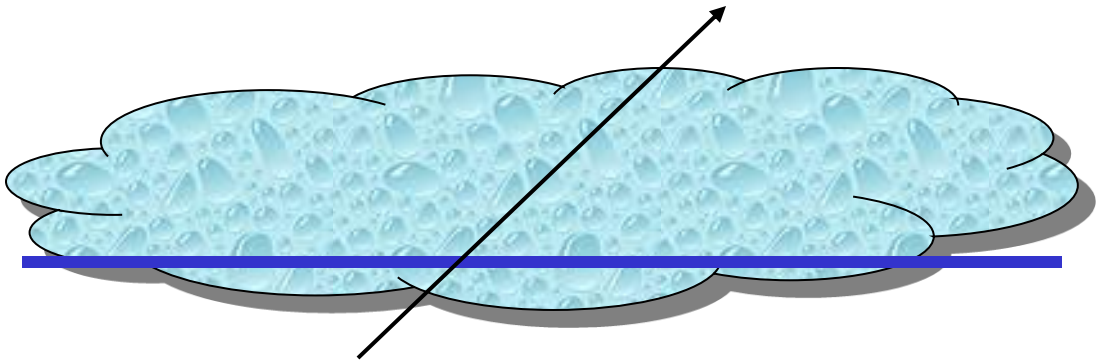
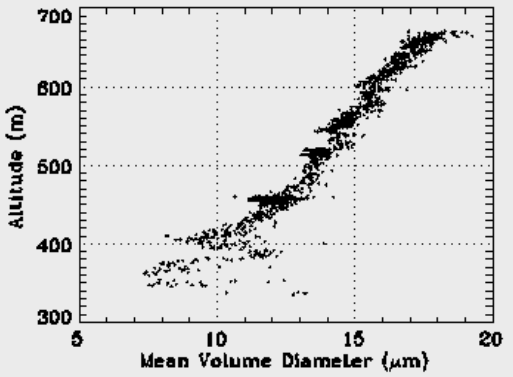
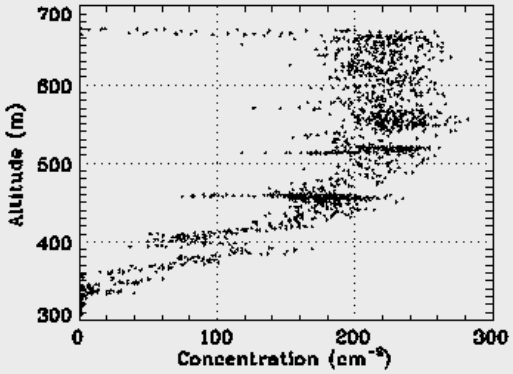
Adiabatic Sc model

