



Aerosol properties retrieved from space observations

D. TANRE

LOA/CNRS/Université de Lille 1

And Many Contributors ……

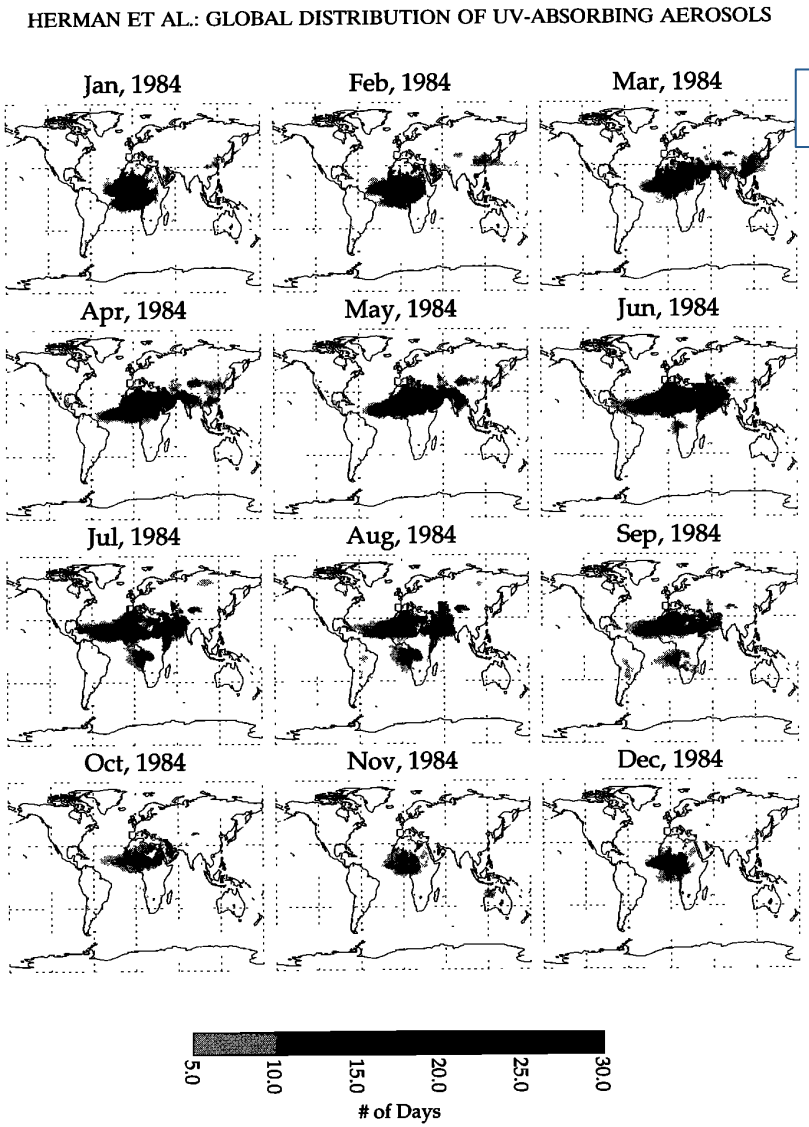
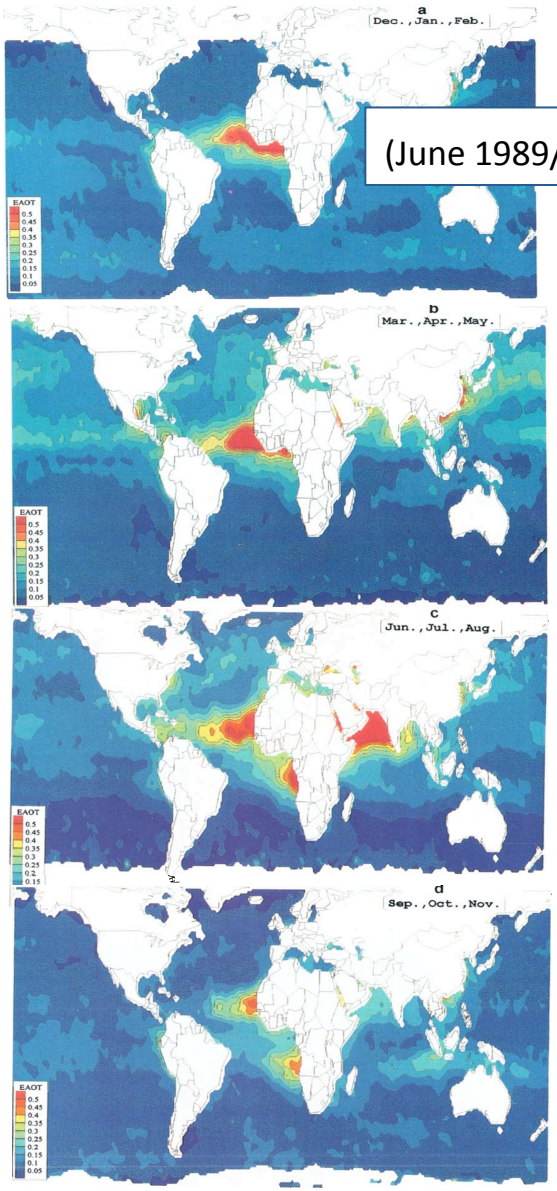


Figure 5. Monthly maps of UV-absorbing aerosol occurrences lasting more than 5 days for 1984.

