ARM Mobile Facility

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What is it?

- Re-locatable ARM ground-based remote sensing facility
- Typically deployed for a year at a time
- All deployment expenses paid by DOE
- ARM
- Data collected and archived by DOE
- Second facility now being constructed

http://www.arm.gov/sites/amf.stm
Instrument complement

- Can vary from deployment to deployment based on experiment
- Probably want to ask for full complement of cloud and aerosol instruments

http://www.arm.gov/sites/amf/instruments.stm
Why do we want the AMF?

- Radiative fluxes and heating rate profiles
  - Relevant to land surface coupling
  - Impact on atmospheric stability and convection

- Cloud properties
  - Frequency of occurrence
  - Microphysical properties

- Comparison with data from ARM SGP
Niamey, Niger
W-band radar antenna

Deployed instruments
Data from TWP Manus
Heating rates

Longwave

Shortwave

Net
LW heating by OLR category

ARM Average LW Heating Rate

Altitude (km)

Heating Rate (K/day)

- OLR Range 75-125 Wm\(^{-2}\)
- OLR Range 125-175 Wm\(^{-2}\)
- OLR Range 175-225 Wm\(^{-2}\)
- OLR Range 225-275 Wm\(^{-2}\)
- OLR Range 275-325 Wm\(^{-2}\)
Where do we put the AMF?

- To be determined
- Near (20 to 30 km radius) to scanning precip radar
- Under track (or pretty close to!) of CloudSat, CALIPSO, and rest of A-train
CloudSat tracks - Pacific
CloudSat image at Nauru
ARM radar at Nauru
First-cut cloud climatology

- From Warren and Hahn atlas compiled from ground based observers
- 5 x 5 degree boxes
- Land-only
North swath
Warren atlas: Monthly Mean, All Clouds

Center swath
South swath

Warren atlas: Monthly Mean, All Clouds

Cloud Fraction

Month

J F M A M J J A S O N D

(-32.5, -62.5)  (-32.5, -57.5)  (-32.5, -52.5)
Next step

- Determine interest
- Write a pre-proposal for 2011 deployment