**Atmospheric
Chemistry
and Physics
Discussions**

# Interactive comment on "The validity of the kinetic collection equation revisited – Part 3: Sol-gel transition under turbulent conditions" *by* L. Alfonso et al.

**Anonymous Referee #2**

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General comments

This interesting paper can be published in ACP after revision. The following three major comments might be useful for the revision.

Specific comments

1. The procedure of Monte-Carlo simulations should be described in more detail (may be in an appendix). The statistical justification of the simulations performed should be added. Time dependences of sol concentration, which determine the statistical reliability of collision procedure, should be added as well.

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2. The obtained results should be illustrated more completely. Could the authors show the distribution of gelation time and evaluate its width? What are the maximum radii of the largest particles leading to gel particles formation? Could the authors show the distribution of these radii and evaluate its width?

3. Many studies were dedicated to determination of the critical drop size that leads to first raindrop formation, (e.g. A. B. Kostinski and R. A. Shaw, "Fluctuations and Luck in Droplet Growth by Coalescence", Bulletin of the American Meteorological Society, 2005, 86, 235-244 and M. Pinsky and A. Khain,. "Effect of in-cloud nucleation and turbulence on droplet spectrum formation in cumulus clouds", 2002, Quart. J. Roy. Meteor. Soc., 128, 501-533. A relevant comparison with the previous results and the corresponding discussion should be added.

Technical corrections:

Figure 3 is not mentioned in the text.

Page 2124, line 1: should be 106.

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Interactive comment on Atmos. Chem. Phys. Discuss., 12, 2115, 2012.