RICO Goals

- Precipitation effects on droplet probes

No natural cloud droplets in RICO rain shaft

- Small Scale Droplet Clustering

Is it real? Quantifiable? Important?

(Collaborators: Patrick Chuang and Jennifer Small - PDI
Jean-Louis Brenguier and Frederic Burnet - FSSP)

- Entrainment, Mixing and Droplet Growth

Comparing observations with Modeling results

(Collaborators: Steven Krueger, Graham Feingold, Hermann Gerber)

- Mystery Echoes

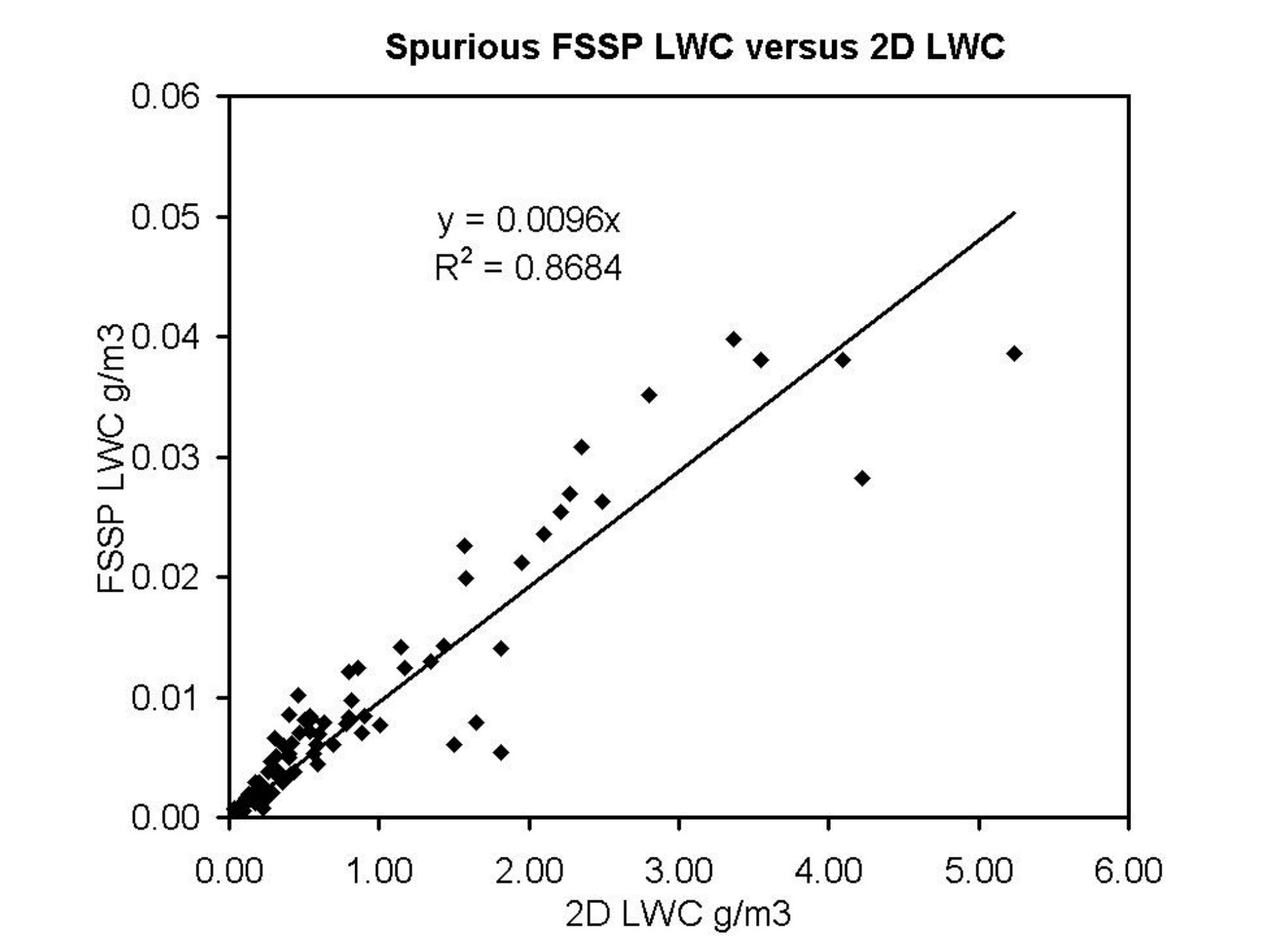
SCMS X-band Bragg or Rayleigh?

