

# Fast-FSSP measurements

Frédéric Burnet, Jean-Louis Brenguier,  
Thierry Bourriane and Jean-Michel Etcheberry

(CNRM/GAME, CNRS/Météo-France)

Second VOCALS meeting  
July 12-14 2009, Seattle

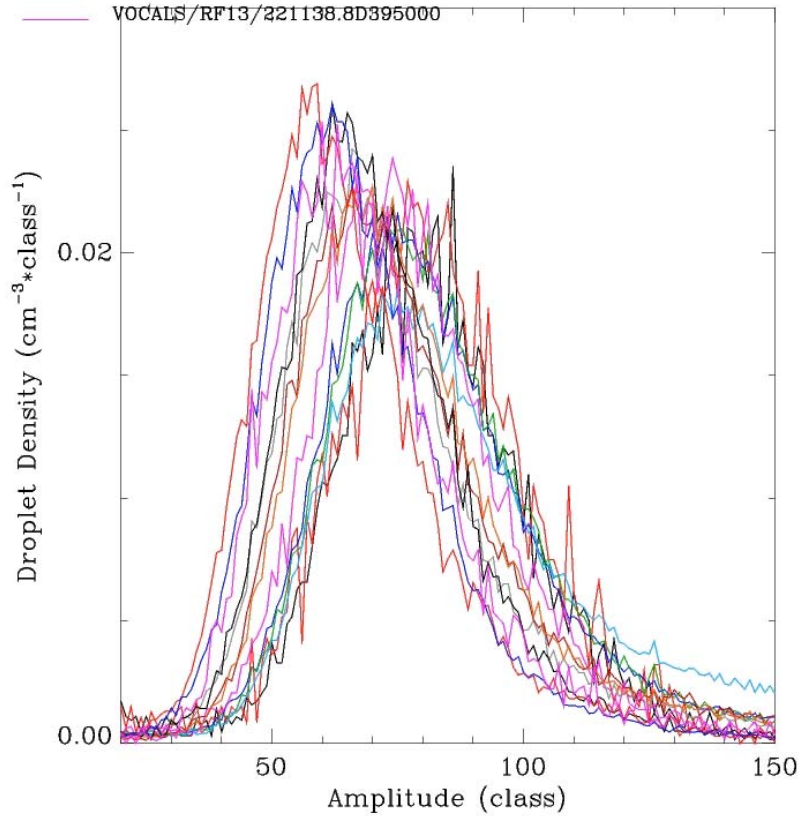
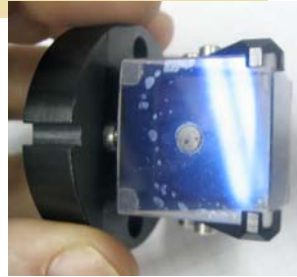
## Data Base overview

RF	date	Mission	Fast-FSSP data	Calibration
1	15-oct	buoy	incomplete & saturations	ca0802
2	18-oct	20 S		incomplete & sizing
3	21-oct	20 S		ca0802
4	23-oct	20 S		ca0802
5	25-oct	20 S		ca0802
6	26-oct	POC		ca0802
7	30-oct	POC		ca0802
8	02-nov	POC		ca0803
9	04-nov	POC /20 S	few minutes missing	ca0803
10	06-nov	20 S		ca0803
11	09-nov	Pollution	few minutes missing	ca0803
12	11-nov	Pollution		ca0804
13	13-nov	20 S		ca0804
14	15-nov	POC		ca0804

**Release by the end of August**

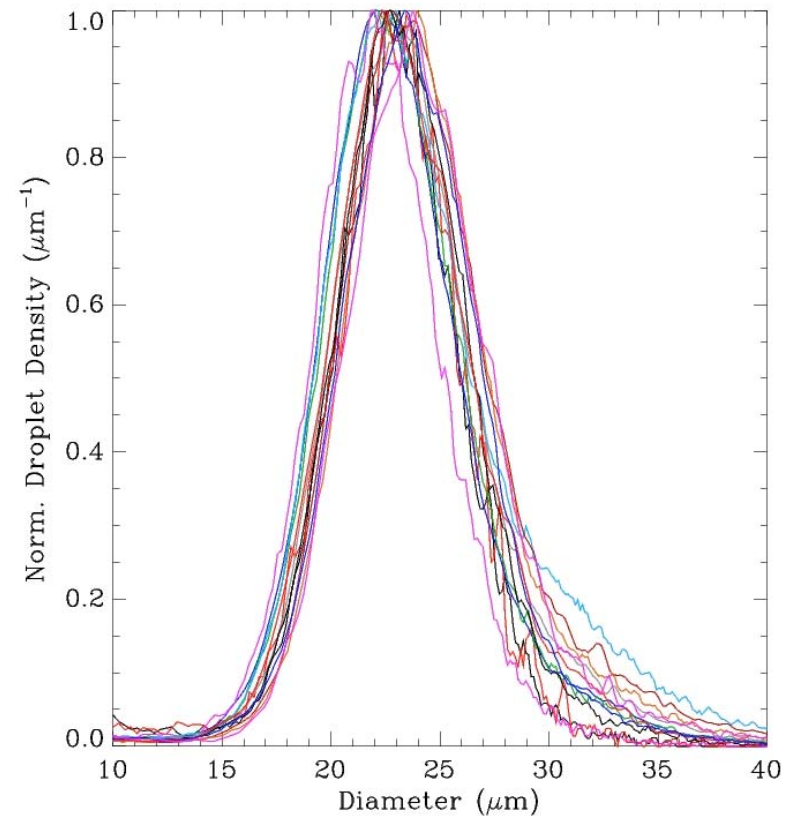
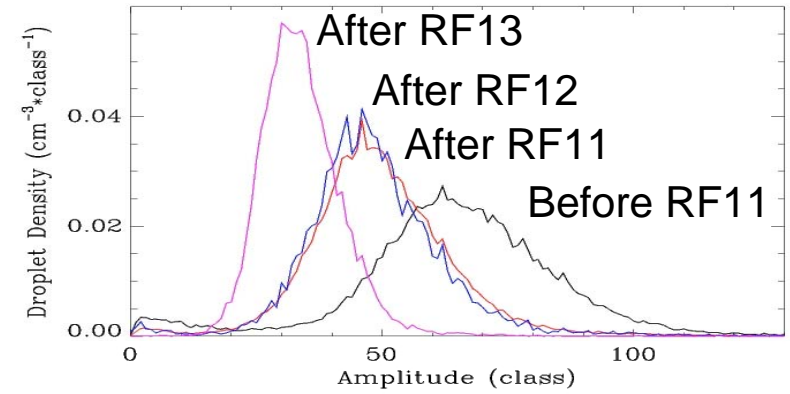
# Fast-FSSP Calibration

