

***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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I appreciate the authors' kind response. Hope the studies recommended help the authors to sharpen up their points. Also, the following comments are made to make points of those studies clearer.

Just want to add that Lee et al. (2008, JGR) focused on the effect of aerosol on mesoscale circulation including gustiness and its dependence on wind shear and stability. The 2-km horizontal resolution may not be able to resolve the turbulent-scale entrainment well but it can reasonably resolve convective cores and associated circulations of interest to Lee et al. (2008, JGR). Lee, Donner, Penner (2010, ACP) reran the same case as in Lee et al. (2008, JGR) with the horizontal resolution of 200m and 3D domain and found that the qualitative nature of findings in Lee et al. (2008, JGR)

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were robust to the dimensionality and resolution. Wang and Feingold (2009a,b) (cited by the authors' paper here) also adopted rather coarse resolutions for warm stratiform clouds, since they focused on the effect of aerosol on mesoscale circulation patterns, similar to the research focus of Lee et al. (2008, JGR). Also, the effect of aerosol on circulation is found to be fairly robust to microphysical schemes as discussed in Lee et al. (2008, JGR), since it is not about the instantaneous microphysical response but about the dynamical response to aerosol; hence, Wang and Feingold (2009a,b) adopted a double-moment microphysics to enable the simulation of mesoscale circulations as Lee et al. (2008, JGR) did .

Lee (2010,ACPD) went through the first round of review. Although there are a number of points made by one of reviewers, overall, both reviewers rated the paper with the evaluation level "good". The progress of the review will be notified.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 2773, 2011.

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