

AeroCom Remote Sensing

(Ground + Satellite)

Working Group Report

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D.Winker, J.Mace, S.Kato,
O.Navarro, ... and YOU !?**





data in AeroCom

- **goals**

- **provide an evaluation environment to modeling**
- **support an appropriate initialization to modeling**
- **set constraints to global modeling (sub-processes)**

- **desirable requirements**

- **global**
- **complete annual cycle**
- **representative at resolution in modeling**
 - **1x1 degree (with sub-grid statistics)**
 - **3hourly ... to monthly (suff. statistics required)**



AeroCom data needs

...for evaluation

- **statistics approach**
- **monthly, 1x1 gridded (avg, PDF 25%, 50%, 75%)**
- **uncertainty range is preferred over average**
- **case-study approach**
- **data at highest resolution for 'data'-simulator**
- **statistics of individual comparisons**
 - **for sparse data (e.g. Calipso, ground-lidar)**
- **format**
- **netcdf format (if possible)**



AeroCom - current data pool

○ ground

- AERONET aod, ssa(abs-aod), sd(re), A, mBC, Forcing
- EMEP su, ss surface conc (EU)
- IMPROVE su, oc/bc surface conc (US)
- EARLINET lidar vertical profiles (EU)

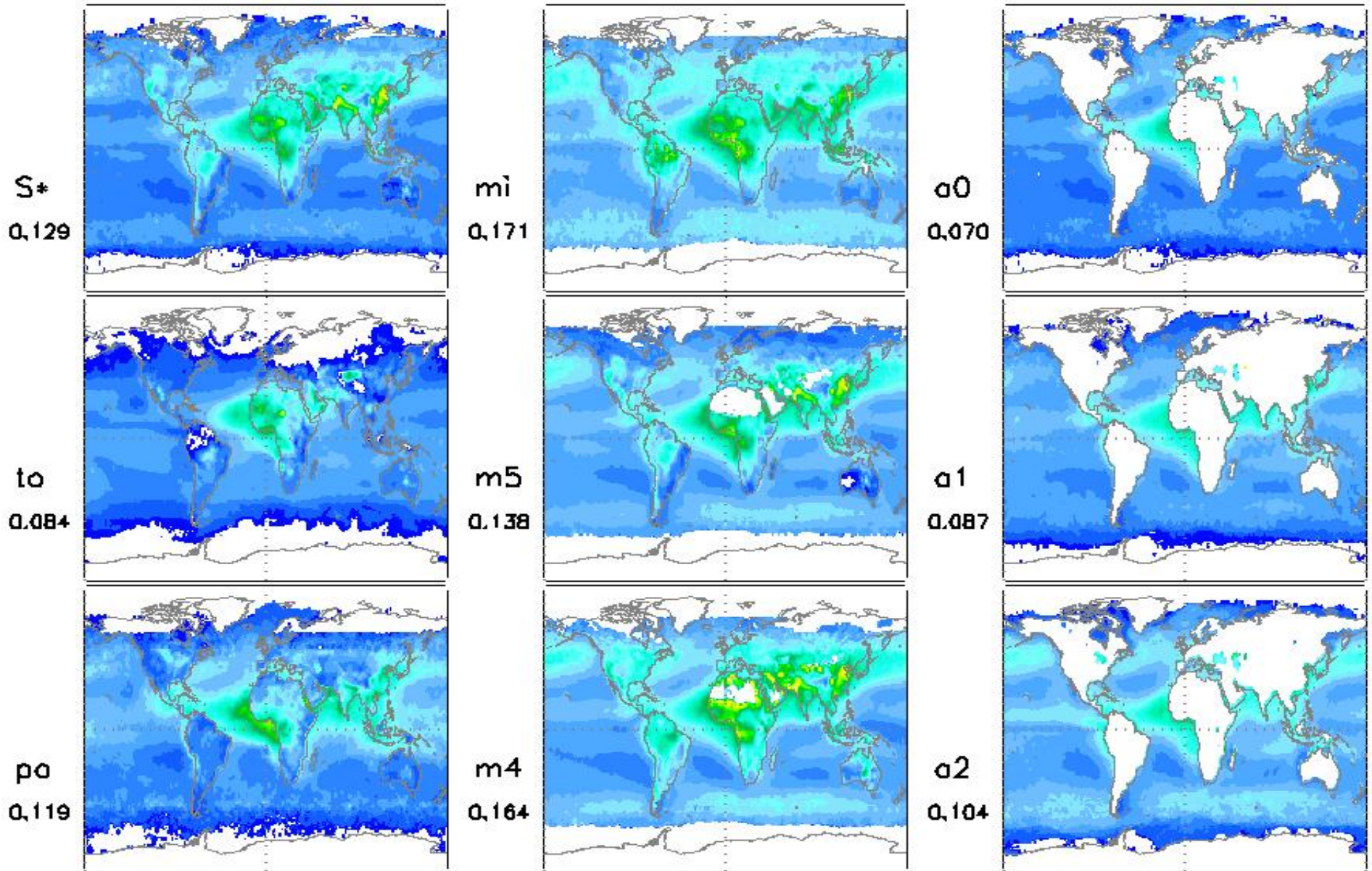
○ satellite

- MODIS (t+a) aod, f-frac (aer) / lwc, ot, re, cover (cld)
