Atmos. Chem. Phys. Discuss., 8, S8827–S8829, 2008 www.atmos-chem-phys-discuss.net/8/S8827/2008/ © Author(s) 2008. This work is distributed under the Creative Commons Attribute 3.0 License.



ACPD

8, S8827–S8829, 2008

Interactive Comment

Interactive comment on "Results of the first air ion spectrometer calibration and intercomparison workshop" by E. Asmi et al.

Anonymous Referee #2

Received and published: 5 November 2008

This paper presents a calibration and inter-calibration of the majority of the (N)AIS instruments produced so far. This is a very important contribution and provides information that will be useful to everyone making field and laboratory measurements with the instruments. I also find the results very promising for the future use of the (N)AIS instruments. Especially since the authors have adopted several different calibration standards in order to cover the full mobility range in an adequate way.

The paper fits well within the scoop of ACP and I recommend publication after minor revision.

General comments:

Does the on-line software include corrections for losses of cluster ions, or have any





off-line corrections been made?

In this paper NAIS is spelled out as "neutral air ion spectrometer". To me this sounds awkward. Why not use "Neutral cluster & Air Ion Spectrometer" or "Neutral particle & Air Ion Spectrometer". I think that it is important to consider this carefully, since this paper will most probably be a very much used reference and can set the vocabulary standard.

Some differences in detection efficiency and sizing of cluster ions between negative and positive ions are observed in the calibration. It would be interesting if the authors could discuss how this relates to the often observed differences in number and size of negative compared to positive cluster ions.

On page 17268 it is described that the geometric mean was used as a representative for the mobility in the (N)AISs. Combining this information with the transfer functions presented in figure 9 poses some question to me: could the un-symmetric shape of the transfer function influence the sizing and the differences between mono-mobility standards and DMA comparison? Would a modal value give a sizing in better agreement? Is the tail the reason for the deviation in sizing and if so, what is the reason for the tail and can it be avoided in future designs? I understand that these question may not be easy to answer, but I recommend the authors to consider them.

Some details:

P. 17261 line 26 What does "measured charge" refer to? Is it the charge polarity that can be studied in the respective columns? P. 17262 line 6-7 reads "conversed". Shouldn't it be "converted"? P. 17271 line 6-7 "The NAISs detected on average \$50% of the concentration of the reference CPC (Fig. 8)". To me, this implies that the detection efficiency is always less than 50%, sometimes negative. Please consider to rephrase.

Figure 2-3 Colour code should be consistent: one colour for one instrument.

8, S8827–S8829, 2008

Interactive Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Figures 4-7 How much of the variability is significant? Could a linear or polynomial fit be used in stead of the "mean" lines with all their variability?

Figure 7 Is the peak in over-detection for ions of mobility around 0.5 cm2/Vs significant?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17257, 2008.

ACPD

8, S8827–S8829, 2008

Interactive Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

