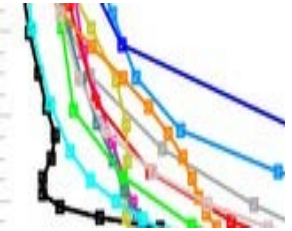


Welcome to 11th AeroCom workshop

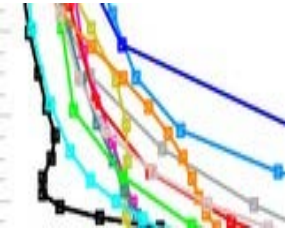
AeroCom phase II analysis

General overview on activities

Michael Schulz

Norwegian Meteorological Institute

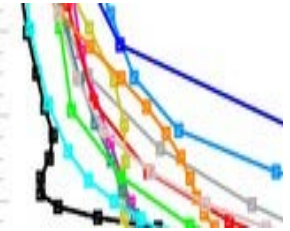
Topics of the 11th workshop



2012 AeroCom Workshop Topics

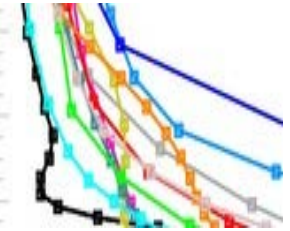
- Review of the AeroCom phase II analysis
- Presentation of recent studies in support of IPCC using AeroCom eventually, also ACCMIP & CMIP5 results
- Comparison of CMIP5 IPCC-AR5 model simulations to AeroCom hindcast and present day simulations
- Discussion of the direct and indirect radiative forcing best guess and trend, and evaluation testbeds
- Robustness of forcing codes and model environment for radiative forcing estimates
- New model experiments and diagnostics to reduce uncertainty of the indirect forcing
- Evaluation of AeroCom models with recent aerosol observations
- Evaluation of aerosol size, and cloud and ice condensation nuclei
- Analysis and evaluation of the vertical distribution of the aerosol
- Assessment of black carbon forcing and potential for mitigation of BC-rich sources
- Role of secondary aerosol (especially nitrate and organics) for aerosol forcing
- Discussion of consistency of aerosol emissions, globally and regionally
- Parameterizations for aerosol models of different complexity

Workshop Technical Remark



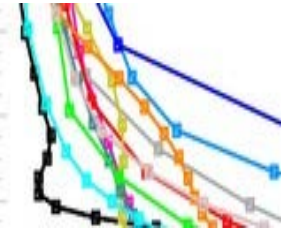
- Upload presentations
  on main computer in breaks
- Presentations (pdf version authorized by you) will be uploaded to password protected part of AeroCom website
- We try to stream the conference by webex
  Speak in the microphone…
  - webex link has been sent only to aerocom-modeller email-list and people from NASA who asked for it

Outline



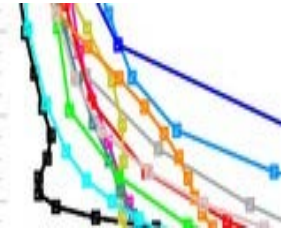
- AeroCom studies 2011/2012
- AeroCom studies under way
- Proposed studies
- Remarks on AeroCom structure

Aerocom Studies 2011-2012 submitted/published



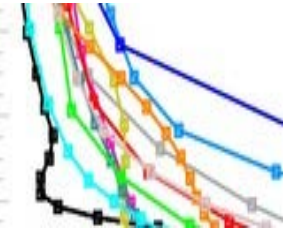
- Koffi, B., **et al** (2012), **Application of the CALIOP layer product to evaluate the vertical distribution of aerosols estimated by global models: AeroCom phase I results,** J. Geophys. Res., 117, D10201, doi:10.1029/2011JD016858.
- Myhre et al submitted to ACP 2012 **Radiative forcing of the direct aerosol effect from AeroCom 1 Phase II simulations**
- Stier et al. submitted to ACP 2012 **Host Model Uncertainties in Aerosol Radiative Forcing Estimates: Results from the AeroCom Prescribed Intercomparison Study**
- Randles et al. submitted to ACP 2012 **Intercomparison of shortwave radiative transfer schemes in global aerosol modeling: Results from the AeroCom Radiative Transfer Experiment**
- Samset et al. submitted to Nature Climate Change 2012, **Black carbon vertical profiles strongly affect its radiative forcing uncertainty**

AeroCom Studies under way



- See also AeroCom Wikipage….
- Caliop phase II =>Koffi / Michaels talk
- Organic Aerosol evaluation => Tsigaridis / Susannes talk
- BC deposition on snow => Flanner poster
- AeroCom hindcasts => Mians talk
- AeroCom & CMIP5 comparison => Nicolas's talk
- Microphysics => Graham's talk
- Surface absorption coefficient => Schulz&Vignati (see below)
- A-Force comparison => Kondo (see below)
- Several indirect effect study talks this time !!
- +++

AeroCom Studies under preparation
=> wiki page



DATABASE USER OVERVIEW [wiki.met.no]

https://wiki.met.no/aerocom/data_base_user_overview

Prosjekter i 2012 [DokIT] ISIweb JGR ACP NO=>DE AEROCOM NO-DE Heinzel Wikipedia

DATABASE USER OVERVIEW [wiki.... Top Sites

[[DATABASE USER OVERVIEW]]

