

| Title / Author | Methods | Key Findings |
|-------------------------------------|---|---|
| Lu and Seinfeld 2006 | 3D LES with bin microphysics. Marine Strat Cu FIRE ASTEX | Dec d with inc Na because of faster dec of d than mean r. Entrainment mitigates this. K inc with Na. Cannot assume $s=0$ for $k < 0.6$ |
| Ackerman et al 2004 | LES with Cloud microphysics and radiative transfer Marine Strat Cu FIRE, ASTEX, DYCOMS-II | 2 different effects. High RH above BL favors an inc in LWP, and low RH at cloud top increases entrainment and decreases LWP. RH above BL main factor in variation of cloud water with increased Na. Sedimentation has an effect on Cloud water and entrainment. |
| Bretherton et al 2007 (Ackerman) | LES with bulk microphysics Drizzling Marine Strat Cu DYCOMS-II | Confirm Ackerman et al.'s finding that addition of droplet sedimentation can significantly decrease the entrainment rate and thicken the cloud. But it's not because of reduced turbulence but because sedimentation reduces entrainment efficacy |

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| Mauger and Norris 2007 (Ackerman) | StratCu region of Subtropical NE Atlantic MODIS satellite obs, and ECMWF (weather) | Correlations between AOD and cloud fraction solely because of aerosol microphysical mechanisms overestimate the sensitivity of cloud fraction to aerosol by 54%, compared to estimates that accounted for variations in static stability in the 48 hours prior. |
| Zhao et al 2006 (Lu and Seinfeld) | Aircraft measurements of cloud size drop distribution. FSSP over Asia | Large range of d (0.2 to 0.8) when N_a is low, smaller range of d (0.3 to 0.5) when N_a is High. This relationship is the same for both polluted and clean regions. Uncertainty of Twomey effect is higher under low droplet conditions. |
| Wood 2007 (Ackerman) | Mixed layer model | Only when the Cloud base height is very low R (IE) is high. And the ratio decreases as cloud height increases. Using a $R(IE)$ better represents the role of entrainment. |

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| Fen et al 2009 | CRM with bin microphysics, Darwin, and Shanghai | With high wind shear (evaporative cooling is always greater than condensational heating) and increasing aerosol leads to suppression of convection. |
| Stevens and Feingold | Review | <p>lifetime effects alone responsible for -.3 and -1.3 W/m², Problem is compounded by the tendency of the aerosol to correlate strongly with meteorological conditions.</p> <p>Ppt Susceptibility of shallow clouds B is a function of Rain rate/ cloud droplet number</p> <p>Needs to be studied at a regional level. looking at all ppt, cloud and aerosol in modeling</p> |