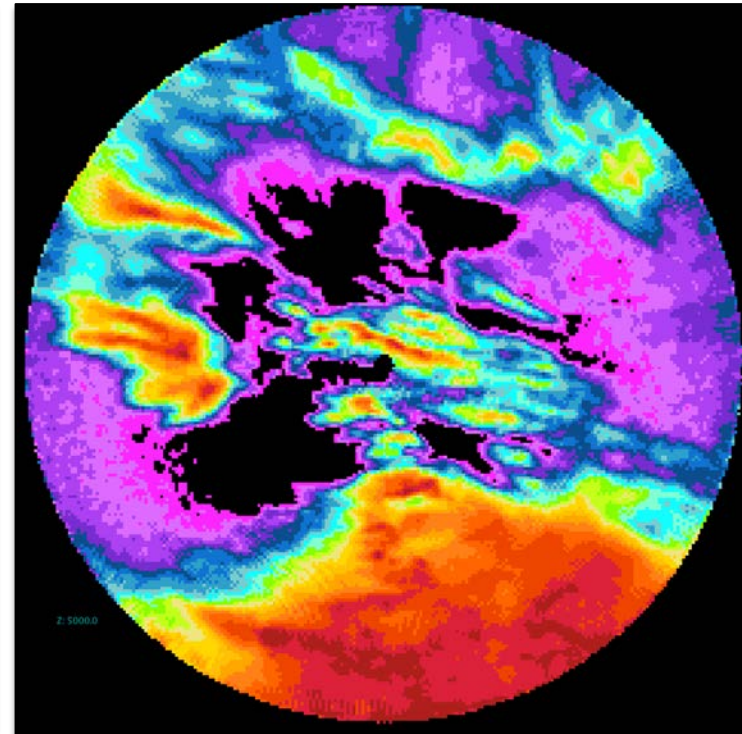


# FASTER

## Data Analysis & Integration Team Progress Update

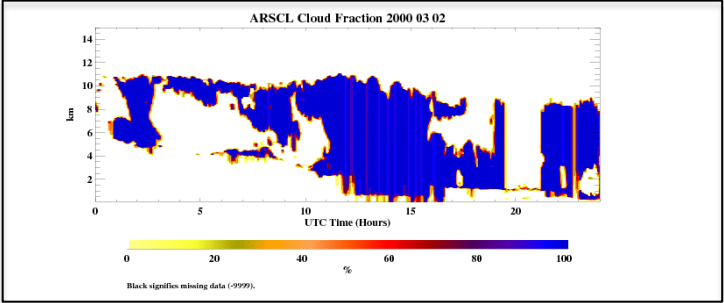
Tami Toto, Michael Jensen, Andrew Vogelmann, Richard Wagener  
Brookhaven National Laboratory

- **FASTER Data Products**
- **Aerosol-Cloud Interactions in GISS ModelE Using ASR Observations**
- **Aerosol Data Assimilation for RACORO**
- **3D Visualization & Analysis Toolkit**
- **Additional Analysis and Future Tasks**



**Warm-up Periods (SGP, 03/2000 & 05/2003)**

- Meteorology, cloud properties
- Gridded precipitation (ABRFC)
- Soil temperature & moisture (SWATS)

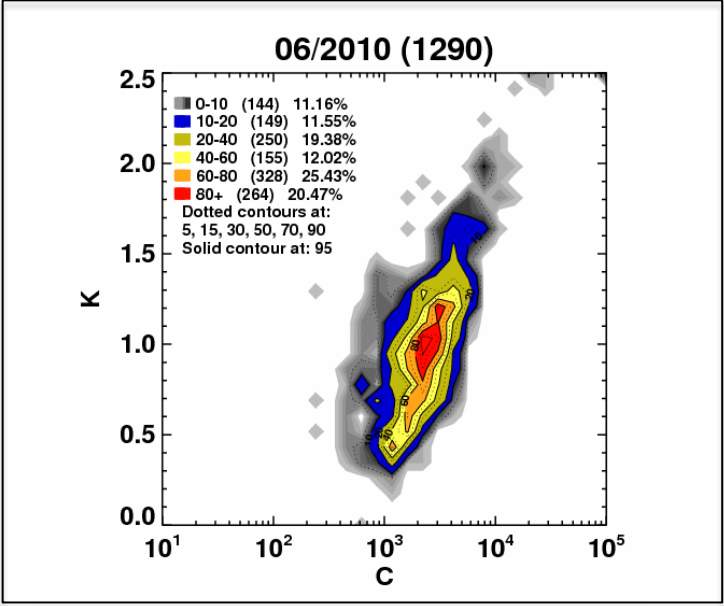


**CAPE, CIN, PBL Height (Entire ARM record through 2011)**

**Convective/Stratiform Rain Partitioning (SGP, 2000 – 2007)**

**Surface CCN Statistics (SGP, 2006 – 2010, PYE)**

Calculated power law fits and statistics, based on Aerosol Observing System data.



