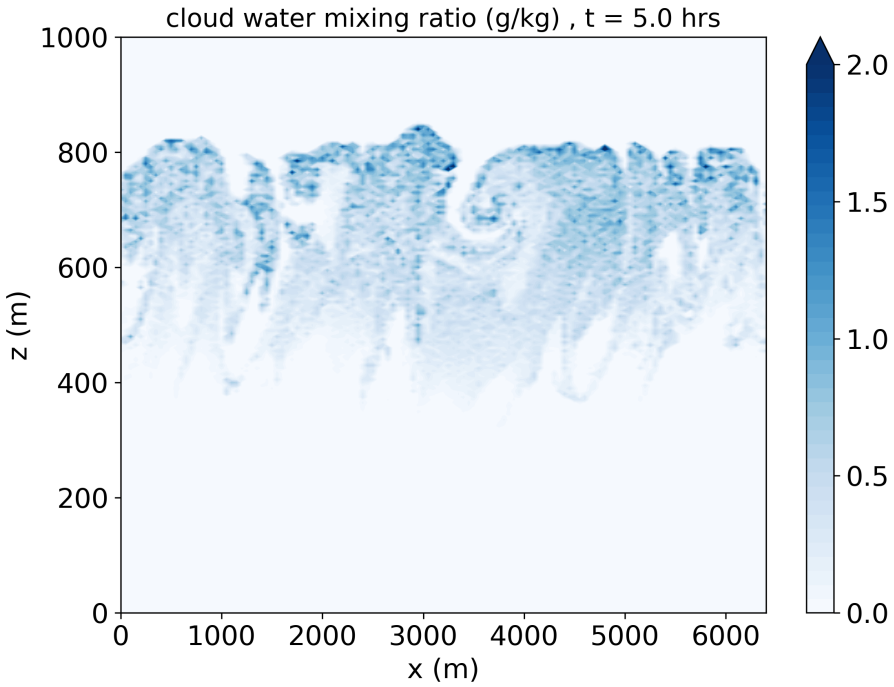

Figure 1. Plot of cloud water mixing ratio (g/kg) in 2D simulated stratocumulus cloud from the DYCOMS-II RF02 LES case.

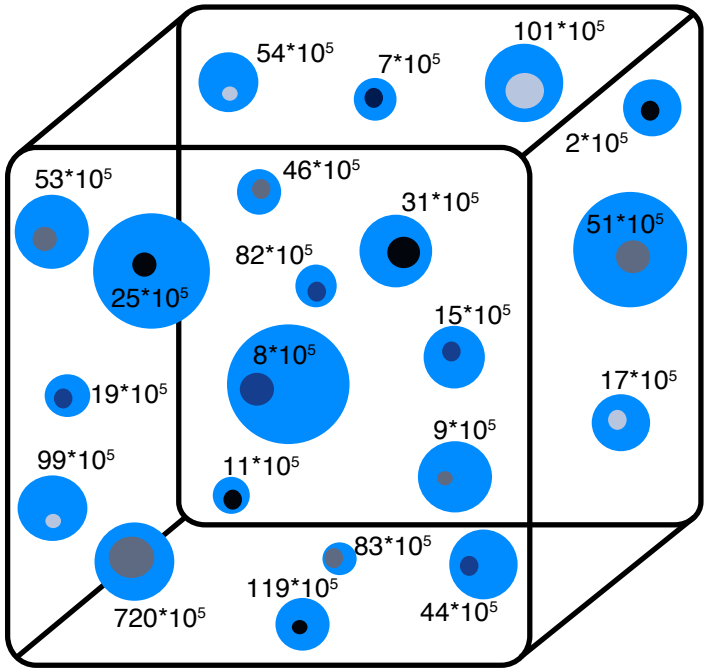

Figure 2. Schematic of Lagrangian droplets inside simulated domain. Simulated particle attributes: wet/dry size, chemical composition, and multiplicity.

Clouds are a critical component of the climate system because of their effects on radiation and precipitation. But clouds would not exist on Earth without aerosols; inside every individual cloud droplet exists a small particle that allows water vapor to condense. How large those droplets become determines how much radiation that cloud will reflect and how much it will rain.

We simulate the aerosol-cloud interactions (microphysics) and cloud dynamics using a Lagrangian cloud model. This allows us to study complex and usually unresolved cloud processes. Current projects include quantifying how droplet activation and subsequent cloud dynamics depend on aerosol chemical composition.