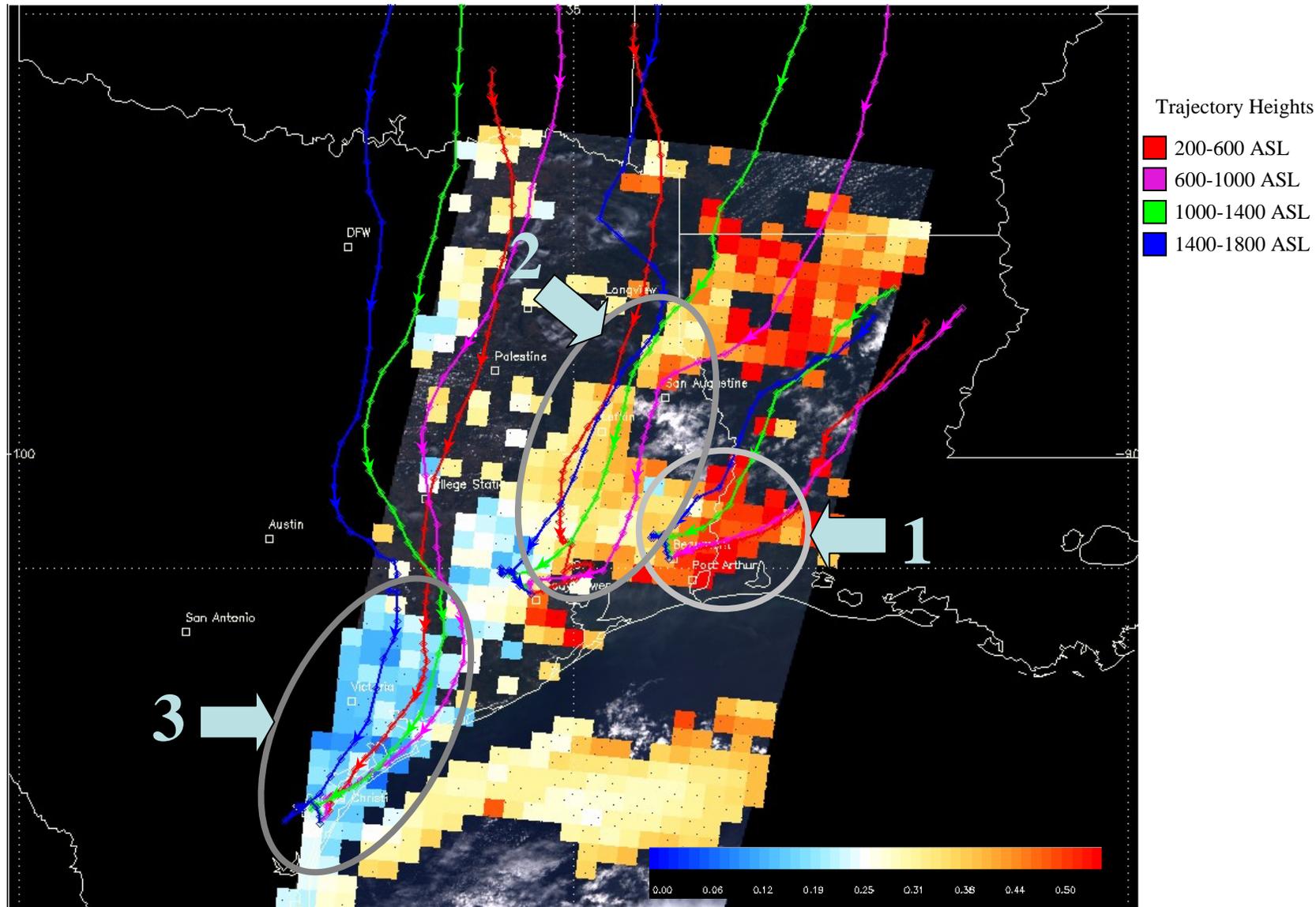


# Interstate Transport of Ozone and Aerosols: The View from Satellites and Models

Michael J. Garay

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# MISR Best Estimate Green Band Optical Depth (V20)

