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Title: Droplet Growth by Condensation: Error Analysis

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Abstract:
The error of the solution of droplets growth equation is presented for a simple 0-D model. The only thermodynamic variable for this model is supersaturation. We use two approaches to solve the droplet growth equation, one is the bin model; the microphysics in this model is based on the solution of the equation for the number density function. The second one is particle model in which the growth equation for each droplet is solved.
Bin and particle model solution is compared against analytic solution for the initial droplets distribution described by Gaussian function. The comparison is done for the case when there is no diffusion (no supersaturation fluctuations for particle model) and for the case with diffusion (there are fluctuation in supersaturation for particle model). Based on the Green's function solution for the droplet growth model the connection between supersaturation fluctuation in particle model and diffusion in bin model is derived.