

***Interactive comment on* “Technical Note:
Intercomparison of formaldehyde measurements
at the atmosphere simulation chamber SAPHIR”
by A. Wisthaler et al.**

Anonymous Referee #1

Received and published: 13 December 2007

The manuscript is well-written and clearly presents the results of the intercomparison experiment as well as providing a good review of relevant and current literature. The experiment described in the manuscript has been well-designed in order to provide a series of challenging tests for the wide range of instrumentation included. I recommend the manuscript be accepted but suggest the authors consider the following points and make the minor changes below in order to improve clarity of the manuscript.

The authors describe significant difficulties encountered when attempting to use the permeation tube method for calibration of the PTR-MS instrument. Further explanation of the variations (up to 40%) encountered should be included where possible.

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The authors state that the permeation tube method was used to calibrate the Hantsch MA-100 instrument. Was this instrument subjected to the same variations from the permeation tube system? A comment here would be useful.

The experiment performed on day 5 in real air produced some strange behaviour by some of the instruments and highlights the challenges encountered when measuring in more complex mixtures. The authors state that there were problems, but do not provide any possible explanations for these. A summary of possible interferences may improve the paper.

Given the problems encountered by some of the instruments under the differing conditions (particularly day 5) a comment from the authors as to the implications of these findings to the previously published formaldehyde data would be useful and may improve the paper.

A list of recommended minor changes is given below.

Page 15624 line 8: The authors begin to describe the instrument features in the form of a list, but only include two items. A concise paragraph would improve clarity here.

Page 15625 line 7: Sentence should read: via a Teflon PFA tube.

Page 15625 line 21: Sentence should read: A quartz fibre.

Page 15626 line 11: Express the detection limit for this instrument in ppt to be consistent units with the other instrument descriptions.

Page 15627 line 28: The authors describe significant difficulties encountered when attempting to use the permeation tube method for calibration of the PTR-MS instrument. Further explanation of the variations (up to 40%) encountered should be included.

Page 15627 line 28: The authors should state whether the permeation tube method was used to calibrate any of the other instruments involved in the study. If so, were the large-scale variations also seen by those instruments?

Page 15630 line 26: Presumably, the inaccuracy described leads to a possible overestimation of the amount of formaldehyde delivered into the chamber and therefore will give an upper limit of formaldehyde concentrations in the chamber. The authors should highlight this if it is the case.

Page 15631 line 22: Sentence should read: intervals labelled.

Page 15632 line 24: Remove the word: losses, sentence should read: at low temperatures were less accurate.

Page 15635 line 13: Over use if the word: level, in this sentence. Suggest changing: HCHO levels, to: HCHO mixing ratios.

Page 15635 line 23: Suggest changing sentence to read: Here we will briefly.

Page 15638 line 26: Suggest changing sentence to read: and thus could not be used.

Page 15644 line Table1: Detection limits should be all expressed as ppt to make it easier to draw comparisons between instruments.

Page 15647 line fig 2: The temperature inside the chamber appears to be missing from the bottom plot.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15619, 2007.

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