

Comments to the manuscript with ID “[acp-2019-1140](#)”

General comments:

A summary of previous works and the key point of this study have been improved substantially. However, the language and presentation can still be improved. A moderate revision is needed before it can be considered for publication.

Specific comments:

1. L.42: Why “cloud top is positively charged and the cloud base is negatively charged”?
2. L.67: “researches” → “studies”. Please also check the use of “researches” in other places of the manuscript.
3. L.71: “investigate” → “investigated”
4. L.75: How do they affect climate system?
5. L.83: Stokes flow
6. L.85-88: check the tense of verbs.
7. L.88: The sentence “The roles of electric charges and fields on precipitation acceleration still needs to be studied” is very abrupt. Could you please elaborate more on this and its link to previous sentences?
8. L.98: “The more accurate method for ” → “A more ...method to”. Please also check the application of “the” in the last paragraph of the introduction.
9. L.126: collide and coalesce ...
10. L.175: to be “solved”
11. L.182: kinetic or dynamic viscosity? Also, ν is the common symbol representing kinetic viscosity and μ for the dynamic viscosity. Please check these symbols carefully in the manuscript to improve the readability of the manuscript.
12. L. 188: “right side” → right hand side.
13. L. 195: Please check the expression of N_{Re} . Also, please specify that it is the particle Reynolds number.
14. L. 199-200: “U” is a scalar here and velocity is a vector.
15. L.204: Could you please estimate the N_{Re} using the typical values of droplet velocity, diameter, and the kinetic viscosity of air? Can it really be as large as 5000? More importantly, why Eq.6 applies to cases with $N_{Re} < 5000$?
16. Is Eq. 10 an empirical Eq?
17. Please clarify the assumptions employed in Eq.11.
18. F_e in Eq. 12 is a vector, which looks like a scalar in the sentence below Eq.12. Please check the font style carefully throughout the manuscript.
19. For the sentences above Eq.12, can you simply say “apply Coulomb’s law to point particles” or something like that to improve the readability?
20. L.242: How does “the line connecting the centers” affect the electric force?
21. Are your q_1 and q_2 in Eq. 12 and 13 the same? Why do you define them twice?

22. L.251: “the first two terms of Eq. (13)”. Please check the wording of explaining each item in Eqs all through the manuscript. You may explicitly write down those terms and explain the physical meaning of them.
23. L.291: “the convenience” or you may say “To save the computational power,”
24. L.293: I don’t understand this “the two droplets can either collide or not depending on the initial horizontal distance ”
25. L.402: Did you mean “net” effect?
26. L.409: “negatively-charged”
27. L. 407-409: I don’t understand how the overall negatively charged collector and the collected droplet can attract each other. Could the author elaborate more on this?
28. L. 417: “and can be used to represent cloud droplets”→ which are the typical size of cloud droplets.