**Surface CCN Statistics (SGP, 2007 – 2009)**

Produced AOS vs. TDMA Collins VAP CCN (.2% SS) comparison analysis.

# Aerosol-Cloud Interactions In GISS ModelE Using ASR Observations

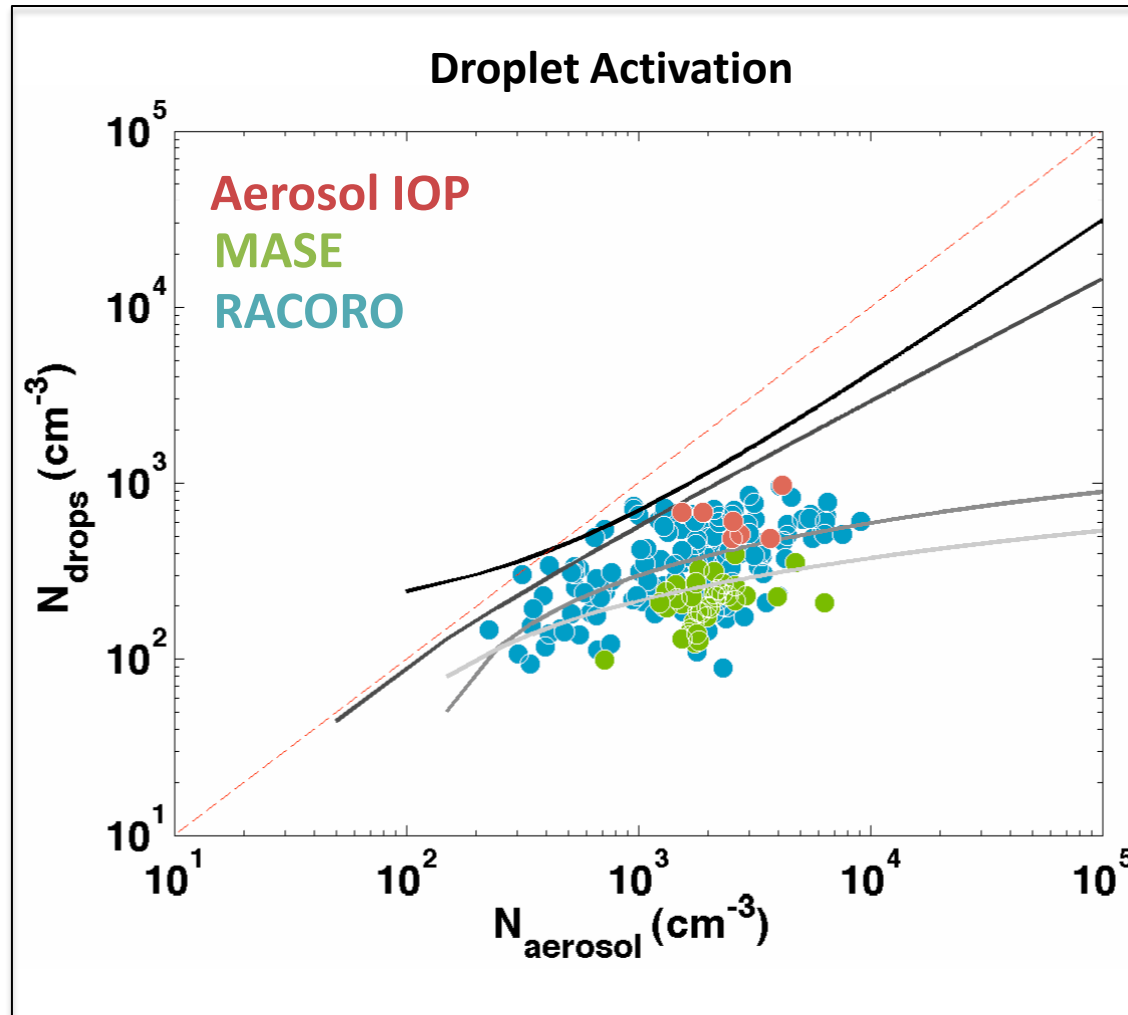
G. de Boer, S. Menon, S. Bauer, T. Toto, A.M. Vogelmann, M. Cribb

