

# Focus Groups in ASR

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## 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

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## 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

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- Water uptake

- $f(\text{RH})$ ,  $g(\text{rh})$  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  $f(\text{RH})$  in column
- Rain/snow collection? Look for aerosol information, water isotopes

# Possible focus groups

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## 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

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## Focus groups provide opportunities to:

- Build collaborations
- Bring critical areas of research to the attention of the community and program management
- advance your own ideas and interests commensurate with program objectives for continued future success within the program

# Breakout Discussion

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- Identify the critical processes/properties that need to be better understood for improving global and regional climate models.
- Develop research projects/approaches to improve the understanding of the indentify processes/properties, including:
  - Develop future field studies
  - Foster ideas and new perspectives for modeling and model development
  - Determine new instruments critical for answering science questions of interest to be considered for future acquisition by infrastructure
  - Indentify data product development critical to answering science questions of interest

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- 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.?
- PASS, PSAP, CLAP
- Lab comparison with known aerosol
- Need for shorter wavelength – 405 nm, 355 nm and improve instruments
- UV MFRSR – total extinction
- Longwave absorption – samples, routine basis
- Column retrievals of absorption by UV MFRSR – diffuse transmission – compare with in situ
- Desire to have ongoing closure experiment to assess filter techniques
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    - Determine appropriate parameterization
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- How can ASR use assets for long term systematic studies of aerosols to benefit models?



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Possible focus group

Synchronization of aerosol measurements with model needs

(example – kappa formulation)

Location – SGP, Azores

-Surface measurements and remote sensing

- prognostic variables from models
- parameterizations
- ongoing closure studies
- controlled lab studies for specific aerosols, need to relate to actual ambient aerosols
- aerosol absorption – more complete coverage of spectrum – start focus in UV? thermal IR? Focus on GVAX?
- QME for assessing aerosol models – aerosol testbed
- what are most pressing needs, low hanging fruit

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- **Water uptake**

- $f(\text{RH})$ ,  $G(\text{rh})$  at surface facilities (6-7 locations worldwide)
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- Campaign data exist to look at dust in various locations
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- advance your own ideas and interests commensurate with program objectives for continued future success within the program
- **Aerosol types...can we help define types relevant and useful for models and measurements and properties required to define the types?**

# Breakout Discussion

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- 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

# Breakout Discussion

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- Determine new instruments critical for answering science questions of interest to be considered for future acquisition by infrastructure

(how can the new (ARRA) instruments be used to address new questions? Example...measurements of aerosol absorption)

# Breakout Discussion

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- Identify data product development critical to answering science questions of interest
- What new products from new instruments should be developed and/or made routinely available?
- How should new and additional measurements of aerosol absorption be combined, assessed, and utilized?

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# Report

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- Discussion leaders report back during the plenary session.



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- How does participation and progress in Focus Groups translate into concrete progress and products within the program?
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  - Opportunity to:
  - 
  - build collaborations – whether you are funded separately and come together on a project relevant to both grants or propose a new grant – science or infrastructure - in the future
  - 
  - bring critical areas of research to the attention of the community and program management – could foster support in the form of extended collaborations or potentially inclusion in future proposal calls
  - 
  - garner support for data product development critical to answering science questions of interest
  - 
  - foster ideas and new perspectives for modeling and model development
  - 
  - determine new instruments critical for answering science questions of interest to be considered for future purchase by infrastructure
  - 
  - advance your own ideas and interests commensurate with program objectives for continued future success within the program

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## Aerosol Absorption

- Need for shorter wavelength – 405 nm, 355 nm and improve instruments
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