



## **Numerical Study of Aerosol Effects on Clouds and Rain Enhancement Results**

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Numerical study of aerosol effects on clouds and rain enhancement results

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The two-parameter cloud scheme with aerosol processes of NFFL of WRF WRF is used to simulate the rainfall case in Beijing area on June 16, 2008, and the effect of aerosol on rain enhancement is discussed. The influence of aerosol concentration and the amount of artificial seeding ice particles on precipitation and water content in the cloud were studied by numerical simulation of the design of different aerosol concentrations and the amount of seeding ice particles.

The results of the simulation show that the rainfall in some areas is obviously increased within 80 min after seeding, and the regional variation of the precipitation is not significant. With CCN increased, the distribution is slightly different and the amount of enhanced rainfall is decreased. The increase of the amount of seeding ice reduces the enhanced precipitation in this period of time; within 240min after seeding, the distribution range and intensity of enhanced precipitation have increased than before, the increase in the amount of seeding ice particles makes the rainfall range and rainfall intensity increased significantly. The concentration of aerosol increased, the content of solid precipitation particles decreased slightly, the interaction between cloud droplets and raindrops weakened, but the melting of solid particles was better than that of rainwater. The increase of the amount of seeding ice particles makes the content of solid precipitation particles increased significantly, and then increase the contribution of its melting to rainwater, so that precipitation increases.

Key words : WRF, aerosol effects, clouds, rain enhancement