1984

TOMS/NIMBUS7 (1979-July 1993)

J.R. Herman et al., 1996



(June 1989/July 1991)

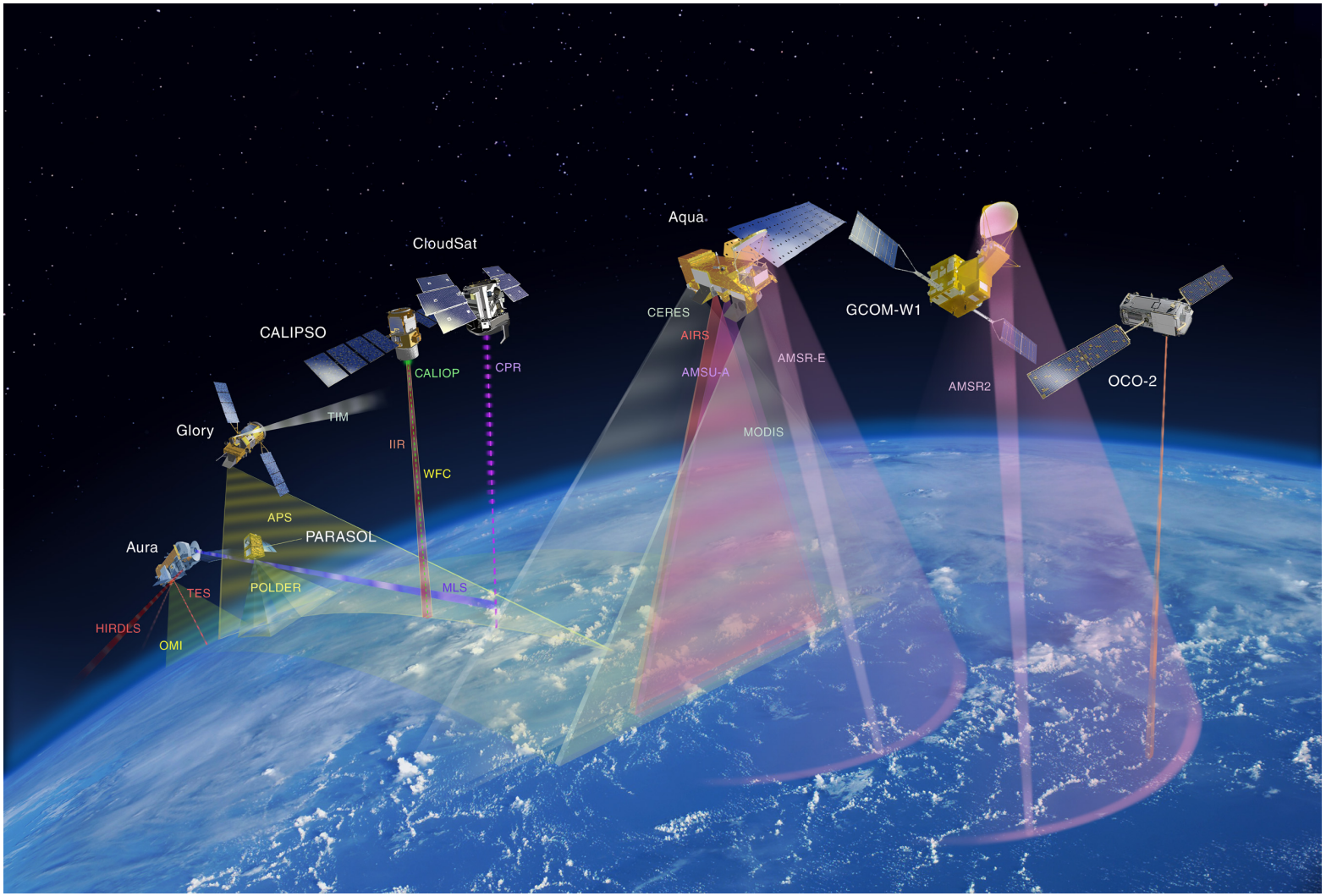
AVHRR/NOAA (1983-2002)

R.B. Husar et al., 1996

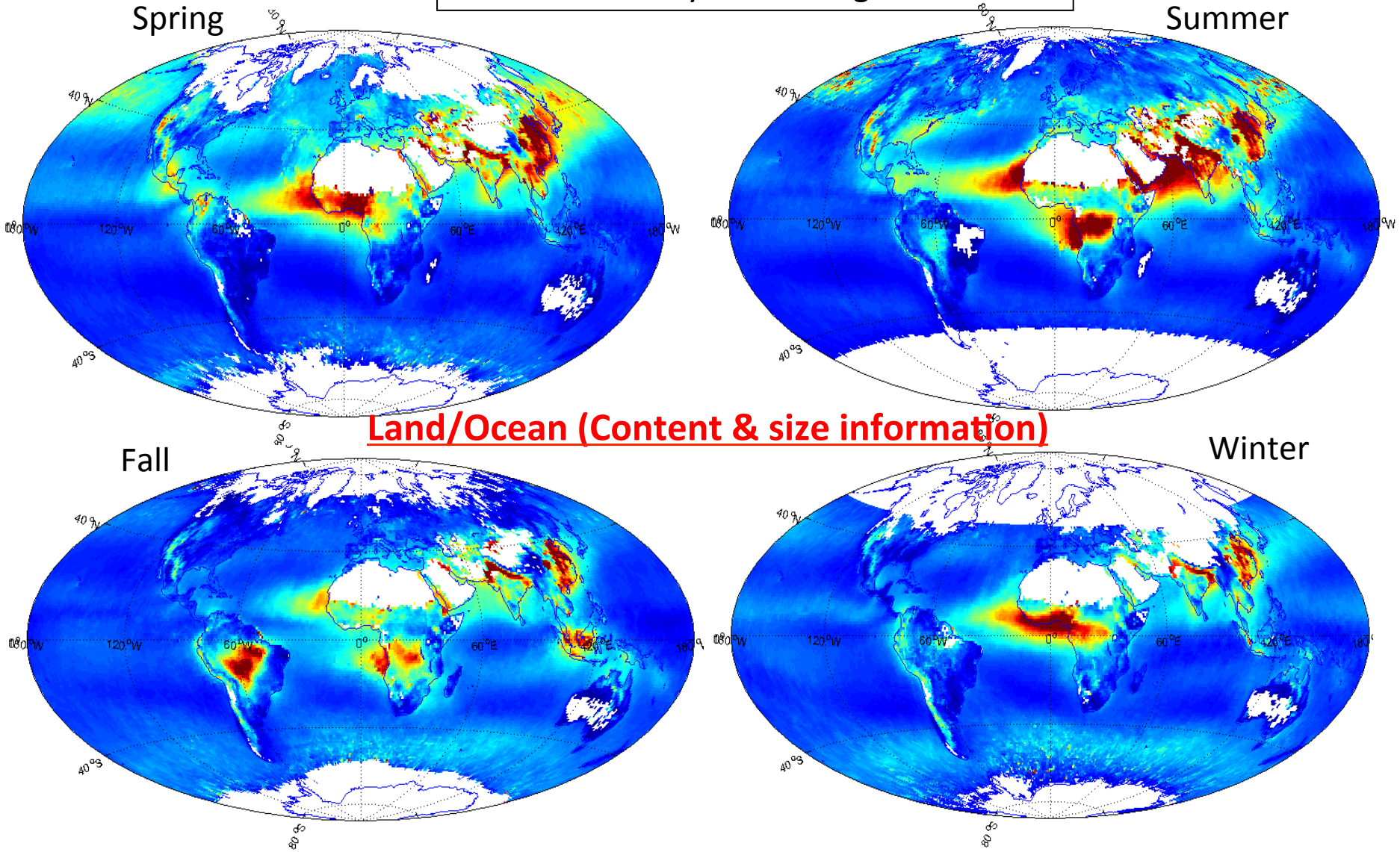
In the 80's....

