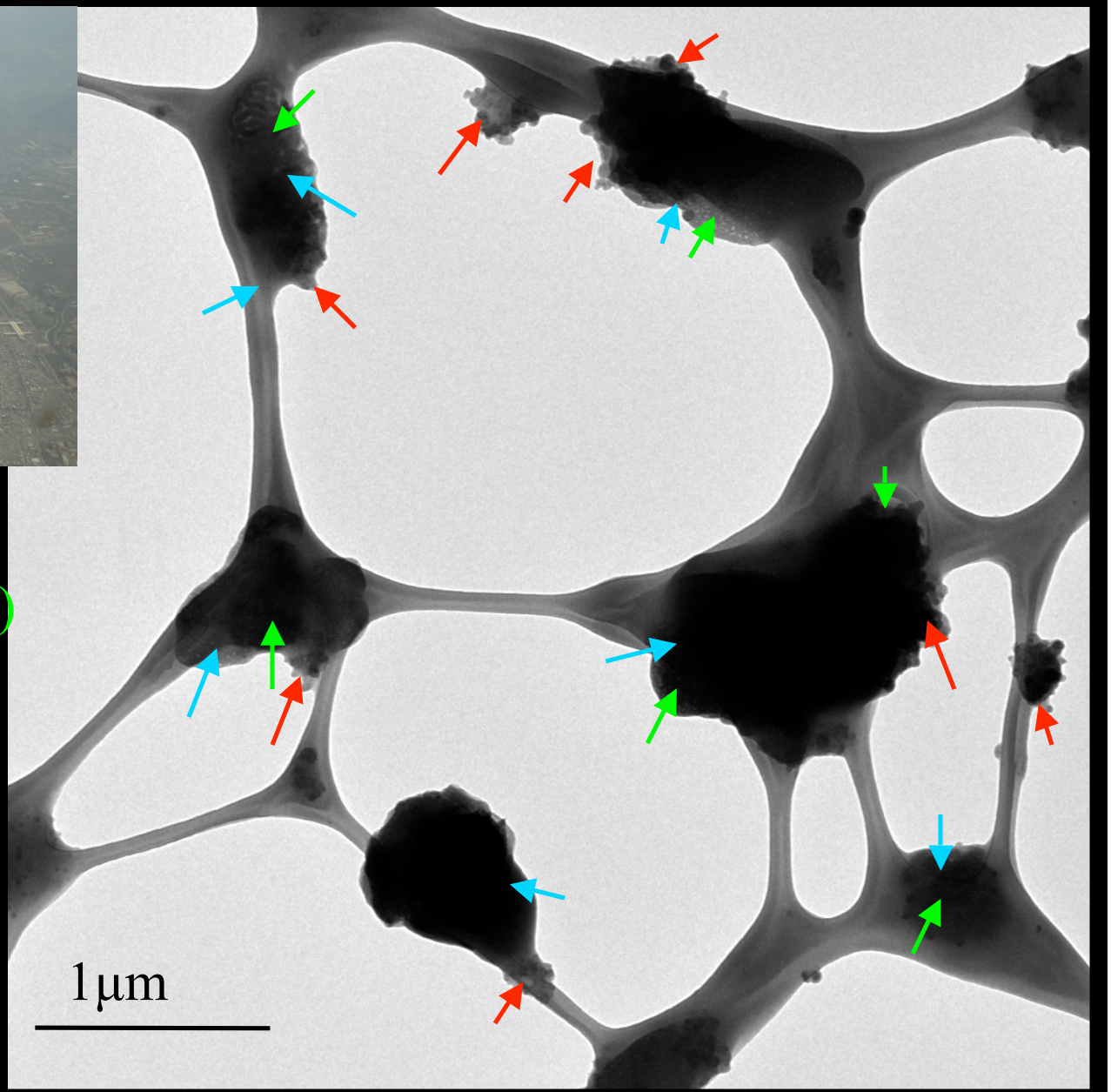
City Haze: Many internally mixed particles of soot, AS, and OM