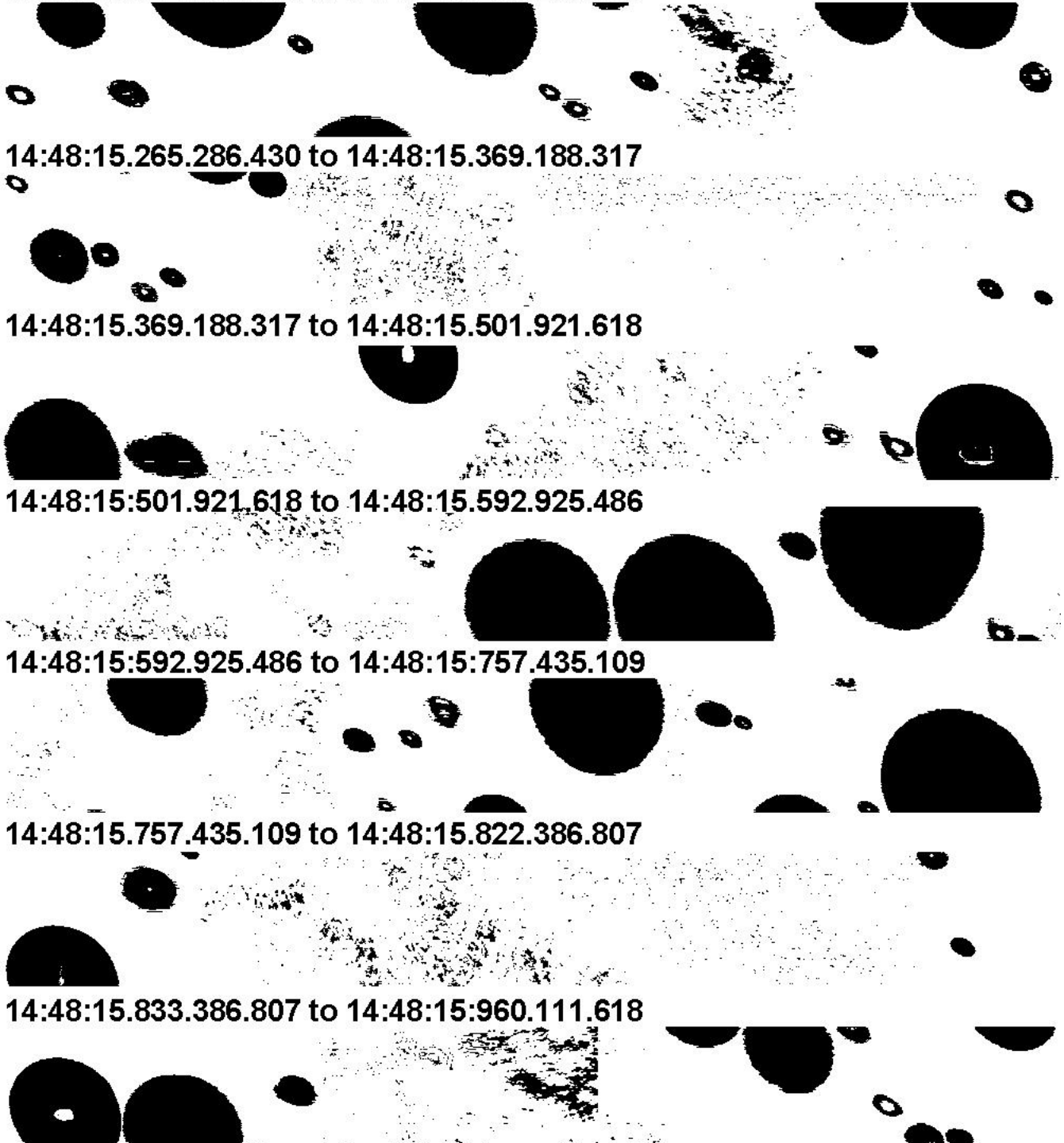
(Collaborator: Charles Knight)

