

Aerosol Working Group

Introduction

Madison, WI

Sep 17, 2007

Beat Schmid

AWG PIs (as of December 2006)

PI	Affiliation	Title	
Chuang&Chin	LLNL	Examine Aerosol Indirect Effects with a 3-D Cloud Resolving Model and ARM Data	Indirect
Feingold	NOAA	Investigation of the Aerosol Indirect Effect at SGP and AMF Using Ground-based Remote Sensors	
Ghan	PNNL	Cloud Modeling for Indirect Effects of Aerosols	
Miller	BNL	Parameterizations of Cloud Microphysics and Indirect Aerosol Effects	
Penner	U Mich	Cloud/Aerosol Interactions: Application and Improvements to General Circulation Models	
Turner	U Wisc	Analysis and Calibration of CRF Raman Lidar Cloud Liquid Water Measurements	
Lacis	NASA	Cloud/Aerosol Radiative Forcings and Feedbacks in a Climate GCM	Both
Schwartz	BNL	Shortwave Radiative Influences of Tropospheric Aerosols	
Ferrare&Flynn	NASA&PNNL	Characterizing the Vertical Distribution of Aerosols Over the ARM SGP Site	Direct
Schmid	PNNL	Vertically Resolved Radiative Properties of Aerosols and Clouds	

AWG Instruments

- Raman Lidar
- Micropulse Lidars
- Aerosol Observation Systems
 - scattering, absorption, number, size distribution, hygroscopicity, CCN, composition (major ions).
- In situ Aerosol Profile (Cessna)
 - scattering, absorption, number, hygroscopicity, CO₂
- Radiometers:
 - MFRSR, NIMFR, RSS, Cimel, AERI

Translators & Instrument Mentors

First	Last	Affiliation	Instrument
Connor	Flynn	PNNL	AWG Translator
Annette	Koontz	PNNL	AWG Translator Support
Chitra	Sivaraman	PNNL	AWG Translator Support
Dave	Turner	U. Wisc.	AERI
Ralph	Dedecker	U. Wisc.	AERI
Anne	Jefferson	NOAA	IAP and AOS
Betsy	Andrews	NOAA	IAP and AOS
Pat	Sheridan	NOAA	IAP and AOS
John	Ogren	NOAA	IAP and AOS
Gary	Hodges	NOAA	MFRSR, NIMFR
John	Schmelzer	PNNL	MFRSR, NIMFR
Rich	Coulter	ANL	MPL
Rob	Newsom	PNNL	Raman Lidar
Dave	Turner	U. Wisc.	Raman Lidar
John	Goldsmith	SNL	Raman Lidar
Peter	Kiedron	NOAA	RSS
Donald	Collins	Texas A & M	TDMA

IOPs relevant to AWG

- Recent Past:
 - MASRAD (Marine Stratus Radiation, Aerosol, and Drizzle, CA, 2005)
 - ALIVE (Aerosol Lidar Validation Experiment, SGP, 2005)
 - RADAGAST (Niger, 2006)
 - CLASIC (SGP, June 2007), with ASP CHAPS
- Now
 - COPS, AMF, (Germany, 2007)
- Future:
 - ISDAC/RISCAM (NSA, 2008)
 - AMF (China, 2008)

AWG Meetings

- Mar 07, Monterey, ~55 attendees
- Nov 06, San Francisco
 - 1st day ~55 attendees
 - 2nd day ~30(?)
- Mar 06, Albuquerque, ~40 attendees
- Nov/Dec 05, Boulder, ~40 attendees
- Mar 05, Daytona, ~35 attendees
- Dec 04, Boulder, ~20 attendees

STM Monterey 2007

- 6 Plenary Talks related to Aerosols
- 4 Breakout Sessions related to Aerosols
- 41 Posters related to Aerosols

STM Albuquerque 2006

- 7 Plenary Talks related to Aerosols
- 3 Breakout Sessions related to Aerosols
- 30 Posters related to Aerosols

Thoughts on Future AWG meetings

- Will have met with CM, and RP. Would like to meet with CP.
- Joint with ASP (CLASIC/CHAPS)

2007 Aerosol Publications in ARM Database (per 9/15/2007)

1. Flynn, CJ, A Mendoza, Y Zheng, and S Mathur. 2007. "Novel Polarization-Sensitive Micropulse Lidar Measurement Technique." *Optics Express* 15: 2785-2790.
2. Guo, H, JE Penner, M Herzog, and H Pawlowska. 2007. "Examination of the aerosol indirect effect under contrasting environments during the ACE-2 experiment." *Atmos. Chem. Phys.* 7: 535-548.
3. Guo, H, JE Penner, M Herzog, and S Xie. 2007. "Investigation of the First and Second Aerosol Indirect Effects Using Data from the May 2003 Intensive Operational Period at the Southern Great Plains." *Journal of Geophysical Research* 112: doi:10.1029/2006JD007173.
4. Kassianov, EI, C Flynn, TP Ackerman, and JC Barnard. 2007. "Aerosol Single-Scattering Albedo and Asymmetry Parameter from MFRSR Observations During the ARM Aerosol IOP 2003." *Atmospheric Chemistry and Physics* 7: 3341-3351.
5. Kelly, JT, CC Chuang, and AS Wexler. 2007. "Influence of Dust Composition on Cloud Droplet Formation." *Atmospheric Environment* 41(14): 2904-2916.
6. Khvorostyanov, V. I., and J. A. Curry (2007), Refinements to the Koehler's theory of aerosol equilibrium radii, size spectra, and droplet activation: Effects of humidity and insoluble fraction, *J. Geophys. Res.*, 112, D05206, doi:10.1029/2006JD007672
7. Lubin, D, and A Vogelmann. 2007. "Expected Magnitude of the Aerosol Shortwave Indirect Effect in Springtime Arctic Liquid Water Clouds." *Geophysical Research Letters* 34: doi:10.1029/2006GL028750.
8. Prenni AJ, JY Harrington, M Tjernstrom, PJ DeMott, A Avramov, CN Long, SM Kreidenweis, PQ Olsson, and J Verlinde. 2007. "Can Ice-Nucleating Aerosols Affect Arctic Seasonal Climate?" *Bulletin of the American Meteorological Society* 88(4):541-550. doi:10.1175/BAMS-88-4-541
9. Wang, J, PH Daum, LI Kleinman, YN Lee, SE Schwartz, SR Springston, H Jonsson, D Covert, and R Elleman. 2007. "Observation of Ambient Aerosol Particle Growth Due to In-Cloud Processes Within Boundary Layers." *Journal of Geophysical Research* 112: doi:10.1029/2006JD007989.

Research Highlights Sorted by Working Group

Aerosol

2007

Ferrare, R. A., NASA Langley Research Center

Raman Lidar Observations of Aerosol Humidification Near Clouds

Li, Z., University of Maryland

Study Aerosol Humidity Effects Using the ARM Measurements

Liu, Y., Brookhaven National Laboratory

General Formulation for Representing Cloud-to-Rain Transition in Atmospheric Models

McComiskey, A. C., CIRES / NOAA

Quantifying Error in the Radiative Forcing of the First Aerosol Indirect Effect

Min, Q., State University of New York at Albany

Mineral Dust Altering Cloud Microphysics and Precipitation

Tao, W., NASA/Goddard Space Flight Center

Using a Cloud-resolving Model to Identify the Role of Aerosols on Clouds and Precipitation

Using ARM Cloud Data to Evaluate the Effect of a Land Surface on Clouds