

3rd AeroCom workshop

at NASA-GISS, New York, USA December 1-3, 2004

Objective

AeroCom seeks to document differences of aerosol modules in global models and to evaluate the skill in aerosol modeling by initiating comparisons to quality data-set. Particular topics of the 3rd AEROCOM meeting are aerosol-cloud interactions and aerosol associated uncertainties affecting the derived aerosol radiative forcing, also in the context of the upcoming IPCC report.

Workshop Format

The workshop featured discussions on particular aerosol subjects, with key presentations by invited speakers and numerous contributions by workshop participants.

DAY 1

1st December – Aerosol Indirect Effects Aerosol ↔ Clouds / Precipitation

DATA – SATELLITE CLOUD PRODUCTS

Key Questions:

- What cloud products are available?
- How accurate are cloud products (cloud-type or regional and/or seasonal limitations)?
- How representative are derived properties of mean cloud column properties?
- Are quasi-simultaneous (time and space) ‘quality’ aerosol data available?
- Among available data-sets for a particular cloud property, what data should be used?

Key speakers: Steve Platnick (NASA-Goddard, on MODIS) / Jerome Riedi (Univ. Lille, on POLDER) / Roger Davies (JPL, on MISR) / Bill Russow (NASA-GISS, on ISCCP)

Contributor: S.Kinne for Pat Minnis (NASA-Langley, on MODIS)

INDIRECT EFFECT: DATA SIGNATURES (?)

Key Questions:

- Where and when do we find correlations between aerosol and cloud properties?
- What do correlations tell us and what they cannot tell us?
- Are there differences as we go to larger spatial scales?

Key Speakers: Yoram Kaufman (NASA-Goddard, MODIS) / Hongbin Yu (GATech, MODIS) / Surabi Menon (BerkeleyLabs) / Johannes Quaas and Stefan Kinne (MPI, Hamburg)

INDIRECT EFFECT: MODEL SIMULATIONS & SENSITIVITY

Key Questions:

- What sign and magnitude has the indirect effect?
- How reliable are the modeled indirect effects?
- Where(region, altitude) /when(season) does what particular indirect effect dominate?

Key Speakers: Toshi Takemura (CCSR) / Joyce Penner (U. Michigan) / V.Ramaswamy (GFDL) / Surabi Mennon (Berkeley Labs)

Contributors: Trond Iverson (Oslo Univ.) / A.Nenes (GaTech) / Ruediger Lang (MPI, Mainz) / Yi Ming (GFDL)

DAY 2

December 2 – quantifying aerosol

aerosol properties

AEROSOL OPTICAL DEPTH

Key Questions:

- How accurate are the data products (e.g. regional and/or seasonal limitations)?
- How extend local data to ‘regional averages’?
- Among available data-sets, what data should (and should not) be used where and when?
- What do we learn from AeroCom B versus AeroCom A experiments?
- What is the anthropogenic contribution to AOT?
- Are differences between GCM and nudged models significant?

Key Speakers: Alexander Smirnov (NASA-GSFC) / Stefan Kinne (MPI-Met) / Michael Mishchenko (NASA-GISS) / Christiane Textor and Sarah Guibert (LSCE)

Contributors: Michail Alexandrov (NASA-GISS) / Yoram Kaufman (NASA-GSFC) / Barry Gross (CCNY)

AEROSOL SIZE AND AOT SPECTRAL DEPENDENCE

Key Questions:

- What data-sets are available (regional and seasonal limitations)?
- Can we use the Angstrom parameter to validate size in models?
- Among available data-sets, what data should (and should not) be used where and when?
- How different are modeled size distributions?

Key Speakers: Oleg Dubovik (NASA-GSFC) / Ralph Kahn (NASA-JPL) / Christiane Textor (LSCE) /

Contributors: Michail Alexandrov (NASA-GISS) / Graham Mann (Univ. Leeds)

ABSORPTION

Key Questions:

- What do we know about the absorption of aerosol (e.g. BC, OC, dust, spectral dep.)?
- How accurate and how ‘global’ are available data-sets?
- What is the latest on black carbon (amount, water uptake)?

Key Speakers: Oleg Dubovik (NASA-GSFC) / Omar Torres (NASA-GSFC) / Bret Schichtel (NPS) / Sophia Zhang (NASA-GISS) / Paul Ginoux (GFDL) / Andy Lacis (NASA-GISS)

Contributors: Ina Tegen (IfT) / Thomas Diehl (NASA-GSFC)

DAY 3

December 3 – towards forcing

(human) aerosol (+clouds) → Rad. Fluxes

AEROSOL ALTITUDE

Key Questions:

- What products are (and soon will be) available?
- How accurate is the vertical aerosol distribution in models?
- How extend local data to ‘regional averages’ in global modeling?

Key Speakers: Dave Winker (NASA Langley, CALIPSO) / Sarah Guibert and Christiane Textor (LSCE) / Rich Ferrare (NASA-Langley) / Jim Spinhirne (NASA-Goddard)
Contributors: Ralf Kahn (NASA-JPL) / Fred Moshary (CCNY) / Oyvind Seland (Univ. Oslo)

Overview Talk “Can AeroCom help reduce uncertainties in direct radiative forcing”
(by Michael Schulz, LSCE)

FORCING

Key Questions:

- How does the error on relevant aerosol properties translate into clear sky forcing?
- Which aerosol mixing assumptions are realistic?
- Which sources to aerosol forcing can we separate?
- What are the differences to clear-sky total forcing (– at ToA and surface)?
- Is there a regional and compositional aspect to these differences?
- By aerosol component: What are (ToA and surface) forcing efficiencies (Forcing/Burden)?

Key Speakers: Olivier Boucher (LOA) / V. Ramaswamy and Shekar Reddy (GFDL) / Norman Loeb (NASA-Langley) / Stefan Kinne (MPI-Ham) / Toshi Takemura (Kyushu Univ) / Honbin Yu (NASA-GSFC), Tad Andersen (Univ. Wash.)
Contributors: Yves Balkanski (LSCE) / Yi Ming (GFDL) / Surabi Mennon (Berkeley Labs)