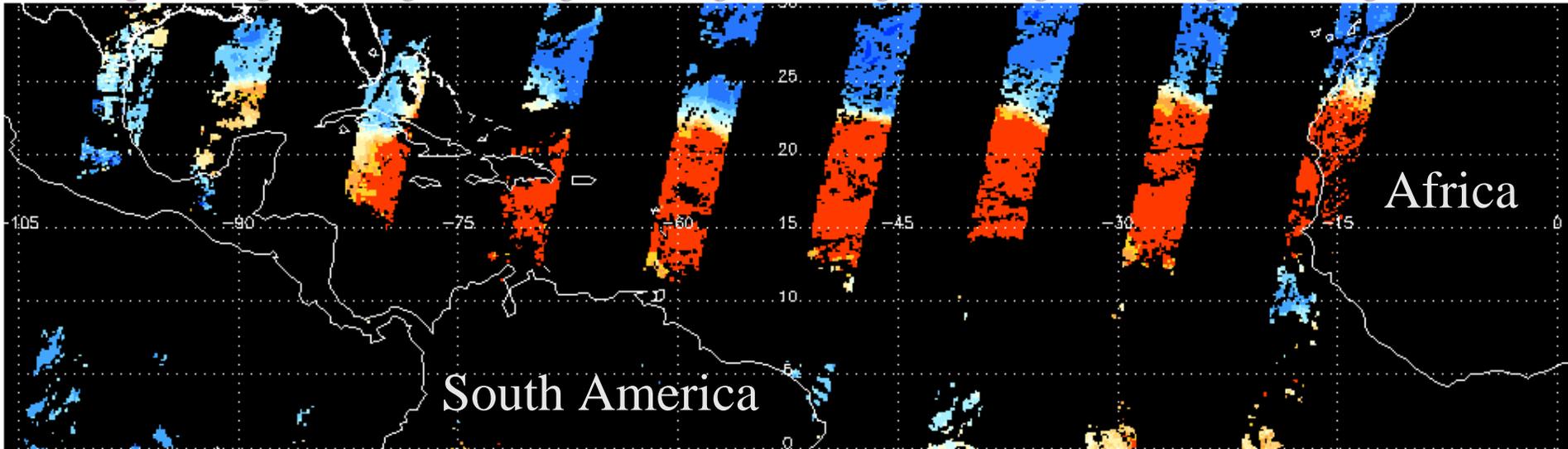


24 and 48 hour back trajectories starting at 1700 UTC 7 September from  
<http://www.etl.noaa.gov/programs/2006/texaqs/traj/>

# Dust from the Sahara Desert Reaches Houston, Texas

United States

Aug 29 Aug 26 Aug 25 Aug 24 Aug 23 Aug 22 Aug 21 Aug 20 Aug 19



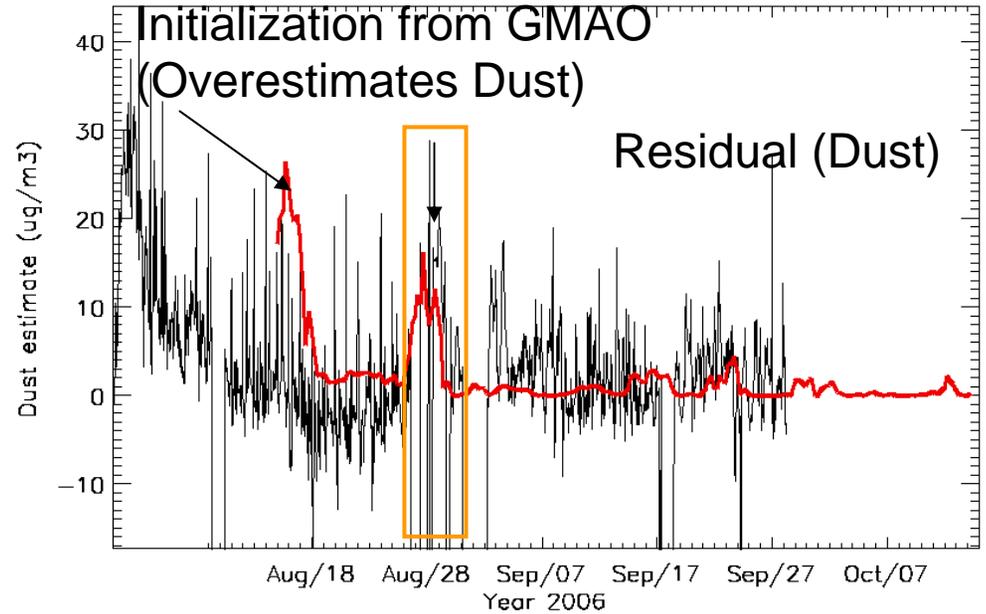
Observations from the Multi-angle Imaging SpectroRadiometer (MISR)  
Instrument on NASA's EOS Terra Satellite