- MISR aod
- AVHRR aod, A (GACP), aod (NOAA), *[multi-ann]*
- TOMS aod, ssa(abs-aod) *[multi-ann]*
- POLDER aod

○ composite

- AOD (MODIS/MISR/POLDER/AVHRR)

SATELLITE COMPOSITE of AOD





new data potential !

A-Train synergetic efforts

- langley (MODIS + CALIPSO) in CERES pixel
- u of utah (Cloudsat + Calipso)
- lille (MODIS + PARASOL)
- goddard (MODIS + OMI +MISR)
- wisconsin (MODIS + AIRS)

... new AeroCom experiment 7/2006 – 6/2007 ?

related

- visualization (3D?) and data portal GIOVANNI



near future data-sets (1)

○ ground

- **BSRN (ground site radiative fluxes)** [M. Wild]
 - in forcing section
- **EARLINET (vertical profiles)** [G. Paparlado]
 - in 'vertical distribution' section

○ in-situ

- **NOAA (profiling at SGP, Bondville)** [J. Ogren]
 - in 'vertical distribution' section



near future data-sets (2)

○ **satellite**

- **Calipso (1x5, day/night-monthly, 250m) [D.Winker]**
- **CloudSat/Calipso (1x1, monthly, 250m) [J.Mace]**
- **MODIS/Calipso (1x1, cloud [–top] data) [S. Kato]**
- **advanced products (MODIS +deep blue) [R. Levy]**
- **MISR (non-) spherical fraction [R. Kahn]**
- **MISR v22: plume altitude, ss-albedo ? [R. Kahn]**
- **OMI (483um ss-albedo!) [B. Veihel.]**
- **SEVIRI (daily cycle!) ... GlobAer? [O. Navarro]**

