



EGUsphere, referee comment RC1
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Comment on egusphere-2022-632

Anonymous Referee #2

Referee comment on "Plant mercury accumulation and litter input to a Northern Sedge-dominated Peatland" by Ting Sun and Brian A. Branfireun, EGU sphere,
<https://doi.org/10.5194/egusphere-2022-632-RC1>, 2022

Comments:

- Line 23, you can change "." to ",".
- Line 34: where these Hg accumulated in plants come from?
- Line 65 Here are more Hg accumulated studies in the peatland"
 - Grigal, D., Kolka, R., Fleck, J. & Nater, E. Mercury budget of an upland- peatland watershed. *Biogeochemistry* 50, 95–109 (2000).
 - Grigal, D. F. Mercury sequestration in forests and peatlands: A review. *J. Environ. Qual.* 32, 393–405 (2003)
 - Osterwalder, S. et al. Mercury evasion from a boreal peatland shortens the timeline for recovery from legacy pollution. *Sci. Rep.* 7, 16022 (2017).
 - Woerndle, G. E. et al. New insights on ecosystem mercury cycling revealed by stable isotopes of mercury in water flowing from a headwater peatland catchment. *Environ. Sci. Technol.* 52, 1854–1861 (2018).
- Line 118. Plot size sampling in 2018? Is that the same size with samples collected in 2019?
- Line 121. For annual biomass, there is always variation between different years, depends on weather conditions, such wet or drought, warm or cool, etc.
- Line 183. Meaning of $F_{(1.73,24.26)}$ and $F_{(1.23,23.38)}$?
- Line 189. I think it is valuable to also quantify Hg mass, biomass times with Hg conc., not only with Hg concentrations, due to biomass also accumulate across the growing season.
- Line 193. Due to different plants structure, perhaps Hg accumulated in foliage is not dominantly from atmospheric uptake as forests did, some foliage Hg may also from root uptake. At least some salt marsh studies have shown that Hg from roots can transport to marsh vegetation leaves due to higher Hg concentration contained in their roots (list as following). More studies are needed to demonstrate your conclusion here, such as belowground roots and rhizomes, and soils samples collect associate with Hg analysis.
 - such as studies from Cabrita et al., 2019 (Mercury mobility and effects in the salt-marsh plant *Halimione portulacoides*: Uptake, transport, and toxicity and tolerance mechanisms);
 - Weis and Weis, 2004 (Metal uptake, transport and release by wetland plants:

implications for phytoremediation and restoration)).

- Line 211 Hg may also mobilize between plants, roots, rhizomes. Also other Hg sources perhaps, i.e. Hg conc in soils, uptake through roots, and then transport to the leaf may also contribute Hg conc increase.