# Dust Event: August 28<sup>th</sup>, 2006

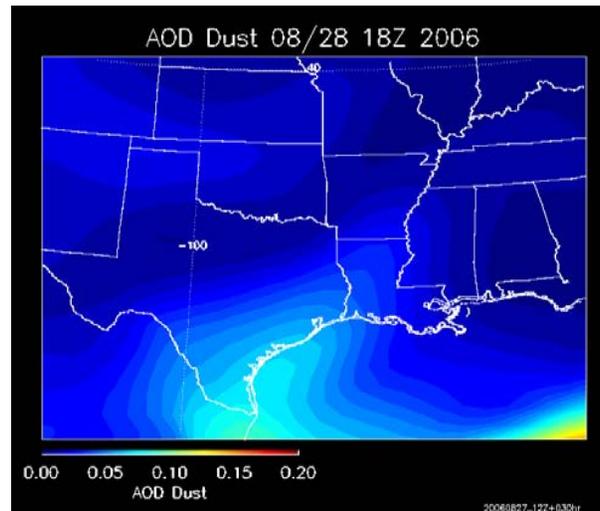
RAQMS Dust analysis is in reasonable agreement with TCEQ residual dust estimates

Shows onshore transport of dust from Gulf accounts for significant fraction of AIRNow total PM2.5 observations in SE Texas on August 28<sup>th</sup>

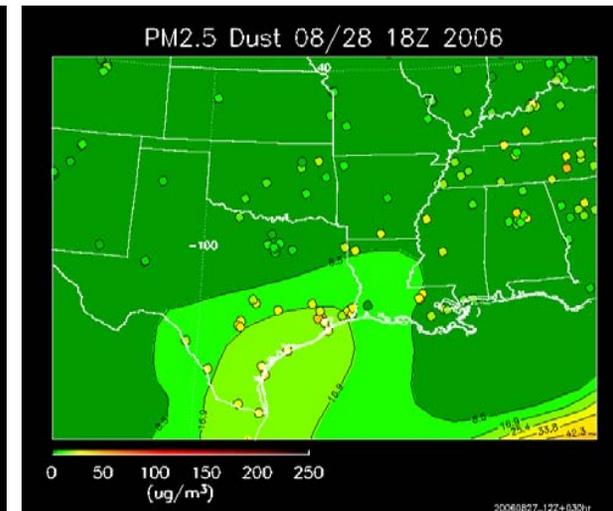
CAMS 35, Region 12 Houston, EPA Site: 48-201-1039  
Site: Hous.Deer Park 2 C35/1001/AFH139F239 [H]



