

Aerosol Life Cycle Working Group Meeting

November 4-6, 2013

Rockville, MD



A word about ASR, ALWG, and Working Group Meetings

ASR Science Plan (2010)

http://science.energy.gov/~media/ber/pdf/Atmospheric_system_research_science_plan.pdf

2.0 Process Research

2.1 Aerosol Life Cycle

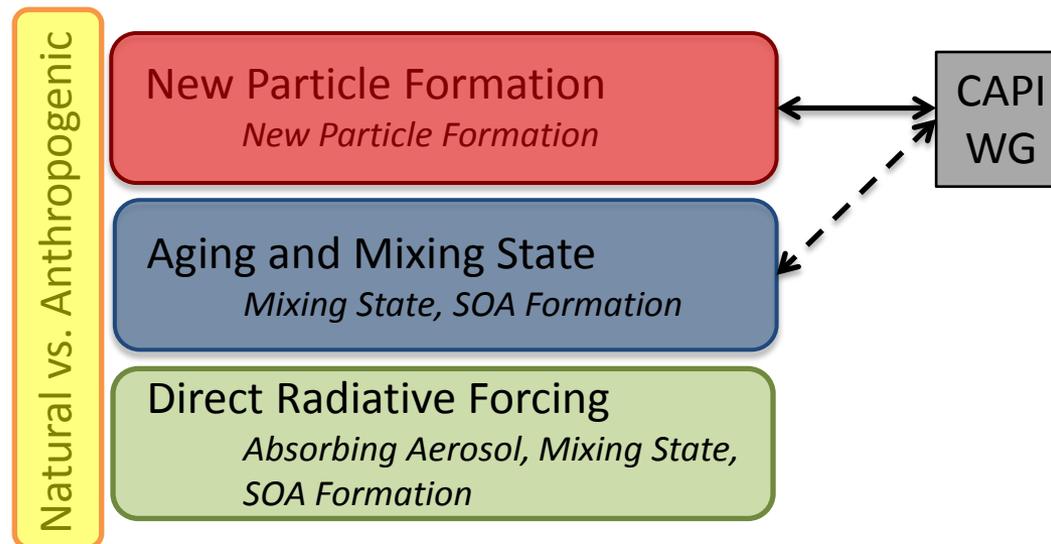
2.1.1 New Particle Formation

2.1.2 Aerosol Aging and Mixing State

2.1.3 Aerosol Direct Radiative Forcing

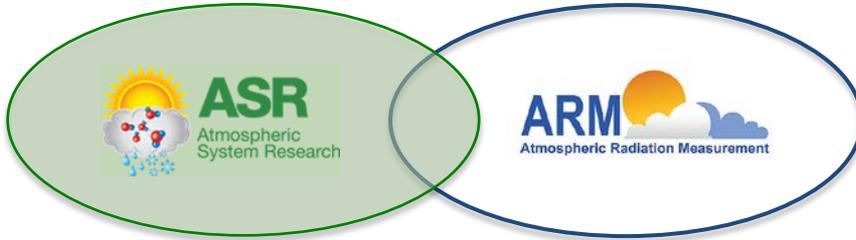
2.1.4 Natural vs. Anthropogenic Influences on Aerosol Properties

Translation to Focus Groups



science

infrastructure



Natural vs. Anthropogenic

New Particle Formation
New Particle Formation

Aging and Mixing State
Mixing State, SOA Formation

Direct Radiative Forcing
Absorbing Aerosol, Mixing State

- in situ (local) nano-scale microphysical properties
- in situ (local) single particle morphology
- in situ (local) single particle chemical properties
- in situ (local) bulk chemical properties
- in situ (local) microphysical properties
- in situ (local) bulk optical properties
- column profile (active) remote sensing
- column integrated (passive) remote sensing

The AOS Committee

1. Instrumentation and Upgrade of Dated Systems (Hardware)

- What are the common geophysical measurements to be provided by AOSes?
- What is the common set of baseline instruments?
- What upgrades need to be made to the current SGP and AMF1 shelters to be consistent with the current BNL AOS shelters?
- What additional observations/instruments are needed at the individual fixed sites to address site-specific issues?
- What set of additional observations/instruments are needed for the mobile facilities to address field campaign deployments.

