**Atmospheric
Chemistry
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Discussions**

Interactive
Comment

Interactive comment on "Gaseous elemental and reactive mercury in southern New Hampshire" *by* J. M. Sigler et al.

Anonymous Referee #1

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The Article describes the results of GEM and RGM measurement at three stations in New Hampshire together with ozone, CO and meteorological data.

The data are analysed by simple correlation analysis and by looking at seasonal behaviour. The paper is an extension of Mao et al. 2008 and from the beginning I think one article could cover the obtained results, however the analysis can be justified and overall I will recommend that the article is accepted.

Throughout the paper classical linear correlation is applied and discussion is based on the value of r (Pearson correlation factor). Terms like strong or weak correlation are used. This is not precise. Therefore they have to be changed into a discussion based on significance level only. r coefficient is dependent not only of the closeness of points

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Interactive Discussion

Discussion Paper

to the regression line but also the number of observations so take care not to use the r value alone to say that a correlation with a parameter is stronger at one site than another. The number of observations has to be included as well.

The end of the introduction has to be more precise of what is the aim of the article? and in the end a conclusion has to introduced instead of just a summary so that it is clear of which new knowledge has been obtained.

Detailed Comments page 17773 Organo bromides do not have a short lifetime in towards photolysis in MBL. They are photolysed by short waved UV light and thus they are an important Br source at high altitudes close to the tropospause. Sea salt on the other hand is a well known Br source

page 17767 line 20. The conversion from Add the T and P value after the concentration as they are needed in order to convert to a mixing ratio.

Page 17768 The uncertainty of RGM is large (Aspmo et al. 2005) therefore it is very important also to discuss the uncertainty of it in the paper and not only detection limits.

p 17769 line 17-19. The difference between TF (161) and PM (157) is significant but not with the AI (139) with a comparable scatter in data. Is it really correct?

Page 17778 line 23- 26. trend analysis Fig. 7. There is not written anything about type of reaction function but in Fig. 7b lineary regression is used and in b another function is used. Additional explanation is needed. Furthermore 11 to 12 observations are shown in each figure and each measurement is a 2 hour average value so that the figurs covers about 24 hour. How is data extracted?

p 17779 line 12 here is an example where two r values are compared. I am not sure they really are different? They are close and the number of observations unknown? You must further explain.

from line 20 – 26 Hg2+ to have high solubility. This is not a prober wording as all ions have high solubility. RGM has a high solubility and can lead to the formation of

Hg2+ in water!!! so replace Hg2+ with RGM

p 17780 line 10. In the reference to Figure 9. From the text it should be data from both TF and PM but only data from TF is shown? either add PM data in the figure or remove PM in the text

line 13-14. The absence of transport from south west is taken as an indication for localized sinks but it could also be smaller sources. Further discussion is needed.

Figure 2a and b is not readable. It would be much better if GEM and RGM from the three sites were separated and not on top of one another.

Figure 7. Why are you not using a non-linear regression on 1 as you do in b? In any case you have to write the regression function you have used? I have asked about the numbers of observations previously

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17763, 2008.