Show pagesource Old revisions

You are here: Welcome to wiki.met.no » Aerocom wiki » DATABASE USER OVERVIEW

Aerocom wiki

AeroCom

Main pages

- AeroCom WIKI home
- Data policy
- Data base User overview
- Optical Properties Model Info
- Organic aerosol documentation
- Model Update Info

This page is hosted by

Norwegian Meteorological Institute met.no

DATABASE USER OVERVIEW

This is an overview of registered users for the aerocom-users ex
Metno:

Name (user) email, institution, *last update, project*

ACTIVE USERS

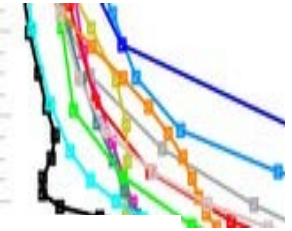
Achim Strunk (astrunk) strunk@knmi.nl, KNMI, Netherlands *Se*

Andrew Gettelman (agettel) andrew@ucar.edu, NCAR, Boulder
indirect intercomparison exercise, July 2008.

Bjorn Samset (bsamset) b.h.samset@cicero.uio.no, CICERO, N
experiment in collaboration with Gunnar Myhre, analysing t
intermodel uncertainties. After the core results have been as
vertical aerosol distributions.

Brigitte Koffi (bkoffi) brigitte.koffi@lsce.ipsl.fr, Laboratoire de
The AeroCom database has been used to evaluate the vertica
CALIOP Aerosol Layer product. The methodology developp

Selection of quality controlled EUSAAR/ACTRIS data

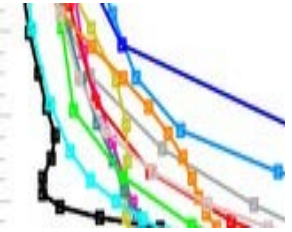


Soot absorption over Europe combining observations and models

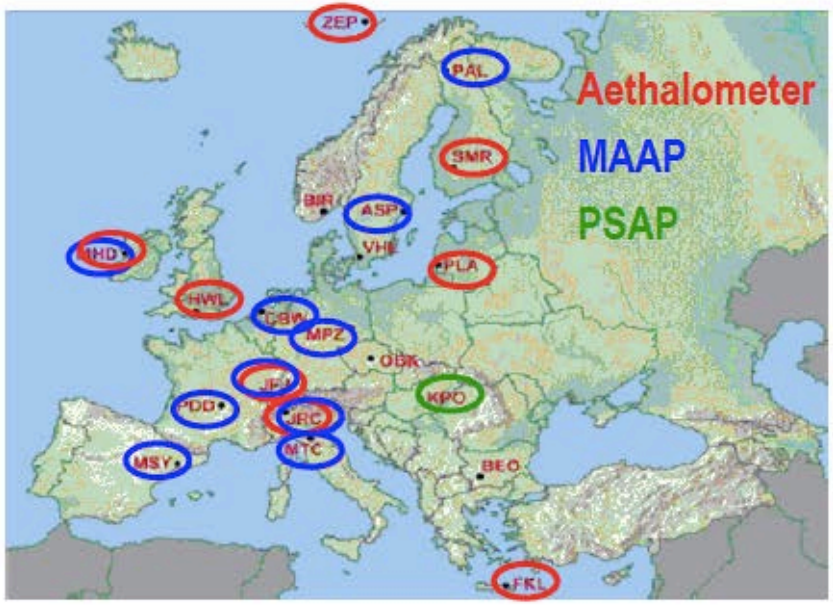
E. Vignati[1], M. Schulz[2], F. Cavalli[1], T. Mueller[3], A. Virkkula[4], C. Lund Myhre[5], A. Wiedesohler[3] and P. Laj[6]

