Giant aerosols

Coalescence modeling using complete aerosol spectrum

Differential GPS and pressure perturbations:
    Circles
    Individual cloud studies

Entrainment/detrainment analysis and aerosol processing
    Thermodynamical and chemical tracers

Giant aerosols
Processing through laboratory experiment   9
Processing today   36
Remaining   (20 hours cpu per slide)   450

RICO, C-130, flight   RF17, 19 Jan 2005 16:40:00 - 17:53:00 Z

Coalescence modeling using complete aerosol spectrum

Aerosols calculated to dry size
(CN, RDMA, PCASP, FSSP)

Aerosols to be merged (GNI)

Gillespie model - use as reference
Complete activation
Condensation
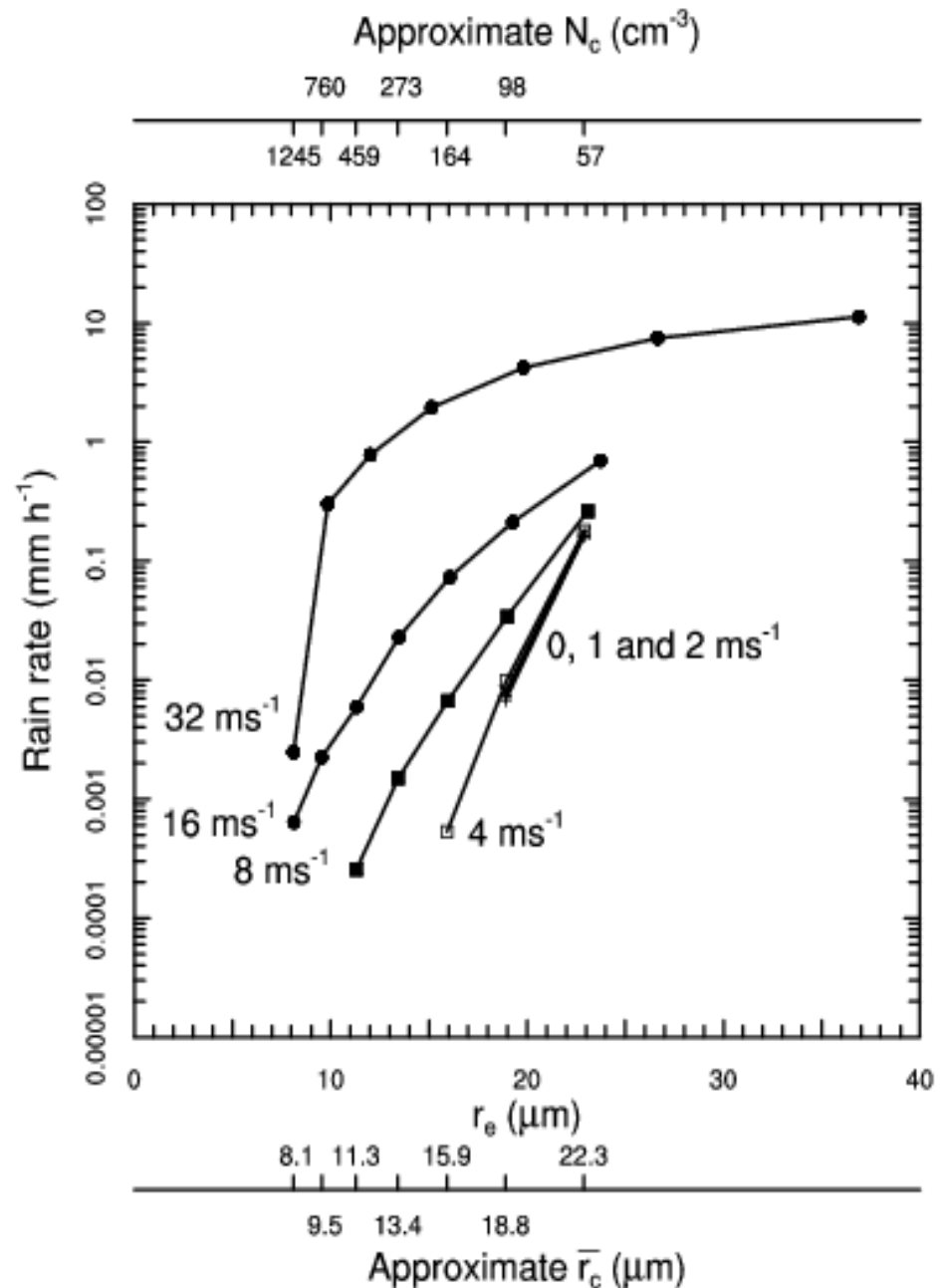Stochastic coalescence – Monte Carlo
Use in its own right, but small volume
Use for comparison study with other models

