

2013 Atmospheric System Research Science Team Meeting
Mid-latitude Continental Convective Clouds Experiment (MC3E) Breakout
Wednesday, March 20 19:00 – 20:30

Michael Jensen, Overview of MC3E data status (10 minutes)

Christopher Williams, Relationships between DSD parameters observed in MC3E observations (10 minutes)

Ali Tokay, Small-scale variability of rainfall and raindrop size distribution by two dimensional video disdrometer and rain gauges (10 minutes)

Xiquan Dong, An integrative analysis of DCS cloud properties using aircraft-surface-satellite observations during MC3E IOP (10 minutes)

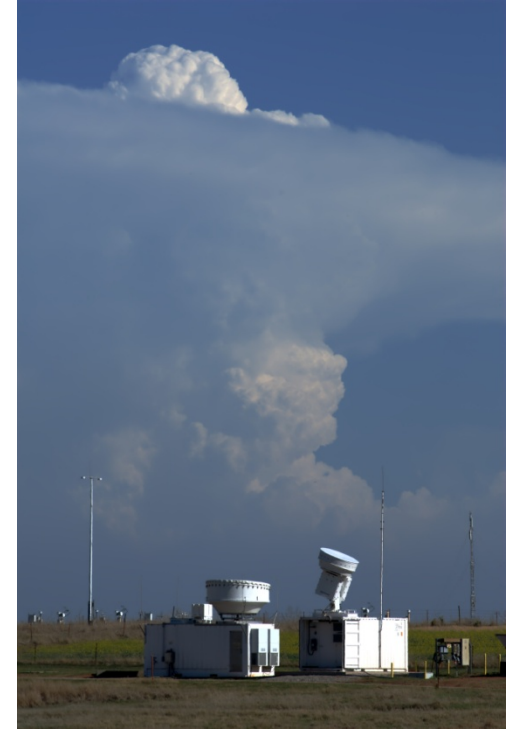
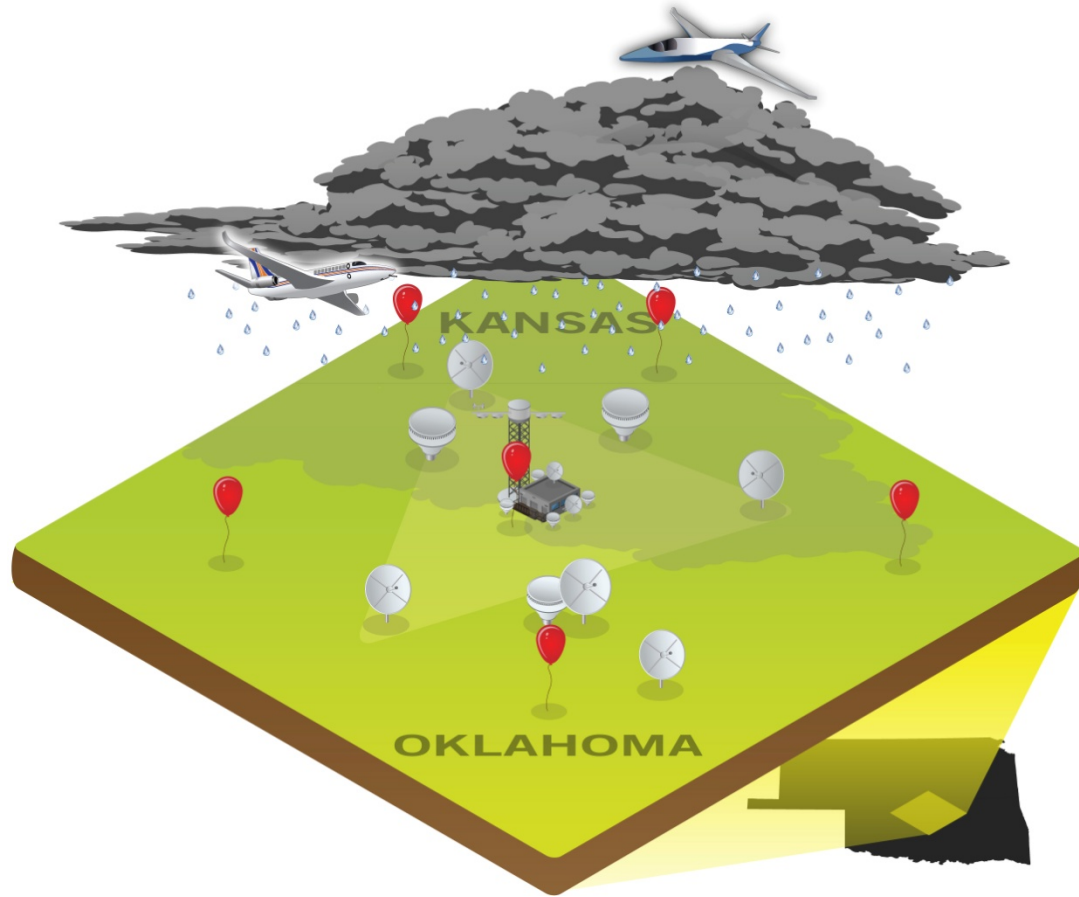
Steve Krueger, Simulating the MC3E IOP with SAM (10 minutes)

