Deliverable D2: PartMC-3D and error quantification

Objective: Develop PartMC-3D and conduct model studies to quantify errors regarding internal mixture assumption for target quantities (cloud microphysical properties, optical properties)

Lead personnel: West, Riemer

Collaborators: None

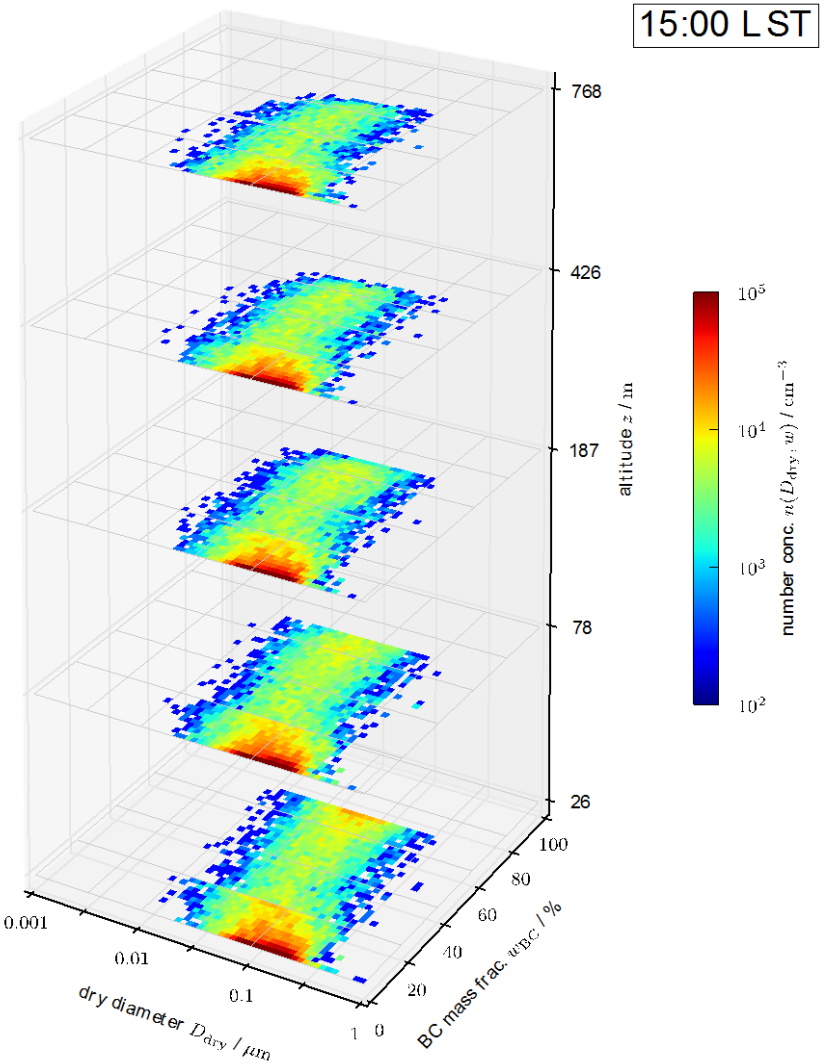
Funding status: funded

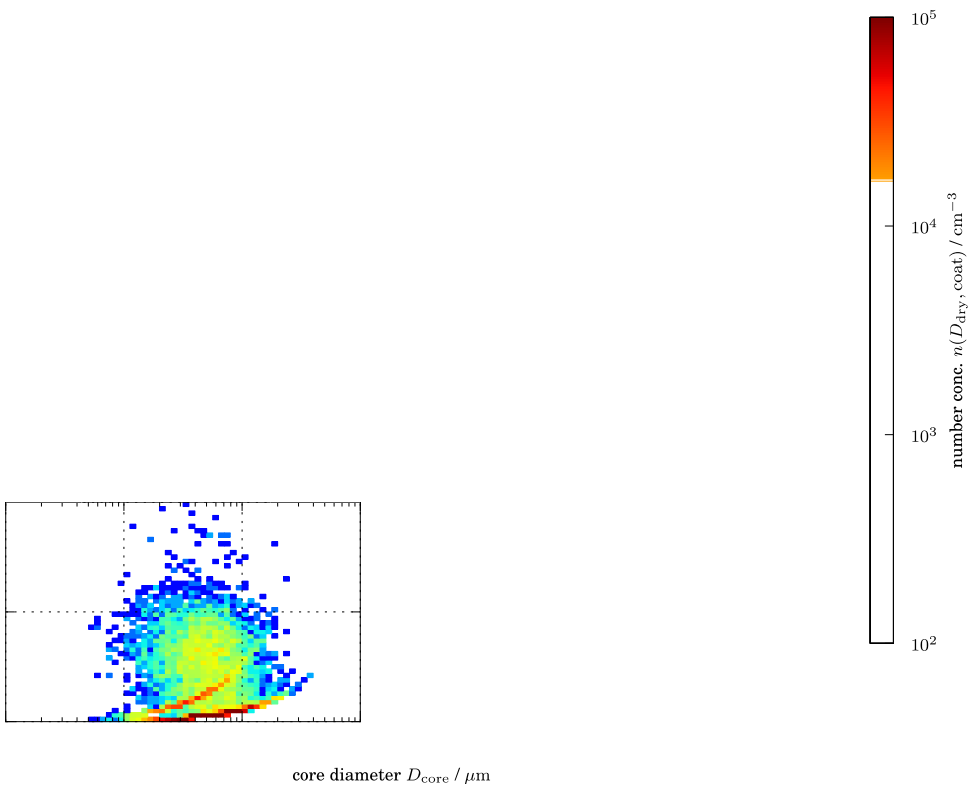
Challenges or needed resources/collaborators: Need vertically-resolved particle-resolved observations.

Summary of progress:

- Eulerian model framework enables easier comparison with observational data from field campaigns (compared to Lagrangian parcel model approach).
- Preliminary development of mixing state metrics.
- Development of PartMC-1D is completed (turbulent diffusion in vertical direction, dry deposition at the surface)
- Development of 3D advection algorithm ongoing.

How does mixing state vary spatially?



BC mass fraction as a function of dry diameter and altitude

Coating thickness as a function of core diameter and altitude (for comparison with SP2)