Atmospheric Chemistry and Physics Discussions

Interactive comment on "Technical note: Water vapour concentration and flux measurements with PTR-MS" by C. Ammann et al.

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The paper explores an empirical method of correcting for high-frequency losses of PTR-MS eddy covariance measurements. The authors exploit the fact that the PTR-MS signal on mass 37 amu ($H_2OH_3O^+$) can be used as proxy for absolute ambient water concentration. Thus they were able to compare the PTR-MS method to well established and reliable measurements of water vapor fluxes using infrared absorption instruments. Usually PTR-MS is used to measure fluxes of VOC trace compounds that cannot be easily measured with other methods, so this study confers further credibility to the PTR-MS eddy covariance method. Furthermore, with this study the authors present an applicable and accurate method to correct for dumping losses also for organic trace compounds. The paper is well written. I only have following minor suggestions and

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comments:

Abstract: add a statement that the presented empirical method can be also used to correct dumping losses for other compounds

p5330, line 22: I suggest including some more references on PTRMS eddy covariance studies, e.g.:

Schade, GW; Custer, TG, ATMOSPHERIC ENVIRONMENT, 38 (36): 6105-6114 NOV 2004

Lee, A; Schade, GW; Holzinger, R; et al., ATMOSPHERIC CHEMISTRY AND PHYSICS, 5: 505-513 FEB 15 2005

Ruuskanen, TM; Kolari, P; Back, J; et al., BOREAL ENVIRONMENT RESEARCH, 10 (6): 553-567 DEC 2005

Holzinger, R; Lee, A; McKay, M; et al., ATMOSPHERIC CHEMISTRY AND PHYSICS, 6: 1267-1274 APR 24 2006

p5334, 1-2: was the flow in the 30m tubing turbulent or laminar?

p5335, 3: accurate determination of the delay time is quite critical. So information on how the lag-time was determined should be given.

p5336, 26: how is "reliable" defined here?

p5337: the layout of equation 3 can be improved.

p5338: please, explain the term "stationarity" in the context.

p5338, 7-10: the sentence "As a ..." is confusing and needs to be clarified. Since it contains a lot of information it probably should be split...

p5338, 24: Since the theoretical dumping factor is extensively used as reference, I suggest the authors should briefly explain in a separate paragraph how this was calculated.

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p5339: I could not follow the discussion on clustering in the PTR-MS very well. Especially the sentence ""The choice..." (line 15) is very unclear. What is an "increase in sensitivity" (line 19) in this respect.

I also think that it is worth explicitly pointing out (somewhere in the discussion) that for the empirical correction only the raw m37 and T data need to be used.

Figure 5: x-axis labels are missing.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 5329, 2006.

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