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## 3P13 - Corona Discharge Induced Submicron Water Droplet Coalescence and Growth in a Subsaturated Cloud Chamber

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In natural, the condensation and coalescence and growth of water droplets play a significant role in the process of cloud formation, which is hard to occur under subsaturated environment. In this paper, the growth of water droplets is detected in a  $0.24\text{ m}^3$ -subsaturated cloud chamber with unipolar corona discharge. The results show that the diameter of droplets can grow up from submicron to  $31\mu\text{m}$  under  $-40\text{ kV}$  at relative humidity  $\sim 80\%$  and ambient temperature  $\sim 10^\circ\text{C}$ . The growth mechanism is further discussed combined with the calculation of electric field intensity distribution, and the measured negative ions density in the cloud chamber. What's more, a novel dynamic model of charged droplets motion is put forward to demonstrate the key role of electric field and charged particles in the evolution process of coalescence and growth of water droplets. The research results can provide a reference to the realization of atmospheric water resources utilization in arid regions.

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