In the 90's: ATSR/ERS1&2 (1991&1995), ADEOS-1/POLDER (1996), TERRA/MODIS/MISR (1999)

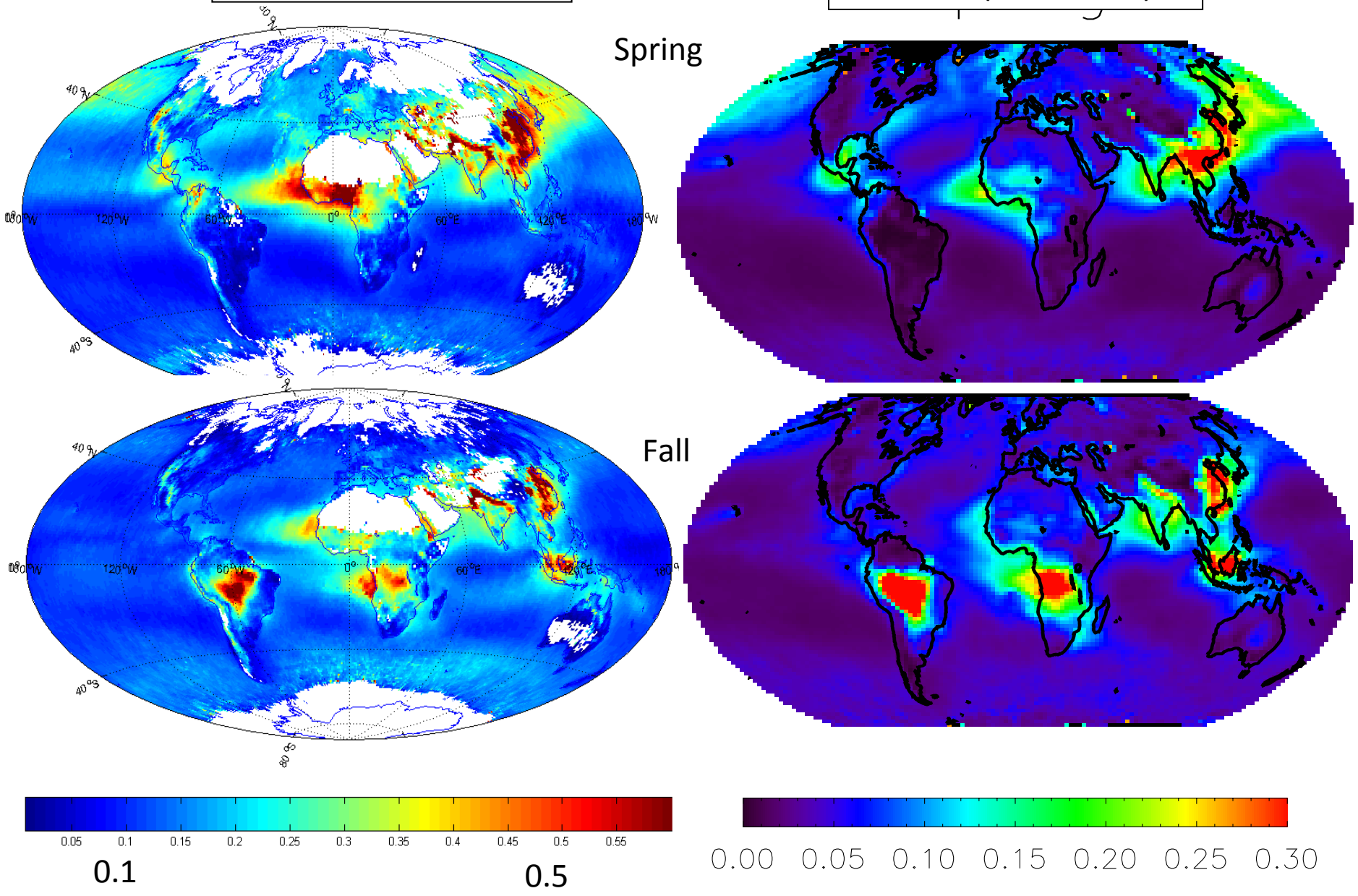
In the last decade: ENVISAT(2002), ADEOS-2/POLDER/GLI (2003), GLAS (2003)
& the A-TRAIN constellation: AQUA/MODIS (2002), AURA/OMI (2004), PARASOL/POLDER (2004), CALIPSO/CALIP/IIR (2006)