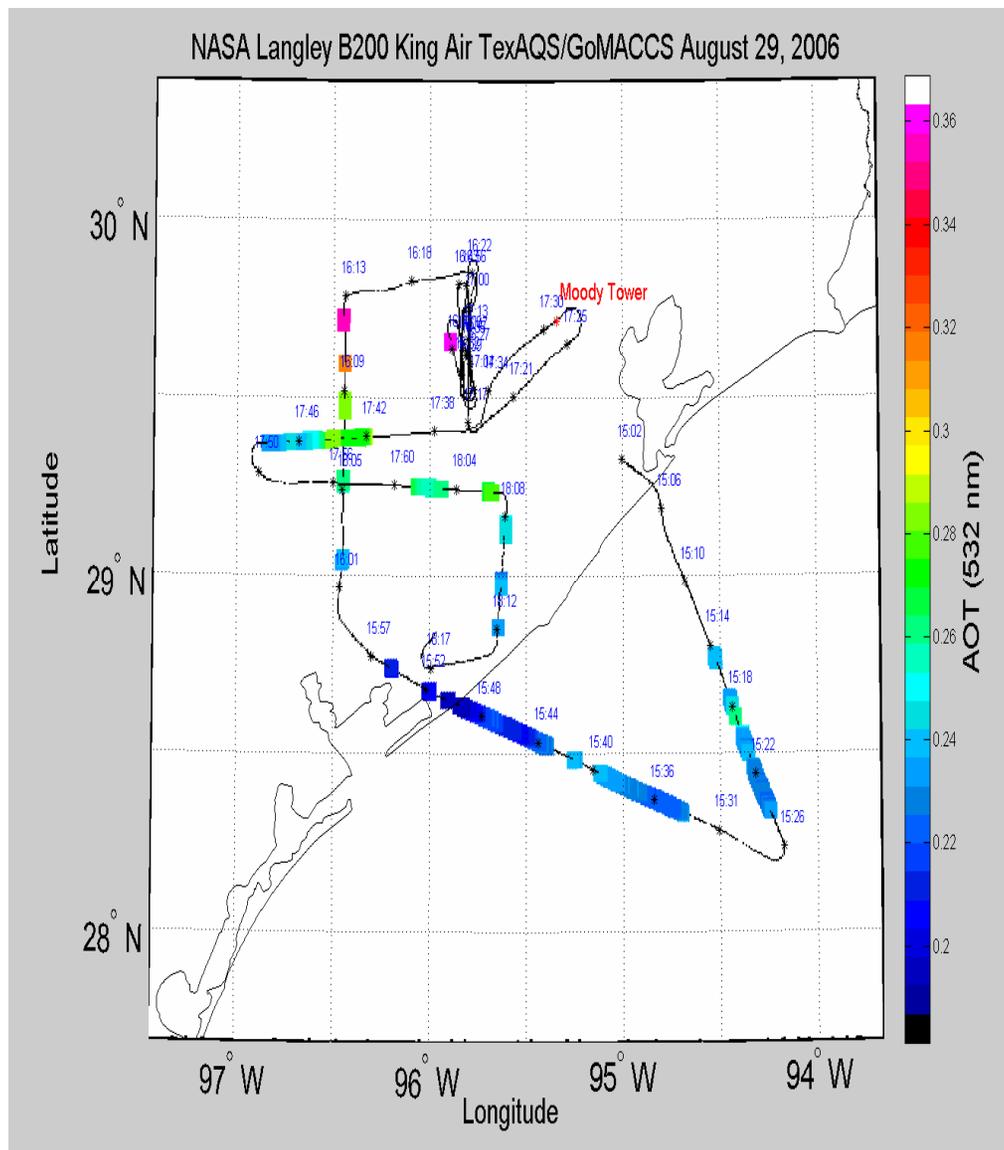
**RAQMS Dust AOD**



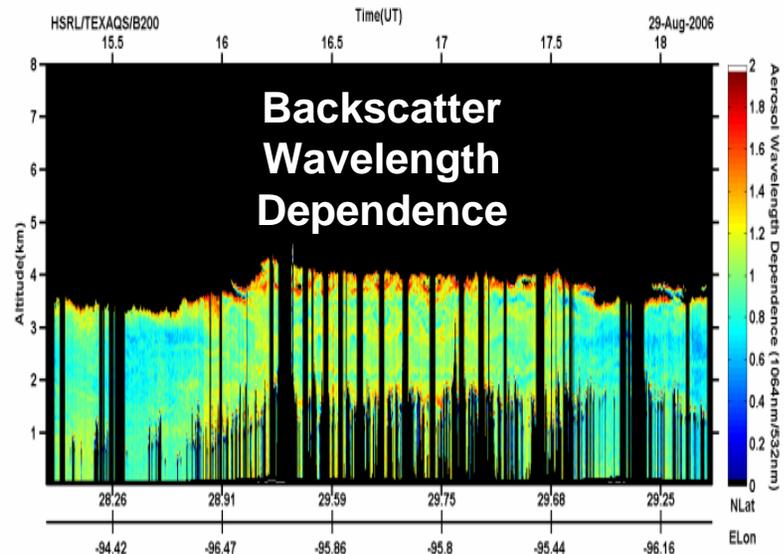
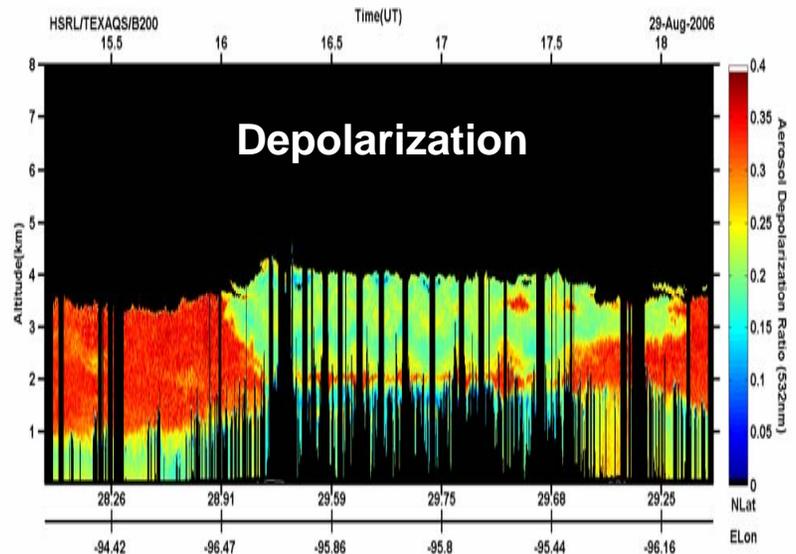