- CALIB/ca0802/080130.1D345000
- VOCALS/po0823/173247.4D350000
- VOCALS/po0825/143953.9D3572000
- VOCALS/RF04/143247.7D390000
- VOCALS/RF06/153031.6D360000
- VOCALS/RF07/152307.8D350000
- VOCALS/RF08/153614.9D340000
- VOCALS/RF09/150553.1D345000
- VOCALS/RF10/143440.9D330000
- VOCALS/ca0803/132714.8D340000
- VOCALS/RF11/214823.8D336000
- VOCALS/ca0804/130009.4D3150000
- VOCALS/RF13/221138.8D395000



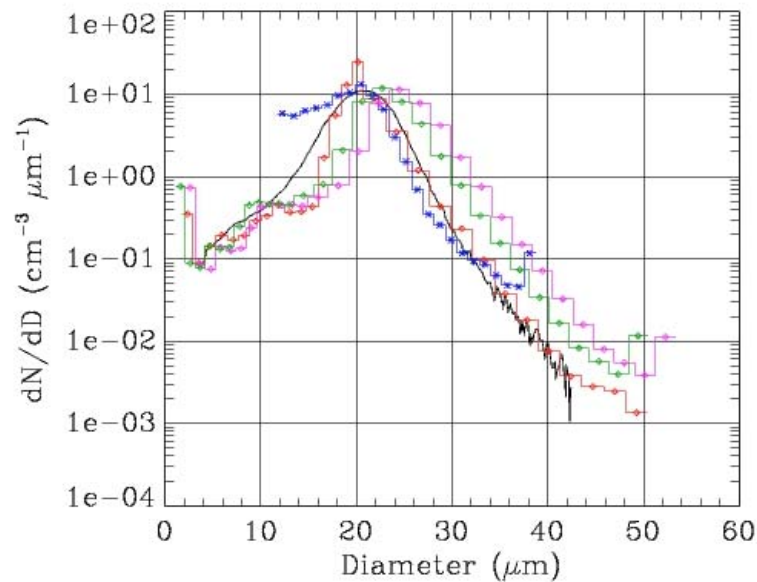
## RICO

- RICO/ca0005/130446.9D3150000
- RICO/po0024/145757.2D3200000
- RICO/hc0502/224319.3D3600000
- RICO/ca0006/110623.0D3100000



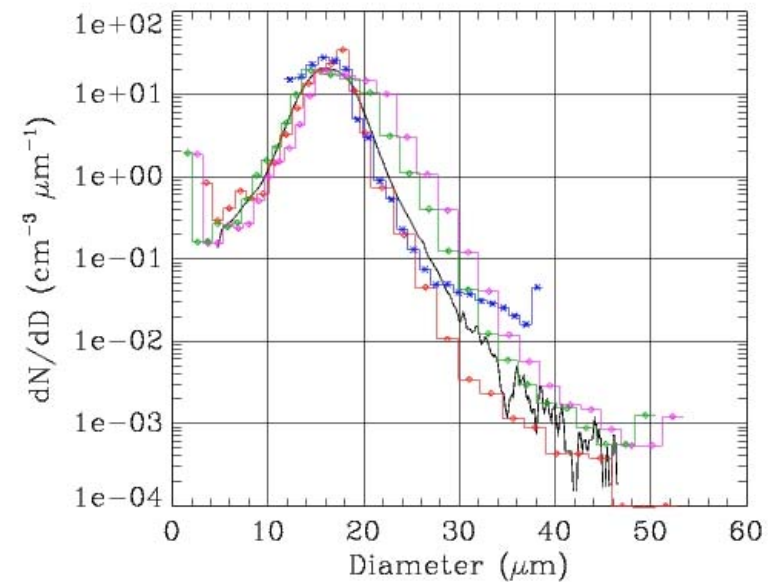
VOCALS - 31/10/08

- RF07/122800.0 (600s) - Fast-FSSP [3.66;42.67]
- RF07/122800.0 (600s) - CDP\_1 ; bins: 2 to 30 [1.75;50.39]
- RF07/122800.0 (600s) - FSSP ; bins: 9 to 31 [11.68;38.70]
- B412/123200.0 (600s) - CDP\_1 ; bins: 1 to 30 [2.08;53.32]
- B412/123200.0 (600s) - CDP\_r3\_1 ; bins: 1 to 30 [1.09;50.44]