Coalescence modeling using complete aerosol spectrum
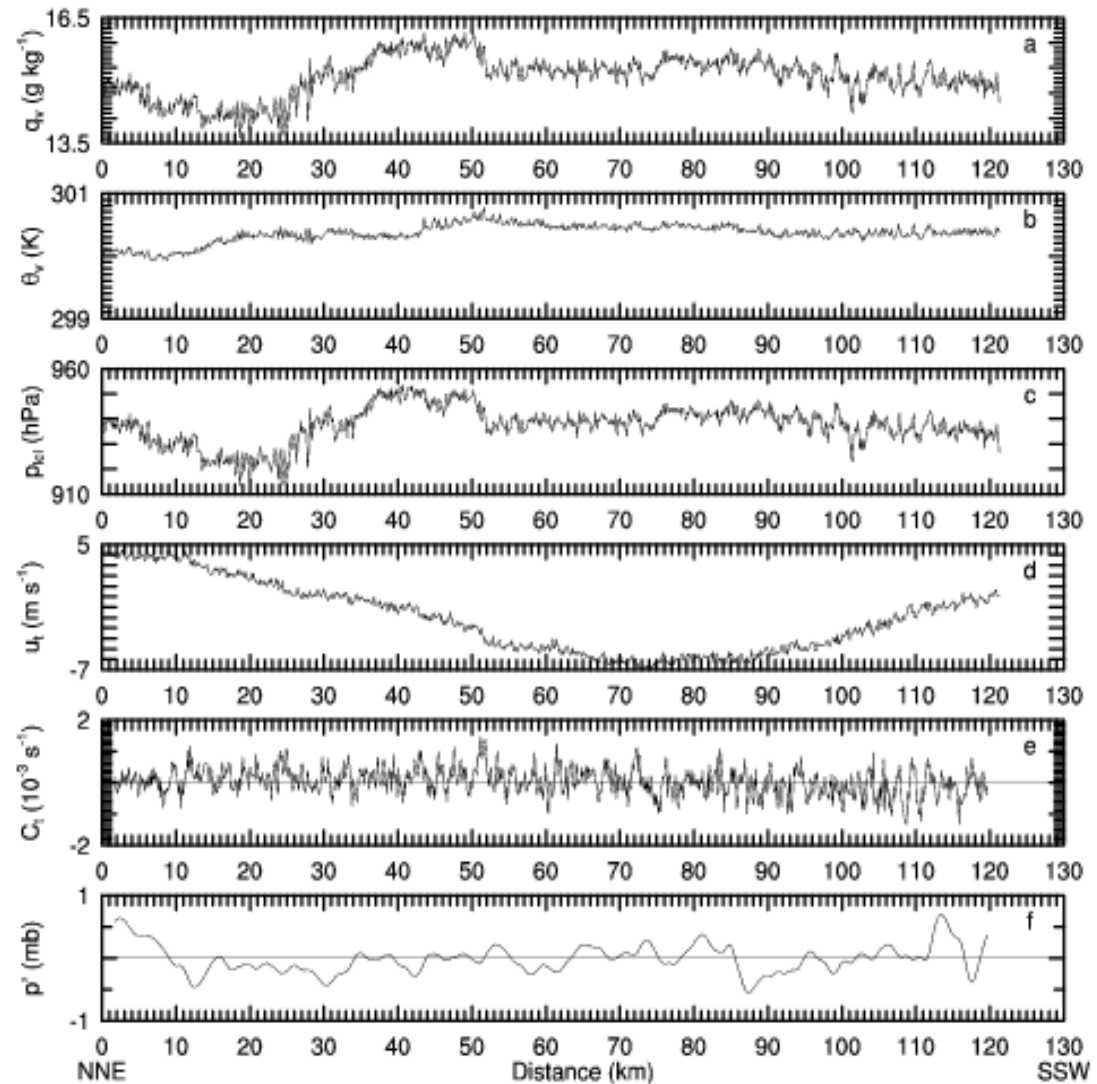
7 small size dist.
7 giant size dist.