○ **composite and resource**

- **GIOVANNI – link to products [G.Leptouhk]**

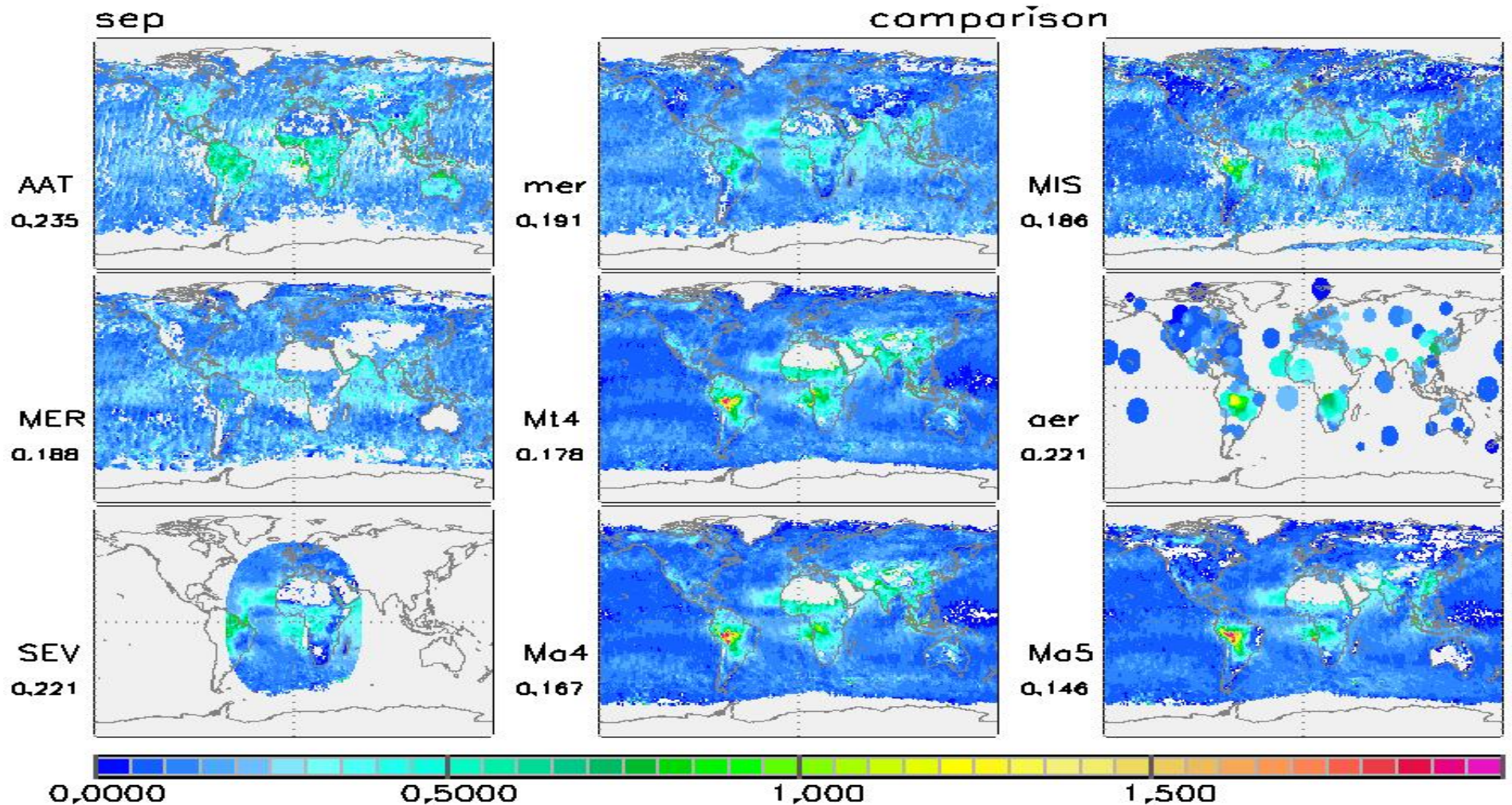


questions to data providers

- **what product (s) ?**
- **monthly gridded 'level 3' data ?**
- **variability / uncertainty statistics ?**
- **when available ?**
- **format ?**