Station	Code	Scatter/Backsc	BC, various res	ABS, all 1h res	to get to 550	EC	StationLongname
JFJ	CH0001G	1995-2011	2001-2010, 1h res (Aeth)	1995-2010 (MAAP)	aeth corr		Jungfraujoch
HPB	DE0043G	2006-2010	2006-2010, 1h res (MAAP)				Hohenpeissenberg
	DE0044R			2007-2010(MAAP)	ogren		Melpitz
MSY	ES1778R	2010		2009-2010 (MAAP)	ogren	2008-2010	Montseny
HYY	FI0050R	2006-2011(jun	2005-2011(may), 5mn res (Aeth)				Hyytiälä
PAL	FI0096G	2000-2011		2007(sept)-2011(may) (MAAP)	ogren		Pallas (Sammaltunturi)
PDD	FR0030R	2006-2011	2001-2007, 5mn res (Aeth)	2008-2010 (MAAP)	ogren	2006-2010	Puy de Dôme
HWL	GB0036R		2009-2010, 15mn res (Aeth)			2008-2010	Harwell
FKA	GR0002R	2004-2010(jun	2004-2010(june), 1h res (Aeth)			2008-2009	Finokalia
KPO	HU0002R	2006-2011		2006-2010 (PSAP)	ogren	2007-2010	K-puszta
MHD	IE0031R	2000-2010	2003-2010, 1h res (Aeth)	2009-2010 (MAAP)	ogren	2006-2009	Mace Head
JRC	IT0004R	2004-2011	2007-2010, 10mn res (Aeth)	2004-2006, 1h res (Aeth) + 2008-2010 (MAAP)	aeth corr	2007-2010	Ispra
MTC	IT0009R	2006-2010		2005-2007 PSAP + 2007-2010 MAAP	ogren	2008-2010	Monte Cimone
PLA	LT0015R		2008-2010, var. res (Aeth)				Preila
CBW	NL0011R	2008-2010		2008-2010 (MAAP)	ogren		Cabauw
ZEP	NO0042G	2004-2010	2005-2006, 1h res + 2007-2010, 30mn re	2002-2010 (PSAP)			Zeppelin
VHL	SE0011R	2008-2010		2008-2010 (PSAP)		2008-2010	Vavihill
	SE0012R			PSAP			Aspvreten
							Birkenes

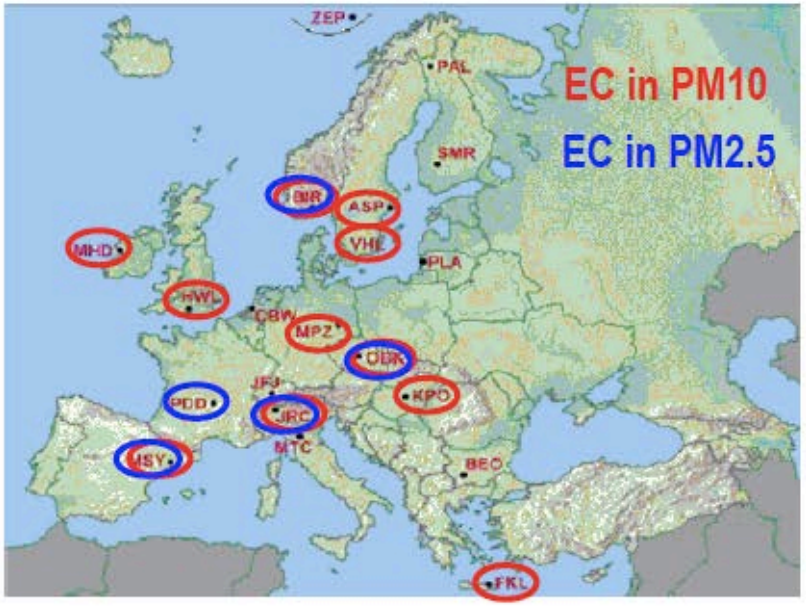
Stations used for absorption coefficient evaluation



Absorption coefficient



Elemental Carbon



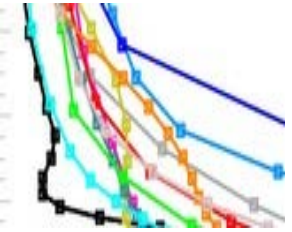
Special Model analysis problems

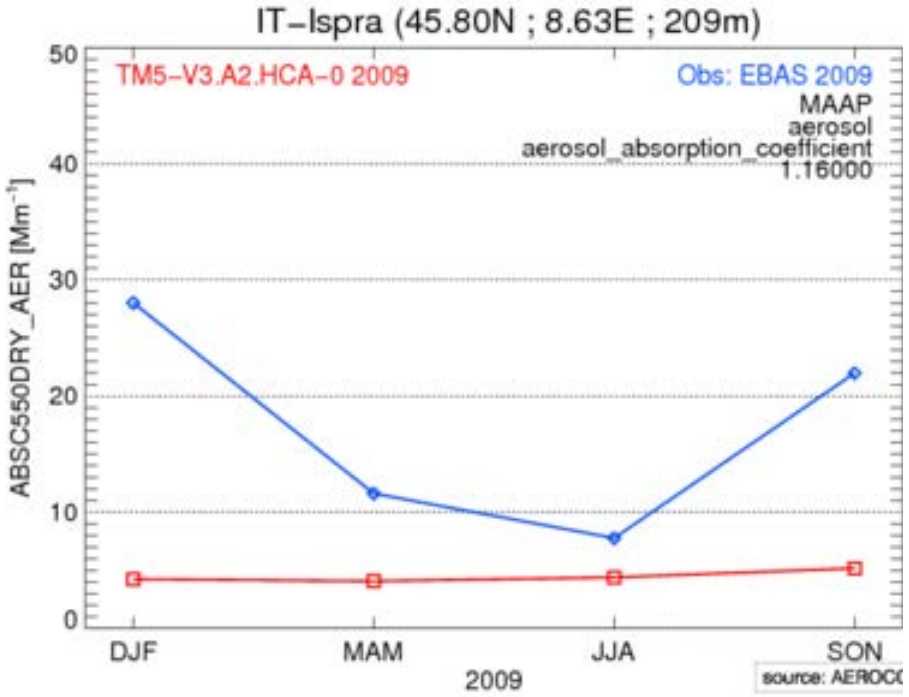
Mountain Station treatment with 3D BCMMR, AAOD and height