Below base to 1200 m higher
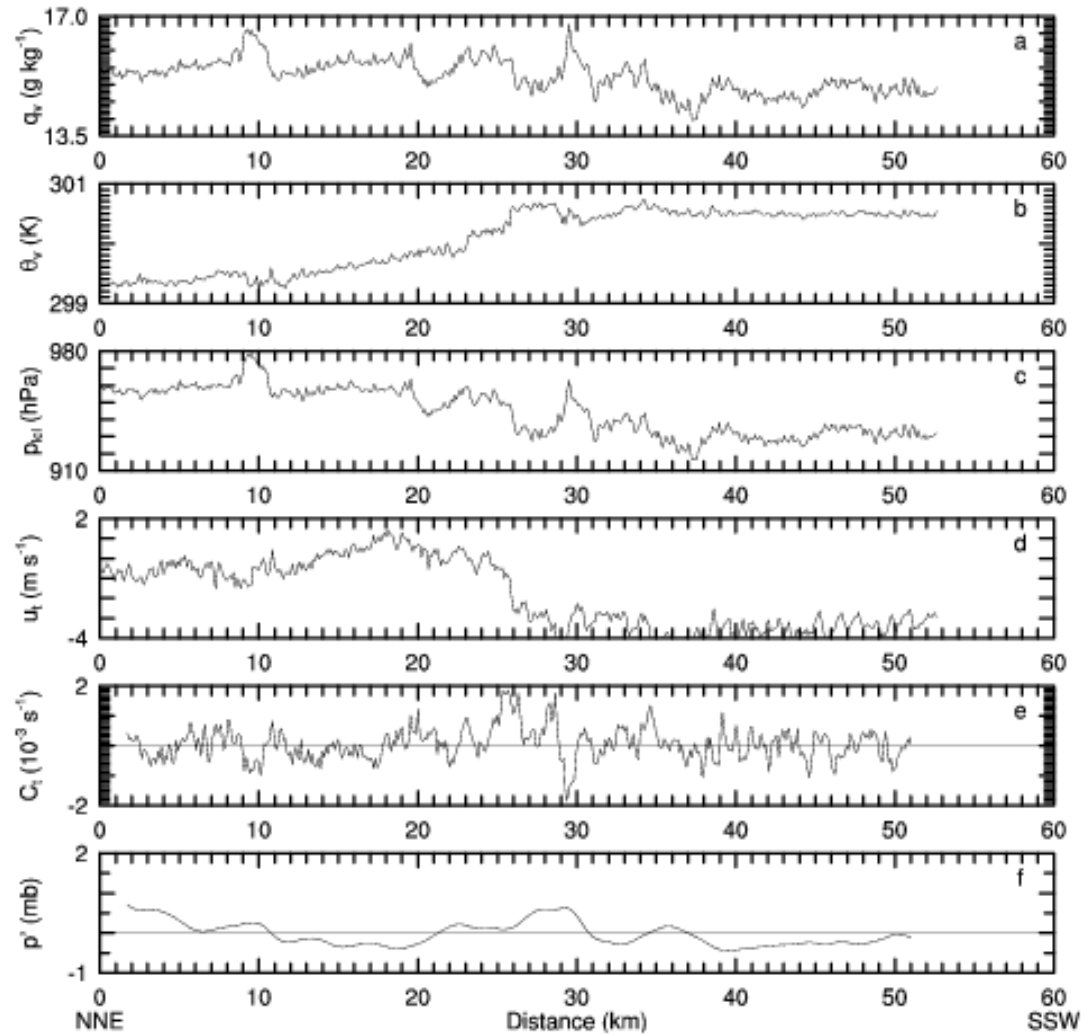
Results 1200 m above base =>