VOCALS - 04/11/08

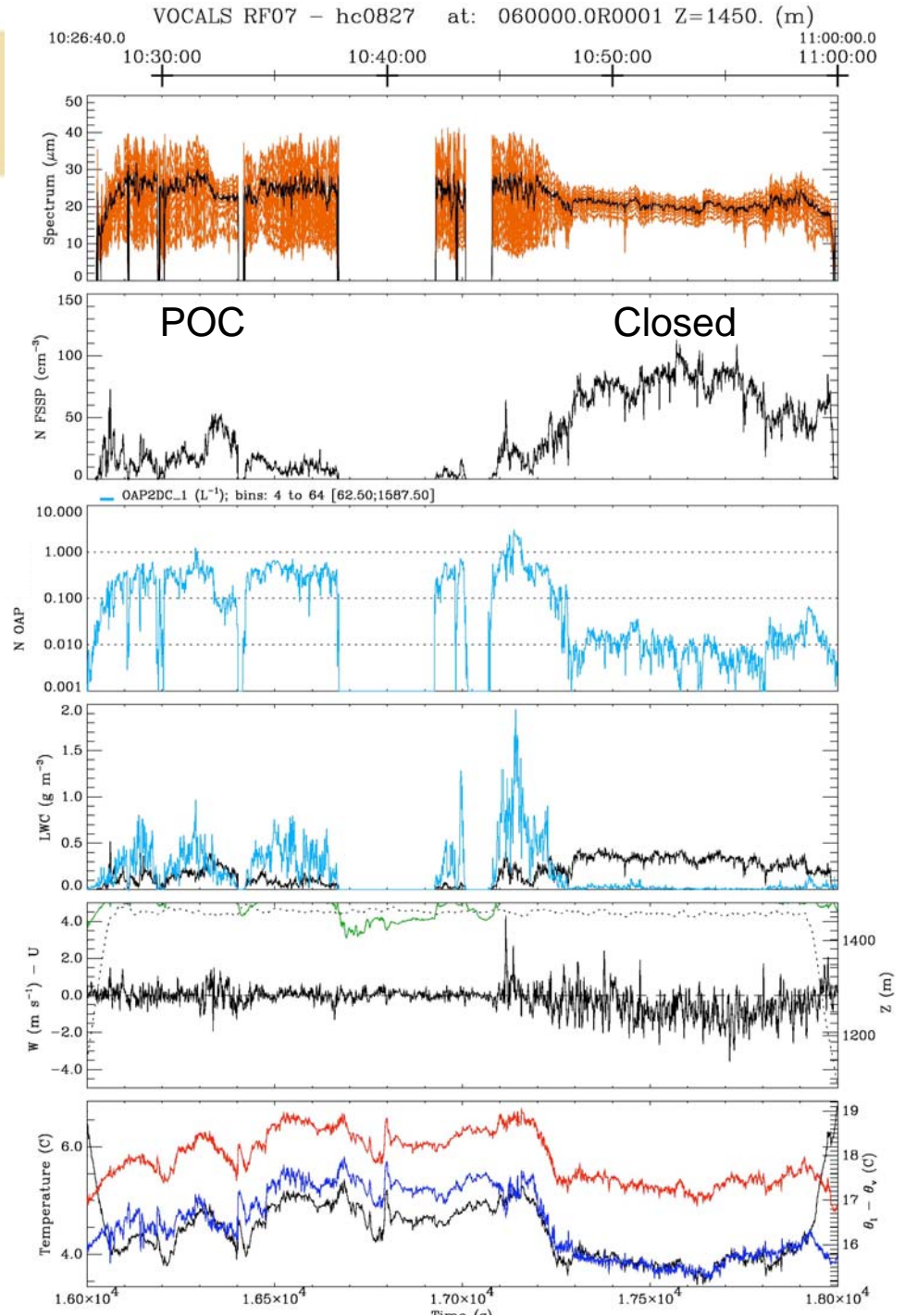
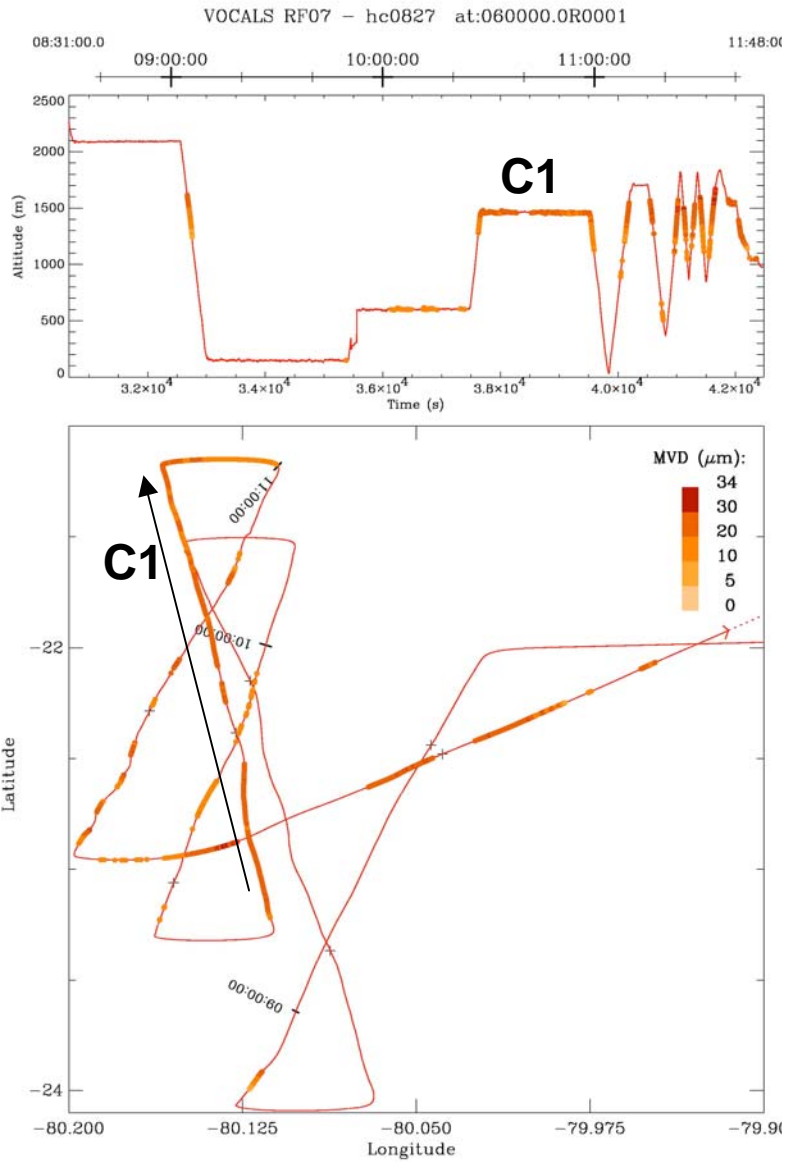
- RF09/122625.0 (600s) - Fast-FSSP [4.32;46.84]
- RF09/122625.0 (600s) - CDP\_1 ; bins: 2 to 30 [2.94;52.67]
- RF09/122625.0 (600s) - FSSP ; bins: 9 to 31 [11.68;38.70]
- B414/123200.0 (600s) - CDP\_1 ; bins: 1 to 30 [2.08;53.32]
- B414/123200.0 (600s) - CDP\_r3\_1 ; bins: 1 to 30 [1.09;50.44]

