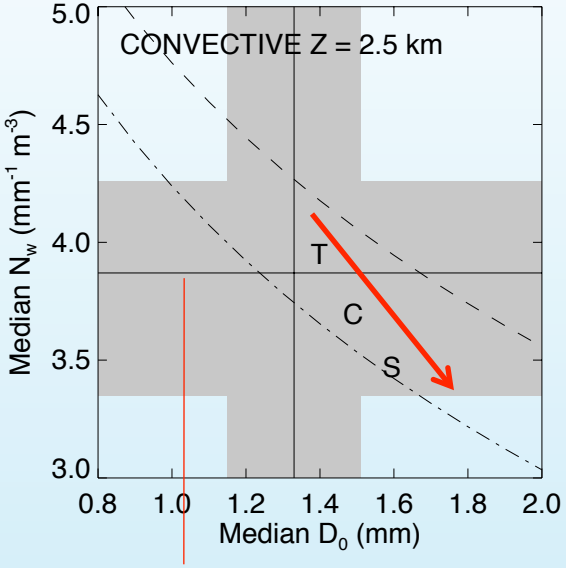
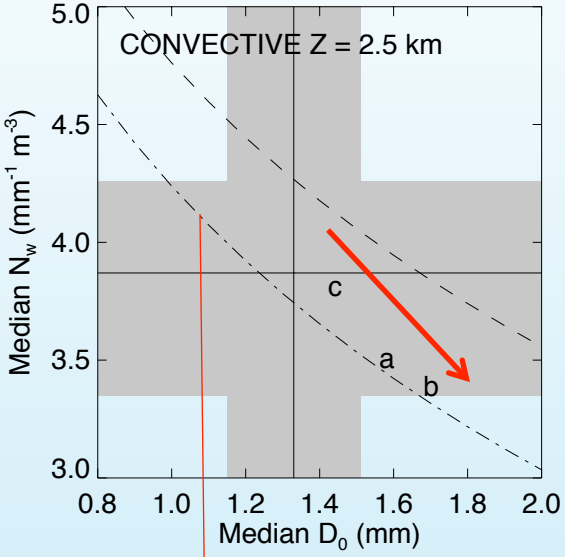
PI Fridlind—Combining observations and CRM simulations to constrain aerosol-cloud interactions

increasing aerosol (baseline)



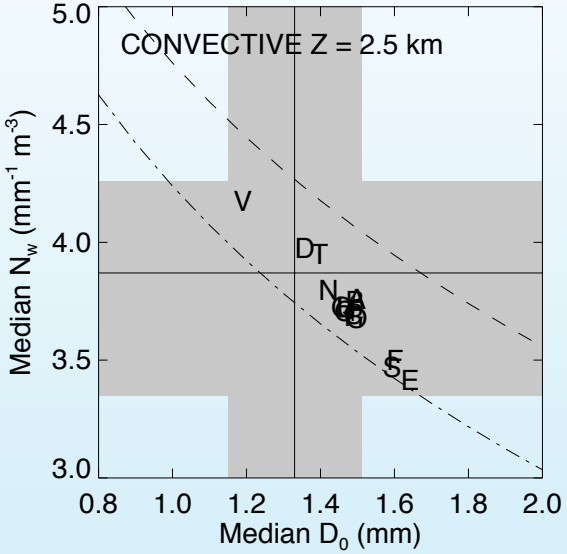
median (line) and inner half (shaded) of C-POL retrievals

increasing aerosol (no ice)



lines of constant LWC

microphys. uncertainty



- **Project description:** develop and evaluate CRM-simulated deep convection case studies using ASR field IOPs (aerosol, hydrometeor, thermodynamic, and surface obs) and satellite observations (TWP-ICE, MC3E)
- **Recent findings (TWP-ICE convective raindrop size distribution properties)**
  - CRM can reproduce observed increase of raindrop D_0 with greater aerosol numbers, the trend does not require ice processes, and the absolute value of RSD properties is dependent on microphysics scheme
  - near-surface approach to raindrop break-up equilibrium in strong rain (condition independent of aerosol)
  - but observations indicate that CRM updrafts are too large and too strong, indicating an incorrect “updraft regime” (collaboration with Varble, Collis, PI Zipser)