Ammonium sulfate (AS)

Organic matter (OM)

Soot

Sampling: 3/17 21:43



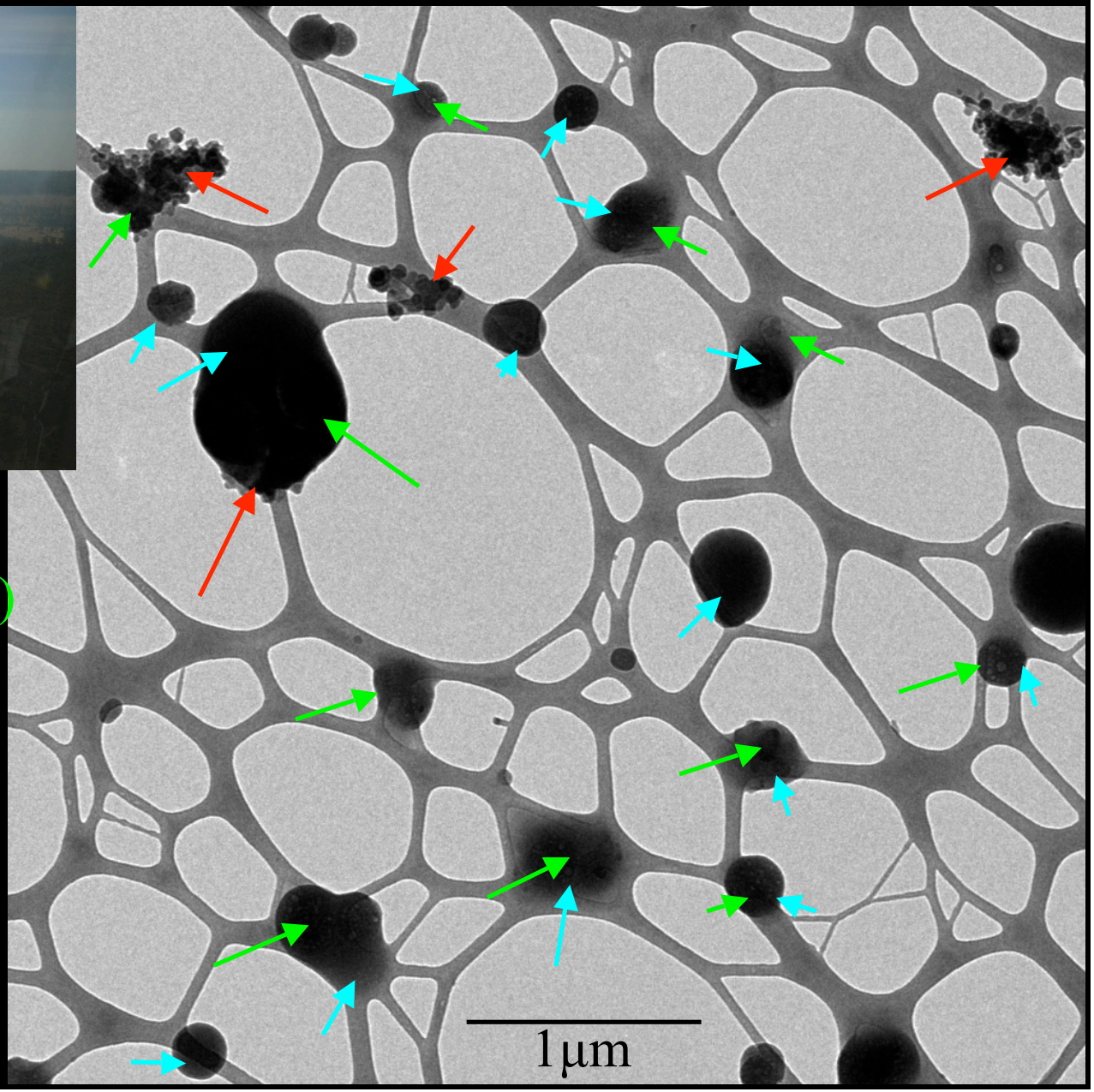
Fire: externally mixed particles of tar balls (spherical, organic), AS, and soot

