AEROCOM Meeting

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Aerosol Products Over Ocean from NOAA/AVHRR and EOS/MODIS created/maintained by NOAA/NESDIS

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AEROBS REAL TIME PRODUCT FROM NOAA-KLM/AVHRR3

1) NOAA-16 (L) (SEP 2000, 02:00 PM)
2) NOAA-17 (M) (JUN 2002, 10:00 AM)

- **Operational Aerosol Observations (AEROBS)**
- **Cloud: same as for SST; Glint: 40°/Antisolar Side**
- **8 km(2x2 GAC pixels)/Daily**
- **Single-Channel (3rd Gen; Ignatov et al. 2003)**
- **Three AODs: $\tau_1(0.63)$, $\tau_2(0.83)$, $\tau_3(1.61\ \mu m)$**
- **Angstrom Exponents estimated from AOD**
- **Calibration off (τ/α off; no affect on τ-patterns)**
- **Qualitative monitoring aerosol & AVHRR performance**

www.osdpd.noaa.gov/PSB/EPS/Aerosol/Aerosol.html

www.saa.noaa.gov

A.Ignatov, J.Sapper, I.Laszlo, N.Nalli, K.Kidwell, 2003: Operational Aerosol Observations (AEROBS) From AVHRR/3 Onboard NOAA-KLM Satellites, *JTECH*, submitted.

NOAA-KLM AVHRR/3 Aerosols 12-20 February 2003

τ_1 (0.63 μm)

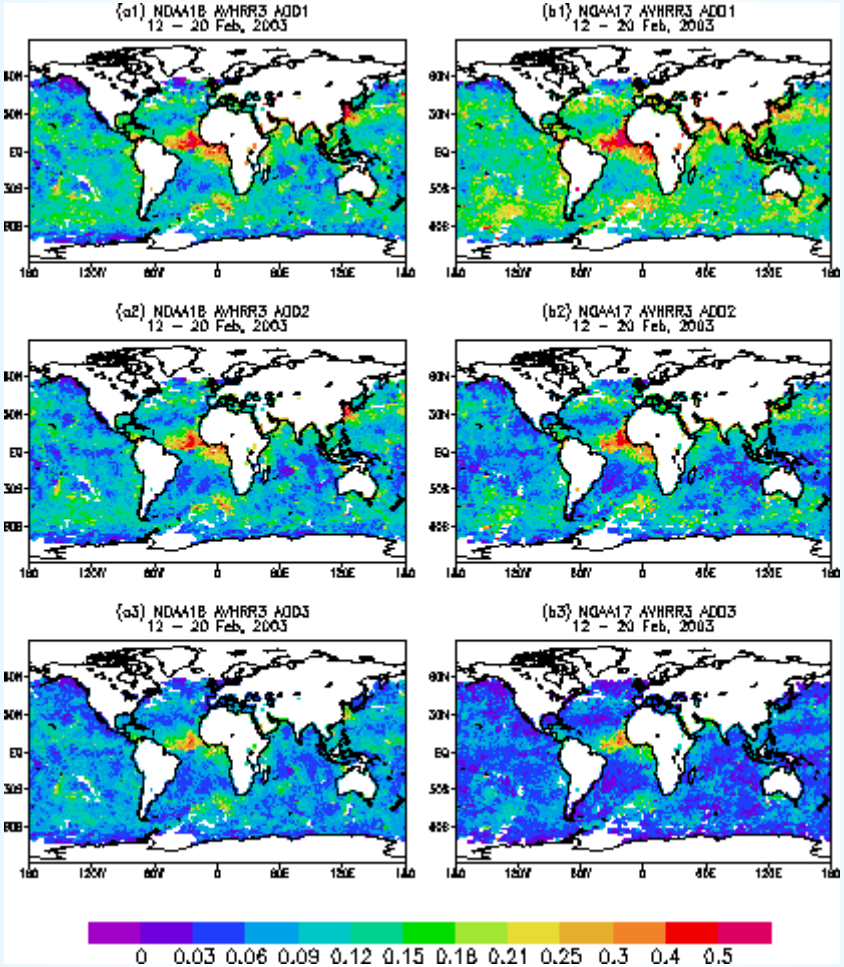
R_1=0.82
$\delta\tau_1$~+0.03
$\sigma_{\tau 1}$~0.05

τ_2 (0.83 μm)

R_2=0.80
$\delta\tau_2$~-0.01
$\sigma_{\tau 2}$~0.04

τ_3 (1.61 μm)

R_3=0.74
$\delta\tau_3$~-0.02
$\sigma_{\tau 3}$~0.03



Ignatov, et al, 2003, *JTECH*, submitted.

