Focus Group Guidelines

- Substantially larger than any individual PI effort
- Focus on a specific process that is not well understood and modeled
- Well-defined, focus science objectives
- Approach for using ARM/ASR data to address the objectives; plan of activities lead to model improvements
- Obtain measurable and significant progress in 5 years
- Target size: > 5 (from both observation and model perspectives)

Potential Names / Scope

- Aerosol Cloud-Continuum Impacts on Radiation (ACEER)
- Radiative Impact and Drivers of the Aerosol-Cloud Continuum (RIDACC)
- Radiative Impact (and Drivers) of the Aerosol-to-Cumulus Transition
- Cloud-Aerosol Transition Science (CATS)
- Cumulus-Aerosol Transition Science (CATS)

gentle reminder: we will be stuck with this name for 5 years!

specific science question and its link to the big picture

Talks in this session

1. Instrument status and (potential) closure study on aerosol optical properties – Connor
2. Boundary layer turbulent structure from Raman lidar measurements – Dave
3. Aerosol and water vapor variability near cumulus from Raman lidar and HSRL measurements – Rich
4. Stochastic cloud modeling for studies of cloudy-clear transition zones – Tamas
5. Cloud field radiative properties from RACORO – Andy
6. Cloud information from oxygen A-band measurements – Qilong

Do we miss anything here?

Scope and objectives

- Scope
  - discussion
- Well-defined, focused science objectives
  - Quantify radiative impact of aerosol in both clear and transition zones
  - Quantify radiative impact of 3D clouds with an emphasis on cumulus
  - Develop a comprehensive set of aerosol/cloud optical/microphysical properties along with dynamical parameters

Approach and potential relationships to other proposed groups

- around spectral measurement – aerosol optical properties
- around transition zone – vertical velocity, entrainment, precipitation susceptibility, aerosol-induced invigoration of deep convective clouds, cirrus aerosol shallow cumuli atmospheric radiation study
- around 3D cloud structure – ?
- around 3D spectrally radiative transfer modeling
- cases for testing (e.g, shallow cumulus, stratocumulus, cumulus congestus, RACORO)

Measurable and significant progress on a 5 year time scale

- spectral radiation closure to a few Wm^{-2}
- any metrics for the transition zones?
- publications
- product?

Measurable and significant progress on a 5 year time scale

- profiles of aerosol properties from the surface to cloud-top level; also environmental T and RH of course
-
- - updraft and turbulence properties in the clouds in order to estimate a mixing time scale (turbulence kinetic energy and eddy length scales, also sizes of entrained blobs): these are needed to estimate CCN activation in entrained air, which then affects the DSD in the clouds which in turn affects cloud albedo.