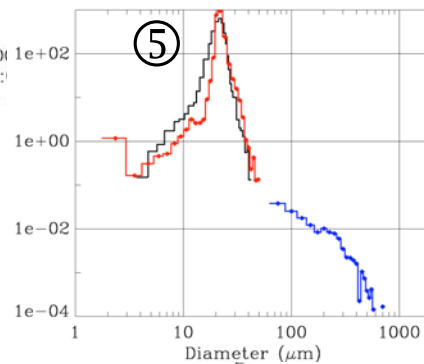
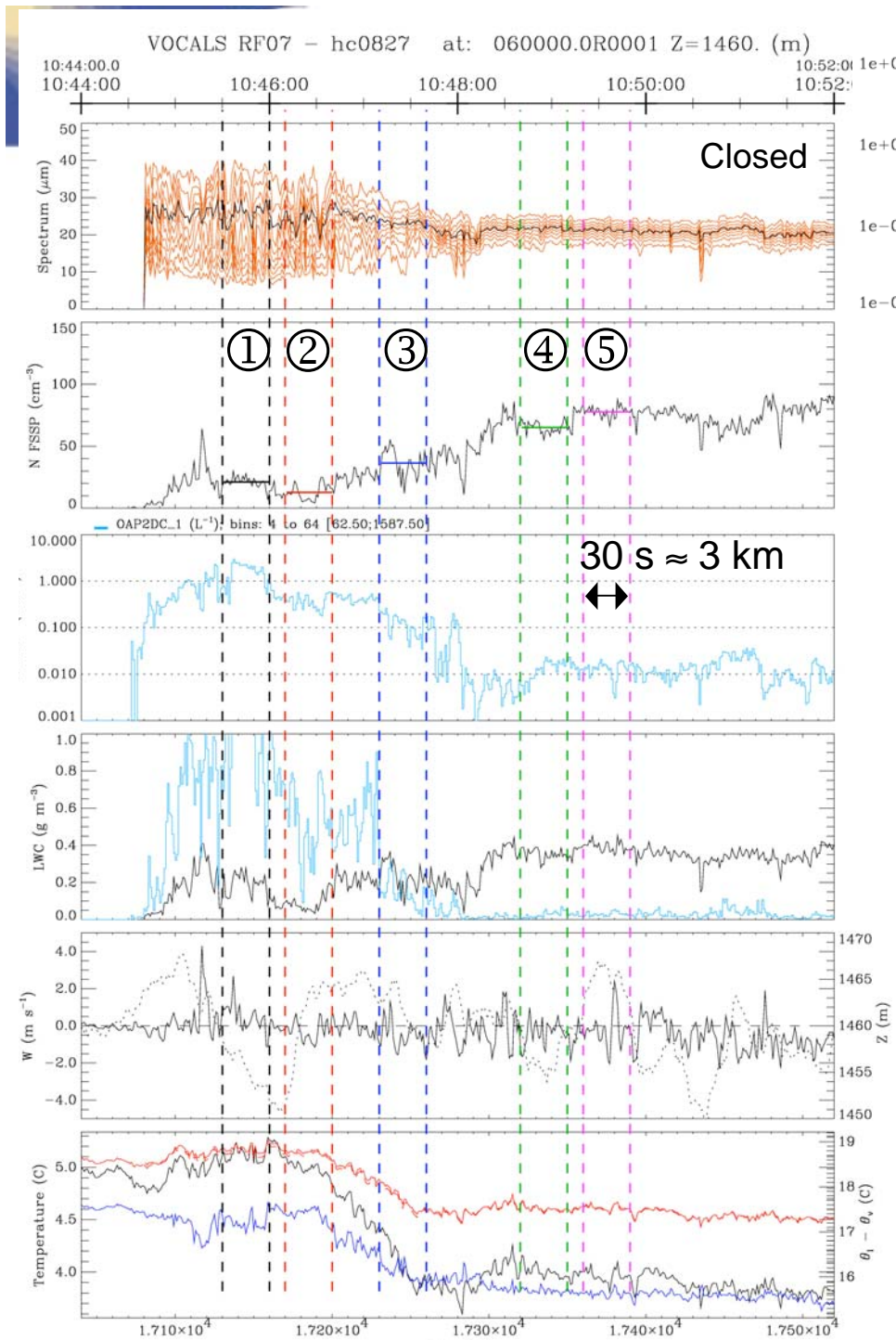


- There is **now** a good agreement between the different C130 probes except the FSSP-100
- Comparison with BAE146 CDP:
  - Agreement for droplet number concentration
  - But discrepancy for the size distributions and then for the LWC
- What about the G1 intercomparison flights ?
- Are the C130 CDP spectra too narrow ?