Differential GPS and
pressure perturbations:
(a) Circles
(b) Individual
cloud studies

Circle at 70 m

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Differential GPS and
pressure perturbations:
(a) Circles
(b) Individual
cloud studies

Surface leg near
cloud band RF17

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Differential GPS and pressure perturbations:
(a) Circles
(b) Individual cloud studies

1900 m leg near cloud band RF17

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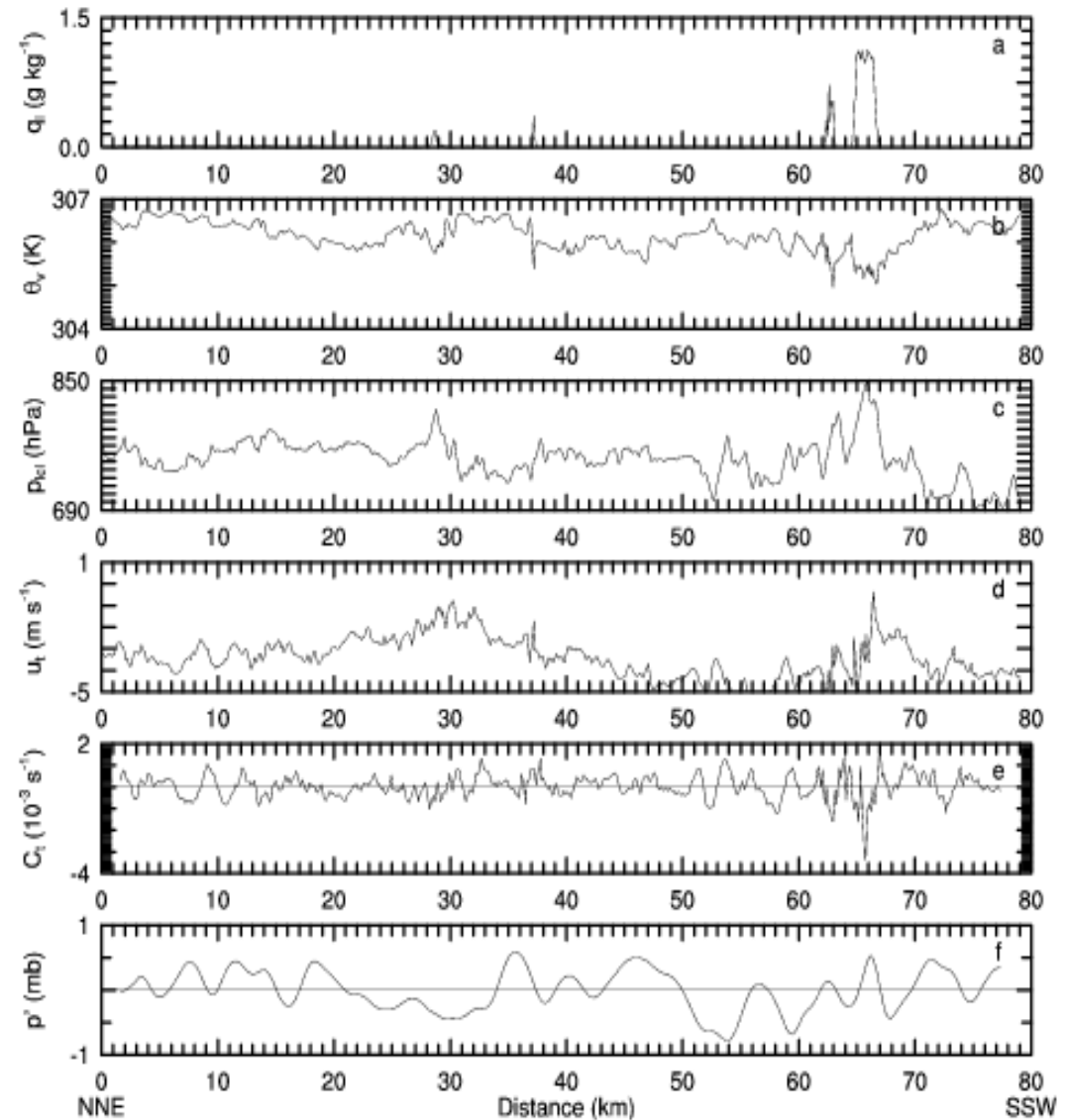
Entrainment/detrainment and aerosol processing

