

Interactive comment on “Hygroscopic mixing state of urban aerosol derived from size-resolved cloud condensation nuclei measurements during the MEGAPOLI campaign in Paris” by Z. Jurányi et al.

Anonymous Referee #2

Received and published: 8 March 2013

General Comments

This paper presents results from a CCN and HTDMA "closure" study close to Paris, at the beginning of 2010. Time resolved CCN measurements are important in constraining model parameters, such as the kappa-Kohler model, as done in this paper. Relating HTDMA (sub-saturated) particle growth, to CCN activation in the super-saturated regime is an area of research requiring careful attention. The authors present a well-written account of the measurement campaign and techniques used, specific to the CCN and HTDMA measurements. They report a good closure between the two instruments, with kappa values between 0.08 to 0.24 (somewhat expected for the sample

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region). The figures are of high quality, and the paper is suitable for publication in ACP, and I have only minor comments and technical corrections, as listed below.

Specific Comments

Section 2.2.2 Were any humidograms performed during the campaign? Such measurement would give a more detailed insight into the mixing state, in addition for interpretation at different RH.

Page 2042 Line 1: Please state to what RH the aerosol was dried before entering the DMA. This will ultimately define the "dry size", which is ideally the same as the dry size of DMA1 of the HTDMA.

Technical Corrections

Page 2038 Line 2: "also" is not needed. Perhaps consider changing to "water uptake plays an important role in the Earth's climate as it directly influences..."

Page 2038 Line 2: Remove "Those". Simply "Aerosol particles that are able" is sufficient.

Page 2038 Line 11: There should be a comma after "black carbon"

Page 2038 Line 14: Rather than "we talk about", consider using "we refer to"

Page 2038 Line 17: "In an externally mixed particle population particles" consider changing to "In an externally mixed aerosol, particles of equal"

Page 2038 Line 20: remove "the"

Page 2039 Line 1: "get" should be "become"

Page 2039 Line 20: consider replacing "of them" with "previous studies"

Page 2040 Line 10: "It is found..." might read better as "Some studies report that the treatment of aerosol mixing state"...

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Page 2046 Line 2: Panel a might be clearer as Panel 2a, or Figure 2a, or something.
This applies to all other instances in the document

Page 2056 Line 22: "It could be" should be "It was shown"

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 2035, 2013.

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