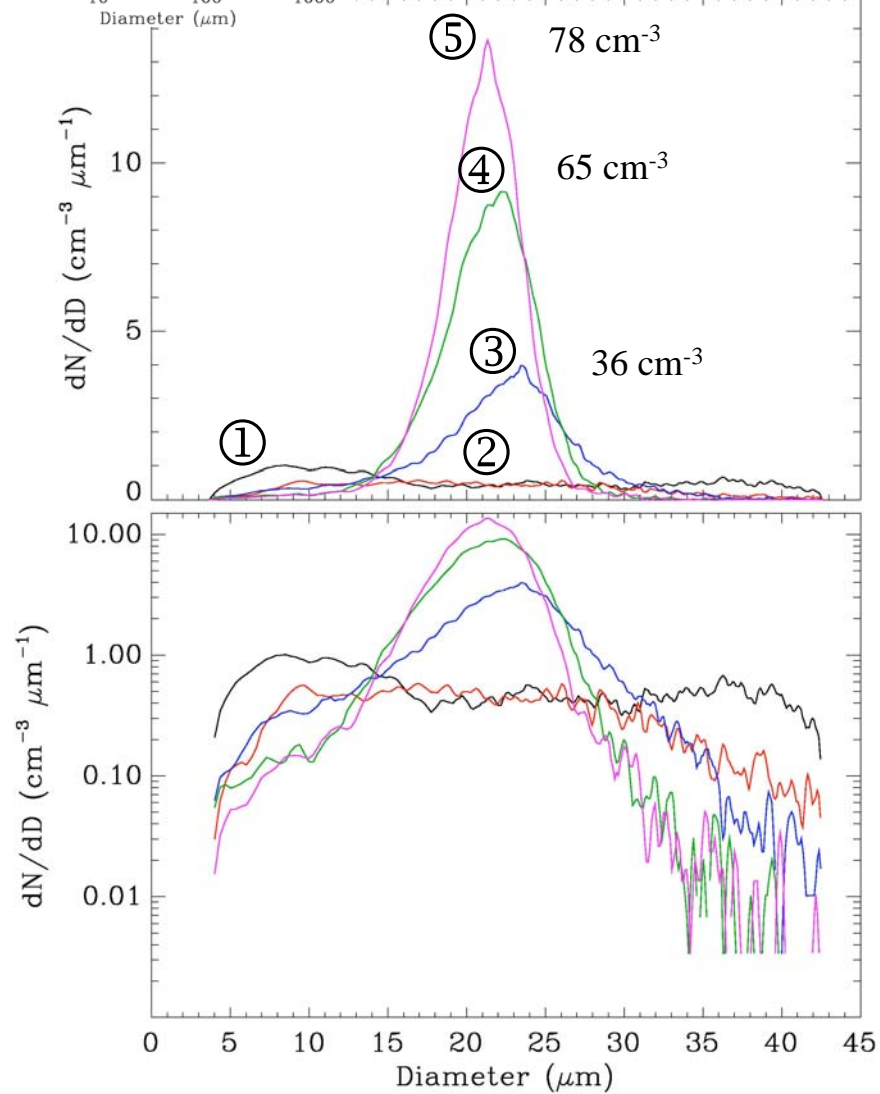
# RF07 - POC



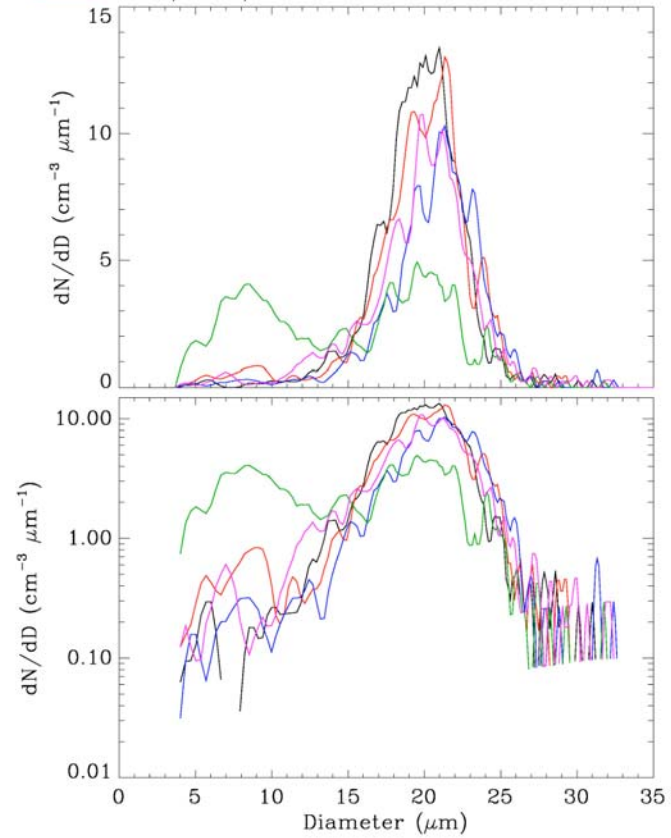
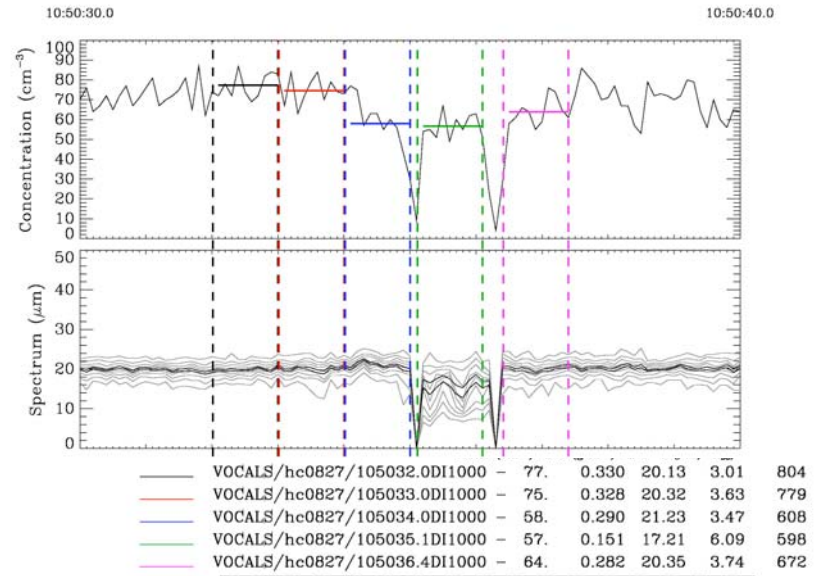
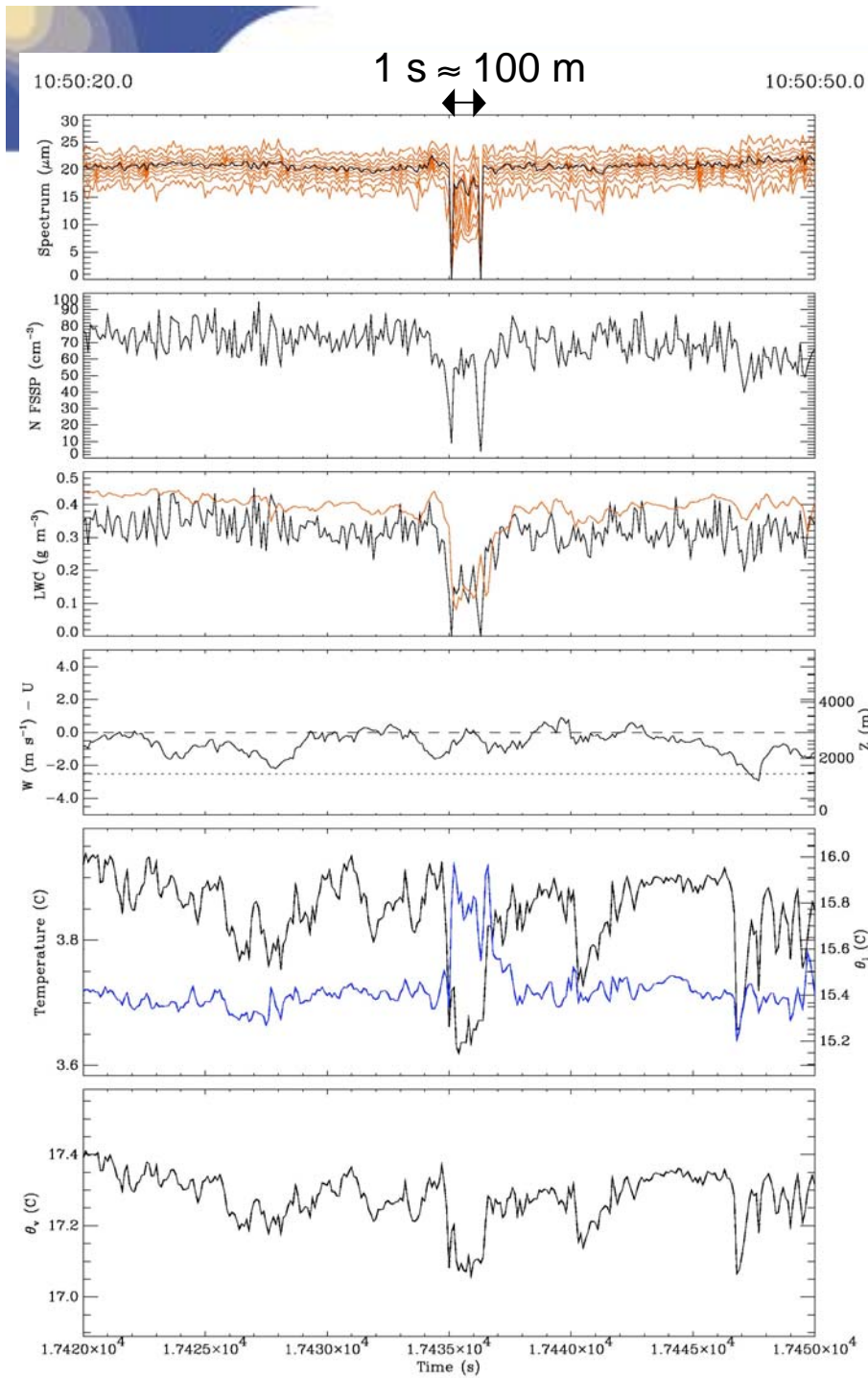


