

Interactive comment on “Formaldehyde measurements by Proton Transfer Reaction – Mass Spectrometry (PTR-MS): correction for humidity effects” by A. Vlasenko et al.

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Referee#3 comments on the uncertainties associated with the correction algorithm described in the manuscript. We agree that the suggested method involves several steps, which are subject to uncertainties so the blind application might result in a significant error. Nevertheless, we think that this approach can be adequately used when a particular PTR-MS instrument is well characterized. Key parameters to determine are the amount of water escaping from the ion source into the drift tube and the value of the reaction constant of HCHO protonation.

Another concern of the referee is about interference arising from methyl-hydroperoxide

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(MHP) as well as from hydroxy-methyl-hydroperoxide (HMHP). This is a very good point since both of these compounds may coexist with formaldehyde and might introduce a positive artifact. We briefly discussed this issue in the original manuscript without mentioning HMHP. We now mention the possibility of HMHP interference in the revised version.

Specific comments:

The article does not go into detail concerning detection limits and accuracy and precision and possible errors in the water vapour correction. Thus, although it is an interesting approach, in clean to moderately polluted regions with mixing ratios of 0.5 to -3 ppb the techniques still seems not to be sufficient for precise measurements.

There is a significant scatter of data points in Fig.6, especially for HCHO mixing ratios below 1.5 ppb. The reason for this is not fully understood but one possible explanation can be an enhanced relative influence of interferences at low HCHO mixing ratios or an error associated with background subtraction. Judging from the data scatter one may conclude that HCHO measurement, using PTR-MS and the suggested correction algorithm, is problematic for mixing ratio below 1.5 ppb. However, we can not conclusively identify the source of this scatter as being primarily associated with the Hantzsch or the PTR-MS method. We now give a caveat to the paper in the Conclusions, stating that there is some uncertainty that arises below about 1.5 ppb.

A further paragraph on error estimates would improve the paper. Although typically well readable the sentence on page 973, line 10 to 13 contains a grammar error.

Text is revised

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