Ammonium sulfate (AS)

Organic matter (OM)

Soot

Sampling:3/17 17:50



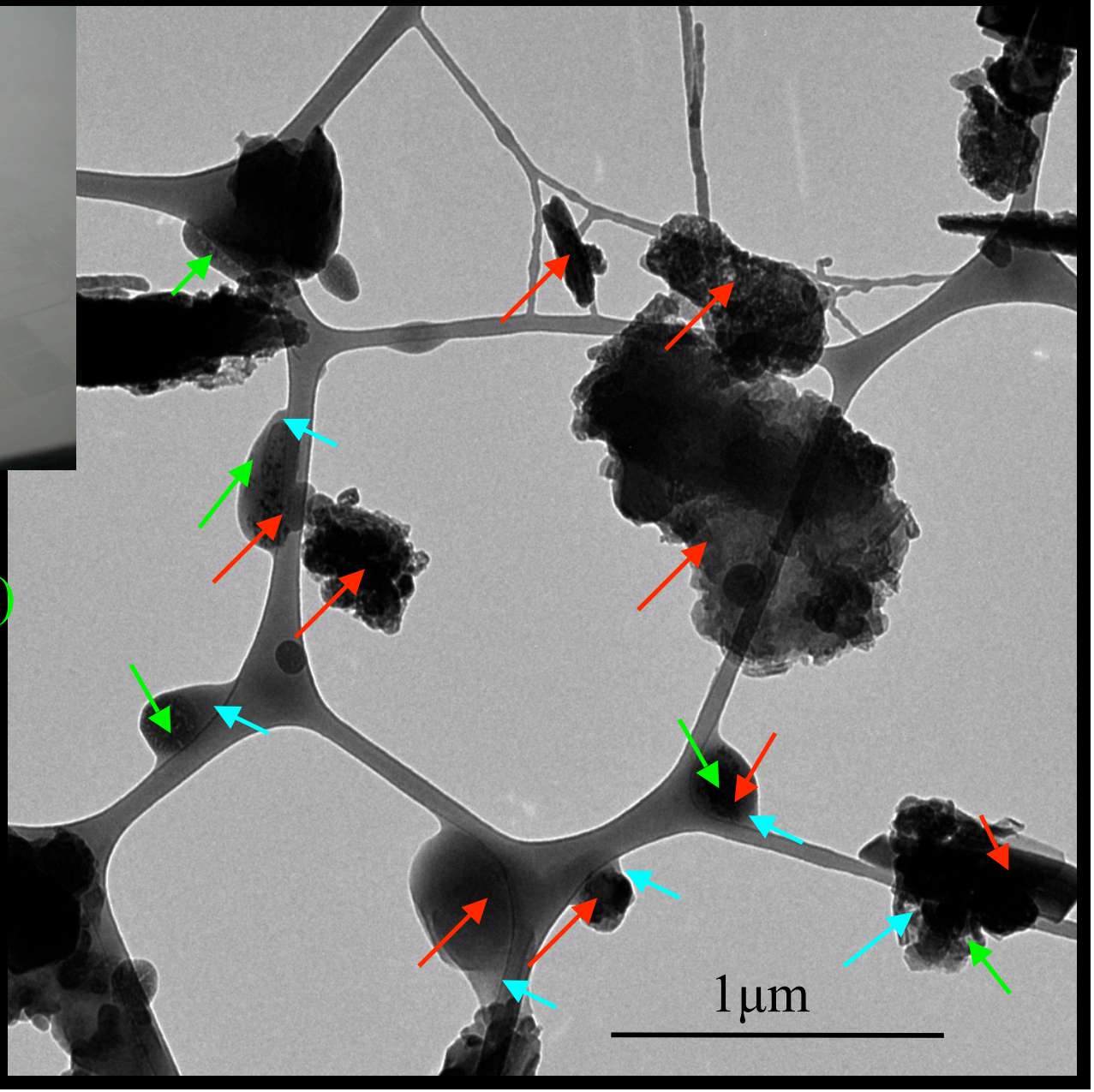
Dust storm: many minerals, some internally mixed with AS and OM

