**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Theoretical basis for convective invigoration due to increased aerosol concentration" *by* Z. J. Lebo and J. H. Seinfeld

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A few points:

1. I do not think that my concern is on the resolution associated with the model simultions. My concern is that the authors' statements about the past literature are not fair. I have listed many bin and bulk CRM studies that used higher resolutions, Open boundary conditions, and large model domain to examine aerosol effects on deep convective clouds in my origianl comments. It is not fair to say that your simulations have higher resolution, better boundary condition, and larger domain. For example, the smallest domain that we used is about 150x150 km2 in our deep convective cloud simulations in the past studies. We used both open and periodic boundary conditions. For periodic conditions, people always tried to avoid the effects from boundary conditions. I do

not have any problems with any of this kind of discussion in the paper, but I think the authors should more carefully read literatures before comparing and discussing them.

2. About "We did not intend to focus on the response of deep convective clouds to aerosol perturbations in under high wind shearconditions" - this means that the results should be discussed in connection with your case conditions (see more details in my original comments).

3. Quite a few of my original comments are not addressed. Maybe the authors will adress them later.

4. I think Annica posed a good question in the differences between bulk and bin schemes, such as the differences in activated droplets. In additon, what are the differences in the threshold size to distinguish droplets and rain between the bulk and bin schemes? Many bulk schemes use 40 microns, which is usually much smaller than that of SBM. The different threshold size could produce large difference in precipitation.

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