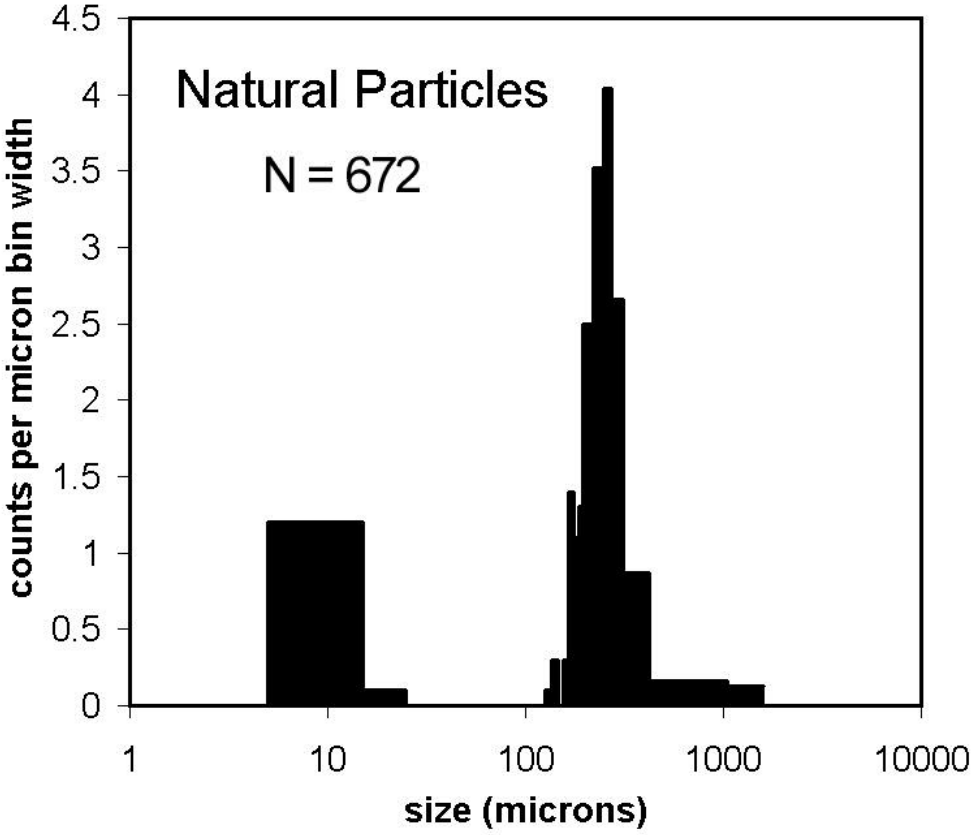
Drop splashing on FSSP

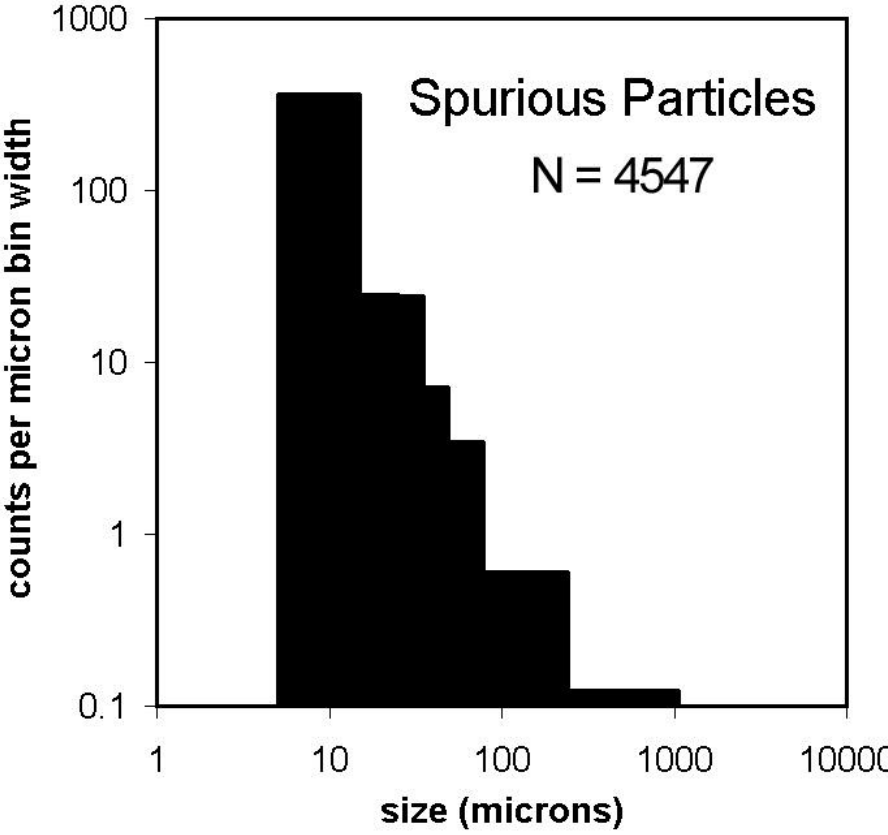
- FSSP LWC well correlated with 2D-C and 2D-P probes.

- 2D-S data shows there are no natural cloud droplets in a RICO rain shaft.


