

Interactive comment on “Optical particle counter measurement of marine aerosol hygroscopic growth” by J. R. Snider and M. D. Petters

G. Feingold (Editor)

graham.feingold@noaa.gov

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Dear Authors: I wondered if you have considered the following: 1) One can show that $r_{wet} = ar_{dry}^{\gamma}$ where a and γ are functions of composition and RH. (e.g. Fitzgerald 1975, JAM.) If one substitutes this expression (or equivalent) into equation 6, you will not obtain equation 5 (see Fitzgerald for details). It is therefore unclear why you seek a constant slope section for your analysis. Also for (8) to hold, I believe you are missing minus signs in front of β in (5) and (6).

2) Particles $> 0.3 \mu\text{m}$ in their ambient state (F300) could deviate significantly from their equilibrium sizes. Have you looked at this effect? For example, Feingold and Morley (2003) found differences in growth factors between updrafts and downdrafts with downdrafts exhibiting higher growth factors than updrafts at the same RH level. The

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authors attributed this to the fact that in downdrafts, particles were evaporating and deviations from equilibrium gave them a large bias. The converse is true for updrafts where particles lag behind their equilibrium sizes. These effects may affect your analysis, particularly because it varies with RH.

Graham Feingold

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