Stith, Campos, Rogers, Jensen - EOL

Thornton - Drexel

Peter, Jason, Blyth - Leeds

Entrainment analysis in both cloudy and clear air (thermodynamics and chemical tracers)
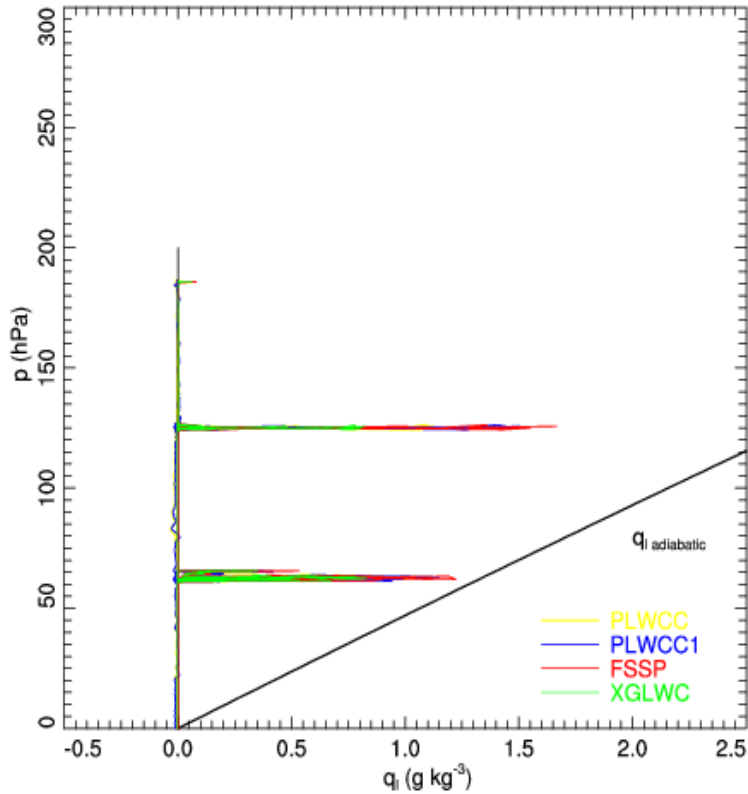
Aerosol size distributions in
  Boundary layer
  Clear air (not recently cloud processed)
  Cloudy air
  Clear air (recently detrained air)

Predict aerosol size distribution in recently detrained air

RICO, C-130, flight RF17, 19 Jan 2005 16:47:00 - 17:40:00 Z

Entrainment/
detrainment and
aerosol processing

RICO, Flight #rf17
01/19/2005, 17:15:00-17:21:00