FROM MODIS 7 years average 2000-2006

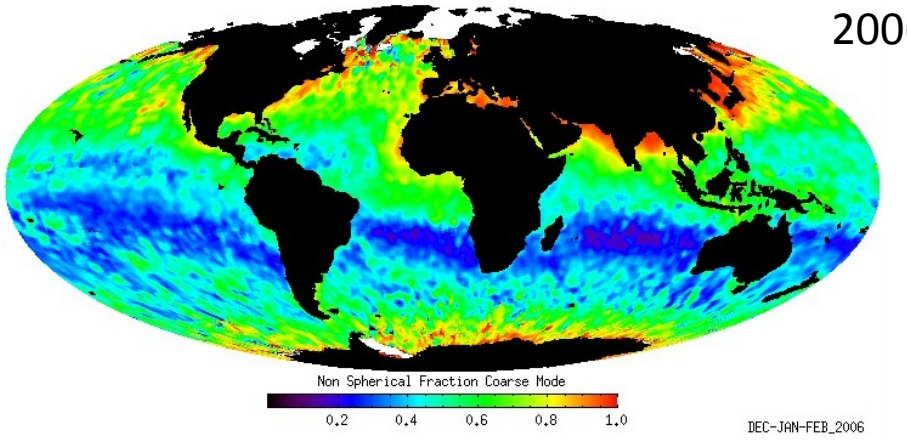


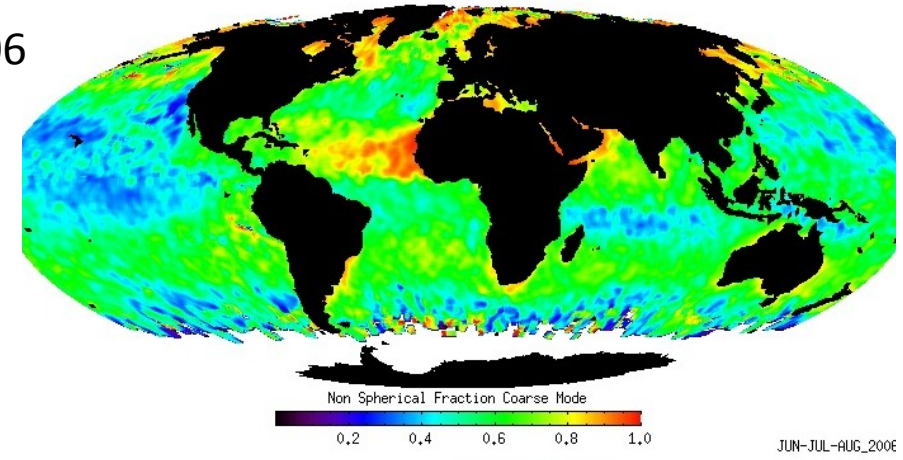
(Remer et al., 2008)