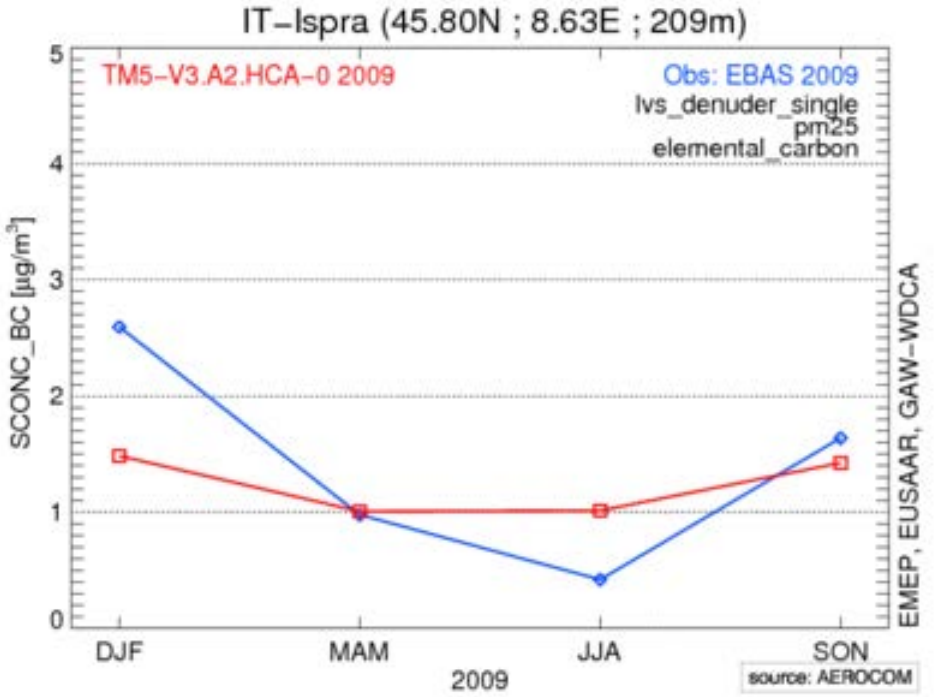
Surface Absorption due to BC PM25 ???

Obs data from 2008-2010, Phase II from 2006

Exampe from Web Interface
Model Group: EUSAAR-Absorption
TM5, Ispra, Seasonal
AER_ABSC550DRY = Absorption Coeff
BC_SCONC = EC surface concentration

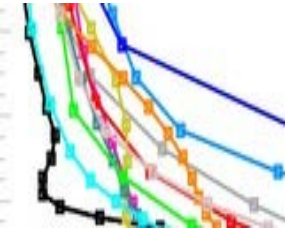






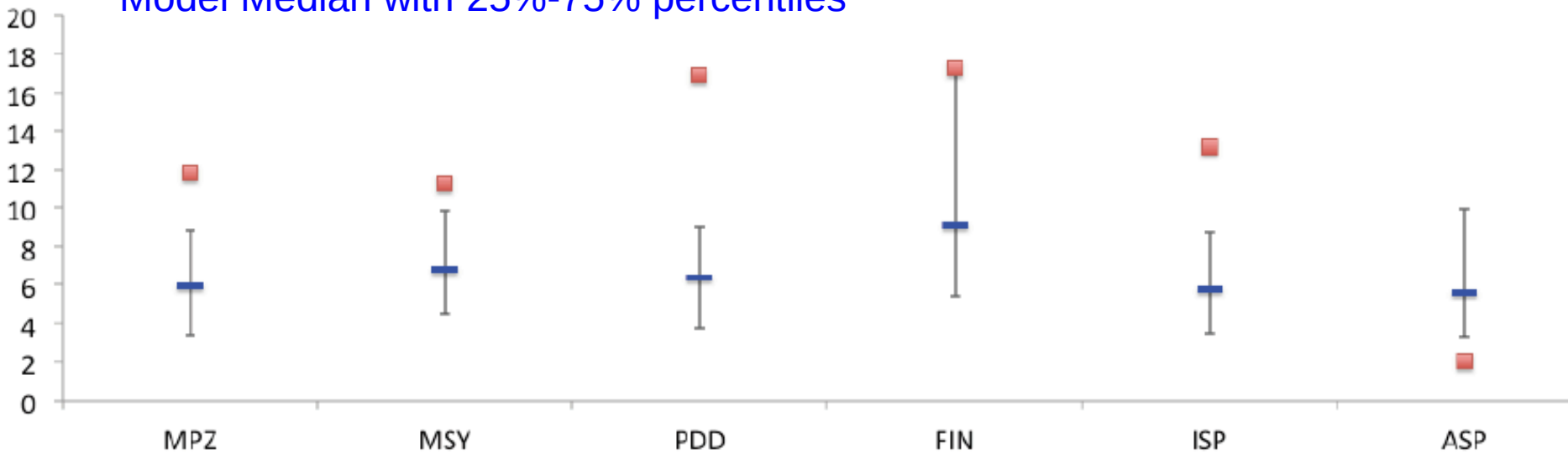
Preliminary quality on web interface !!!