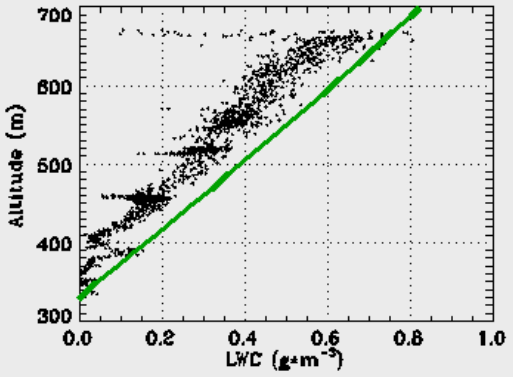


- Cloud Base constant = Zb
- CDNC constant = No
- $LWC_{ad} = C_w (Z-Zb)$

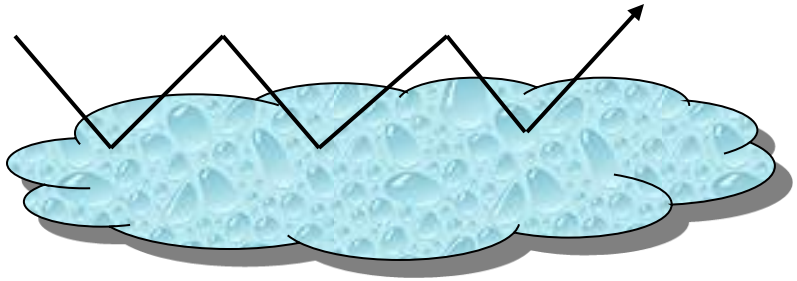
$$= \frac{\pi}{6} \rho_w No \Phi_v^3$$







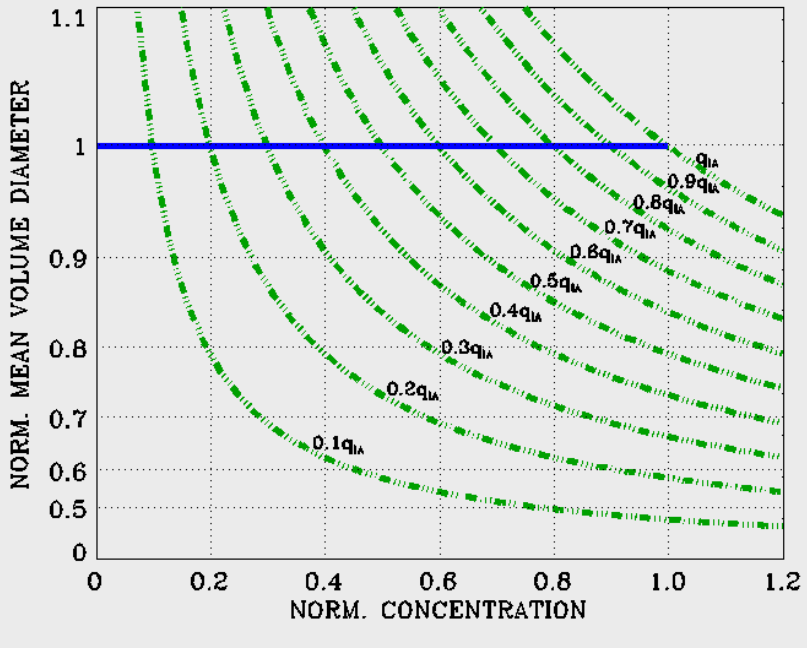
Entrainment - Mixing



Inhomogeneous

N ↘ dilution + evaporation

Φv constant



