Atmos. Meas. Tech. Discuss., 2, C436–C438, 2009
www.atmos-meas-tech-discuss.net/2/C436/2009/

Atmospheric Measurement Techniques Discussions

Interactive comment on "A method for real-time profiling of organic trace gases in the planetary boundary layer" *by* R. Schnitzhofer et al.

Anonymous Referee #1

Received and published: 7 August 2009

General comments ==========

I think this is an important piece of work that shows it is possible to make accurate profiles of various atmospheric compounds in the lower part of the boundary layer. It would greatly increase our understanding of processes in the (polluted) boundary layer if these experiments could be repeated at other sites. However, there are probably legal limitations on how high you can fly a tethered balloon (or parafoil kite) at most sites, and specifically on sites in an industrial (and thus polluted) environment. Also prior permission from air traffic control could be required. In my opinion the authors should put a word of warning about this in the paper.

Specific comments ==========

In section 1, an example of a small sensor is given. Another example is of course the widely used ECC ozone sensor used in ozonesondes.

In section 2.2 the 200 meter Teflon tube is discussed. I assume all experiments were done with a brand new tube. I wonder how this tube will behave after some time, when dust (from aerosols) starts to accumulate in the tube. Have the laboratory experiments been repeated after the field campaign?

In section 3.1 the unit "m/z" is used without an explanation. I understand that this is completely trivial to the authors, but even so, "m/z" must be properly introduced.

Later on in paragraph 3.1 it is suggested that toluene might condense in the Teflon line (tube?). Although toluene can condense at 0 oC, it will not do so under normal atmospheric conditions. I think the correct verb here is "to adsorb".

It should be noted that the system is used at a much lower temperature than the 0 oC by which is was tested.

In table 1, a list is made of the 50% rise and fall times of the relevant compounds. I think this should be compared to the theoretical value, for compounds that do not adsorb to Teflon. From the data in the paper I conclude that the volume of the inlet system is 3.7 liters, at a flow of 7 l/s this would result in a 50% rise time of 31.4 seconds. Can the authors give a more accurate value? If this value is correct, 3 compounds in table 1 have a shorter rise time. Can this be explained?

In Figure 2, it is unclear which of the lines represent ascending, resp. descending measurements. For some -but not all- this can be found in the text. I would like to see this made clear in the graphs (either in the legend, or with an arrow near the lines).

Technical corrections ==========

(please note that I am not a native English speaker) Consider the following changes: teflon -> Teflon ; radiotransmitted -> radio transmitted ; vaccuubrand -> vacuubrand ; sentitive -> sensitive ; implicantions -> implications ;

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 1771, 2009.