Ammonium sulfate (AS)

Organic matter (OM)

Mineral

Sampling:3/17 22:13



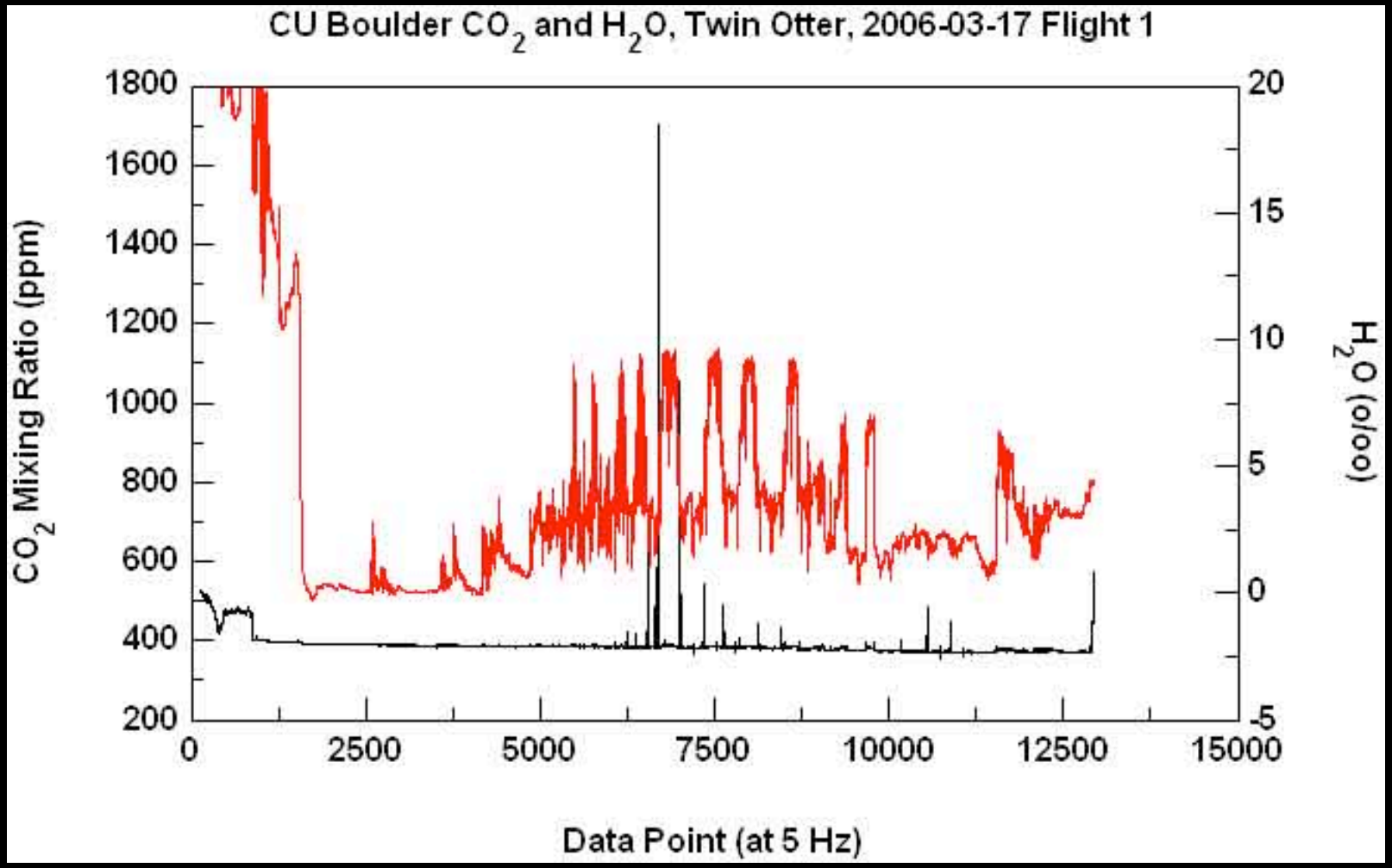
Results to date for Mexico City area aerosol