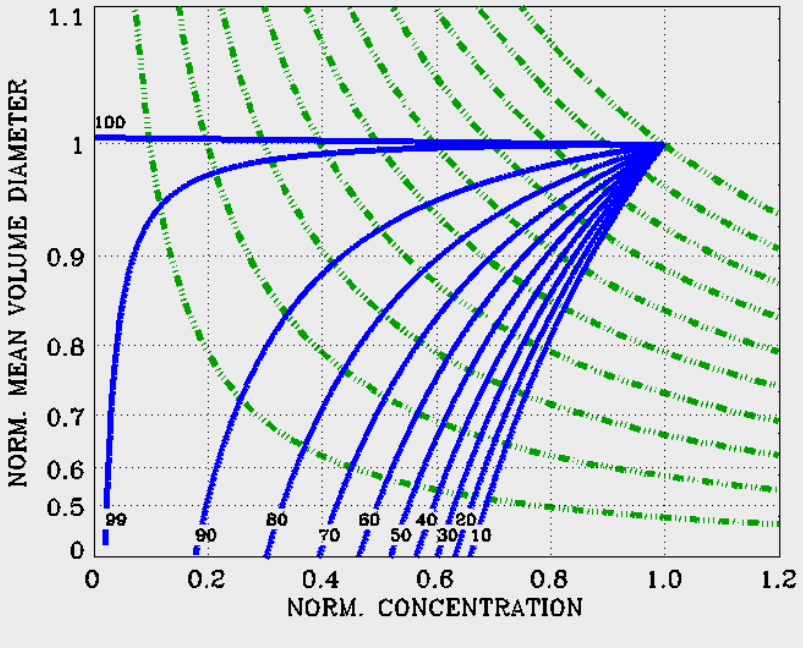
$\frac{\Phi_V^3}{\Phi_{VO}^3}$

N / No

Homogeneous

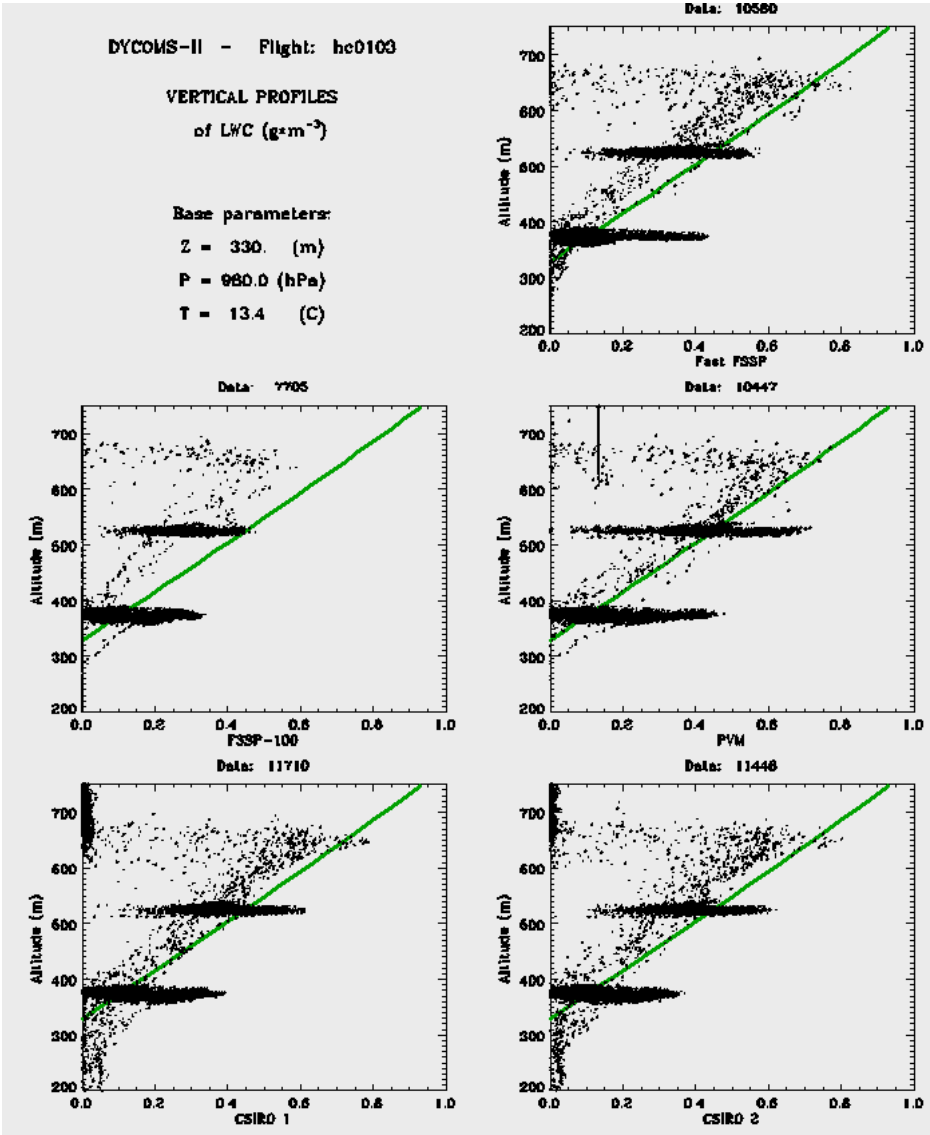
N ↘ dilution only

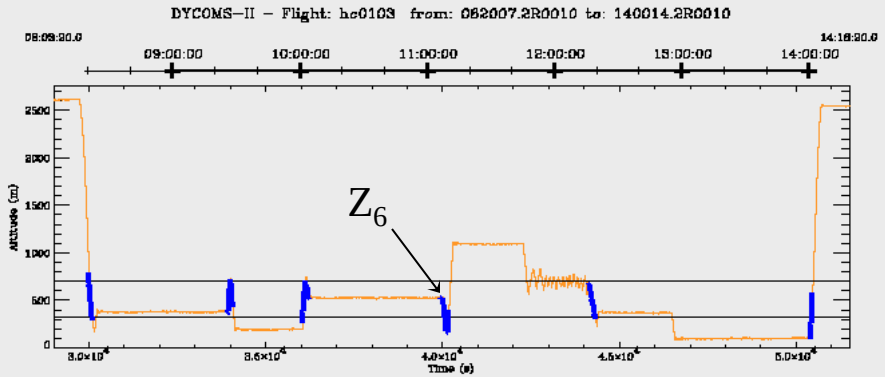
Φv ↘ evaporation

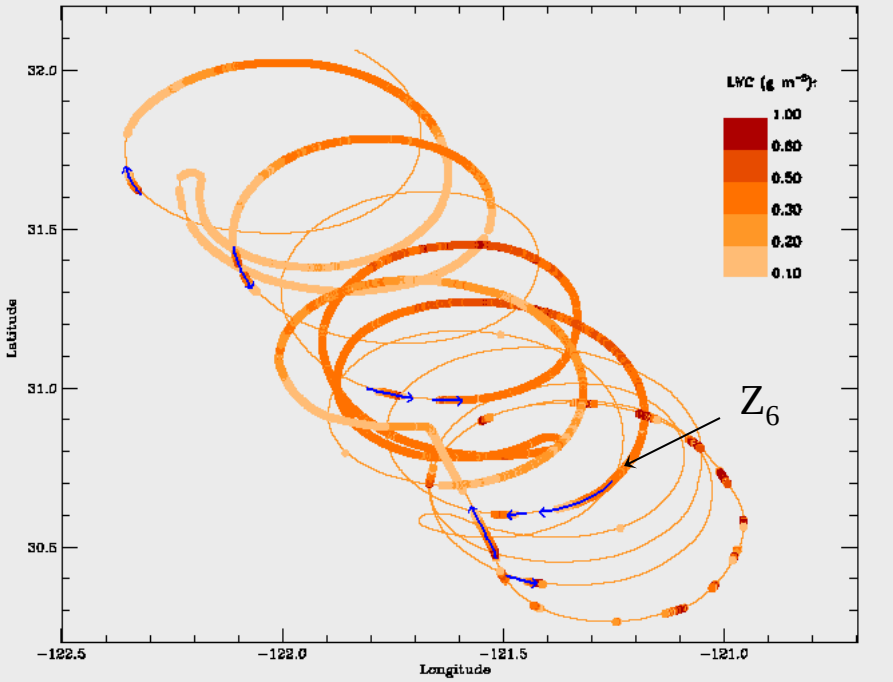


N / No

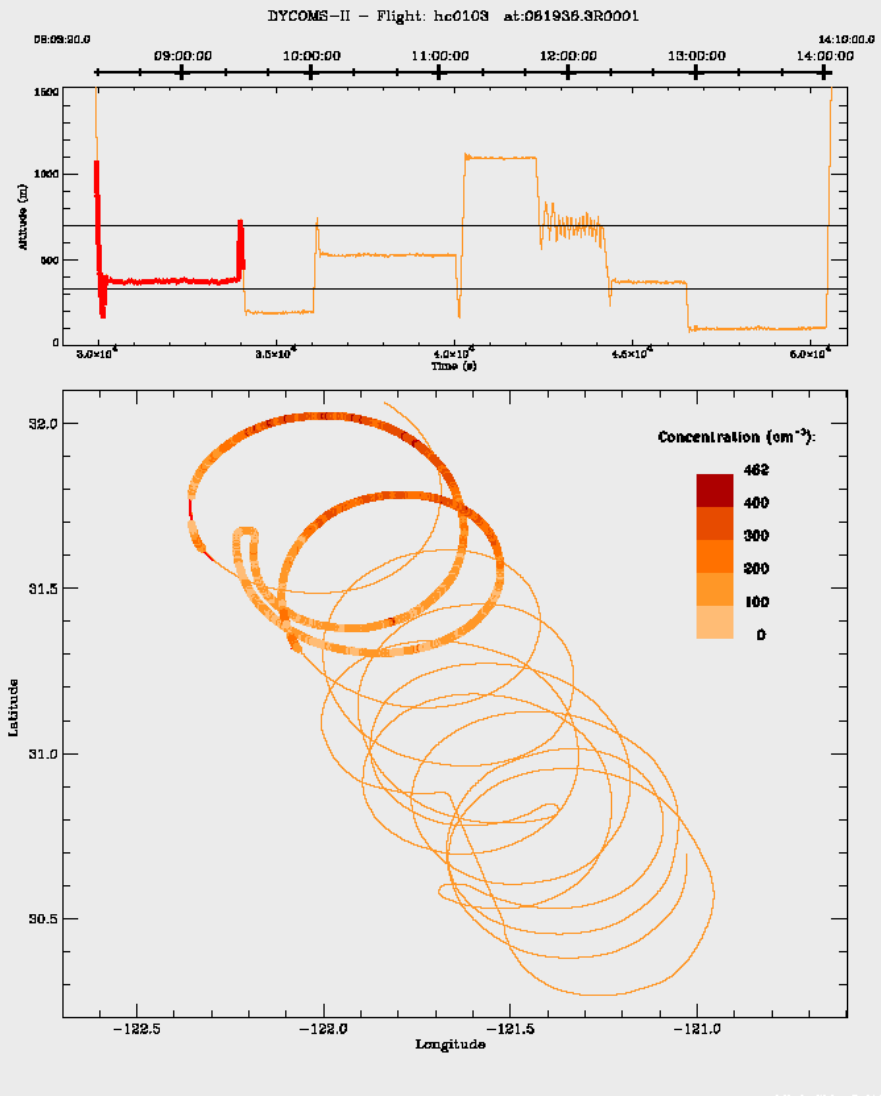