NOAA-16 (2 PM)

NOAA-17 (10 AM)

PATMOS HISTORICAL REPROCESSING FROM NOAA-7 TO-14/AVHRR2

NOAA-7,-9,-11,-14 (1981 - 2000)

- **Pathfinder Atmosphere (PATMOS)**
- **Cloud: CLAVR; Glint: 40/Antisolar Side**
- **110 km / Daily**
- **Single-Channel (2nd Gen; Stowe et al. 1997)**
- **Two AODs: $\tau_1(0.63)$, $\tau_2(0.83)$**
- **Angstrom Exponent estimated from AODs**
- **Cal adjusted: Long term/Climate analyses**

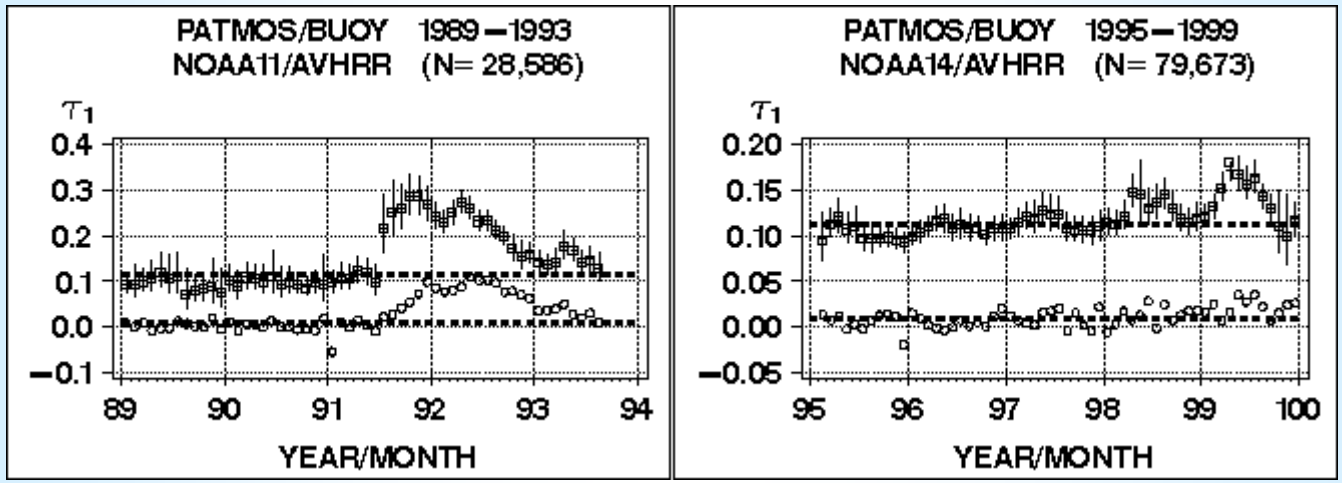
www.saa.noaa.gov

L.Stowe, H.Jacobowitz, G.Ohring, K.Knapp, N.Nalli, 2002: The AVHRR PATMOS Climate Dataset: Initial Analyses and Evaluations, *JClimate*, 15, 1243-1260.

A.Ignatov, N.Nalli, 2002: Aerosol Retrievals from PATMOS dataset for correcting SST, *JTECH*, 19, 1986-2008.

PATMOS-KLM PLANS: NOAA-16,-17 (2000 -)

EXAMPLE OF PATMOS TIME SERIES FROM NOAA-11 AND NOAA-14



Circles: Minimum;
Squares: Mean;
Whiskers: $9\times\sigma/\sqrt{N}$.

Ignatov, Nalli, 2002: Aerosol Retrievals from PATMOS dataset for correcting SST, *JTECH*, 19, 1986-2008.