BC specific absorption coefficient using quality controlled ACTRIS data



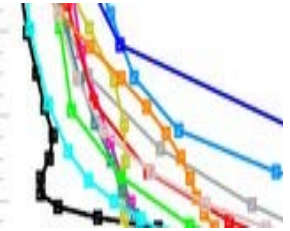
Measurements

Model Median with 25%-75% percentiles



absorpt coeff/ EC

BC profile comparison, for IPCC
Courtesy Yutaka Kondo, Univ of Tokyo



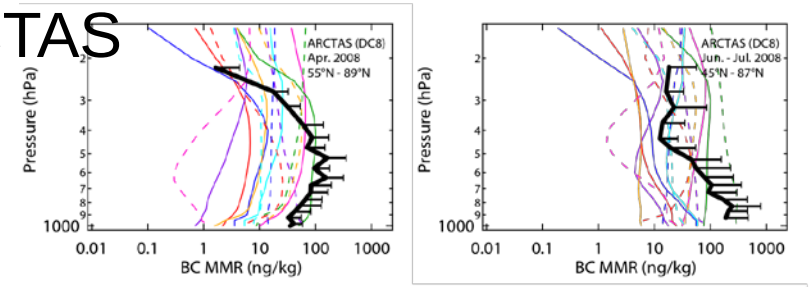
Update of Schwarz et al. (2010) and Koch et al. (2009) comparisons of AeroCom phase I models
Using AeroCom phase II models
Against
SP2 instrument measured vertical profile of “black carbon”
In different campaigns

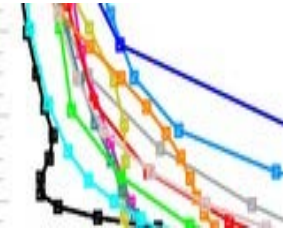
- BCC_AGCM2.0.1_CAM.A2.HCA-FIX
- CAM4-Oslo-Vcmip5.A2.CTRL
- CAM5.1-MAM3-PNNL.A2.CTRL
- GISS-MATRIX.A2.CTRL
- GISS-modelE.A2.CTRL
- HadGEM2-ES.A2.CTRL
- IMPACT-Umich.A2.CTRL
- INCA.A2.RAD-CTRL
- MPIHAM_V2_KZ.A2.CTRL
- OsloCTM2.A2.CTRL
- SPRINTARS-v384.A2.CTRL
- TM5-V3.A2.HCA-IPCC
- GMI-v3.A2.CTRL
- GOCART-v4.A2.CTRL

BC profile comparison, for IPCC
Courtesy Yutaka Kondo, Univ of Tokyo

- BCC_AGCM2.0.1_CAM.A2.HCA-FIX
- CAM4-Oslo-Vcmip5.A2.CTRL
- CAM5.1-MAM3-PNNL.A2.CTRL
- GISS-MATRIX.A2.CTRL
- GISS-modelE.A2.CTRL
- HadGEM2-ES.A2.CTRL
- IMPACT-Umich.A2.CTRL
- INCA.A2.RAD-CTRL
- MPIHAM_V2_KZ.A2.CTRL
- OsloCTM2.A2.CTRL
- SPRINTARS-v384.A2.CTRL
- TM5-V3.A2.HCA-IPCC
- GMI-v3.A2.CTRL
- GOCART-v4.A2.CTRL

ARCTAS



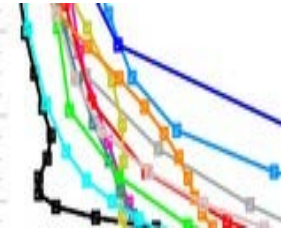


HIPPO

CARB

AFORCE

Proposed Studies

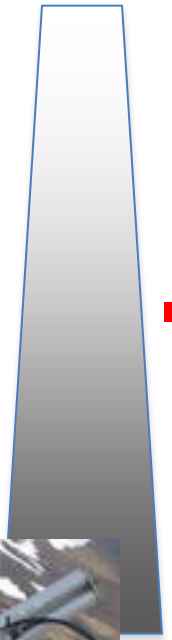


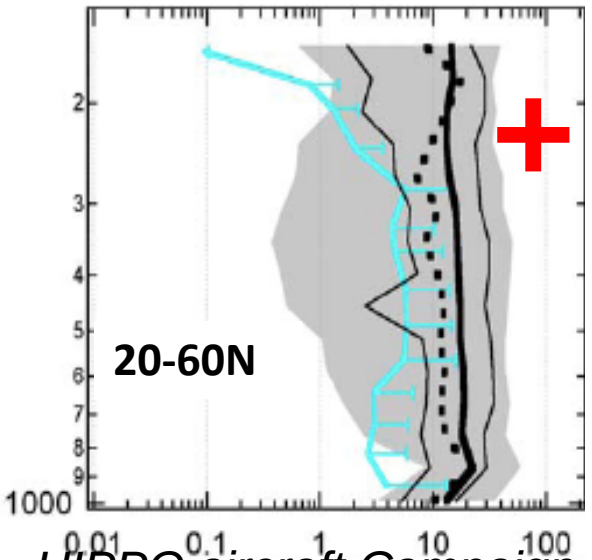
- Basic AeroCom description&AeroCom Median
- Basic Model evaluation paper
- BC evalution II ?
- Nitrate evaluation
- Indirect effect studies

