Focus Groups in ASR

Objective of focus groups

- Focus on critical processes and/or properties to improve global and regional models.
- Aerosol absorption...how should the new instruments and measurements be used, combined, etc.?
  - Need for shorter wavelength – 405 nm, 355 nm and improve instruments
  - Desire to have ongoing closure experiment to assess filter techniques
  - UV MFRSR – total extinction
  - Longwave absorption – samples, routine basis
  - Compare column retrievals of absorption by UV MFRSR – diffuse transmission – compare with in situ
  - Utilize solar FTS instruments at SGP and Darwin and Manaus
  - Compare remote and in situ techniques at GVAX with high aerosol loading (if cloudfree skies)
  - New – CAPS technique for aerosol extinction

Focus Groups in ASR

Objective of focus groups

- Bring critical areas of research to the attention of the community and program management
- Some needs expressed by Xiaohong Liu in his talk about aerosol representation in GCM
  - Refractive index of dust
  - Hygroscopicity of dust and organics
  - Vertical profiles
    - Injection heights of biomass burning
    - Measurements of aerosols in free troposphere
    - SOA formation in upper troposphere
  - water uptake
    - Determine appropriate parameterization
    - how to measure and define this for the column
- How can ASR use assets for long term systematic studies of aerosols to benefit models?

Aerosol Representation in GCM

- Water uptake
  - f(Rh), g(rh) at surface facilities (6-7 locations worldwide)
  - Characterization of uncertainty
  - Campaign data exist to look at dust in various locations
  - Can we derive kappa at various locations?
  - Not all kappa's are the same (CCN vs. TDMA) – consistent method required
    - very high RH
  - Closure studies needed
  - Relate kappa formulation to composition (size resolved)
  - Look at chemical information as related to kappa
  - Quantify uncertainties for remote sensing retrievals in campaigns
  - Utilize SGP Raman lidar and surface measurements to look at f(RH) in column
  - Rain/snow collection? Look for aerosol information, water isotopes

Possible focus groups

1. Synchronization of aerosol measurements with model needs

(example – kappa formulation)

Location – SGP, Azores and other locations

- surface measurements and remote sensing
- controlled lab studies for specific aerosols, need to relate to actual ambient aerosols

2. aerosol absorption – more complete coverage of spectrum – start focus in UV? thermal IR? Focus on GVAX?

3. QME for assessing aerosol models – aerosol testbed

- what are most pressing needs, low hanging fruit – need participation and input from modelers
- prognostic variables from models
- parameterizations
- ongoing closure studies

Breakout Discussion

- Develop future field studies
- GVAX – how can the measurements be best utilized to study aerosol optical properties?
- What aerosol properties, distributions, processes should be addressed in future field missions?
- Controlled burning –
  - characterize sources and products
  - SOA vs. burning products
- Power plant studies – look farther downwind
  - Ex. Four corners