$\Phi_{VO}(Zb)$? CB spatial variability

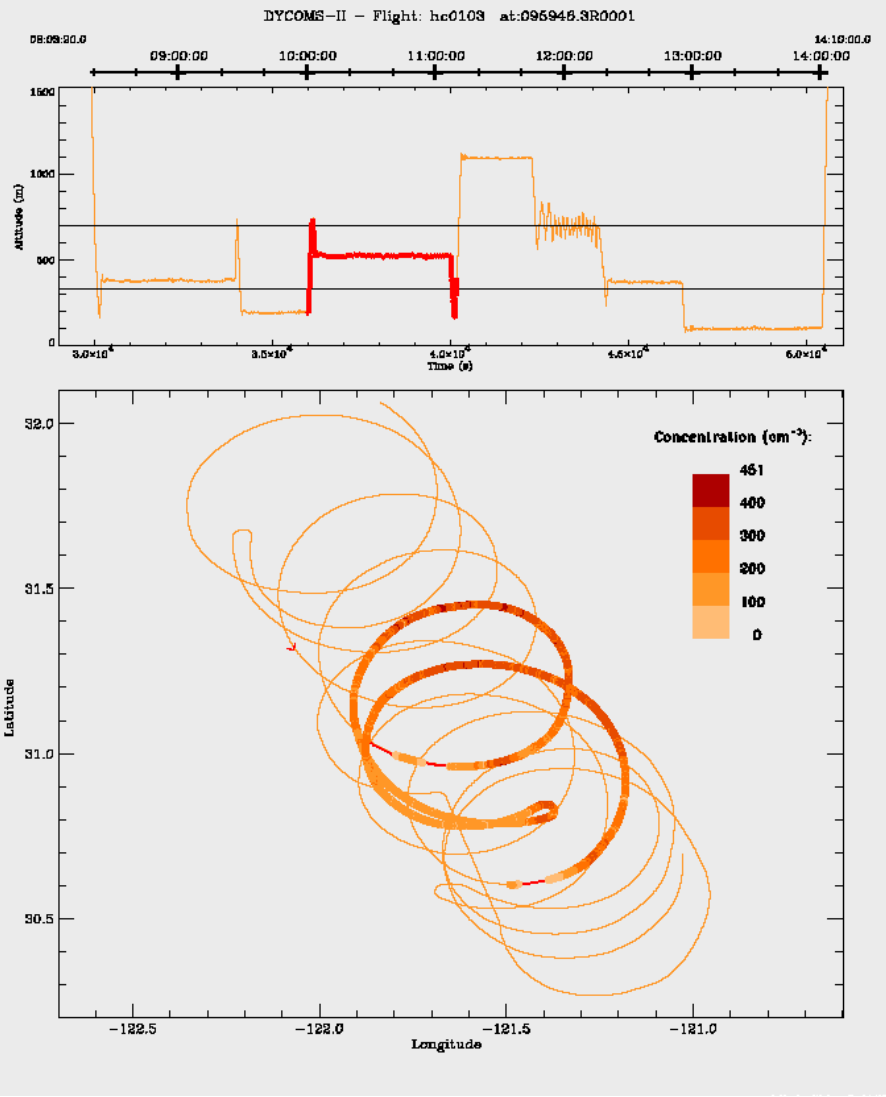




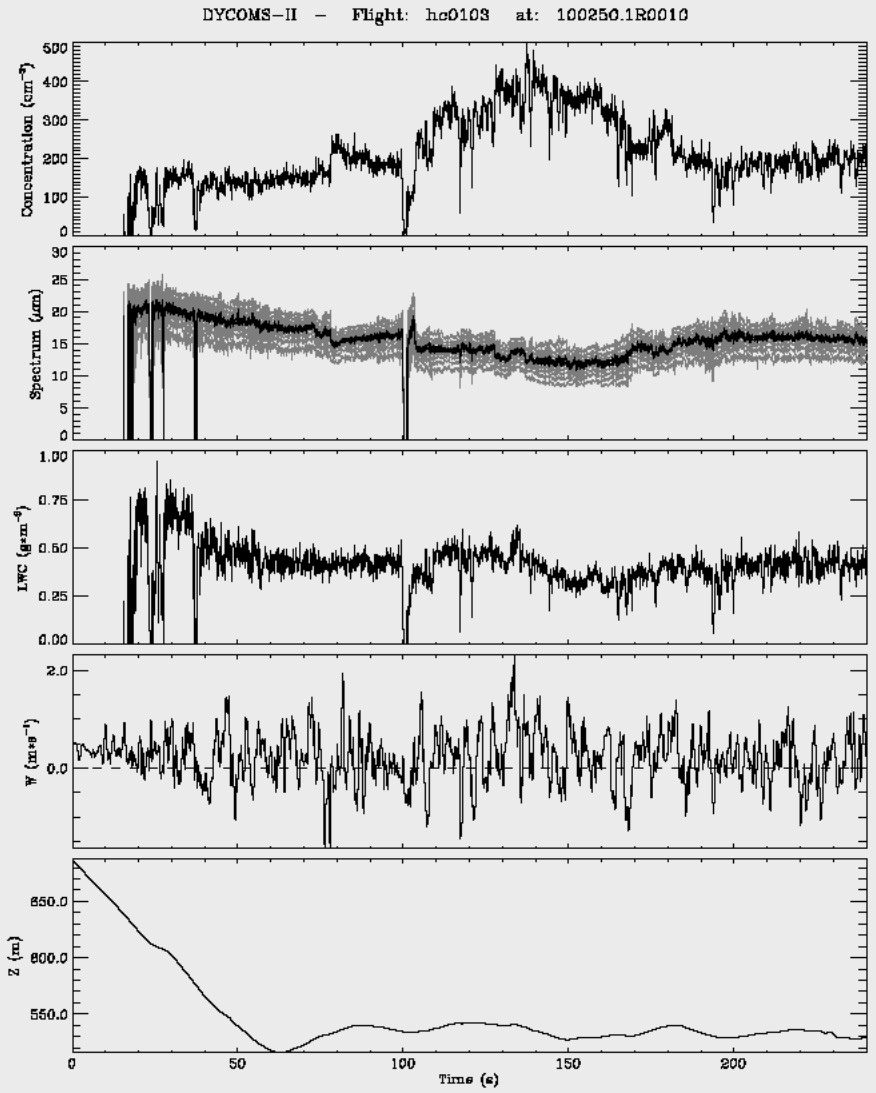


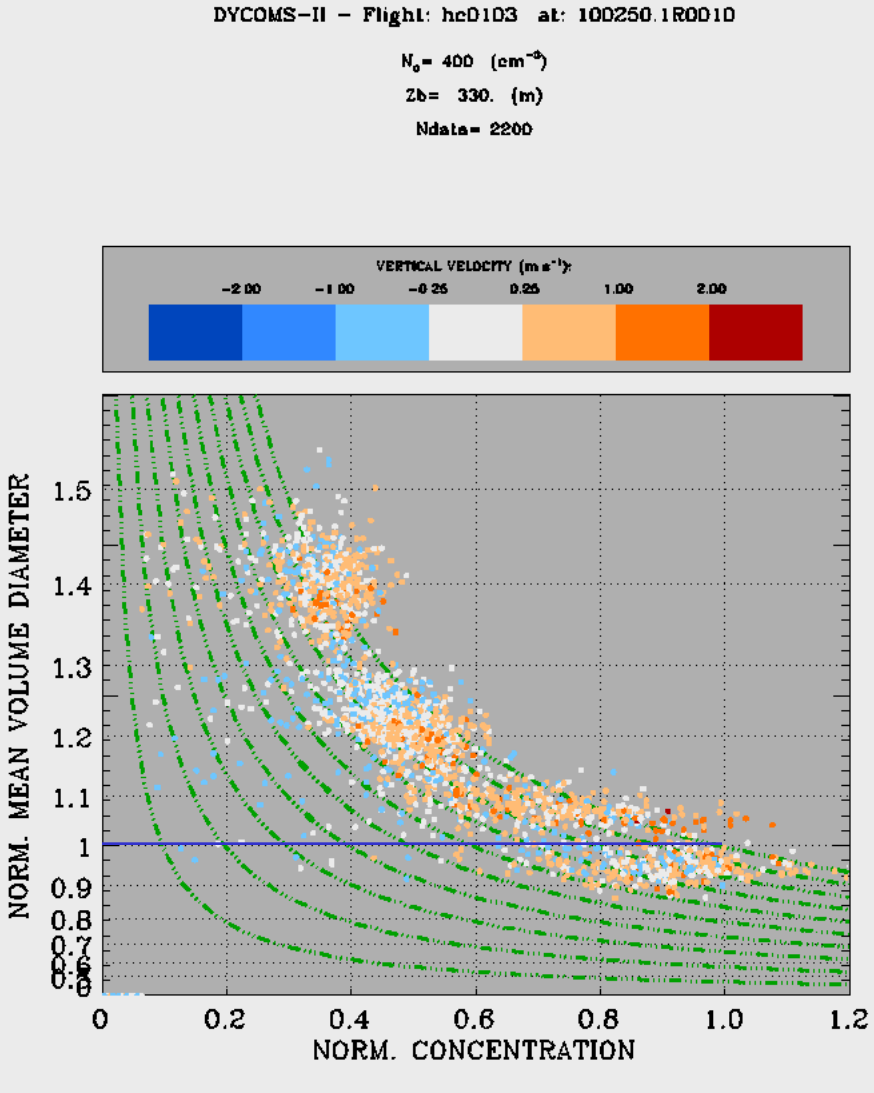
N_O ? CDNC spatial variability



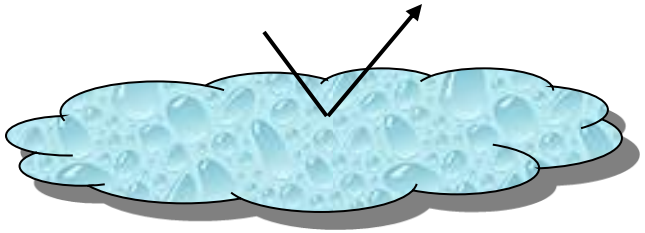


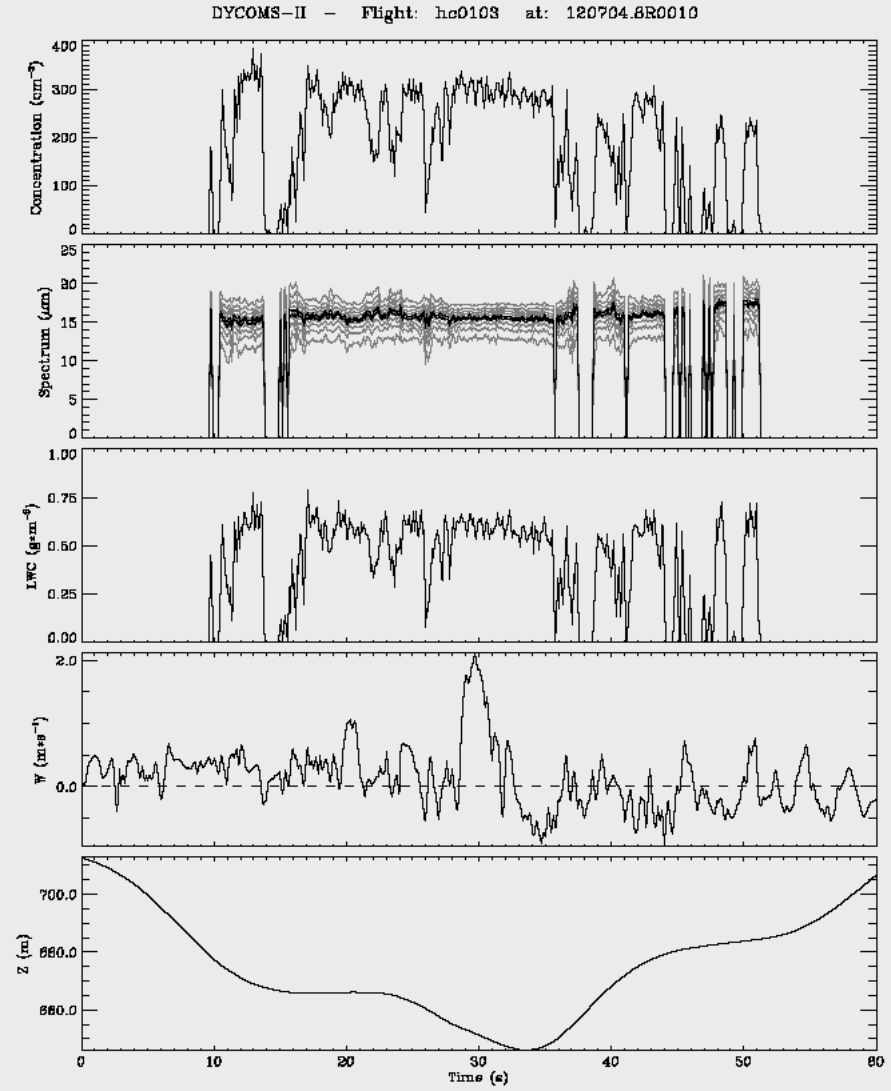
N_o ? Effect of CDNC variability

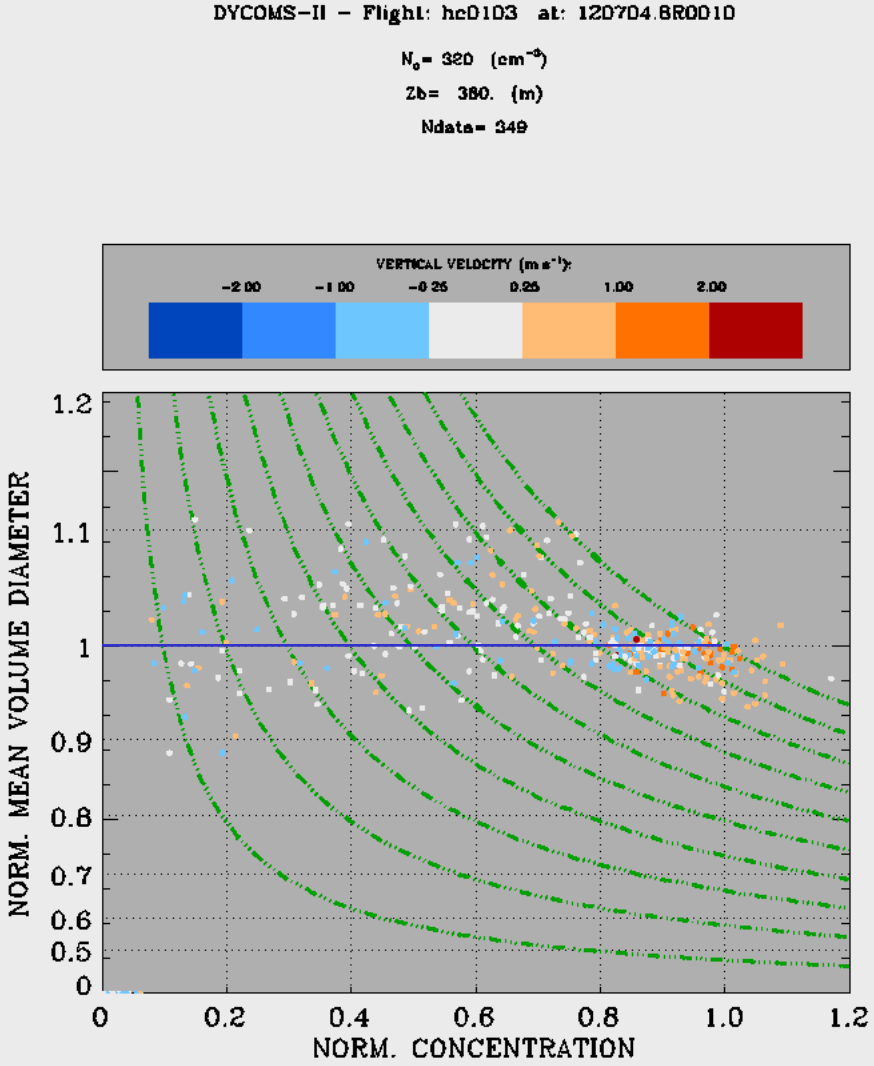