## 4 Campaigns:

- Aerosol IOP (2003)
- MASRAD/MASE (2005)
- China AMF (2008)
- RACORO (2009)

## Observations:

- Meteorology
- Aerosols (surface, in situ)
- Cloud Properties



# Aerosol Data Assimilation for RACORO

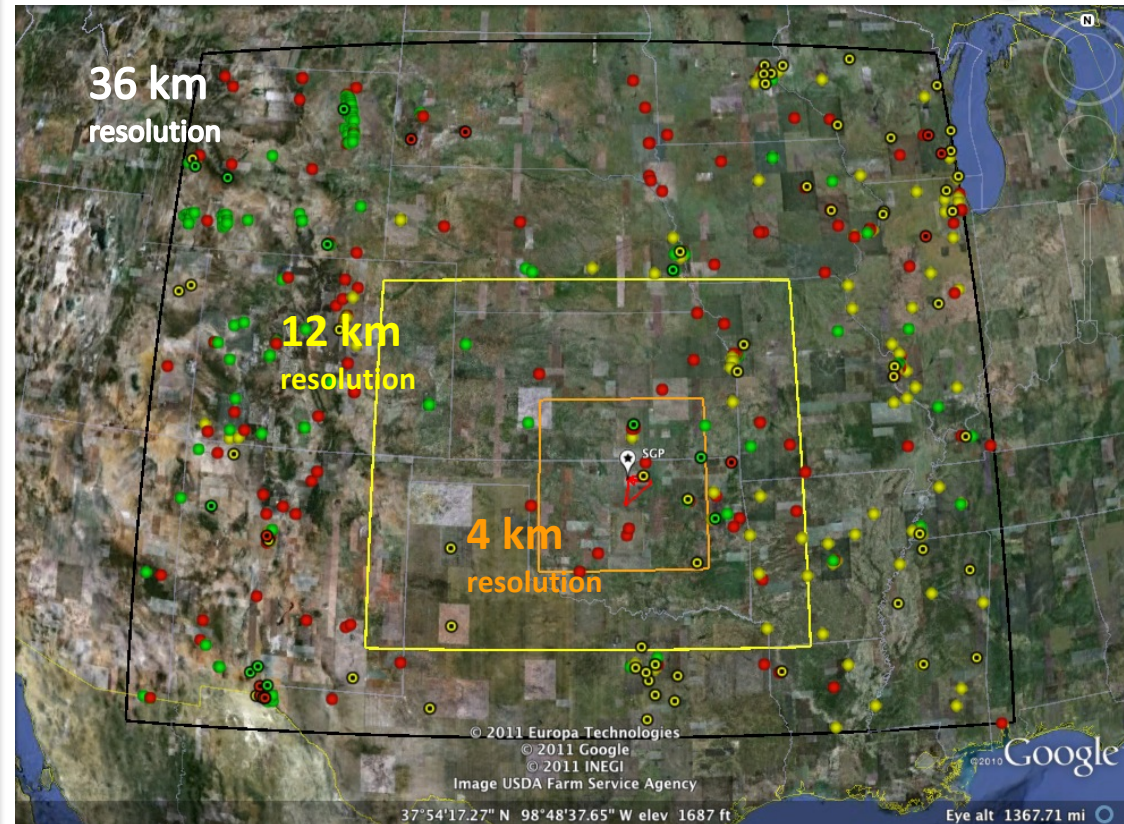
Zhijin Li, Zhengqing Ye, Yangang Liu, Tami Toto, Andrew Vogelmann

## Provide input observations:

- EPA measurements (Non-ARM data)
  - Complex network comprised of many monitoring methods, different agencies (IMPROVE, the Chemical Speciation Network, SLAMS, NAMS, CASTNet) and multiple data access points (AQS Data Mart, Views 2.0, KML files)
  - Temporal duration and frequency resolution varies: hourly, daily, every 3/6/12 days
  - Many, many species available
- Aircraft aerosol measurements
- SGP CF meteorological data

