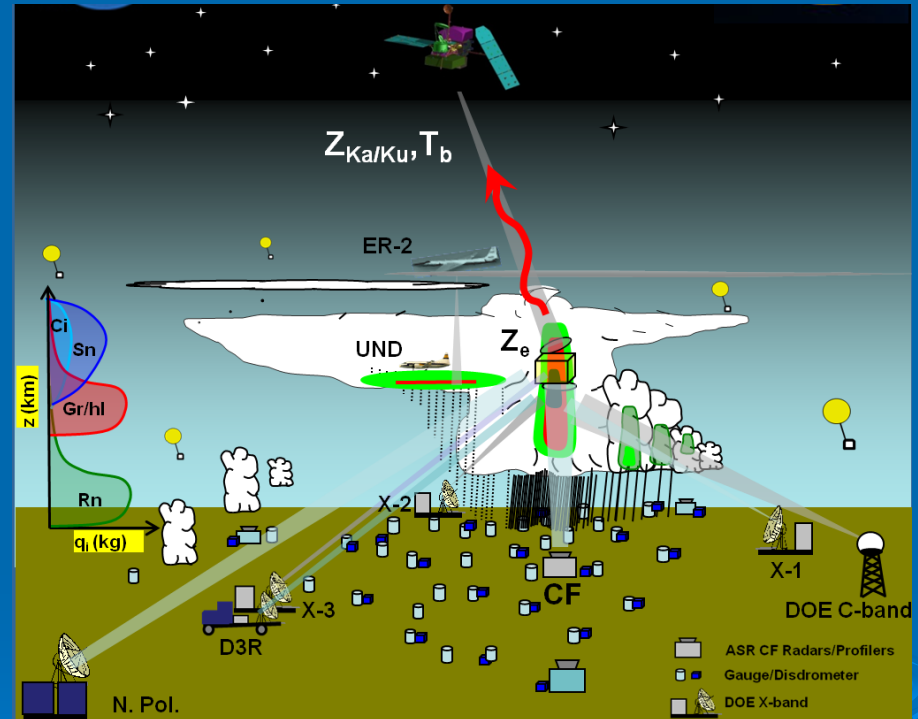
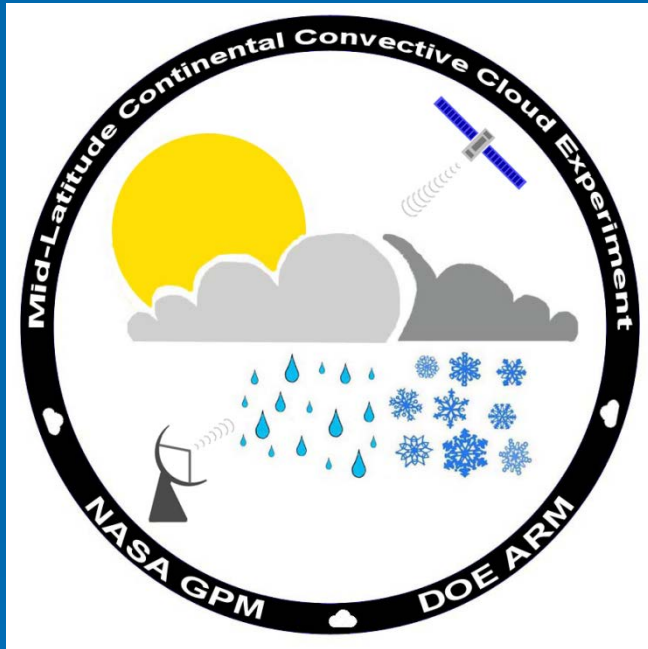


DOE - ARM / NASA- GPM

Midlatitude Continental Convective Cloud Experiment (MC3E)



- ARM Southern Great Plains Central Facility
- April 22nd - June 6th 2011

MC3E April 22- June 6, DOE ARM Central Facility

Represents a collaborative effort between the DOE ARM Program and the NASA Global Precipitation Measurement (GPM) mission

Overarching Science:

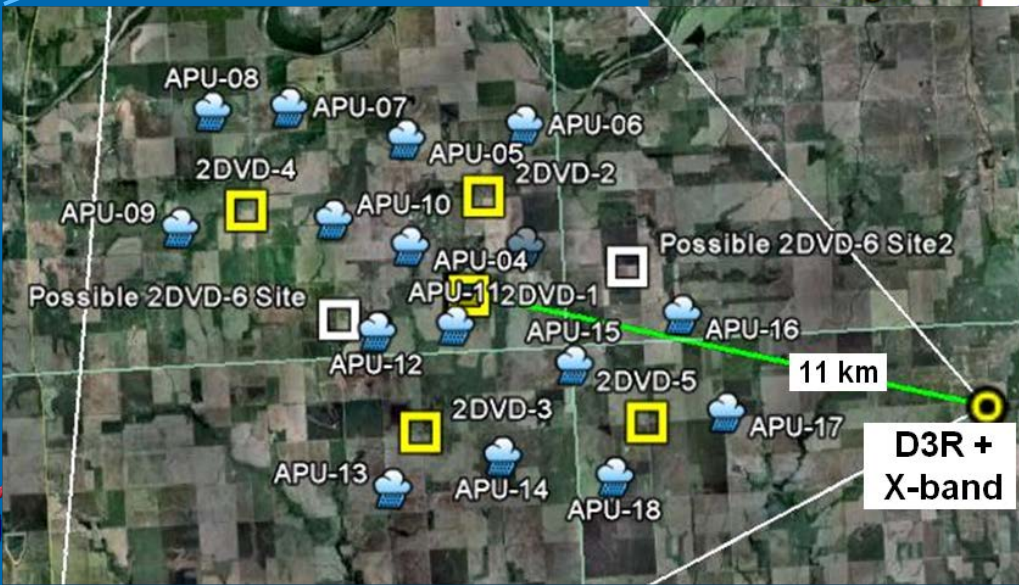
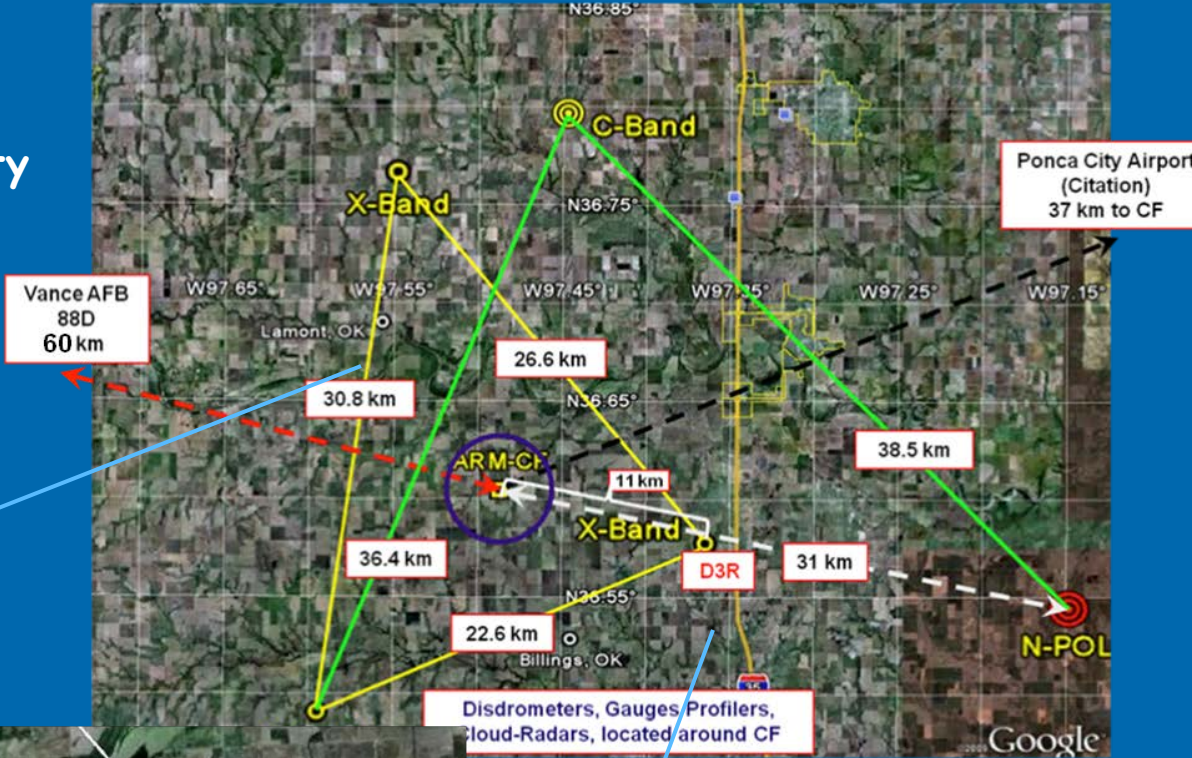
A complete characterization of convective cloud systems in order to:

- 1) Advance the understanding of the different components of convective parameterization
 - Focus: Convective initiation and up/downdraft coupling to precipitation and cloud microphysics.