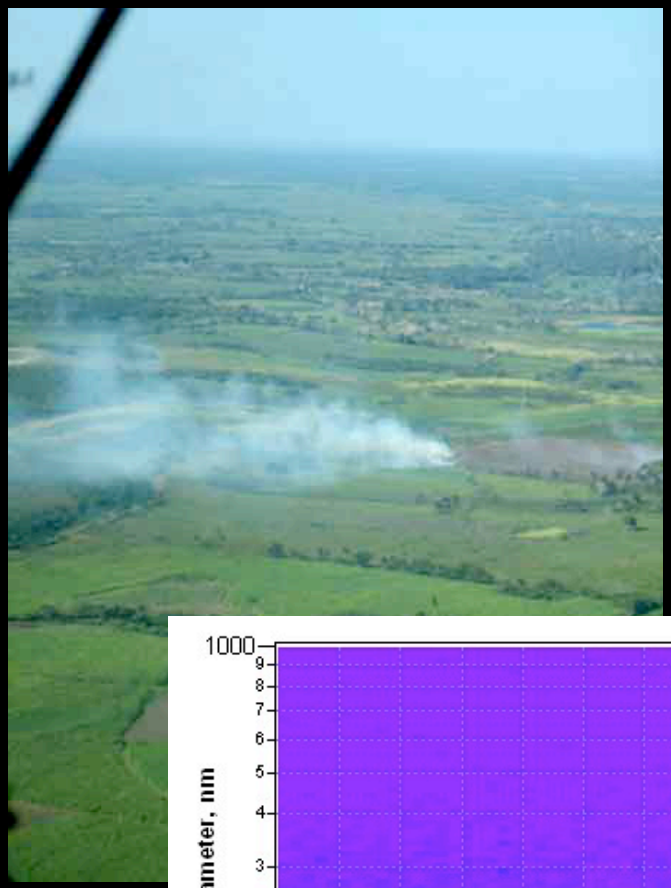
- Most particles are internally mixed
- Organic matter (OM) coats most soot, ammonium sulfate (AS), and some mineral particles
- In emissions from fires, OM also occurs as tar balls
- Soot particles coated by OM/AS are dominant in MC haze

University of Colorado Measurements of Submicron particles, CO_2, and H_2O

- ParticleMetrics, Inc. UHSAS and LiCor Li-7000 installed on Twin Otter on February 27, 2006, flown same day from Ogden UT
- Instruments acquired data on all 25 flights of the USFS Twin Otter in Mexico
- Preliminary data are on the MILAGRO web site
- UHSAS – 55-950 nm, 99 bins, 1 second time resolution
- Li-Cor – CO_2 and H_2O at 5 Hz for most flights, very high resolution
- Final data will include corrections for saturation effects of particles in small size bins (< 300 nm)