2. Compatibility of CIRES/BNL Systems (Operating Procedures)

- What metadata needs to be collected to ensure confidence in the instrument performance?
- What automated diagnostics can be developed for continual assessment of instrument health and data quality?
- In what manner can the Data Quality Office be utilized?
- How frequently will 'mentor edits' be submitted?

3. ARM Ingest (Software and Products)

- What changes need to be made to current CIRES and/or BNL data content and processing to standardize ARM processing of all AOS data?

Instrument Priorities: Proposed baseline instruments

Instrument	Measurement	Notes
CCN	CCN concentration	
PSAP/CLAP	light absorption	high sensitivity (potential biases)
UHSAS	size distribution	50 nm – 1 μ m
dry nephelometer	light scattering	
humidified nephelometer	humidification factor	light scattering
TDMA/HTDMA	size distributed growth factor	size
ACSM	composition	non-refractory
SMPS	size distribution	15 nm – 450 nm
CPC	aerosol number concentration	
APS	size distribution	400 nm – 15 μ m
CAPS	light extinction	(absorption by difference)
filter composition	Chemical composition	Ion chromatography; EC/OC
photoacoustic	light absorption	lower sensitivity
CO		

Instrument Priorities: Site specific instrument needs

Instrument	Site	Notes
Nano-SMPS	SGP	NPF
SO ₂ analyzer	SGP	NPF
1625 nm MFRSR	SGP (others?)	+ downlooking head
requested		
CO/NO _x monitor		ENA + AMFs

Agenda

AM 1 (8:30-10:00)		AM 2 (10:15-12:00)		PM 1 (1:30-3:30)		PM 2 (3:45-5:30)
Monday Nov 4						
ALWG Plenary: Welcome/Overview Plaza 1		BBOP Plaza 1		Absorbing Aerosol Jefferson		Absorbing Aerosol Jefferson
				SOA Formation Madison		SOA Formation Madison
Tuesday Nov 5						
TCAP Plaza 1		Mixing State Plaza 1		Mixing State Plaza 1		ALWG Needs for UAV Measurements Plaza 1
		NPF Jefferson		NPF Jefferson		
Wednesday Nov 6						
Aerosol Wet Removal Plaza 1		ALWG Plenary: Summary Plaza 1		ASR Programmatic Plenary Session Plaza 2+3		Cross WG Breakouts
Other breakouts: Magic, Radar Science						
Thursday-Friday Nov 7-8 Cloud Aerosol Precipitation Interactions						

★ Evening Breakouts (7:30-9:00 PM)

Monday – Radiative Impacts of Absorbing Carbon (Madison)

Wednesday – Model Testbeds (Plaza 1)

Questions to

- Do we have...
- What new...
- Does AR... address...
- Have you... <http://asr.s...>
- Have you... <http://asr.s...>

The image shows a screenshot of the Atmospheric System Research (ASR) website. The top navigation bar includes links for ABOUT, SCIENCE, MEETINGS, PROJECTS, DATA, PUBLICATIONS, NEWS, and CONTACTS. A secondary navigation bar below it features Research Highlights, Performance Metrics, Working Groups, and Field Campaigns. On the left, a sidebar contains a 'Submit a Highlight' button and a 'Would you make a good highlight?' prompt. The main content area is titled 'Research Highlights' and contains several articles. The first article, 'Drizzle in the Making', is dated Oct 23, 2013, and is funded by ARM and ASR. It includes a small map of the Caribbean island of Oahu. The second article, 'A Tall Order: Climate Models Fall Short in Predicting African Sahel Rainfall', is dated Oct 21, 2013, and is funded by ARM. It includes a map of the Sahel region in Africa. The third article, 'Evaluation of WRF Microphysics Schemes in Squall Line Simulations', is dated Oct 21, 2013, and is funded by ARM and ASR. It includes a small diagram of a mesoscale convective system (MCS).