# F07 - C1

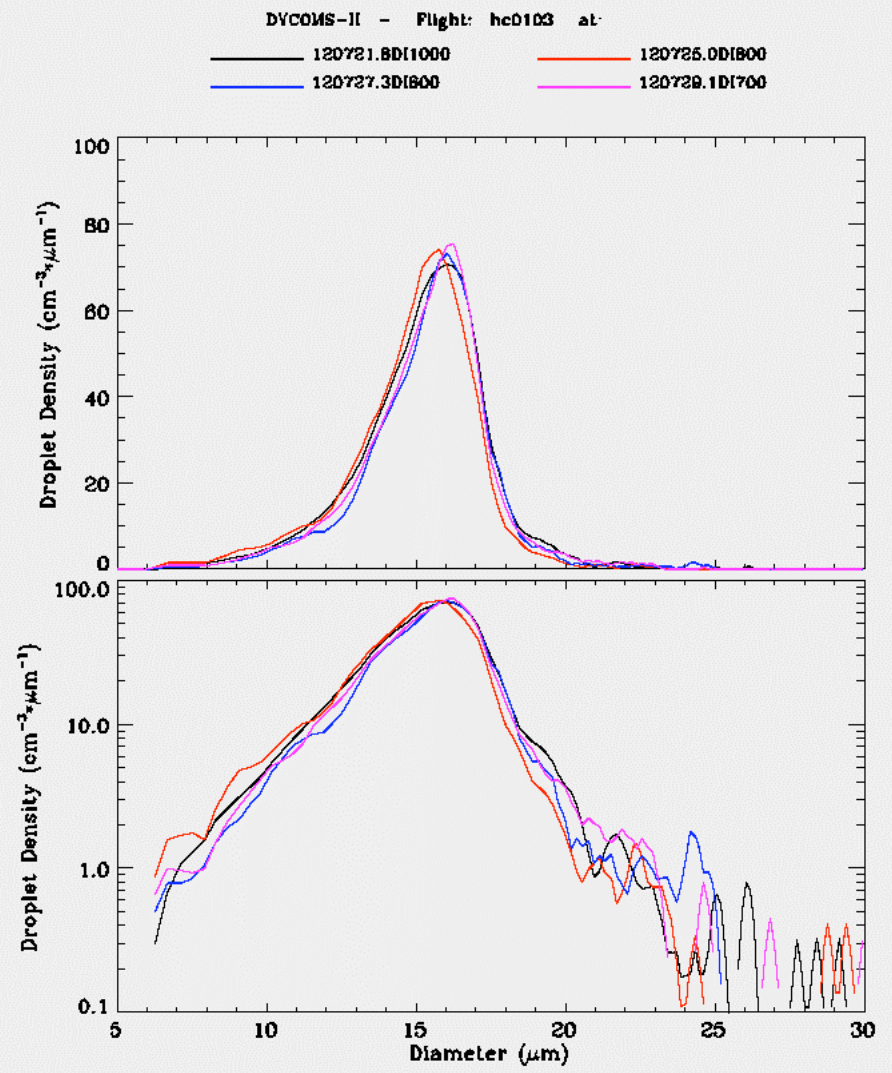
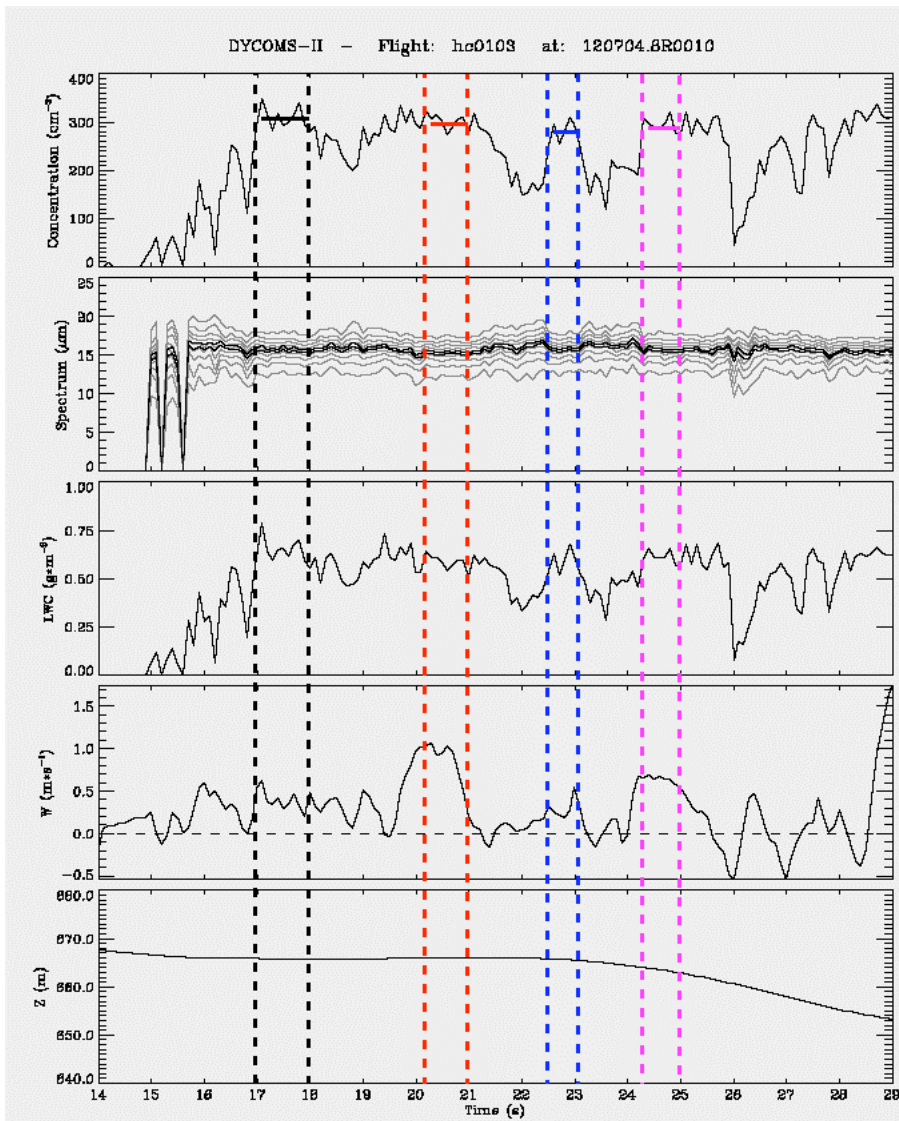
	CDNC ( $\text{cm}^{-3}$ )	LWC ( $\text{g m}^{-3}$ )	MVD $\sigma$ ( $\mu\text{m}$ )	$N_{\text{DOP}}$	
4530.0DI30000	-	21.	0.192	25.92	11.21 662
4610.0DI30000	-	13.	0.091	23.84	8.65 407
4710.0DI30000	-	36.	0.238	23.18	5.49 1166
4840.0DI30000	-	65.	0.350	21.74	3.48 2056
4920.0DI30000	-	78.	0.393	21.31	3.02 2460





