Interactive comment on “The validity of the kinetic collection equation revisited – Part 2: Simulations for the hydrodynamic kernel” by L. Alfonso et al.

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Reply to Reviewer # 1

First, we would like to thank the anonymous referee for his/her comments that will improve the quality of our paper. Our revised version will include several of his/her suggestions.

General comments:

1) Breakup of droplets:
For the simulations presented in this paper, the largest droplets (runaway droplets) at the start of the runaway growth have a size between 25-40 \( \mu \text{m} \) in radius.

2. First simulation for the product kernel with an initial concentration equal to 100 cm\(^{-3}\): The radius of the runaway droplet at \( t=1335 \text{ sec.} \) was found to be equal to 37.5 \( \mu \text{m} \).

3. Second simulation for the hydrodynamic kernel with an initial concentration of 100 cm\(^{-3}\): The radius of the runaway droplet at \( t=860 \text{ sec.} \) was found to be equal to 28.5 \( \mu \text{m} \).

3. Third simulation for the hydrodynamic kernel with an initial concentration of 200 cm\(^{-3}\): The radius of the runaway droplet at \( t=450 \text{ sec.} \) was found to be equal to 36.9 \( \mu \text{m} \).

Then, the runaway drop sizes obtained in the three simulations are smaller than the typical collision breakup drop size. As we know, spontaneous breakup occurs once a diameter of approximately 3 mm is reached. The runaway drop sizes are also smaller than the typical sizes involved in the collision induced breakup mechanism. A brief discussion of this point will be included in the final revised version.

2) Hydrodynamic kernel: In the revised version, the claim that the hydrodynamic kernel is realistic will be tuned down as suggested by the reviewer.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 6219, 2010.