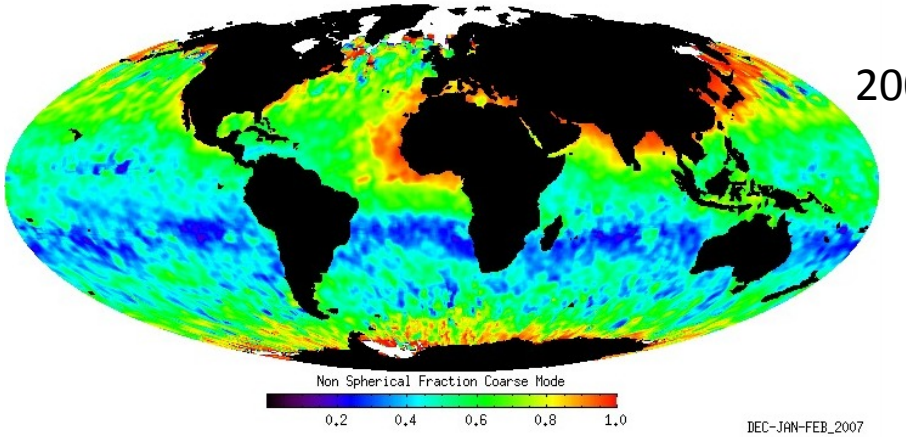
Total AOD & AOD from accumulation mode

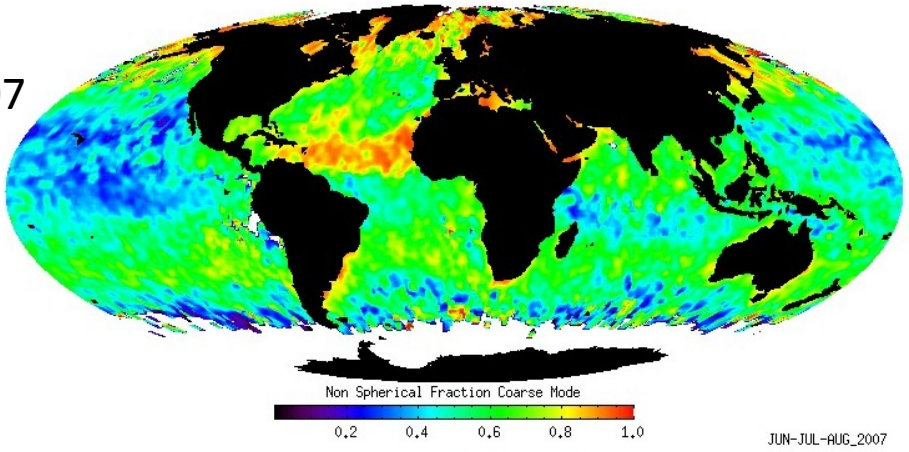
2006





2007



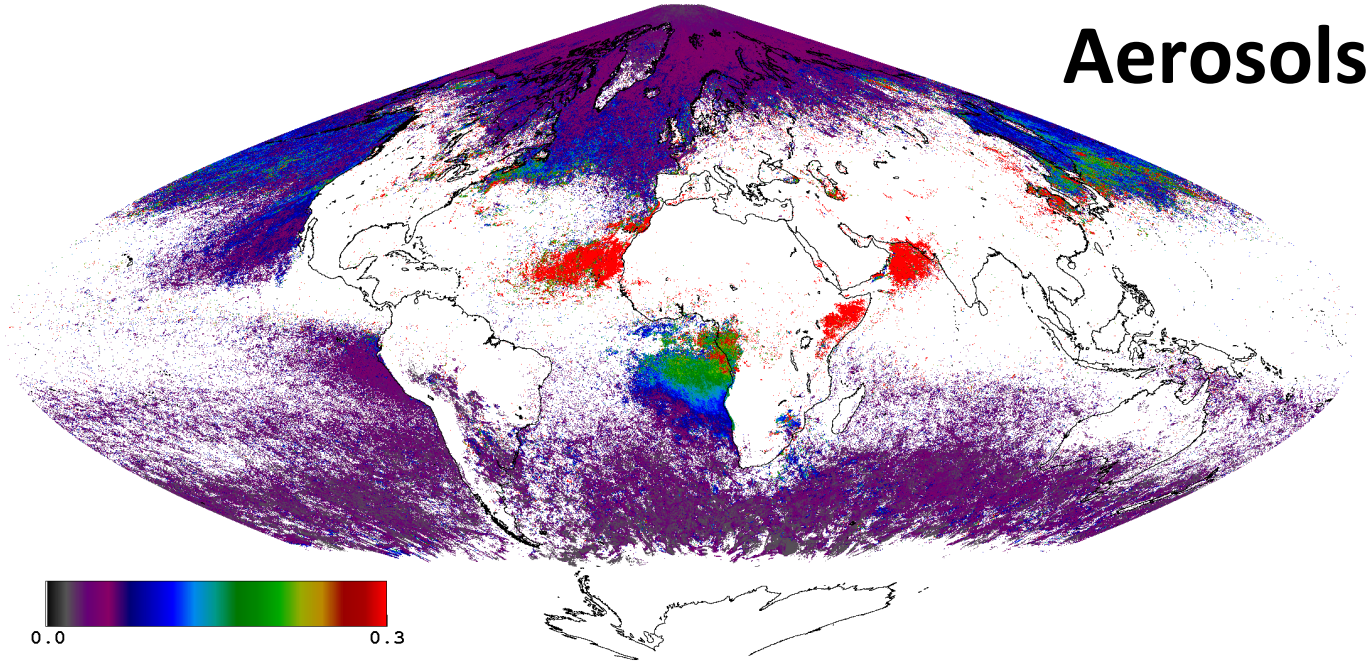


WINTER

SUMMER

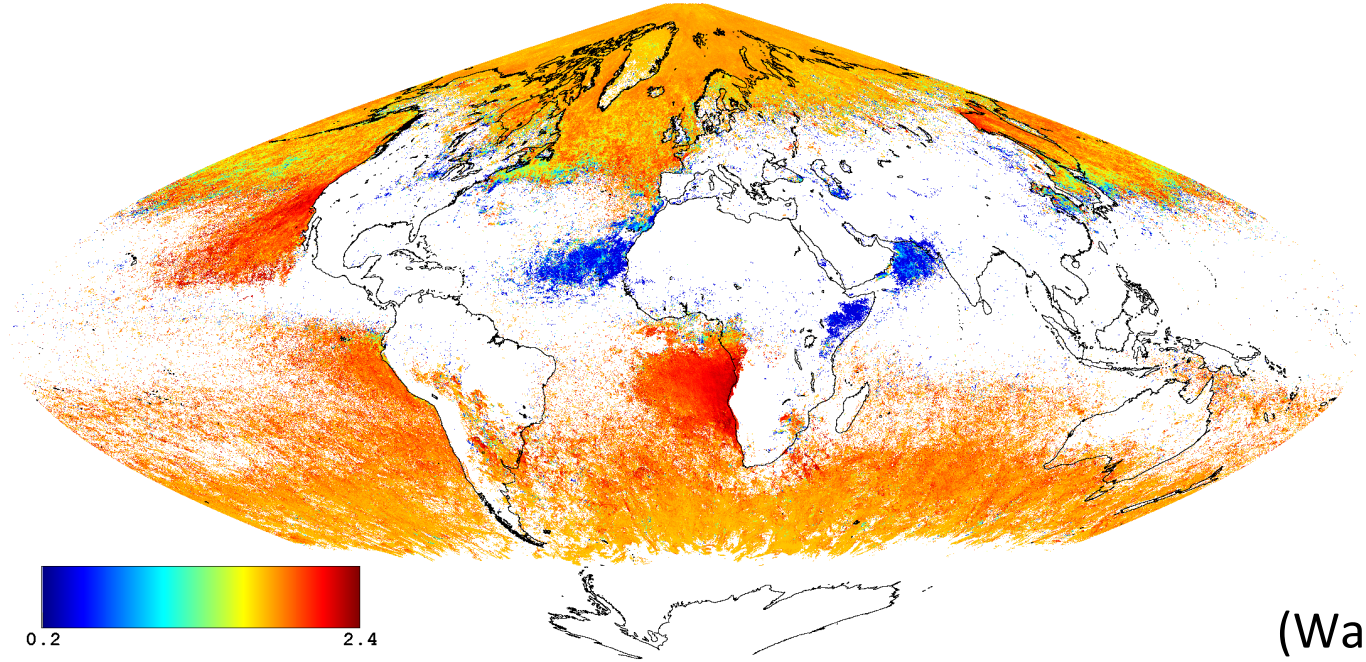
Nonsphericity_ratio (AOD_NS/AOD_Coarse mode)