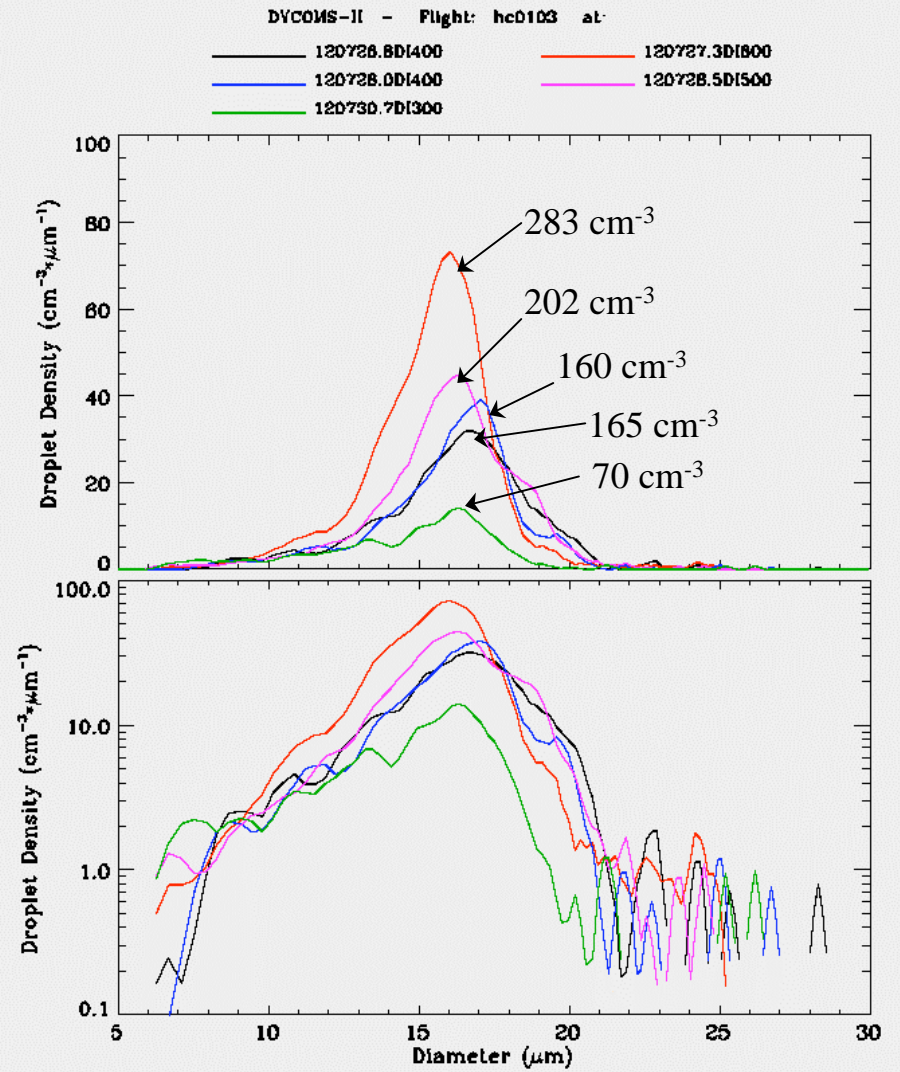
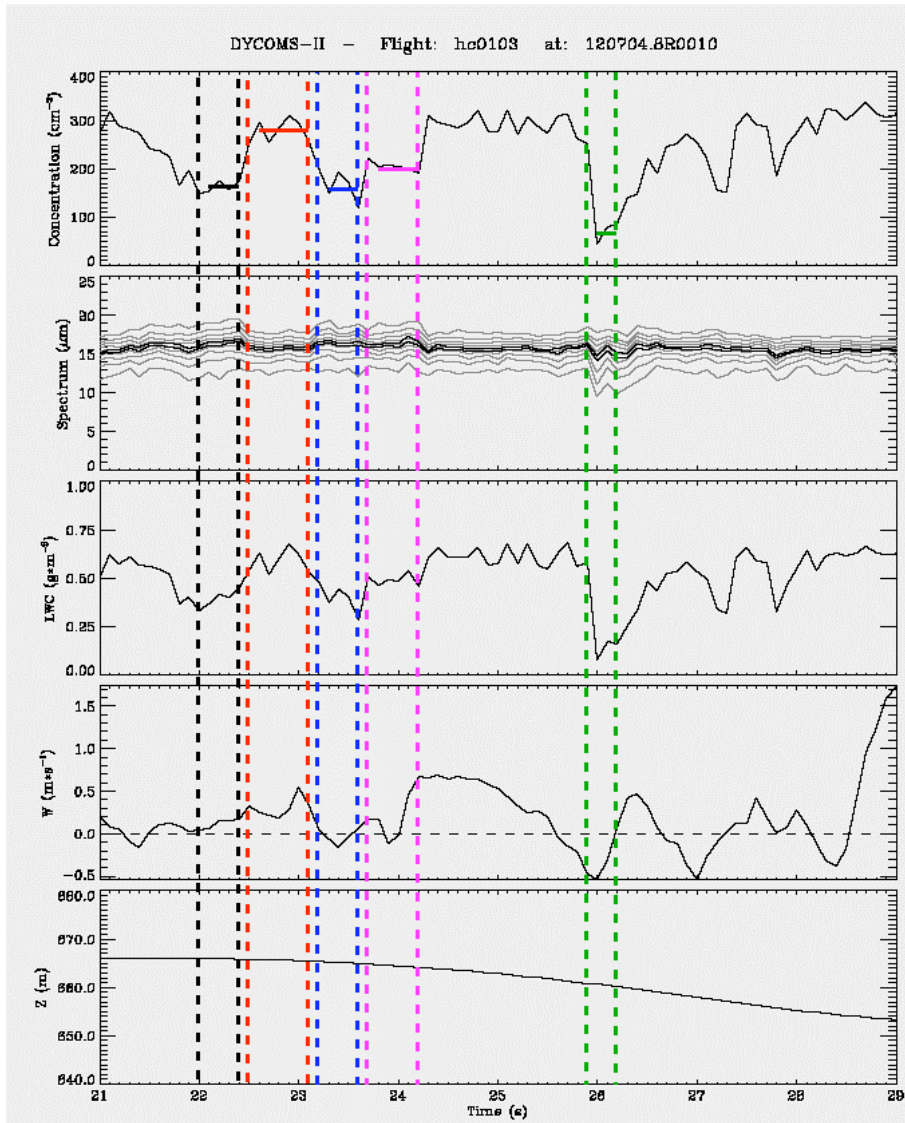