Inconsistent evaluation of black carbon in AeroCom model intercomparison

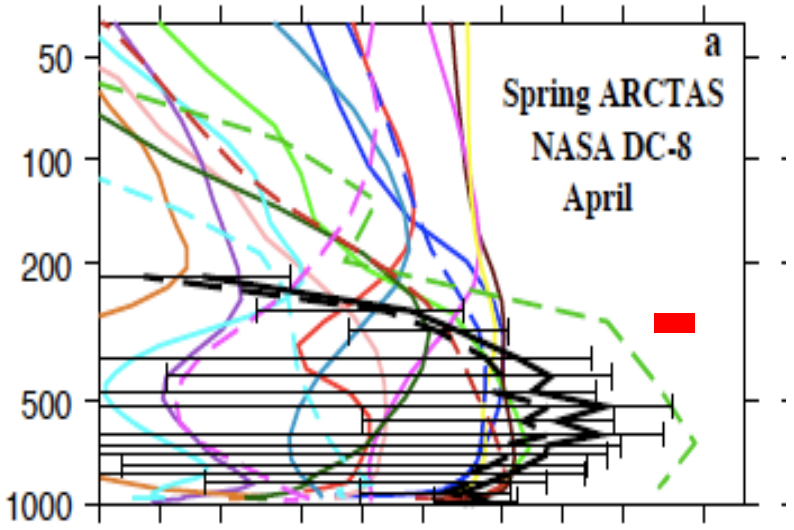
Mid latitudes **upper Troposphere** Arctic

Column absorption
50% underestimated





HIPPO aircraft Campaign



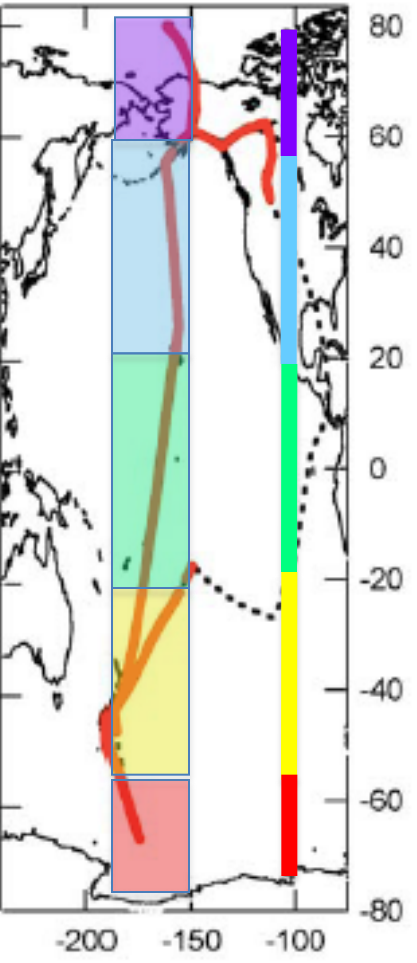
SP2 aircraft measurements

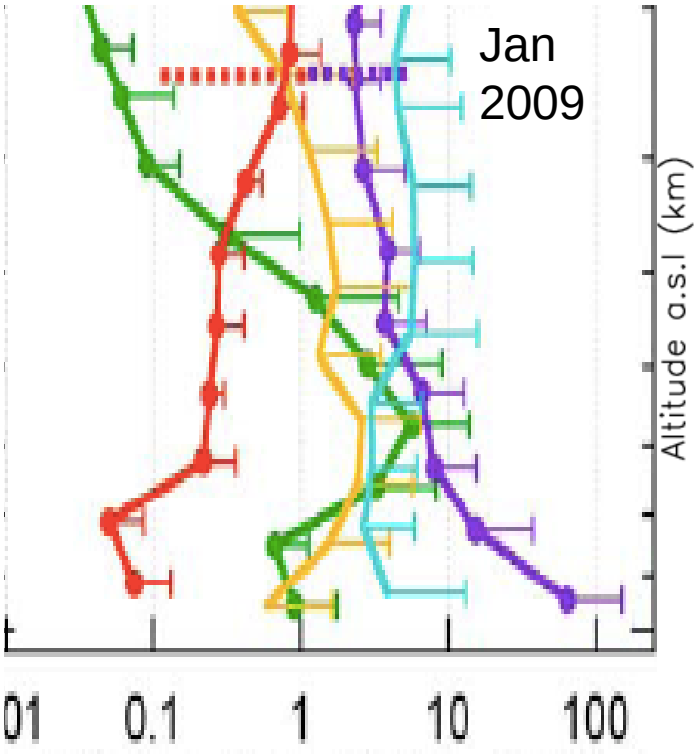
EC **surface** concentrations
60% overestimated by models
in N America