Aerosols above clouds



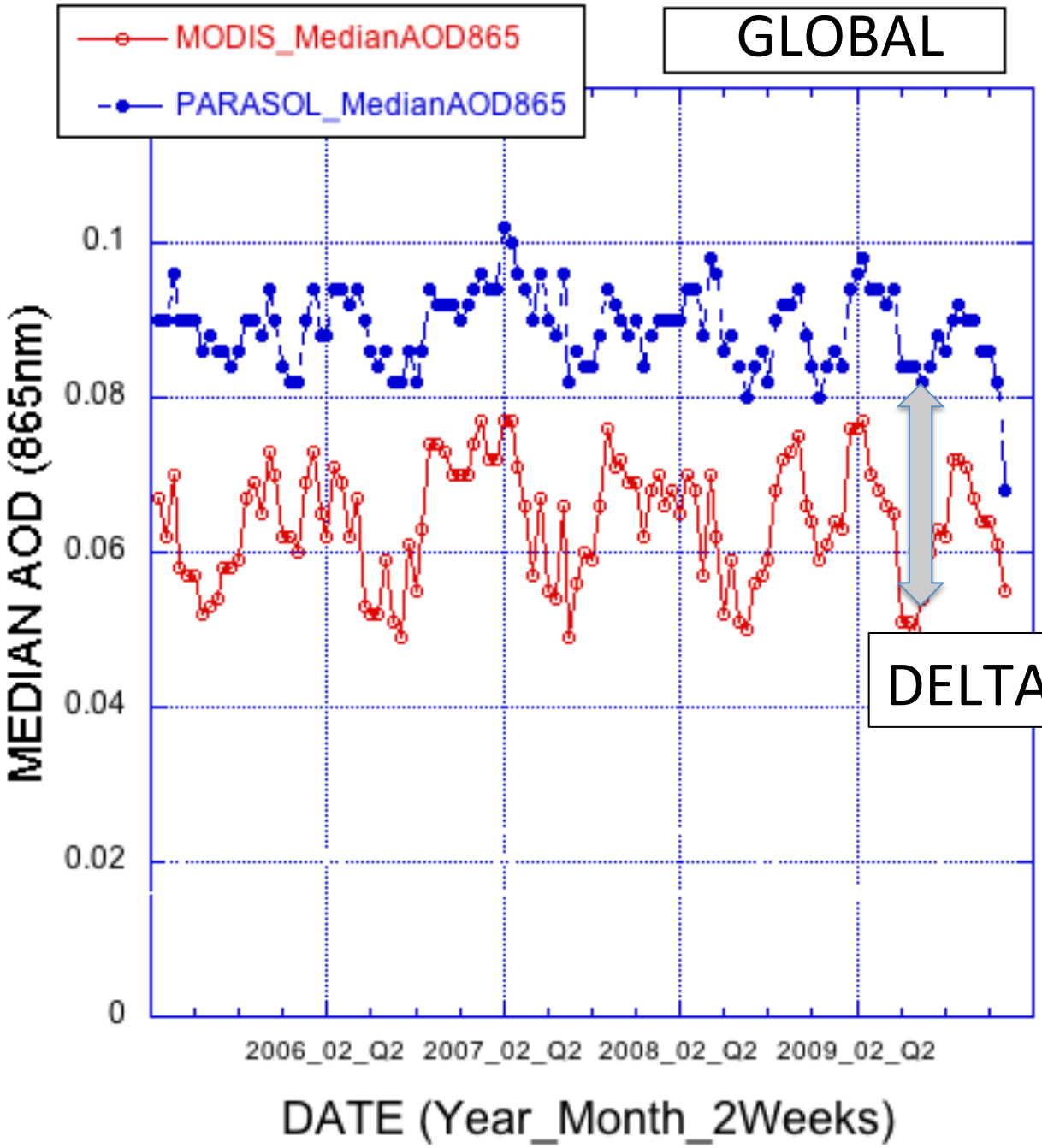
AOD (865nm)