Zhaoxia Pu, High-resolution analysis and simulation of convective systems during MC3E with data assimilation and comparison with radar and large-scale forcing data (10 minutes)

Jiwen Fan, Comparison of CRM simulations with observations for MC3E convective clouds (10 minutes)

Dave Turner, Plains Elevated Convection at Night (PECAN) (10 minutes)

The Midlatitude Continental Convective Clouds Experiment (MC3E): Introduction and Overview of Field Campaign Observations



Michael P. Jensen
Brookhaven National Laboratory

20 March 2013
ASR Science Team Meeting, Potomac, MD

Quick Overview of MC3E

- Who? DOE Atmospheric Radiation Measurement Program
NASA Global Precipitation Measurement Ground Validation
- What? Ground-, Aircraft-, Satellite-based observations of convective cloud systems. First demonstration of many of the new ARRA instruments
- Where? Centered at the ARM Southern Great Plains site in Lamont, OK
Extended facilities from Southern Kansas to south of OKC
- When? April 22 – June 6 2011
- Why? 1) Advance the understanding of the different components of convective parameterization
- 2) Improve the fidelity of satellite estimates of precipitation over land.

Summary of conditions sampled during MC3E

Category	Description	# days sampled	Days
1	Convective Line / Cell events	8	4/22,25; 5/11,18,20,23,24,31
2	Widespread Stratiform Rain	3	4/27, 5/1, 5/10
3	Elevated Weak (Overnight) Convection	3	4/23, 24; 5/18
4	Boundary Layer Clouds	10	4/26; 5/5,13-15,19,27-29;6/1
5	Mid- or Upper-level clouds	7	5/2,3,8,9,25,26; 6/2
6	Clear	14	

- Coordinated aircraft missions focused on categories 1 & 2
- Dedicated boundary layer cloud flight by UND Citation 5/27 & 5/30
- Enhanced sounding operations focused on categories 1-3

Where can we get data? It depends which data you want

ARM MC3E observations - IOP archive (<http://iop.archive.arm.gov/arm-iop/2011/sgp/mc3e>)
Soundings (except CF), ARM 2DVD, BNL MWR (S05),
VARANAL, Citation HVPS & UHSAS

Standard ARM observations (including ARRA instrumentation) – www.archive.arm.gov
All “raw” radar/lidar observations, radiation, surface meteorology, CF soundings, etc...
ARM Best Estimate Products (ARMBE)
Micropulse Lidar Cloud Mask (MPLCMASK)
MWR Retrieval (MWRRET) [PWV, LWP]
Data Quality Assessment for ARM Radiation (QCRAD)

Value-added (Evaluation) products - <http://www.arm.gov/data/vaps>
Corrected Moments in Antenna Coordinates (CMAC)
Convective Vertical Velocity (CONVV) (4/25, 5/20, 5/23)
Interpolated Sounding (INTERPSONDE)
KAZR-Active Remote Sensing of Clouds (KAZRARSCl)
Merged Sounding (MERGESONDE v1 & v2)
C-SAPR Gridded Radar Moments (MMCG)
Planetary Boundary Layer Height (PBLHT)
Quantitative Precipitation Estimates (QPE) from the C-SAPR
Humidity Corrected Soundings (SONDEADJUST) [at Central Facility]
Variational Analysis (VARANAL) [300 km, 150 km, 75 km]

Where can we get data?

It depends which data you want

NASA Global Hydrology Resource Center <http://gpm.nsstc.nasa.gov/data.html>

ER-2 (AMPR, CoSMIR, HIWRAP)

UND Citation Cloud Microphysics

Disdrometer/Gauge network

NASA S-band Dual-Polarimetric (N-Pol) Doppler Radar

NOAA S-band Profiler

NOAA UHF 449 MHz Profiler

Vaisala US NLDN Lightning Flash Data

ARM PI Products <http://www.arm.gov/data/pi>

Raman Lidar/AERI PBL Height Determination (Rich Ferrare)*

Humidity-Corrected Soundings (Mike Jensen)

Combined KAZR/WSR-88D profiles (Xiquan Dong)

NEXRAD Mosaic products (Xiquan Dong)

Combined UAZR/KAZR profiles (Scott Giangrande)

Precipitation Morphology (Scott Collis)

Dual-Doppler Vertical Velocity (Steve Rutledge)

Yet to come!

Broad-band Radiative Heating Rate Profiles (BBHRP) , NASA Langley Satellite Products