

Interactive comment on “Summertime elemental mercury exchange of temperate grasslands on an ecosystem-scale” by J. Fritsche et al.

Anonymous Referee #3

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This is an interesting paper that is easy to read. However there are some issues that should be addressed if this paper is to be published.

First it is thought that the Tekran measures total gaseous Hg not gaseous elemental Hg. The authors should go back and change GEM to Hg throughout.

Second their gradients for calculation of flux are below the detection limit of the instrument 0.1 ng/m³ and it is not really clear they could resolve the gradients they have reported. Under the results they report a minimum resolvable gradient of 2.6 to 4 ng/m² h. Thus only fluxes of > 4 are believable. They should remove all data that they have reported that is below this range and not present it in figures for this is misleading. Additionally under section 4.3 they report their gradients to range from 0.02 to

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0.06 n/m³ and these again are extremely low and fluctuations in the Tekran data alone could result in this amount of change over an hour. Based on this the Hg flux data is not really valid and perhaps the authors should just remove this data from the paper.

Third the fact they have correlations with gaseous mercury and environmental conditions and ozone does not provide evidence for the speculation that they present in section 4.2. This section should be significantly reduced to state that there are correlations however not clear evidence of processes occurring.

Lastly the data for the Fruebuel site may also be presented in an earlier paper. If so this should be clarified in the text.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 1951, 2008.

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