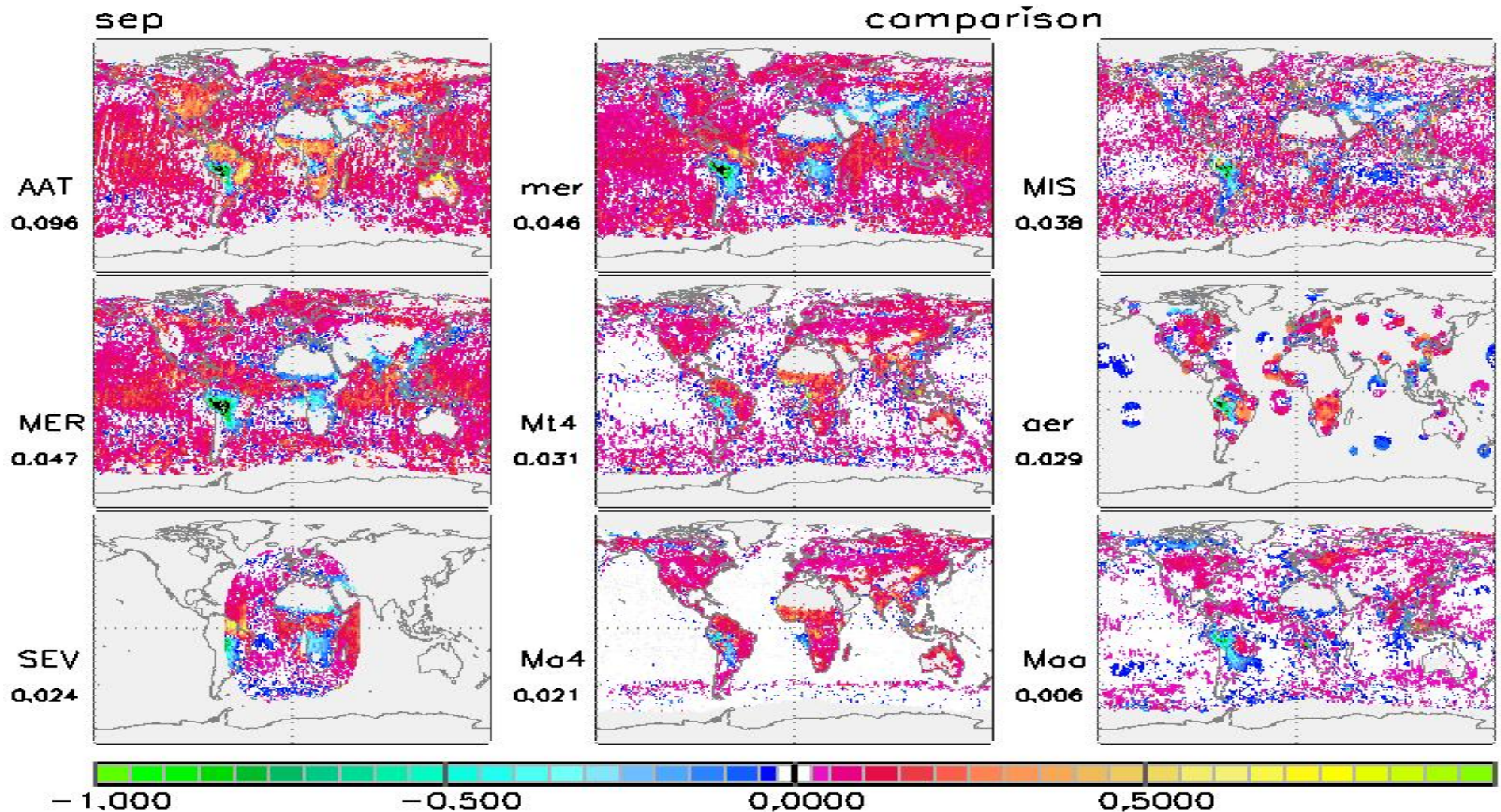
GloAER (1)



GloAER: AAT – AATSR, MER – MERIS, SEV – SEVIRI, mer - merged for comparison: MODIS4 (t+a), MODIS5 (a), MISR and AERONET



Globaer – diff to MODIS 5,aqua



Globaer: AAT – AATSR, MER – MERIS, SEV – SEVIRI, mer - merged for comparison: MODIS4 (t+a), MODIS5 multi-yr, MISR, AERONET