- 2) Improve the fidelity of satellite estimates of precipitation over land.
 - Focus: Observation and quantification of dominant column microphysical processes impacting satellite-based passive/active microwave retrievals

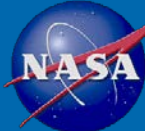
MC3E Sampling: Ground

- Multi-Freq./ Doppler / polarimetric/ profiling radars
 - Sub-pixel DSD/rain variability
 - 3-D (solid/liquid/mixed) HID
 - Cloud water(maybe)
 - Kinematics
- Network embedded in sounding array
 - CRM Forcing
 - Budgets



NASA Disdrometer network

- 5 2DVD 3rd Generation, compact
- 16 Parsivel (Autonomous)
- 1-3 Joss (915 Profiler collocated)
- 20-40 Rain gauges collocated



MC3E Sounding Network

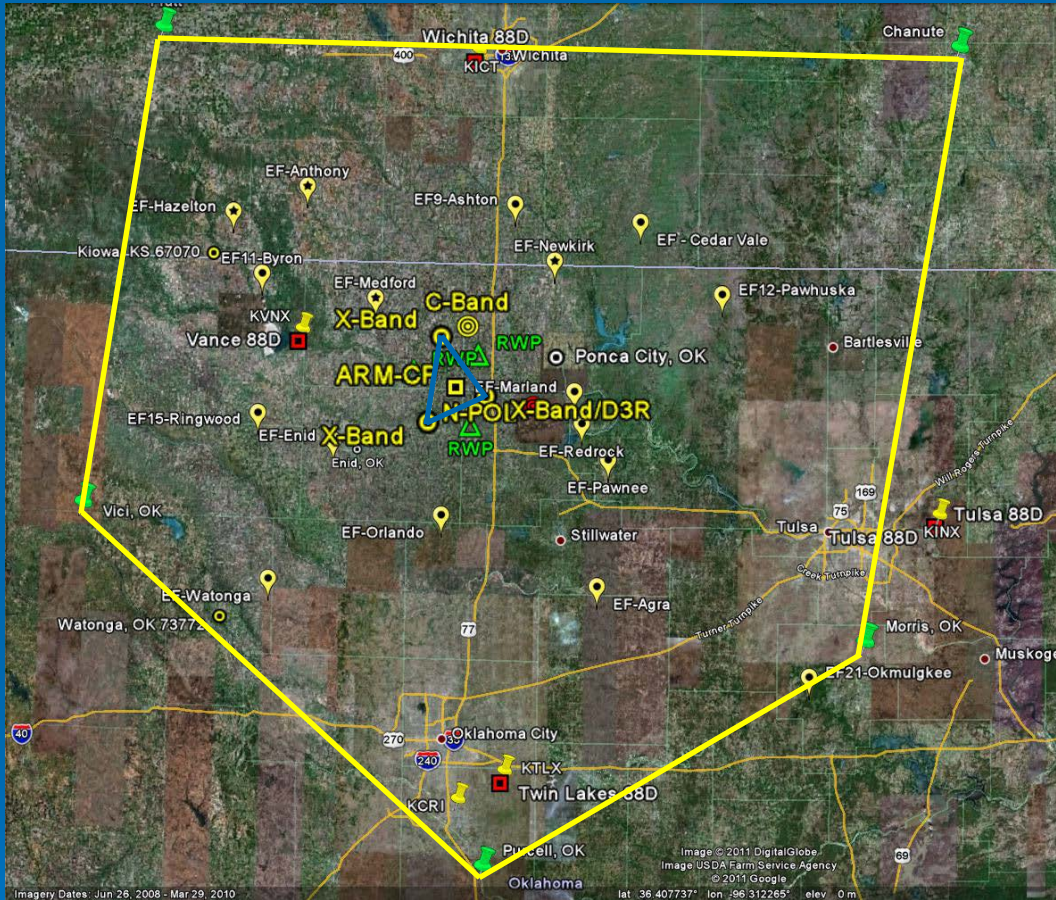
Proposed Sounding Sites

- Pratt, KS [37.7, -98.75]
- Chanute, KS [37.674, -95.488]
- B4 Vici, OK [36.071, -99.204]
- B5 Morris, OK [35.687, -95.856]
- B6 Purcell, OK [34.985, -97.522]
- C1 Lamont, OK [36.605, -97.485]

NOAA Wind Profilers are at:

C1, B4, B5, B6 and B1 Hillsboro, KS [38.305, -97.301], Hailand, KS [37.65, -99.09], Neodisha, KS [37.38, 95.63]

Sounding launches - 4 or 8 per day.