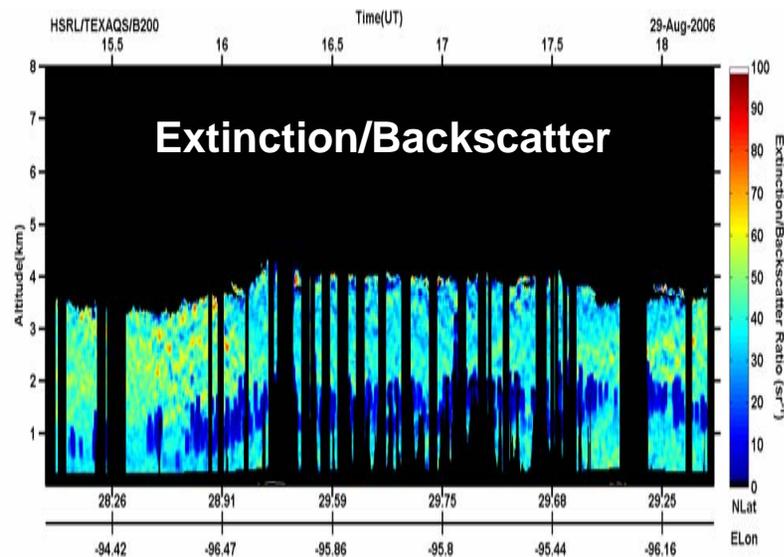
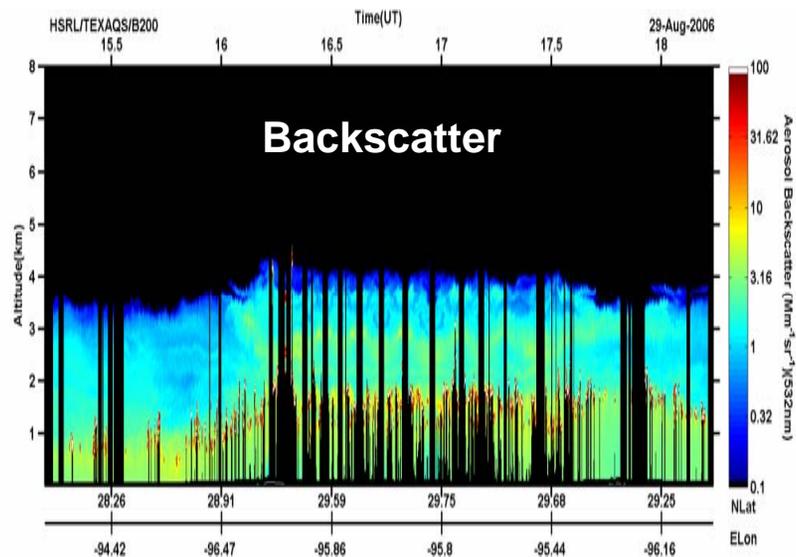
**RAQMS vs AIRNow PM2.5**