Spurious FSSP LWC versus 2D LWC
y = 0.0096x
R2 = 0.8684
FSSP LWC g/m3
2D LWC g/m3
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.00
1.00
2.00
3.00
4.00
5.00
6.00

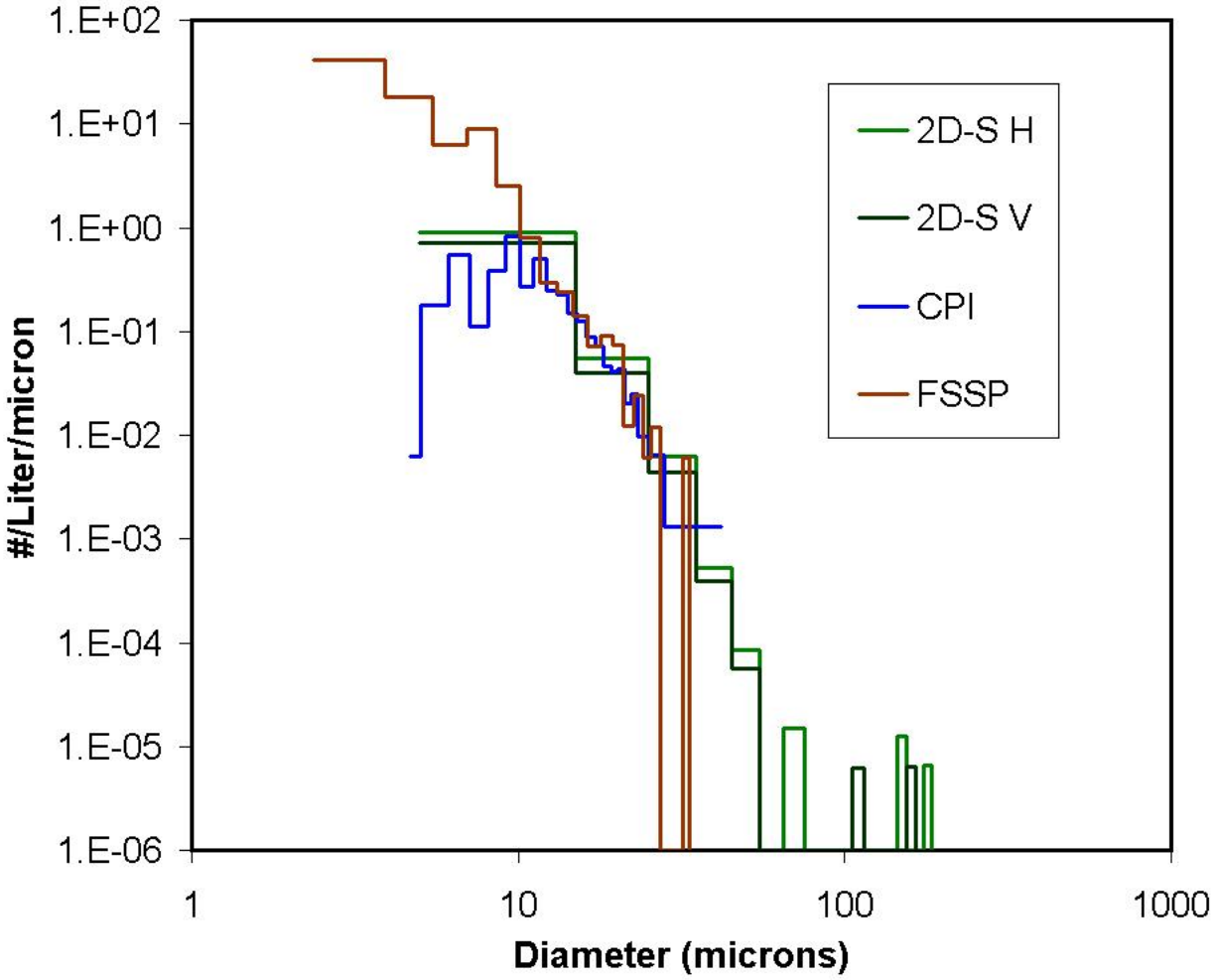

14:48:15.265.286.430 to 14:48:15.369.188.317
14:48:15.369.188.317 to 14:48:15.501.921.618
14:48:15:501.921.618 to 14:48:15.592.925.486
14:48:15:592.925.486 to 14:48:15:757.435.109
14:48:15.757.435.109 to 14:48:15.822.386.807
14:48:15.833.386.807 to 14:48:15:960.111.618


Natural Particles
N = 672
counts per micron bin width
size (microns)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
10
100
1000
10000


Spurious Particles
N = 4547
counts per micron bin width
size (microns)
1000
100
10
1
0.1
1
10
100
1000
10000

Ultra Giant Nuclei Measurements

- The 2D-S may prove useful for measuring UGN concentrations.
- 2D-S appears to detect 10 micron droplets
- 2D-S detects a few very large deliquesced drops.



200 microns

- FSSP, CPI, and 2D-S particle size distributions averaged over the big circle flown at 1000 feet from 12:09:30 to 12:44:30 on 1-23-2005.