## Non-specified PM 10 and PM 2.5 Observations

● PM 10 and PM 2.5 ● PM 10 only ● PM 2.5 only ● Hourly



## Speciated PM 2.5 Observations

Elemental carbon and black carbon, organic carbon, chloride, nitrate, sulfate, sodium, ammonium

# 3D Visualization & Analysis Toolkit

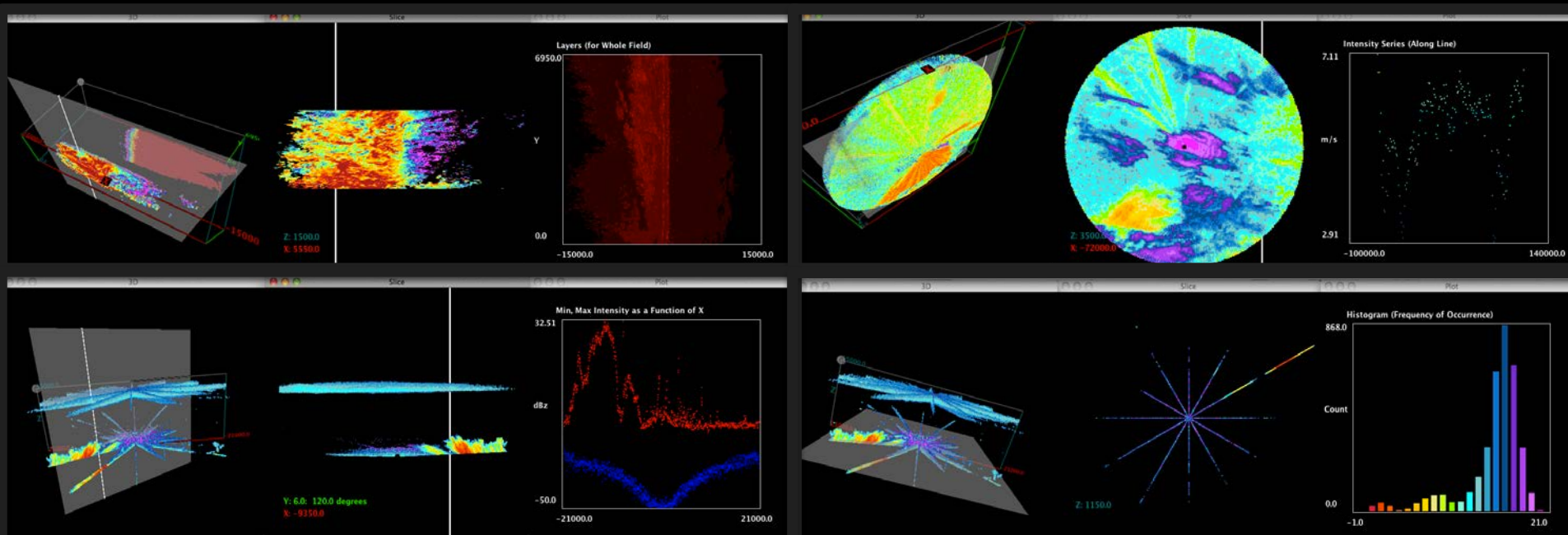
Come see the demo at the poster sessions!

## Key Features:

- Easy-to-load 3D/4D ARM data
- Dynamic interactivity
- Platform-independent
- Open source
- Web-deployed
- **Customized to the needs of FASTER participants!**

## Future Development Plans:

- Integration of non-radar datastreams such as lidar and soundings to facilitate analysis and interpretation of data



# Additional Analysis and Future Tasks

## PBL VAP Development

In collaboration with ARM and PNNL, implementing various PBL algorithms on sondes:

- Heffter (1980)
- Seibert et al. (2000)
- Liu and Liang (2010)

## Future Tasks

- Validate SGP MMCR-based convective/stratiform rain partitioning product against NEXRAD.
- Construct low-level jet climatology from ARM SGP wind profiler, tower wind, and sonde observations.
- **Our future plans depend on you!**

**Contact us  
with requests!**

[mjensen@bnl.gov](mailto:mjensen@bnl.gov)

[ttoto@bnl.gov](mailto:ttoto@bnl.gov)

**Thank You!**