# DYCOMS-II RF03 Cloud top structures

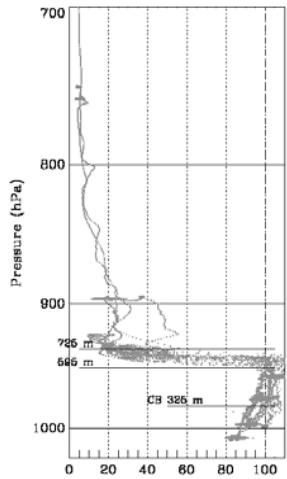




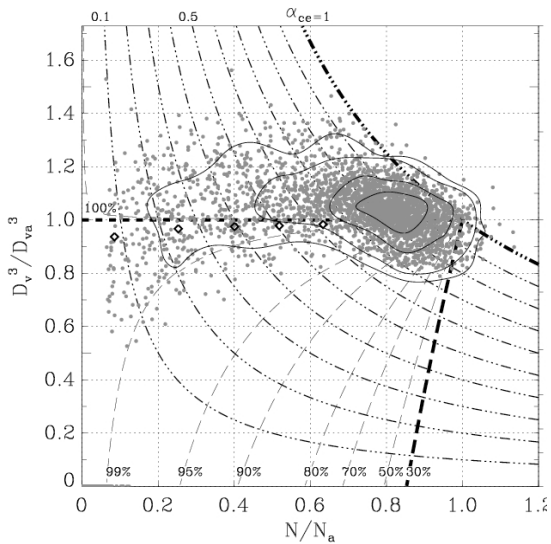
# DYCOMS-II RF03 - Mixing zone2



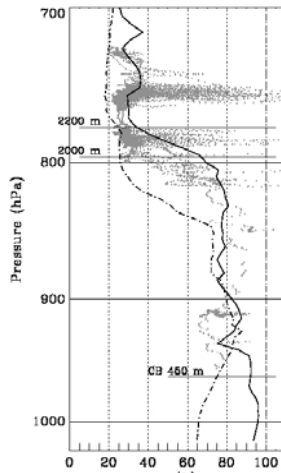
# DYCOMS-II RF03



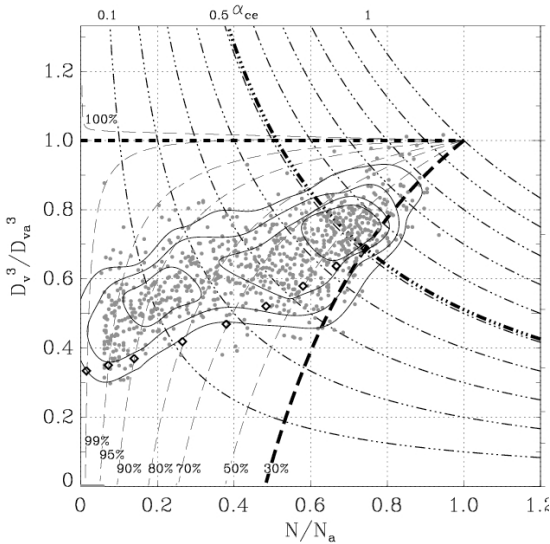
$RH \sim 30\%$   
 $w \sim 0.6 \text{ m/s}$   
 $ql \sim 0.7 \text{ g/m}^3$   
 $D \sim 15 \mu\text{m}$   
 $\tau_t \sim 17 \text{ s}$   
 $\tau_d \sim 0.8 \text{ s}$   
 $\tau_d / \tau_t \sim 0.05$



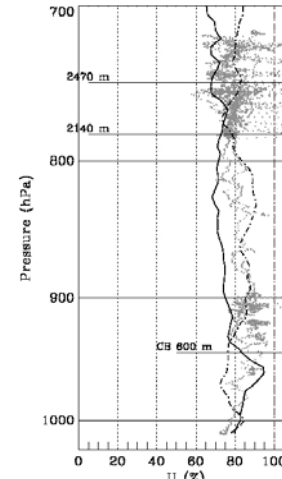
# SCMS-06/08



$RH \sim 30\%$   
 $w \sim 6 \text{ m/s}$   
 $ql \sim 4 \text{ g/m}^3$   
 $D \sim 30 \mu\text{m}$   
 $\tau_t \sim 1.7 \text{ s}$   
 $\tau_d \sim 3.2 \text{ s}$   
 $\tau_d / \tau_t \sim 1.9$



# SCMS-11/08



$RH \sim 80\%$   
 $w \sim 6 \text{ m/s}$   
 $ql \sim 4 \text{ g/m}^3$   
 $D \sim 30 \mu\text{m}$   
 $\tau_t \sim 1.7 \text{ s}$   
 $\tau_d \sim 11.3 \text{ s}$   
 $\tau_d / \tau_t \sim 6.6$

