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Atmospheric Measurement Techniques Discussions

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.

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This manuscript presents a description of an HTDMA developed for long term monitoring of aerosol particle hygroscopic properties. The manuscript presents the main ideas of the construction together with analysis of long term stability and data quality. The manuscript is well written and presents clear new contribution in the field of atmospheric measurement techniques. I recommend this manuscript to be published after modifications discussed in the following.

General comments

The manuscript present well the general ideas and concepts in constructing the HT-

DMA. However, some critical issues are not discussed. I would ask the authors to better describe the temperature control of the second DMA (page 1062, line 17). How were the peltier elements installed? Were there any measurements of potential temperature gradients in the DMA column?

Another important issue concerning long term experiments is the need for presence of personnel. How long time could this instrument be used unattained on a typical situation? What about issues like power cuts? Is the instrument able to start operating automatically as the power returns?

Specific comments

Page 1059, line 2: I recommend using terminology in which "saturation ratio"=S= p/p_saturation and "supersaturation"=SS=S-1. Use of "super saturation ratio" is somewhat strange.

Page 1059, line 22: Delete the second "constructed".

Page 1064, line 2: This effect could also result if there is not constant relative humidity along the aerosol trajectory. What is the typical time scale for scanning the RH? Is it possible that the RH has not been stabilised within the instrument when the new GF is determined?

Page 1064, line 24: Explain DP.

Figure 5: Could you explain why the water activity is lower for smaller particles? I understand that water activity is the value of RH that is set in the instrument (typically 90%) and the GF is measured (and is obviously smaller for smaller particles).

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 1057, 2009.