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Atmospheric Measurement Techniques Discussions

Interactive comment on "Dimethylamine and ammonia measurements with ion chromatography during the CLOUD4 campaign" *by* A. P. Praplan et al.

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We would like to thank the referee for taking the time to read and comment on this manuscript and for his/her helpful and constructive comments. Reviewer comments are portrayed in regular font style, replies in italic.

Reply to Referee

The main purpose of this paper remains a bit vague after reading the abstract and introduction. Is it to evaluate the performance of ammonia and amine measurements in CLOUD chamber, or to describe a small set of such measurements, or some combina-

tion of these two issues? Some clarifications in text are needed.

To clarify the purpose of the paper, the abstract and the last paragraph of the introduction were modified.

The discussion on sampling efficiency in section 3.1 is difficult to follow. What is the main point authors are aiming to tell here? What is the desired level of sampling efficiency of this system (99%, 95% or something else)? It seems that several factors affect the sampling efficiency. How then a single value of liquid to air flow ratio determine a certain sampling efficiency?

We agree that the discussion of the sampling efficiency may be difficult to follow. The aimed efficiency is the highest possible. The discussion was restructured and describes now one after the other, the factors affecting the overall sampling efficiency (stripping efficiency, protonation degree and concentrator column capacity). The authors distinguish between the "sampling efficiency (overall)" and the "stripping efficiency" of the sampling device for more clarity.

The liquid to air flow is the only factor that affect the overall sampling efficiency to a large extent and requires correction of the mixing ratio measured for DMA as discussed previously. According to the authors' reply to Anonymous Referee ♯1, no sampling correction is applied for NH_3 *in the new version of the manuscript.*

Page 2403, lines 3-5. Considering the multiple factors affecting the sampling efficiency the procedure introduced here (multiplying by factors 1.5 or 2) seems quite a crude way of correcting the measured concentration levels. Can the authors justify this issue a bit more?

The multiplying factors are now applied only to DMA mixing ratios and were replaced by more accurate values (see above). We also discuss now the concentrator column capacity and show that this is no issue despite the long sampling times.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 2395, 2012.