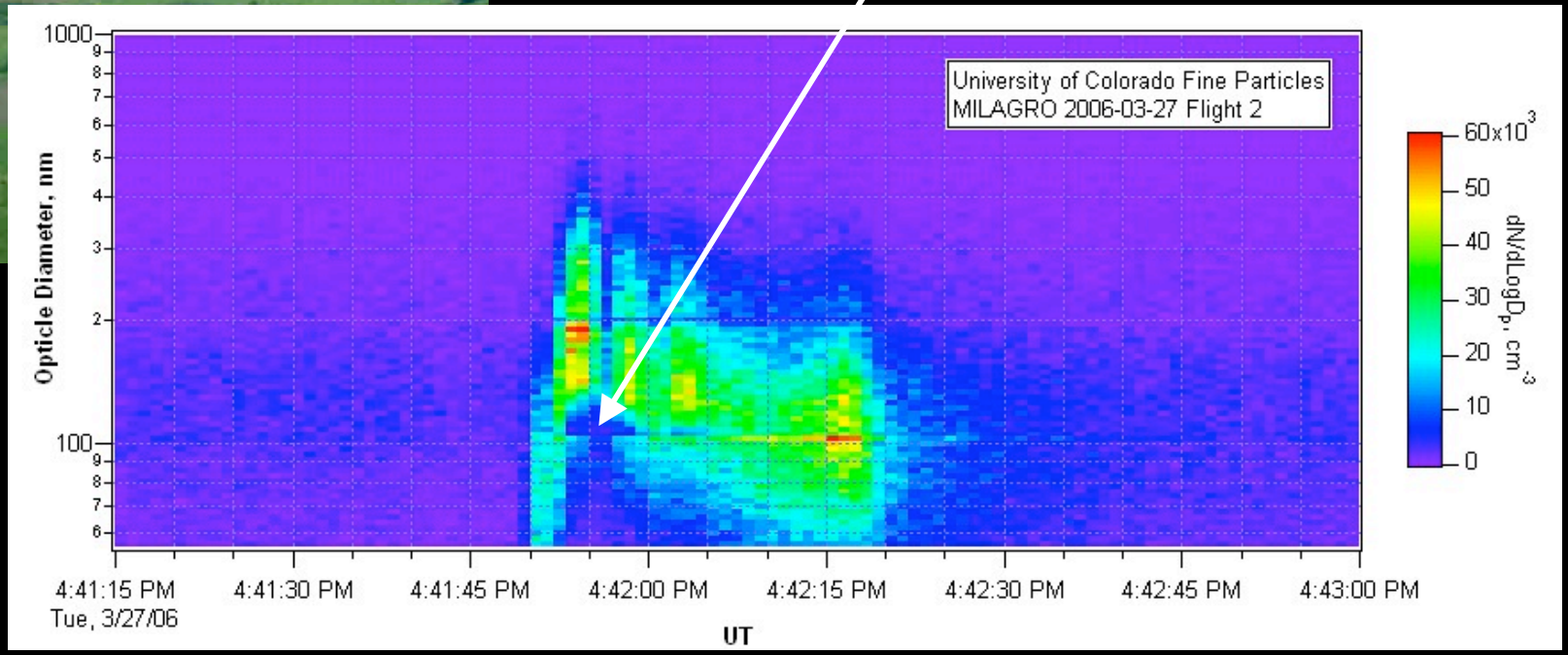
Sample CO_2 and H_2O Flight Series
March 17, 2006, 1st Flight





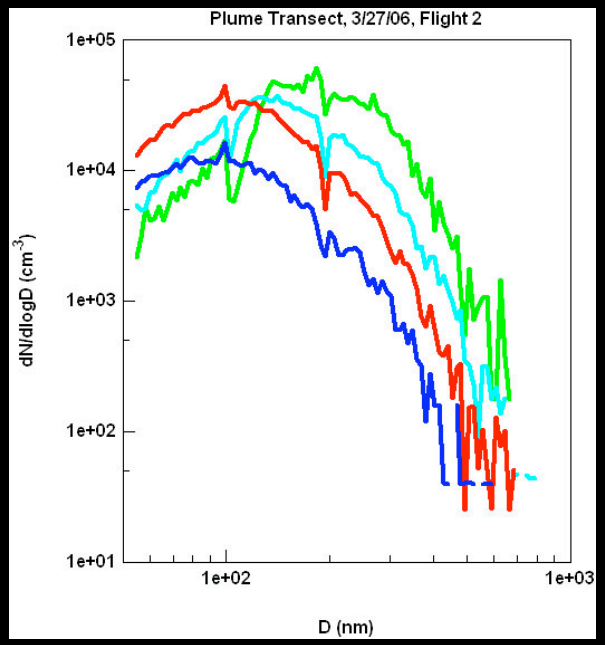
Particle number distributions through dense smoke plume March 27, 2006, 1st Flight

