

## ***Interactive comment on “An inverse modeling procedure to determine particle growth and nucleation rates from measured aerosol size distributions” by B. Verheggen and M. Mozurkewich***

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This paper describes an inverse modeling method that can be applied to a time series of aerosol size distributions in order to determine such things as nucleation rates, coagulation kernels, condensational growth rates, deposition rates and the particle size distribution at earlier times. The authors demonstrate the value of this technique in an application to smog chamber data. In the paragraph describing and comparing previous studies, we ask that the authors reference two previous works (see below) which

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have also solved very similar inverse problems. These papers derive and numerically validate equations which allow the recovery of dynamic parameters (coagulation kernel, growth rate, deposition coefficients) and initial size distributions from time series of observations using the adjoint method.

Henze, D. K., J. H. Seinfeld, W. Liao, A. Sandu, and G. R. Carmichael (2004), Inverse modeling of aerosol dynamics: Condensational growth, *J. Geophys. Res.*, 109, D14201, doi:1029/2004JD004593

Sandu, A., W. Liao, G. R. Carmichael, D. K. Henze, and J. H. Seinfeld (2005), Inverse modeling of aerosol dynamics using adjoints: Theoretical and numerical considerations, *Aero. Sci. & Tech.*, 39, 677-694

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