did you choose the DORM-4 (Fish protein certified reference material) as the standard sample, not the plant standard samples?
Line 183: Explain the subscript in F(1.73,24.26).
Line 208-209: In references, the Hg concentration in foliage showed the linear increasing, inconsistent with the decreased uptake rate as description of the sentence.
Line 218: The larger leaf also caused the bigger biomass, offsets the stomates effect. How to explain it?
Line 229-231: It is insipid. Further explain is needed to clarify the reason why the Hg concentration in peatland vegetation is lower than that in tree litter.
Line 334-342: This discussion is not enough. What does the SUA represent? I hope not only the amount of aromaticity. You should explain more about each factor. For example, "indicating that leached DOM from tussock sedge and few-seeded sedge/wire sedge leaves

had higher aromaticity and less bioaccessible than that from the sweet gale leaves", the higher aromaticity and less biaccessible, so what? This discussion is meaningless.
Line 342-343: I can find the evidence to support that stimulate biological degradation and Hg methylation in this study.
Line 381-382: In this MS, I cannot find any MeHg data. But the authors always highlighted the MeHg production. This is confused.
Line 383: This conclusion is not available in this MS.