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Interactive comment on "The characterisation of pollution aerosol in a changing photochemical environment" *by* M. J. Cubison et al.

Anonymous Referee #1

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The article describes results from the TORCH campaigns in 2003 and 2004. The authors tried to link size-resolved chemical information of volatile aerosol compounds with hygroscopic growth of particles in the range from 27 to 360 nm.

Overall I like the approach, but I think the author should look more in detail into the HTDMA spectra. I cannot believe that one can observe for particles smaller than 100 nm in size growth factors greater than 1.75 (there is no sea salt). I don't know what can be wrong but it seems to be either the HTDMA inversion model (which I don't know), or missing calibration scans with a know salt during the campaigns. The author should demonstrate that the HTDMA data are correct. Wrong results in hygroscopic growth yield directly wrong interpretation with the chemistry data (see figs 9 and 11).

I suggest that the authors should go back to the HTDMA analysis (but not only cutting out the measurements with high growth factors) to present a trustable analysis of the RH in the second DMA.

I look forward to see these results.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 10055, 2005.