GPM Airborne Assets in MC3E

GPM Core Satellite "Simulator"



NASA ER-2:
GMI/DPR Proxy

Base: Albuquerque (Kirtland) AFB , NM

In Situ Microphysics

UND Citation
Microphysics

Base: Ponca City, OK



Instrument	Characteristics
AMPR (Radiometer, H +V)	10.7, 19.35, 37.1, 85.5 GHz
Resolution @ 20 km range	0.6 km (85.5 GHz), 1.5 km (37.1 GHz), 2.8 km (10.7-19.35 GHz)
CoSMIR(Radiometer, H+V)	37, 89, 165.5, 183.3+/-1, 183.3+/-3, 183.3+/-8 GHz
Resolution @ 20 km range	1.4 km footprint at nadir
HIWRAP Ka-Ku band Radar	13.91/13.35 GHz, 35.56/33.72 GHz
Transmit peak power	30 W (Ku), 10 W (Ka)
3 dB beamwidth	2.9° Ku, 1.2° Ka
MDS (dBZ _e , 60 m res., 3.3 μs chirp pulse, 10 km range)	0.0, -5.0 dBZ _e

Instrument	Measurement
FSSP/King	Cloud liquid water
PMS 2D-C/P	Cloud and precipitation particle spectra
HVPS	Large hydrometeor spectra
2D-S	Cloud particle spectra
CDP and/or SID	Cloud particle spectra
Nevzorov and CVI	Total water content
Rosemount icing probe	Supercooled liquid water
CN counter, UHSAS	CN/CCN

Other MC3E-related field campaigns

Airborne Instruments for MC3E

(Mike Poellet UND)

Deployment of CN counter (10 nm cut) and a UHSAS (100 channels, 60 nm - 1 micron) for collection of aerosol profiles in vicinity of deep convective systems

- Inner Domain Thermodynamic Profiling during MC3E

(Dave Turner NSSL)

Deployment of three AERI systems for the retrieval of boundary layer thermodynamic profiles

- Multi-Frequency Profilers

(Christopher Williams NOAA)

Deployment of 414 MHz and 2.3 GHz (S-band) profilers at the CF.

MC3E final "spin-up" activities

- February 24-25 MC3E Siting and Logistics Meeting with Forecasting Exercise (SGP Central Facility)
- March 29-31 Daily Pre-campaign Weather Briefing @ ASR STM
- March 29 MC3E Breakout Meeting
ALSO COME BY MY POSTER
- April 4 - April 21 Daily Pre-campaign Weather Briefing online
- April 19 (tent.) Radiosonde Crew on-site training
LOOKING FOR ADDITIONAL STUDENT HELP!
- April 8 - 22 Guest instrument set-up
- April 22 MC3E Day 1

MC3E Breakout Schedule

Tuesday , March 29th 1:30-30 PM

- 1:30 -1:40 Michael Jensen – “The MC3E – Overview and Updates”
- 1:40 – 1:50 V. Chandrasekar – “Science Plans for the D3R”
- 1:50 – 2:05 Wei-Kuo Tao – “Goddard WRF for real-time forecasting during MC3E”
- 2:05 – 2:20 Arun Chandra – “Evaluating aspects of exiting shallow cumulus cloudiness and mass flux parameterizations using MC3E observations”
- 2:20 – 2:35 Yunyan Zhang – Transition from Shallow to deep convection
- 2:35 – 2:50 Steve Krueger – “Interactions of Cumulus Convection and the Boundary Layer at the Southern Great Plains ACRF”
- 2:50 – 3:05 Anthony Del Genio – “ Mesoscale Organization Issues for Climate Models”
- 3:05 – 3:20 Ann Fridlind – “Aerosols, dynamics, microphysical processes and hydrometeor size distributions: Advancing understanding through observationally constrained CRM simulations”
- 3:20 – 3:35 Hugh Morrison – “Microphysical uncertainties in simulations of midlatitude convective clouds”
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