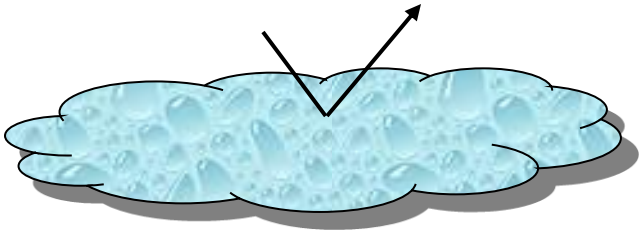
Poirpoising section

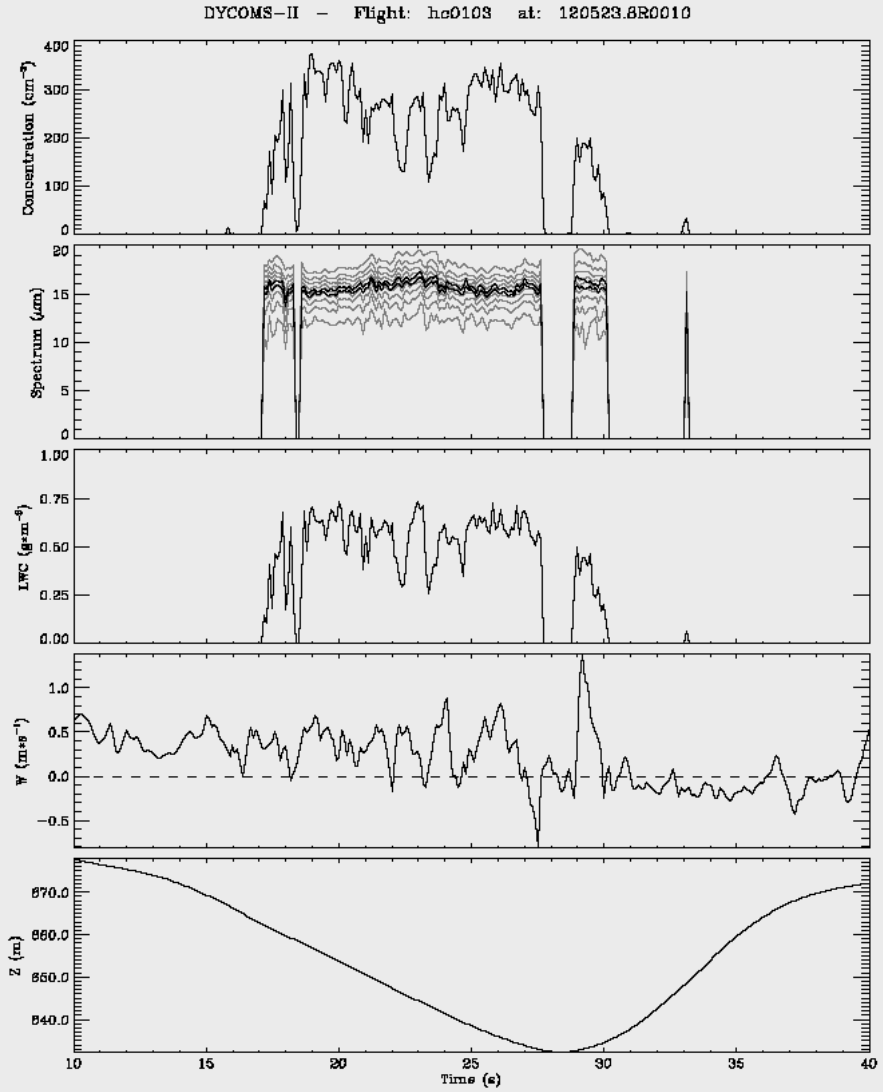


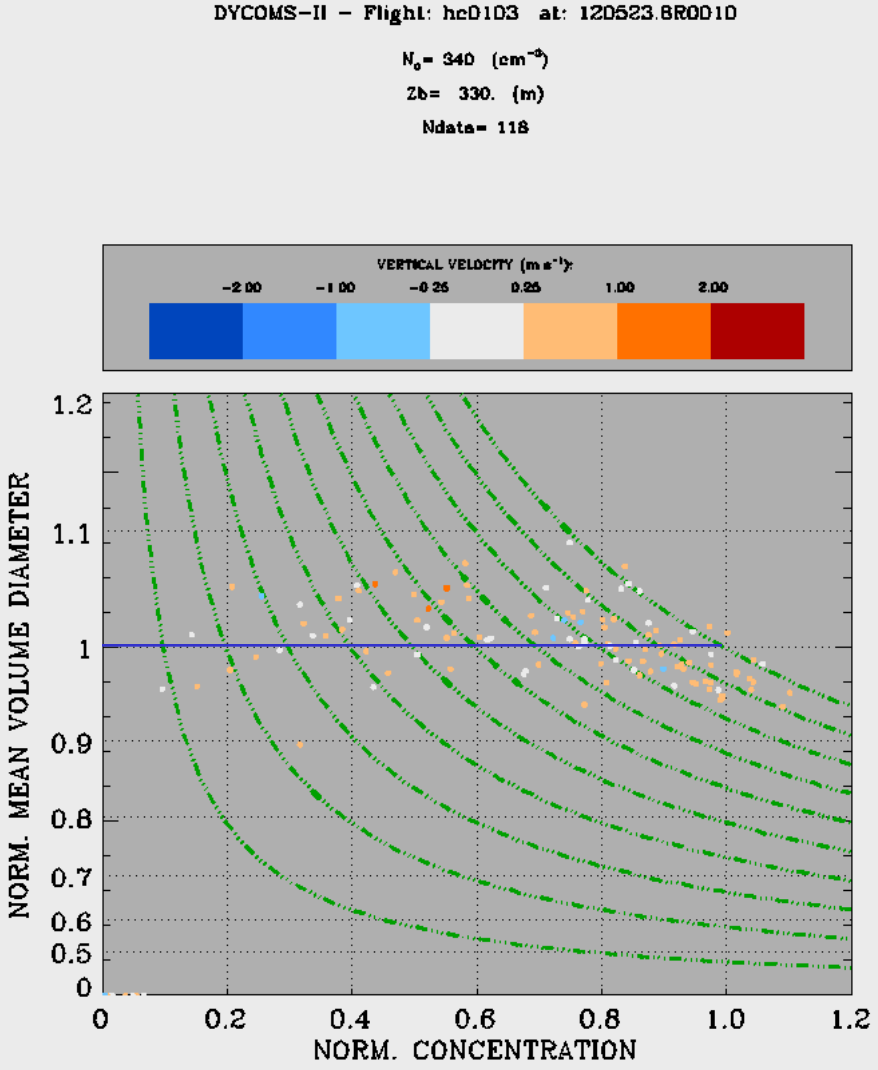




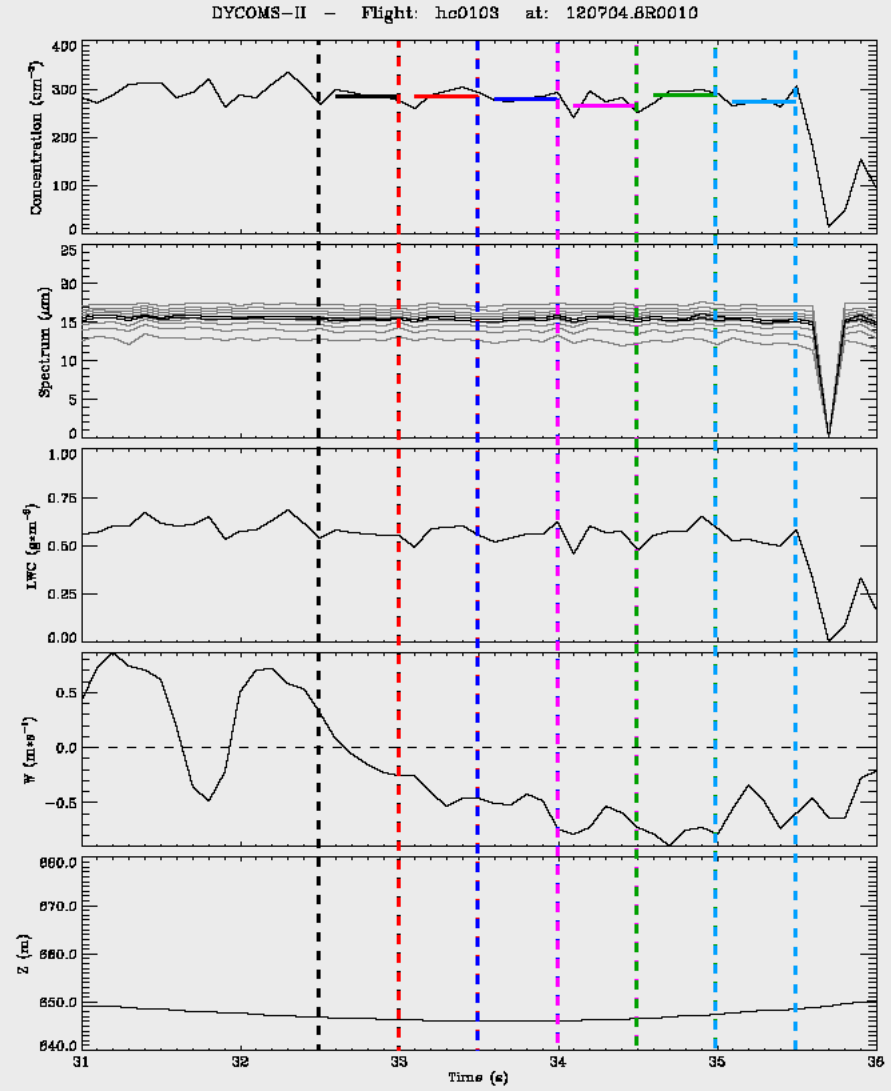
Poirpoising section

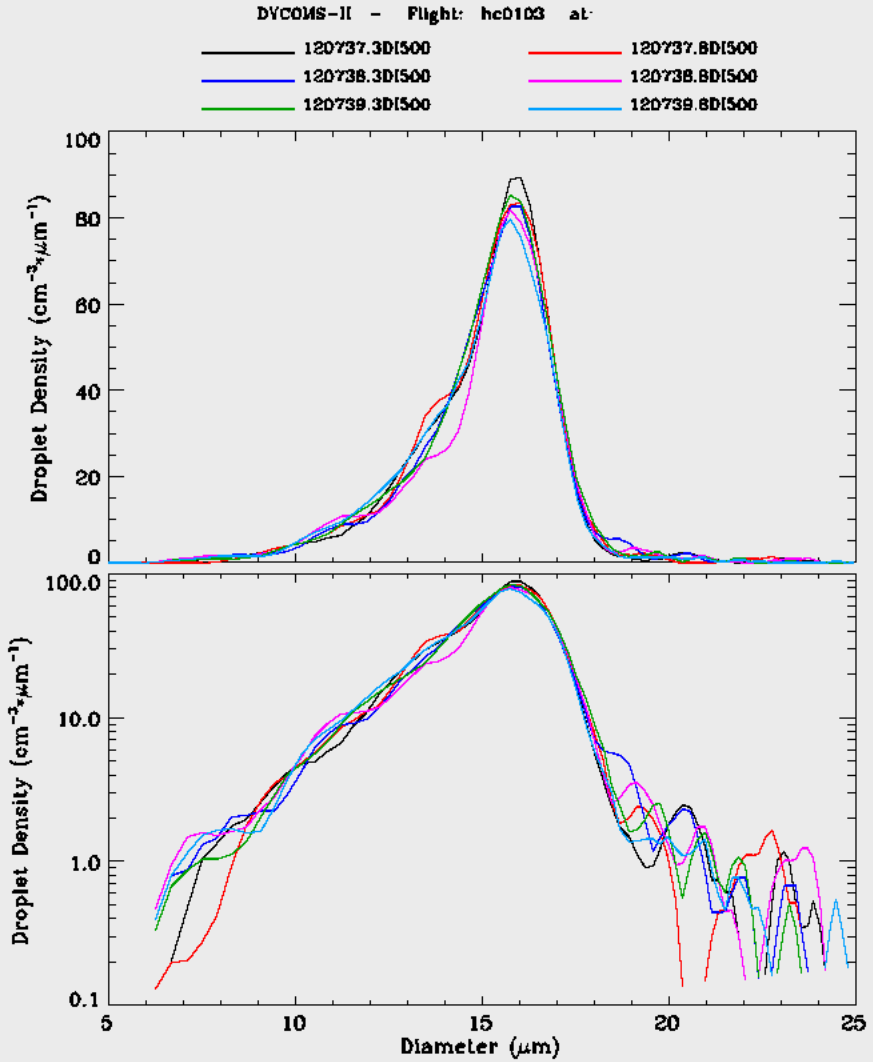




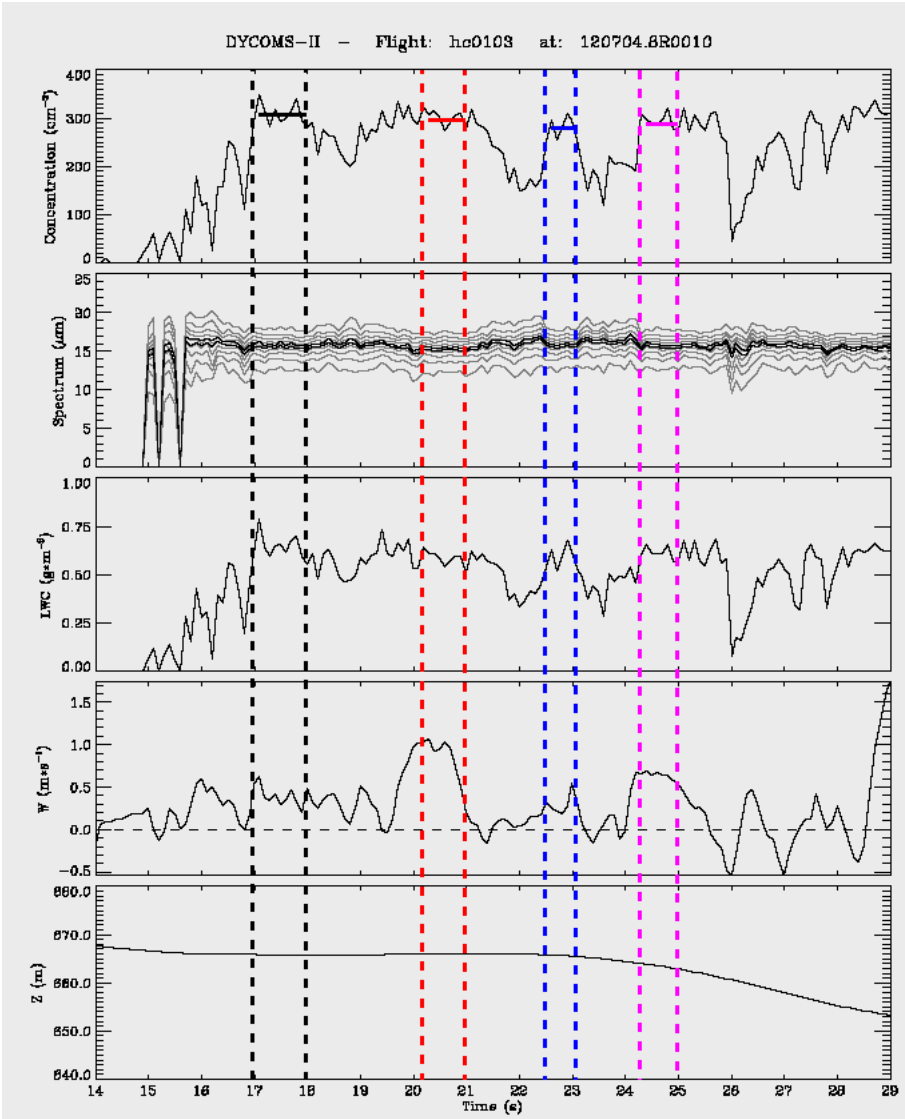