JJA 2007



Angström exponent

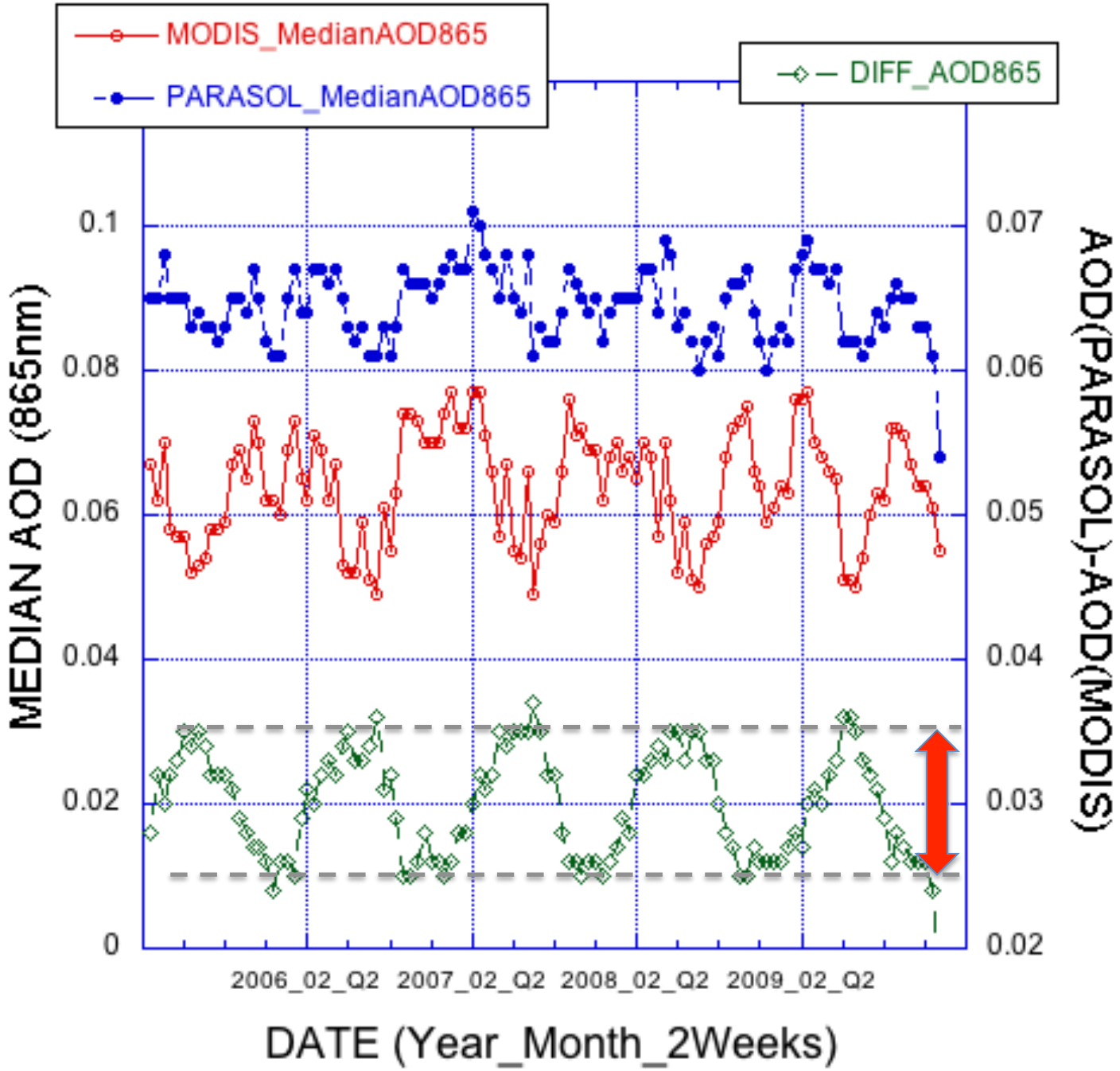
(Waquet et al., 2009 & 2011)



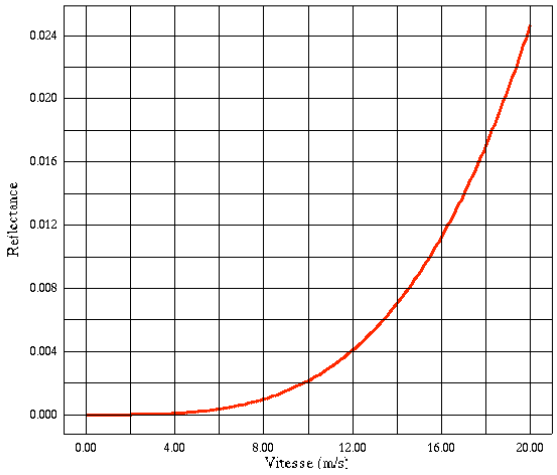
Consistency/
Complementary
between sensors