[Model bias]

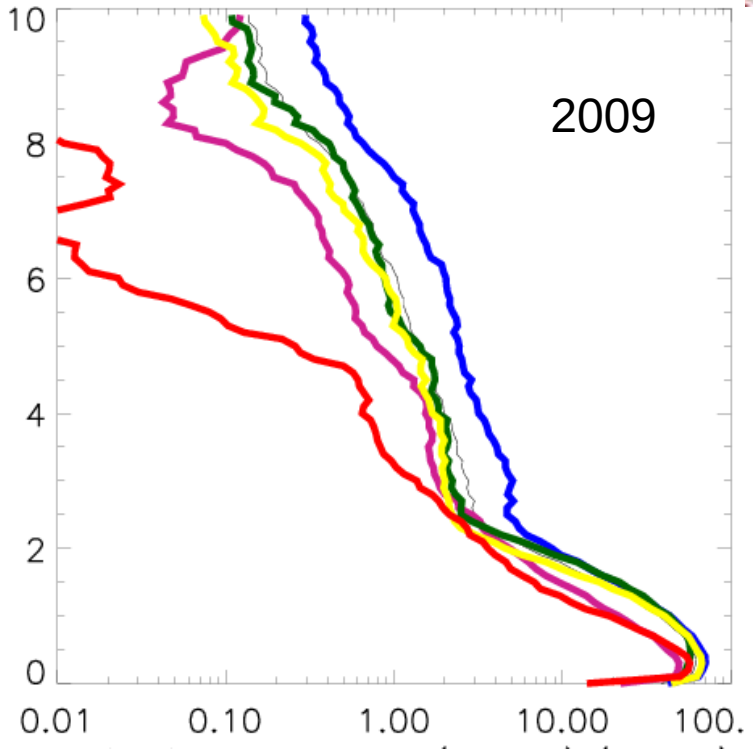
Koch et al., ACP 2009
Schwarz et al. JGR 2010

Aircraft profiles versus Caliop profiles



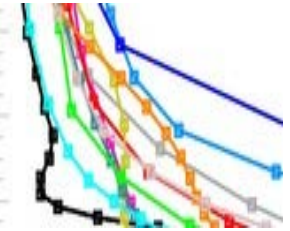


Black carbon
Mass mixing ratio
[kg/kg]



Aerosol
extinction
[Mm-1]

Remarks on Aerocom Structure



- Database approaching 10 TB (aerosol models since 2002)
- One data format (interoperabel w HTAP/ACCMIP/IPCC)
- Documentation through joint papers
- Web interface image catalogue of model fields/evaluation
- Observational data link: 1980 – 2010, Aeronet, EBAS, satellites , CALIOP, aircraft….
- Data server for analysing scientists
- Annual workshop
- Funded currently and indirectly through
  MACC, ECLIPSE, EMEP, ACTRIS, IS-ENES, cci-Aerosol
  BUT also by partner institutes and their core resources

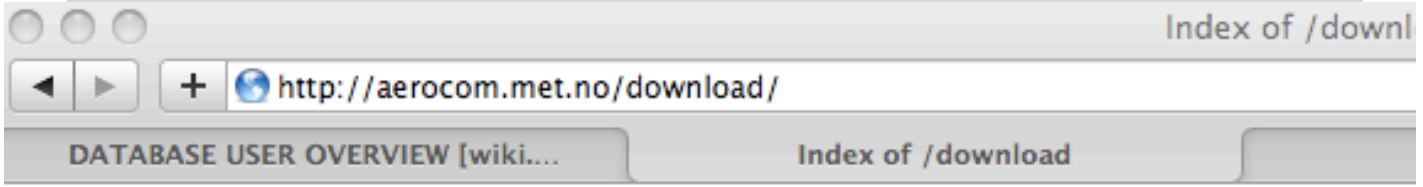
Aerocom wiki

Main pages

- AeroCom WIKI home
- Data policy
- Data base User overview
- Optical Properties Model Info
- Organic aerosol documentation
- Model Update Info

+ Model version/documentation info?

Benchmark datasets on AeroCom webpage



Index of /download

Name	Last modified	Size	Description
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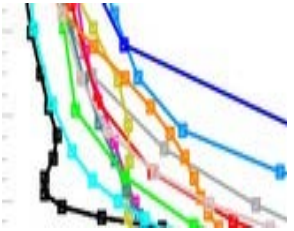
AEROCE-SEAREX/	02-Jan-2012 15:10	-	
AEROCOM_diagnostics_091024.xls	03-Nov-2009 02:05	389K	
BC_BENCHMARK_KOCH2009/	10-Nov-2011 12:55	-	
CALIOP_BENCHMARK_KOFFI2012/	01-Jun-2012 09:11	-	
DUST_BENCHMARK_HUNEEUS2011/	03-Jan-2012 08:03	-	
EUSAAR-ABSORPTION/	04-Jul-2012 14:59	-	
FOR_KONDO/	17-Jul-2012 12:37	-	
HTAP_STDDEV/	18-Jan-2012 17:04	-	
emissions/	15-Jun-2012 11:32	-	

