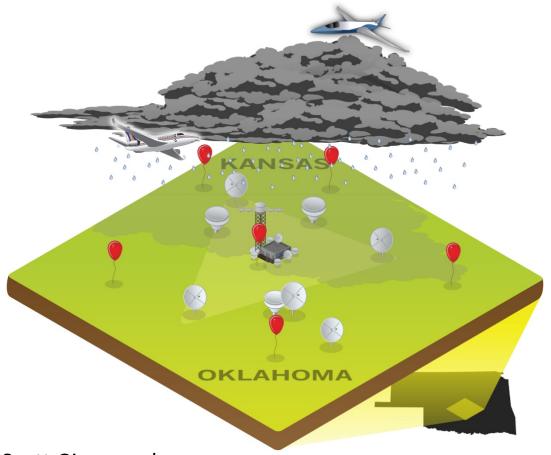
# The Midlatitude Continental Convective Clouds Experiment (MC3E): A field campaign focus for FASTER (convective parameterization)?





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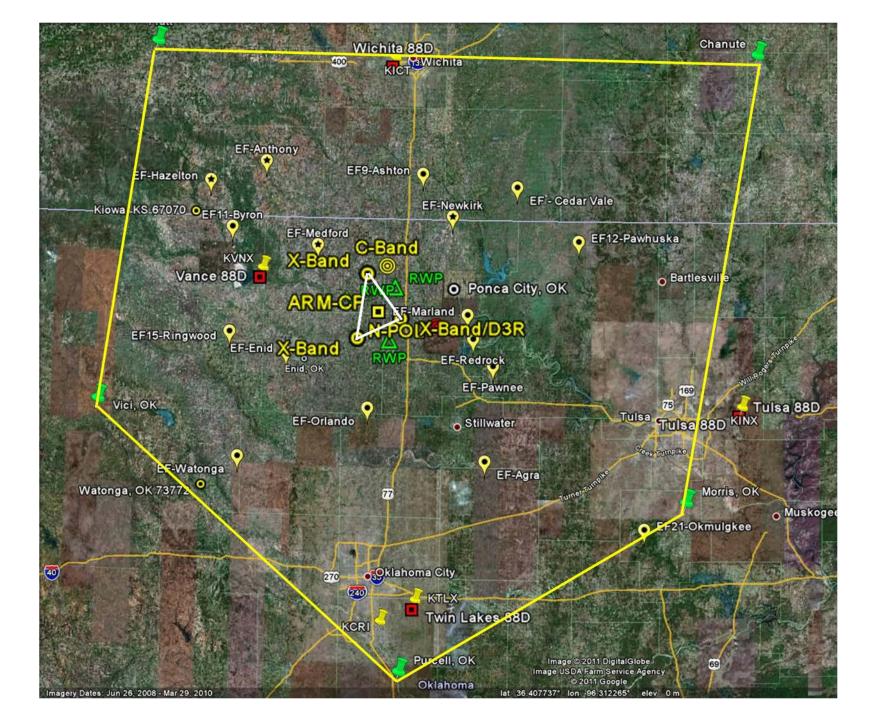
# **Quick Overview of MC3E**

- 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.

## MC3E Scientific Objectives (ASR perspective)

"Advance the understanding of the different components of convective simulation and microphysical parameterization"

Pre-convective Environment
Convective Initiation
Updraft and Downdraft Dynamics
Condensate Transport/Detrainment/Entrainment
Precipitation and Cloud Microphysics
Influence of Convection on Environment
Influence on Radiation
Large-Scale Forcing



#### 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

APU-08

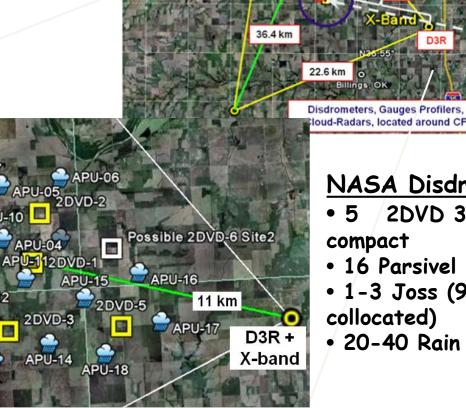
APU-09

Possible 2DVD-6 Site

APU-10

APU-13

- CRM Forcing
- Budgets



Vance AFB

88D 60 km

#### NASA Disdrometer network

Ponca City Airport (Citation)

37 km to CF

2DVD 3rd Generation, compact

W97,45° W97,35°

- 16 Parsivel (Autonomous)
- 1-3 Joss (915 Profiler collocated)
- 20-40 Rain gauges collocated

### **Summary of conditions sampled during MC3E**

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