

Interactive comment on “Development of an H-TDMA for long-term unattended measurement of the hygroscopic properties of atmospheric aerosol particles” by E. Nilsson et al.

Anonymous Referee #1

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General comments.

This is a valuable contribution to the topic of aerosol instrumentation and monitoring. It relates to long-term monitoring of hygroscopic properties, a parameter of great interest to the atmospheric chemistry, radiation and modeling communities. The group has a long history of developing these instruments and the present description documents that. It also presents examples of results and uncertainties associated with the result.

Some scientific comments.

Page 6 “However, higher than that.” Quantification of the overall error would be valuable.

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More engineering data regarding the flow rates, residence times etc. would be of use and in line with the tenor of the paper.

What is the effect of doublets in the results? Is this estimated?

What is the effect of the scanning inversion on the uncertainty or error cf. eg. Collins’ analysis?

A statistical summary and table of the data in figure 5 would be valuable including the Kelvin effect.

The case for the “smeared” deliquescence RH needs to be explained more thoroughly. Reference the paper by Lynn Russell, Scripps Institution for Oceanography and coauthor. Sorry I don’t have the citation at hand, ca. 2002.

The support for small longitudinal temperature gradients is shown in figure 3. What are radial gradients?

Figure 2. What is the dashed line? What diameter of ammonium sulfate particles was used?

Purely technical comments.

Figure 3 Be consistent with Pt. It is hard to see the details of the Pt100 sensors. Expand the scale or average to relevant time scale.

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