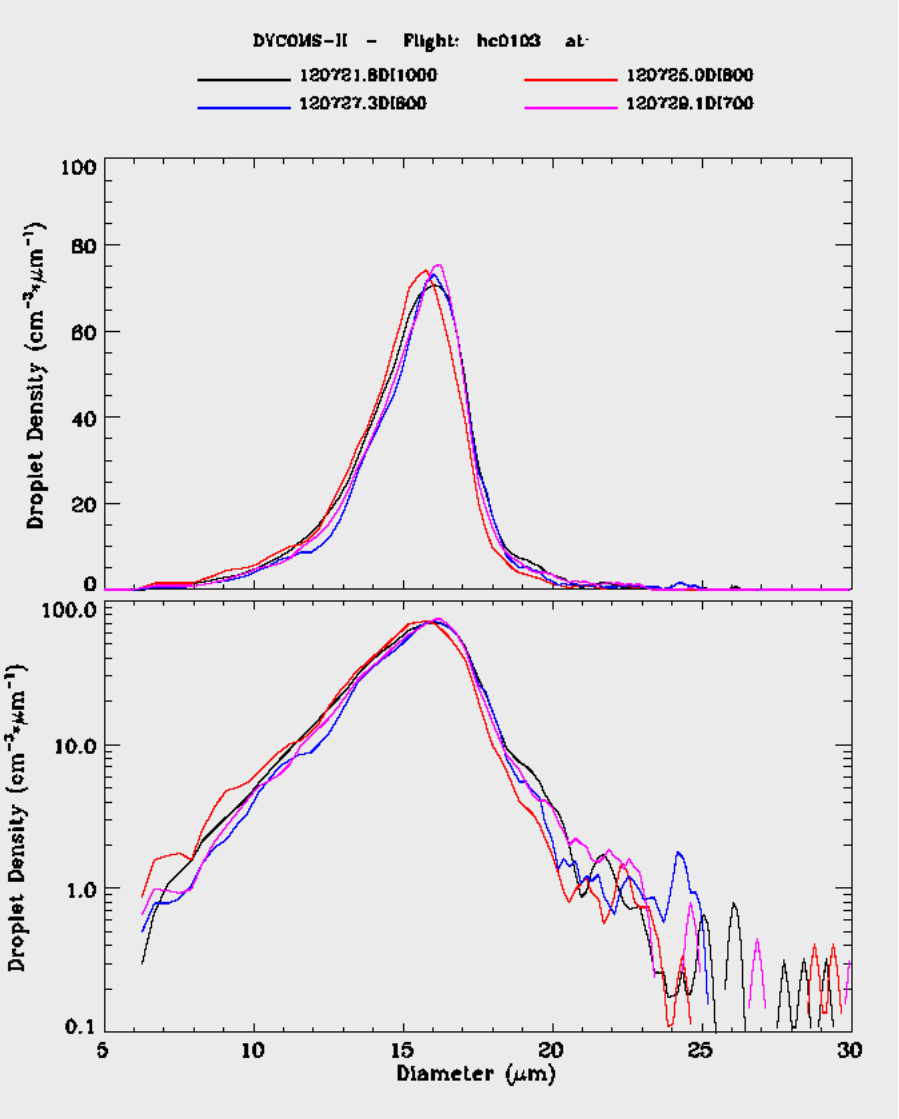
Spectra variability



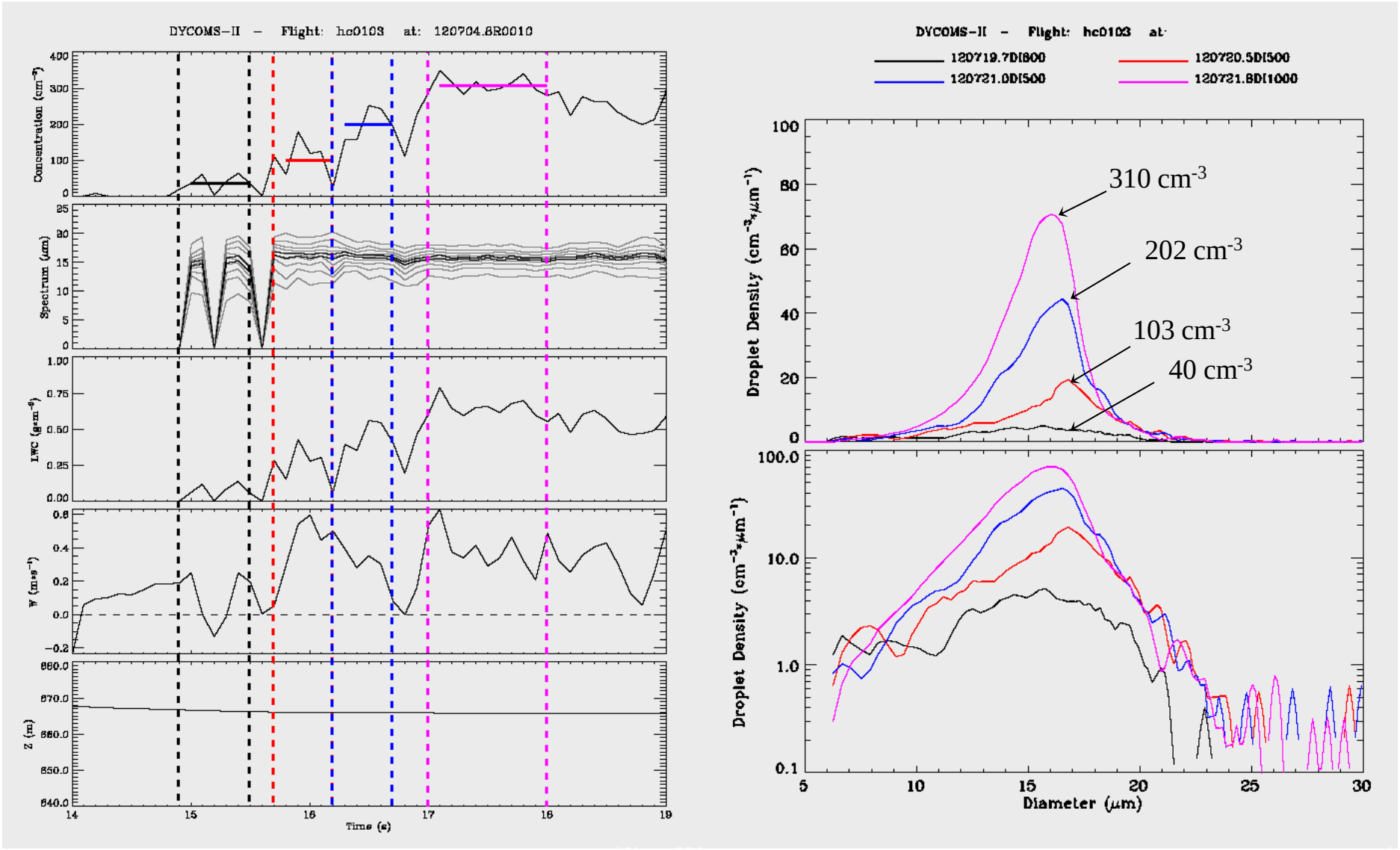


Cloud top structures

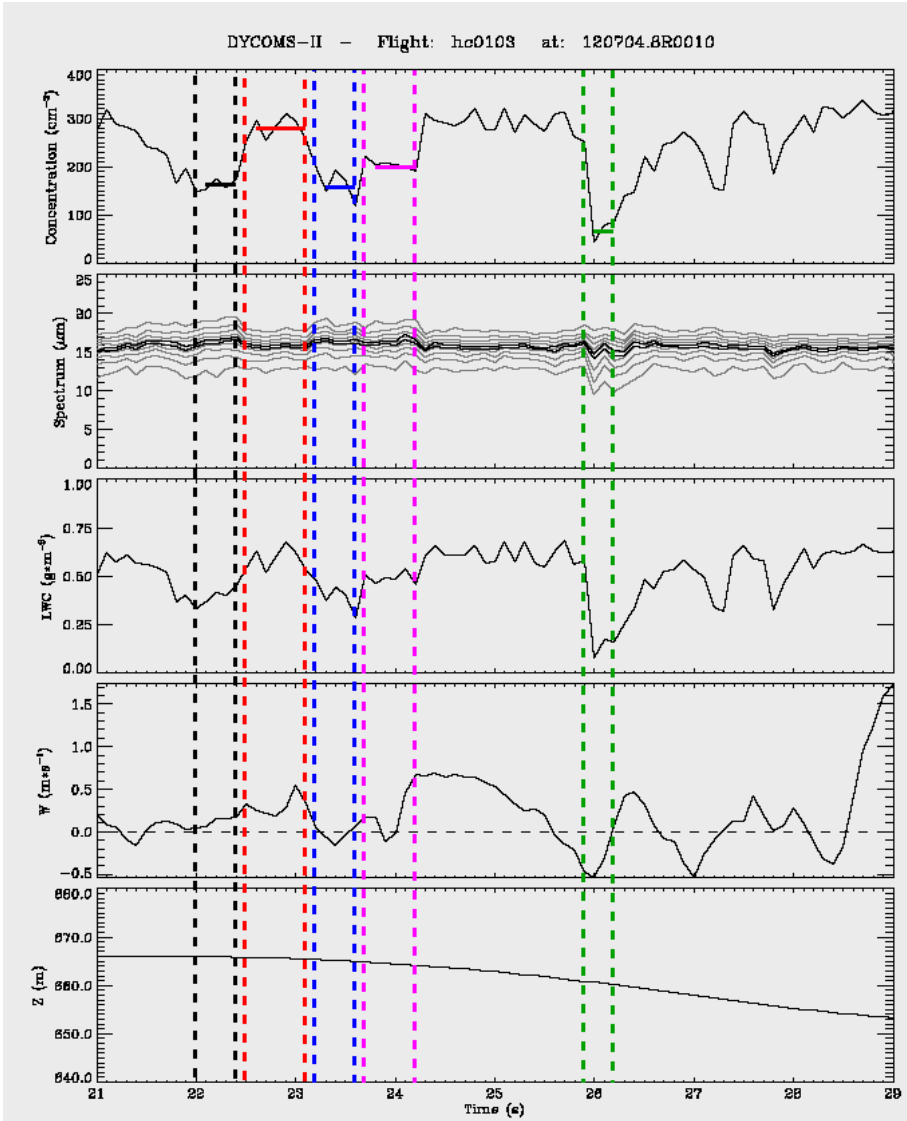


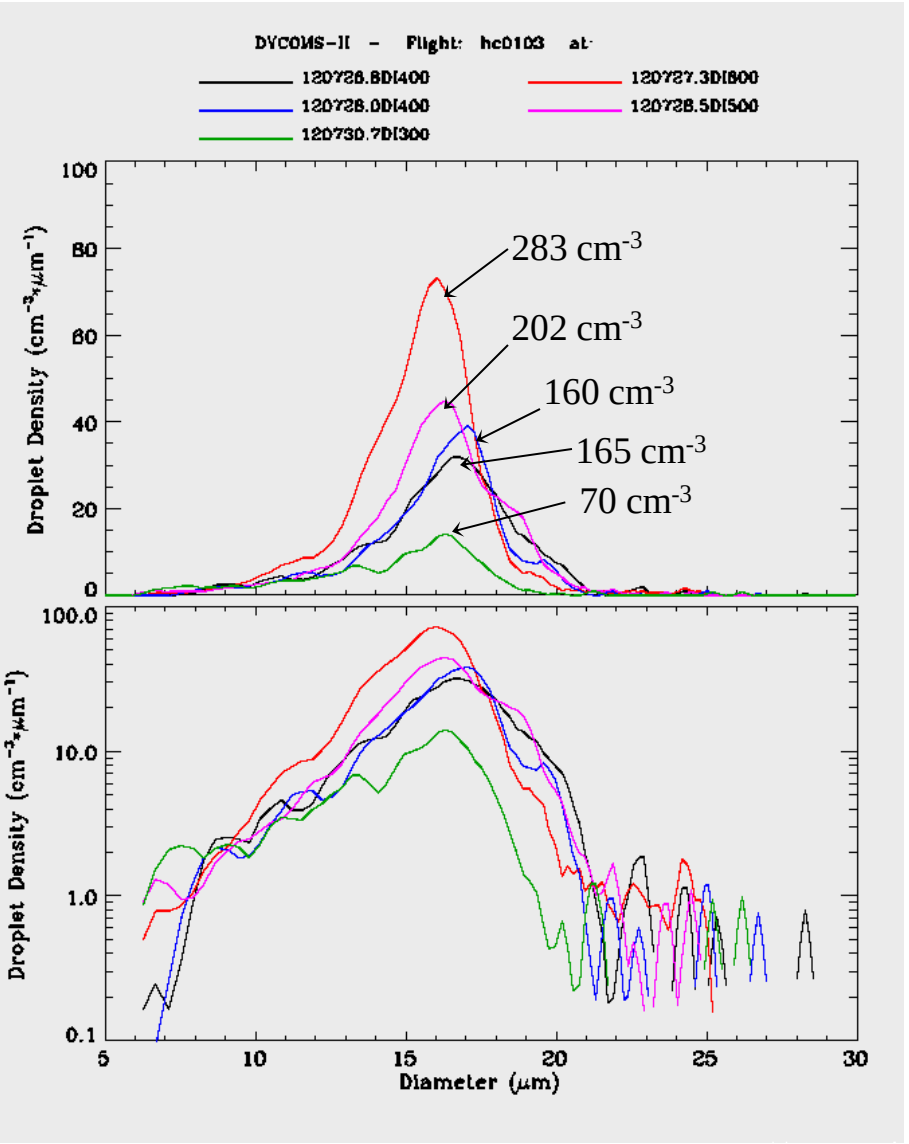


Mixing zone1

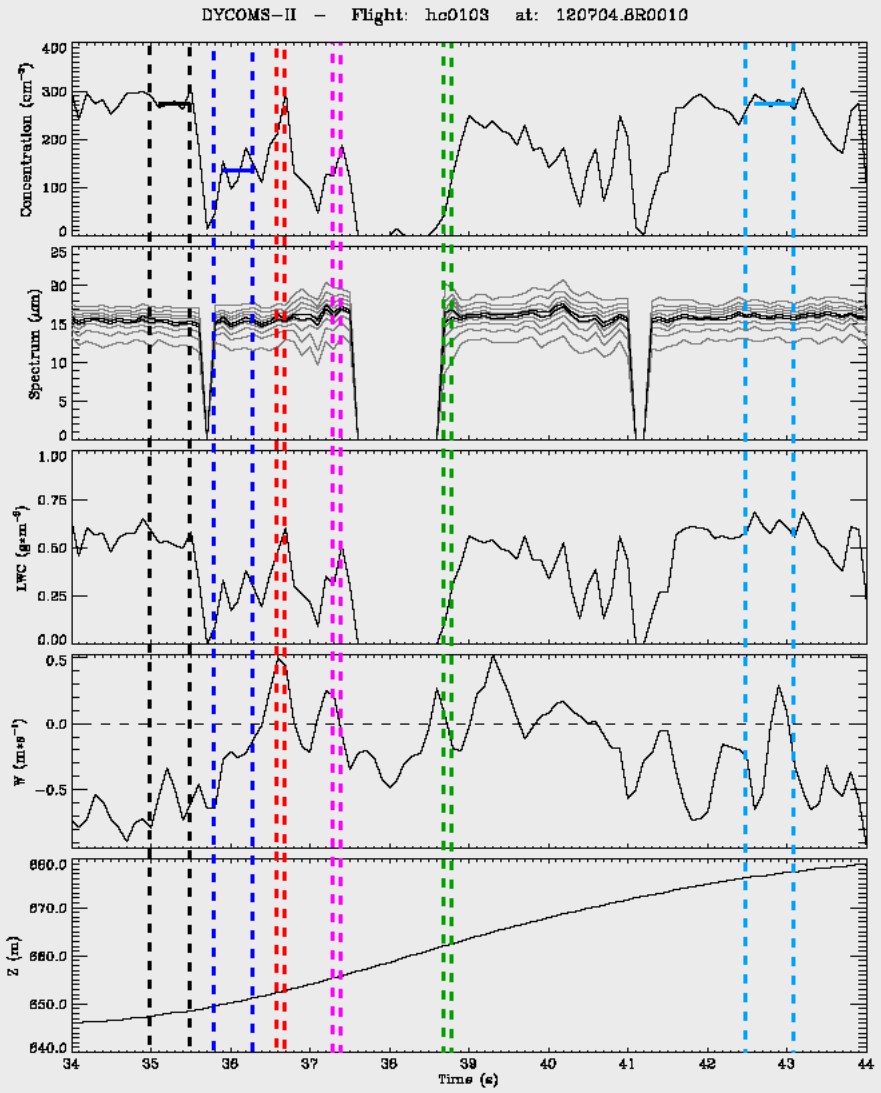


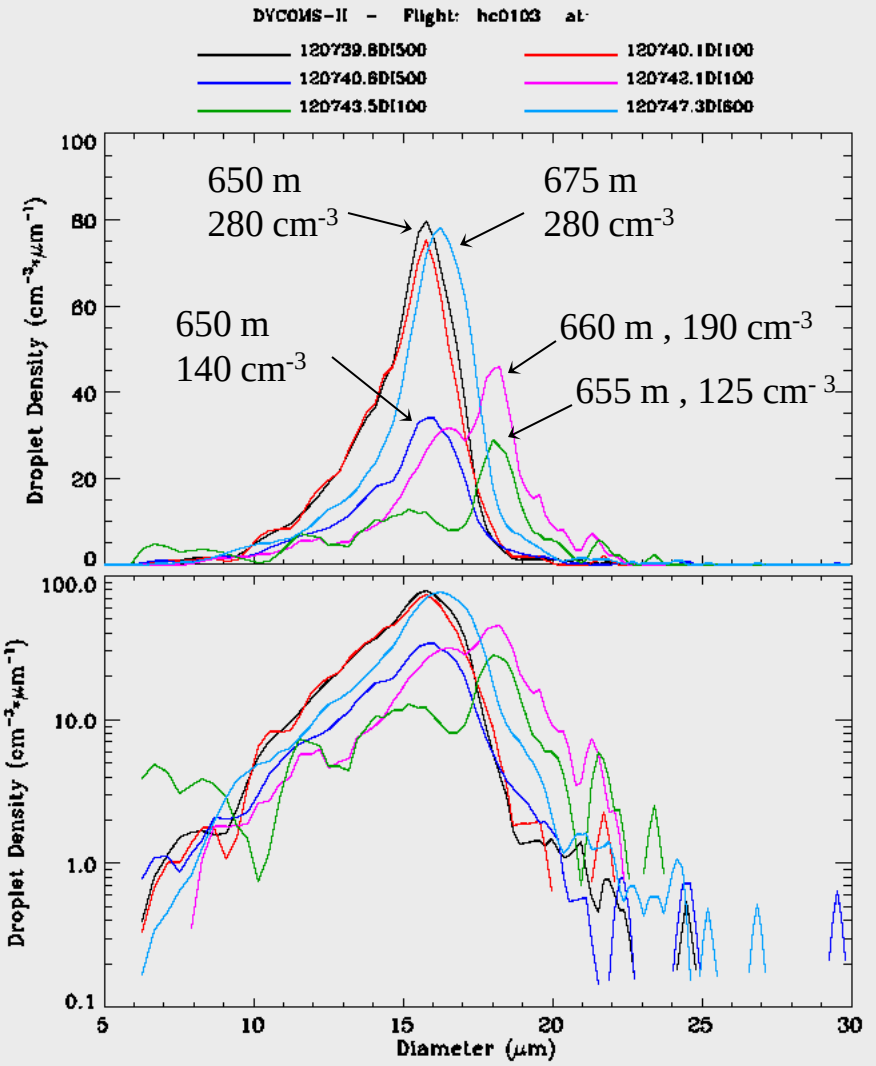
Mixing zone2





Mixing zone3





Conclusion - perpectives

- **Mixing diagram** with 10 Hz data (≅ 10 m spatial resolution)
  - ▶ LWC reduction entirely due to CDNC reduction at cst MVD

    ⇒ **Heterogeneous mixing**

    (Dry air from FT is humidified by previous mixing events)

- **Cloud top structure**:
  - ▶ quasi-adiabatic regions: LWC ≅ LWCad

    cst CDNC (No) and droplet spectrum
  - ▶ mixed regions : 0 < LWC < LWCad

    0 < N < No

    different spectra with { significant density of big droplets / variable density of small droplets }

⇒ these features reflect different stages of the mixing process

↳ **Obj: document the statistics of these structures**