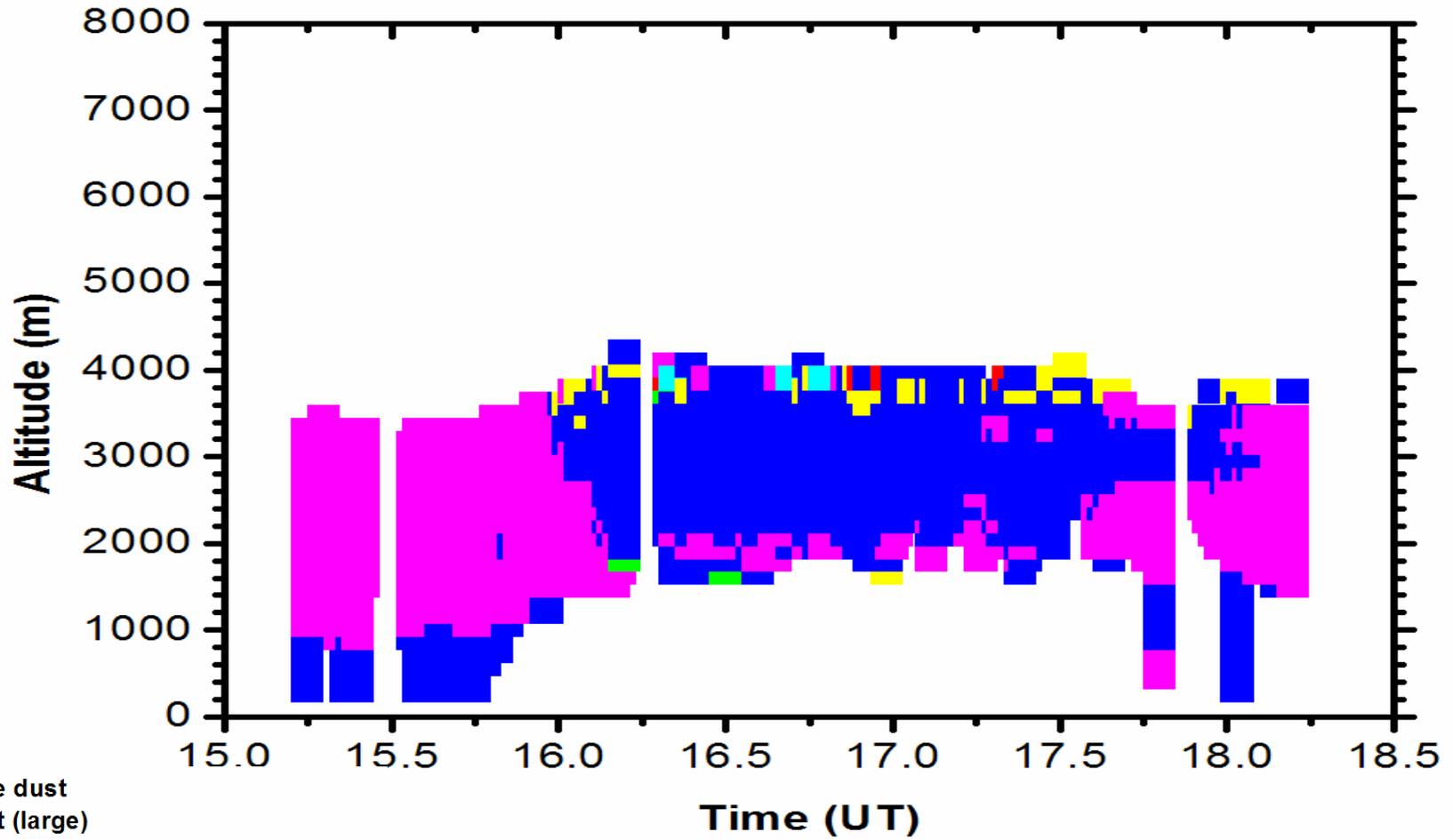
# High Spectral Resolution Lidar (HSRL) Verification