CERES/SSF AEROSOLS FROM EOS/MODIS

1) TERRA (DEC 1999, 10:30 AM)
2) AQUA (MAY 2002, 01:30 PM)

- **Clouds and the Earth's Radiation Energy System (CERES) Single Scanner Footprint (SSF) Datasets**
- **MODIS stat mapped into CERES footprints (~20 km)**
- **eosweb.larc.nasa.gov/PRODOCS/ceres/table_ceres.html**

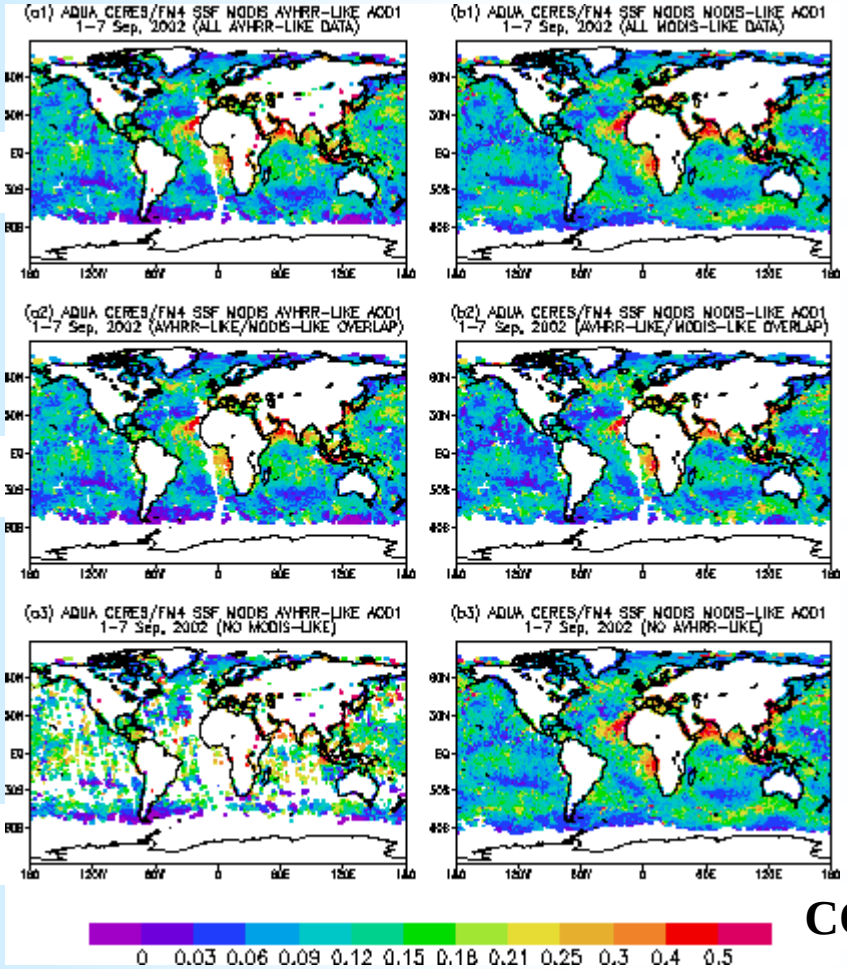
- **TWO aerosol products from MODIS on CERES SSF:**
  1) Standard MODIS (NASA/GSFC & Univ. of Lille);
  2) AVHRR-like τ_1(0.63), τ_2(1.61 μm) (NOAA/NESDIS)
  (Ignatov et al, 2003, JAS, in preparation)

- **Why: 1) Hereditary w/AVHRR; 2) MODIS improvement**

- **Different: 1) Cloud/Glint screening 2) Aerosol Algorithm**

Aqua τ_1@0.659 μm: 1-7 Sep 2002

AVHRR-like **MODIS-like**

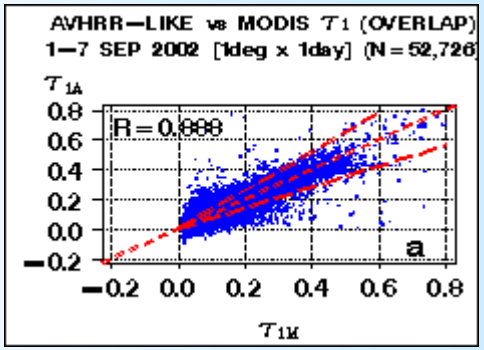


A_T~43% A_T~53% **ALL DATA**

A_T~42% A_T~42% **OVERLAP**

A_T~48% A_T~59% **COMPLEMENT**

- **Data good**
- **Patterns similar**
- **τ coherent with cloud, A_T**



- **τ_M & τ_A: Correlated**
- **Scatter at low τ: Aerosol model unlikely**