Apache/2.2.8 (Ubuntu) mod_perl/2.0.3 Perl/v5.8.8 Server at aerocom.met.no Port 80

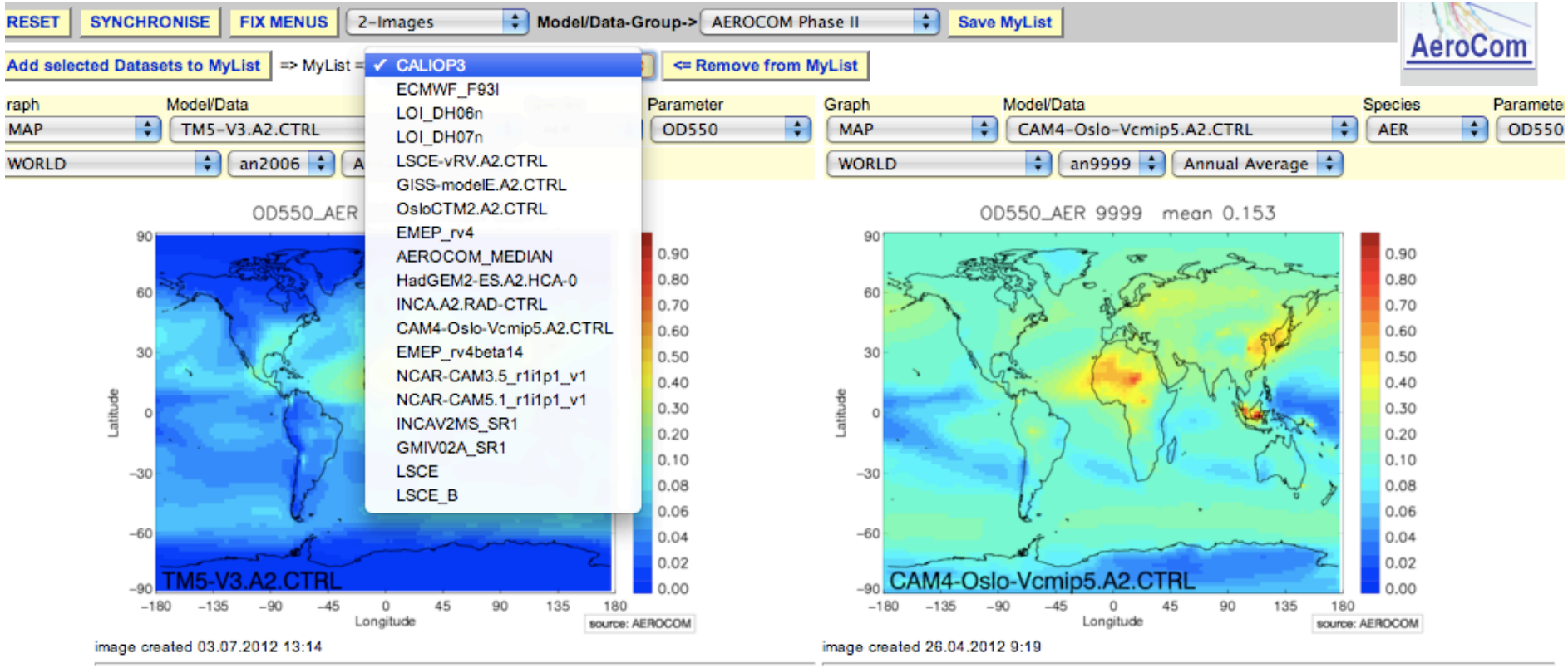
New features on AeroCom webinterface



AEROCOM phase II INTERFACE - MODEL versus DATA, Model maps & scores

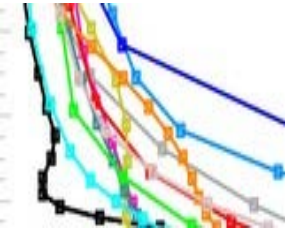
RESET | SYNCHRONISE | FIX MENUS | 2-Images | Model/Data-Group-> | AEROCOM Phase II | Edit MyList

Mylist feature (model selection stored in cookie..) =>



/EB LINK to AeroCom interface selection

Data flow AeroCom



Data provider

Modeller

Consistency with database?

Study Lead

CF checker ???

AeroCom databse Behind Firewall

rsync

User server and disk

Other users

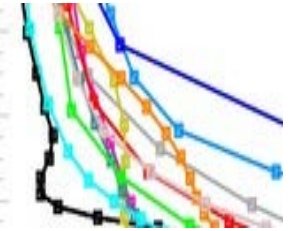
ECMWF/EMEP
Cci-Aerosol
Solar Energy
RollsRoyce
Weather Forecast

Idl-tools processing

Web interface

See also poster from Jan Griesfeller on MetNo facilities

Thanks for the attention



Topics of talk

- AeroCom studies 2011/2012
- AeroCom studies under way
- Proposed studies
- Remarks on AeroCom structure