# HSRL Observations on 29 August 2006 (Dust Event)

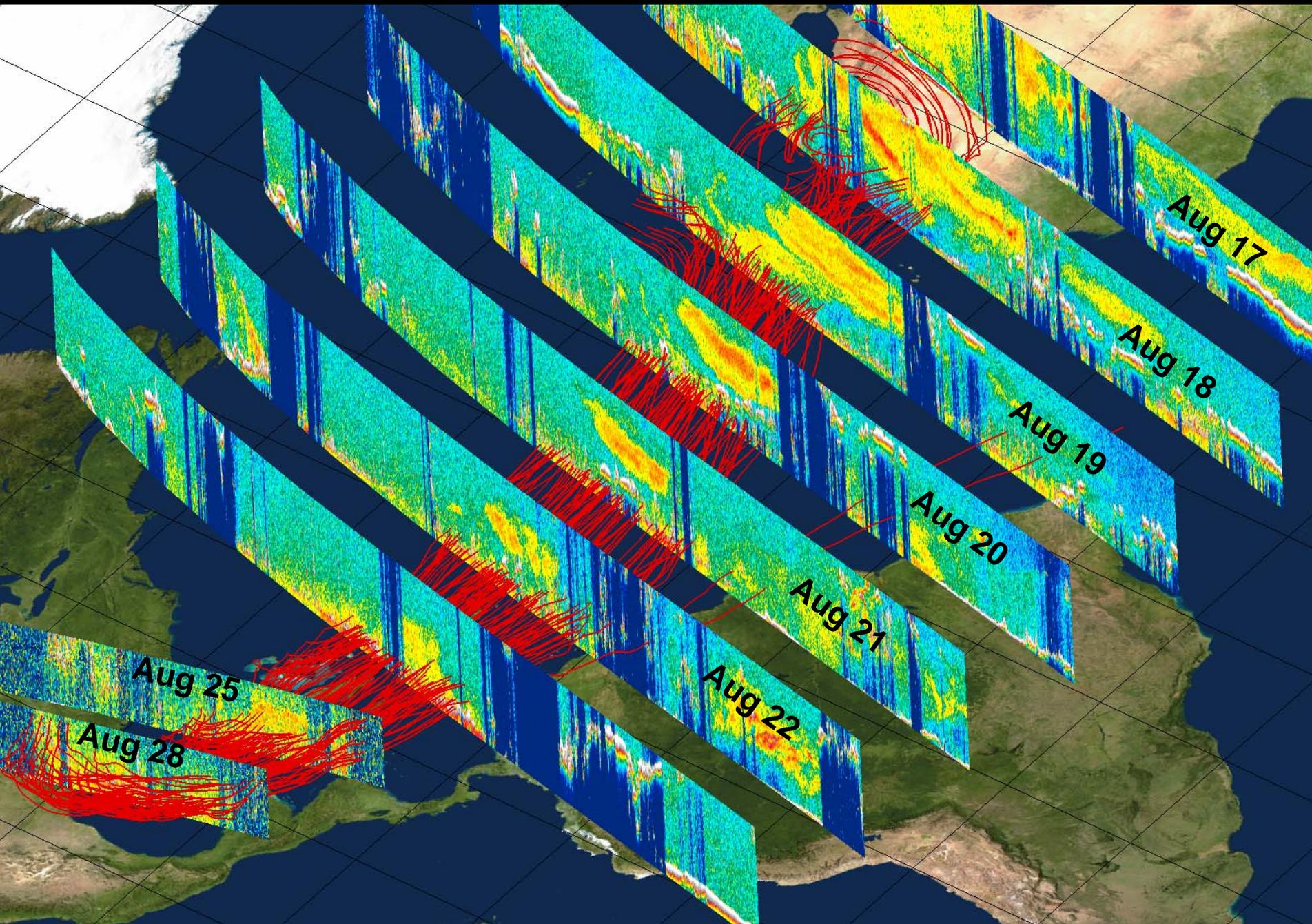


# HSRL Particle Characterization 29 August 2006



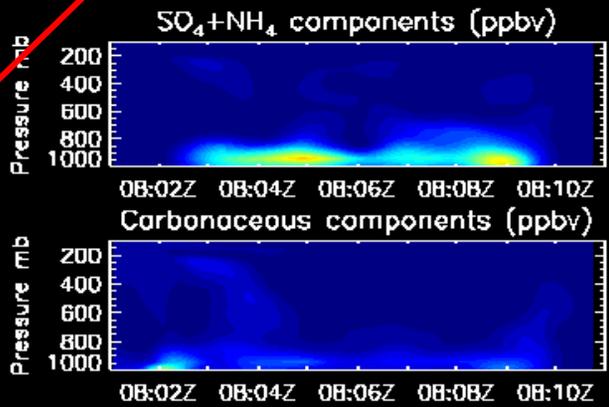
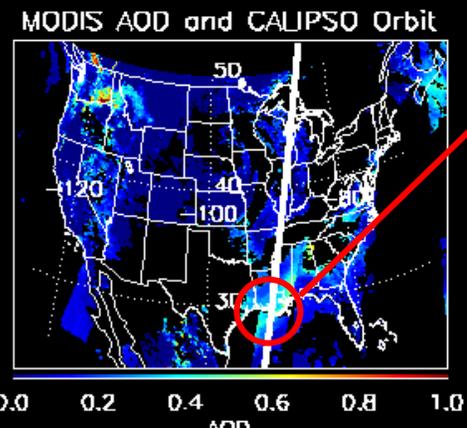
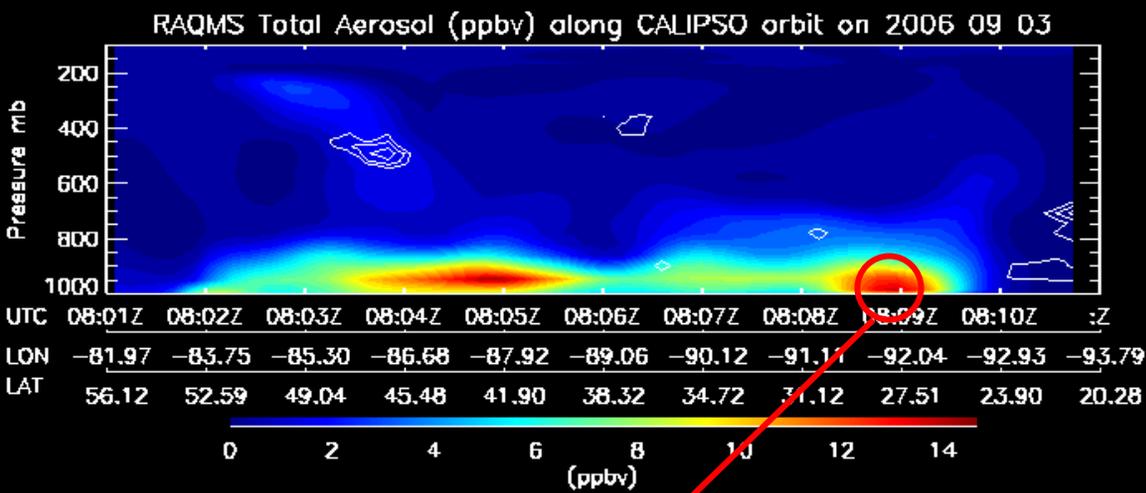
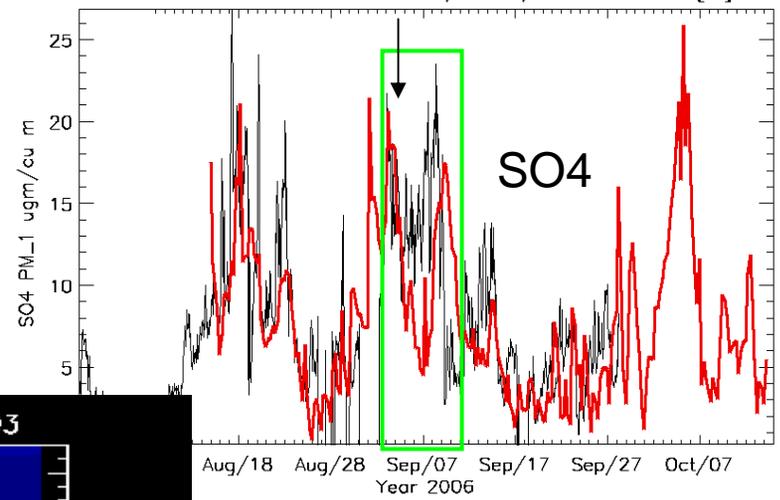
- pure dust
- dust (large)
- dust (small) + urban
- oceanic
- urban/industrial (small) + biomass
- urban (large) + urban (small) + biomass
- biomass + urban

CALISPO Backscatter profiles for August 17-28, 2006  
Boundary Layer back trajectories from August 28 CALISPO track shown in red



# Sulfate Event: Sept. 03, 2006

CAMS 35, Region 12 Houston, EPA Site: 48-201-1039  
 Site: Hous.Deer Park 2 C35/1001/AFH139F239 [H]



RAQMS aerosol analysis is in good agreement with TCEQ SO<sub>4</sub> measurements on Sept 03.

Shows sulfate dominated aerosols along CALIPSO track east of Houston

# HSRL Model Verification: aerosol backscatter distribution

RAQMS<sub>regional</sub> (80km)

RAQMS provides a good prediction of the magnitude of BL aerosol backscatter, but:

- misses elevated aerosol suspected of being smoke (B<sup>1</sup>, C<sup>1</sup>, A<sup>2</sup>, B<sup>2</sup>, C<sup>2</sup>) and BL enhancement near Houston (A<sup>1</sup>)
- predicts elevated aerosol layer at beginning of CALIPSO underflight that is not observed (dash)