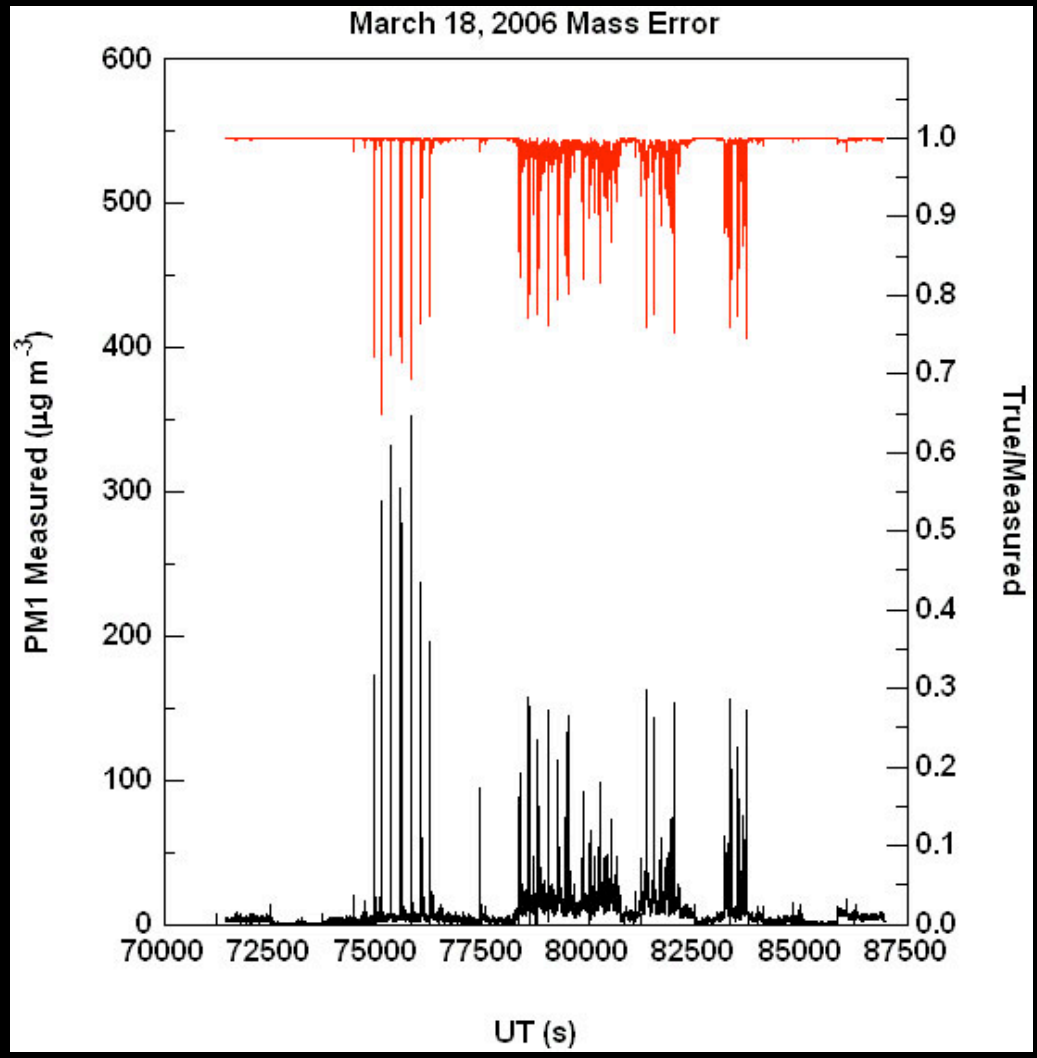
Detector saturation at lowest sizes in highest gain stages



Correcting for Saturation

(see poster by Toohey and Fisher)





Variation of Particle Mass with Humidity in Background Air

(see poster by Fisher and Toohey)