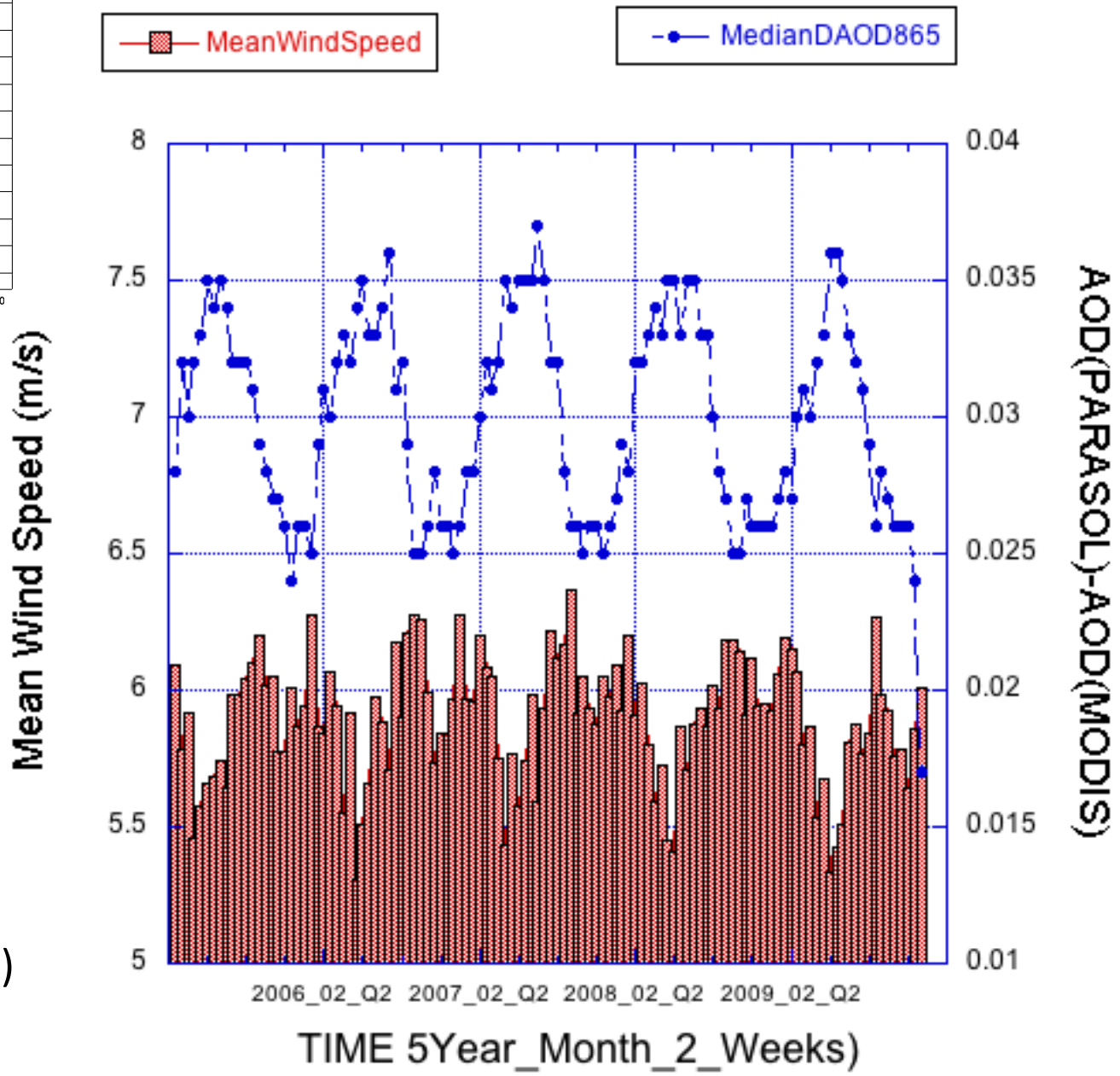
DELTA(AOD) = 0.03

MODIS C05


MODIS_MedianAOD865
PARASOL_MedianAOD865
DIFF_AOD865
MEDIAN AOD (865nm)
AOD(PARASOL)-AOD(MODIS)
0.1
0.08
0.06
0.04
0.02
0
0.07
0.06
0.05
0.04
0.03
0.02
2006_02_Q2
2007_02_Q2
2008_02_Q2
2009_02_Q2
DATE (Year_Month_2Weeks)

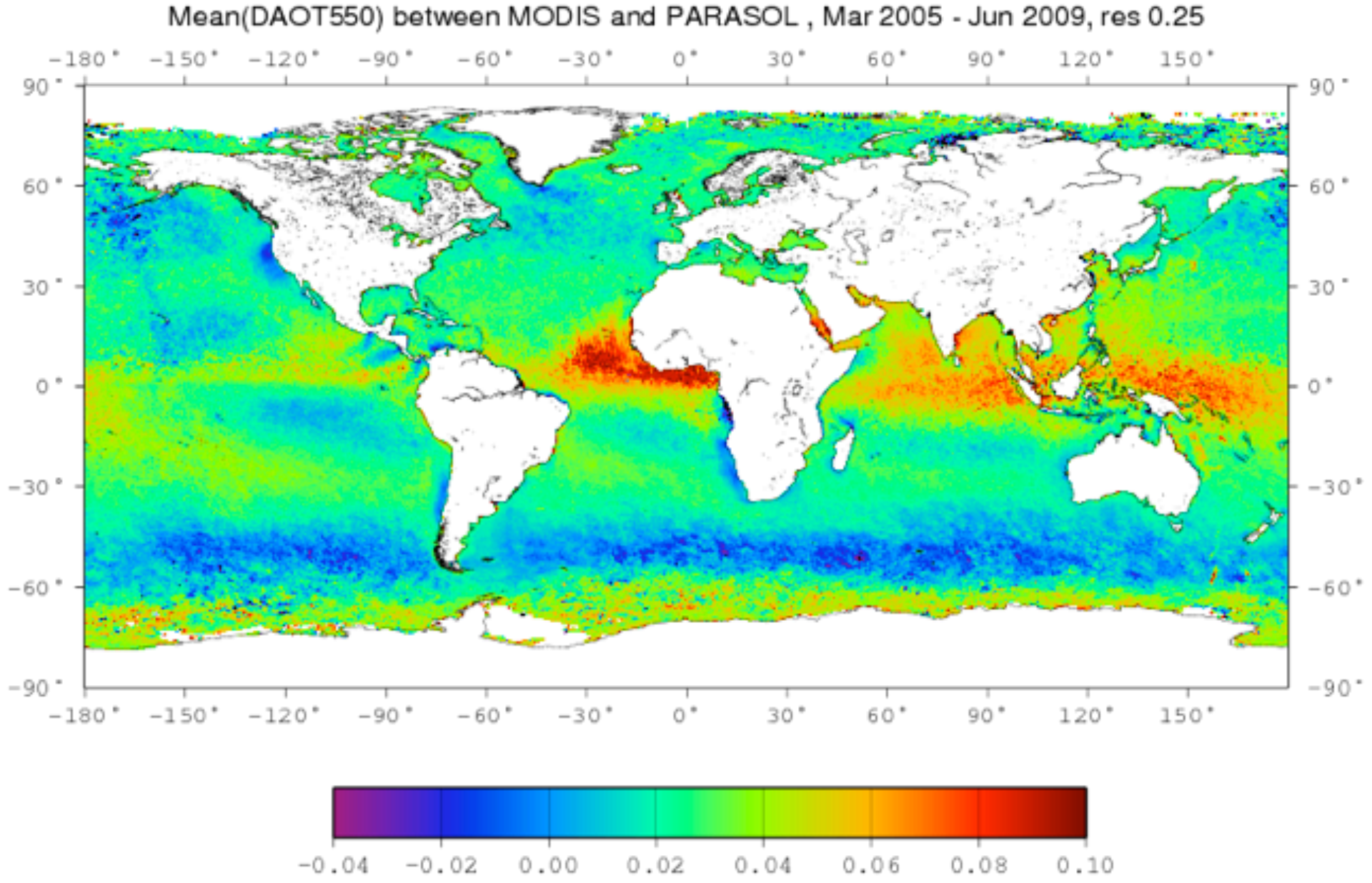
+/-0.005



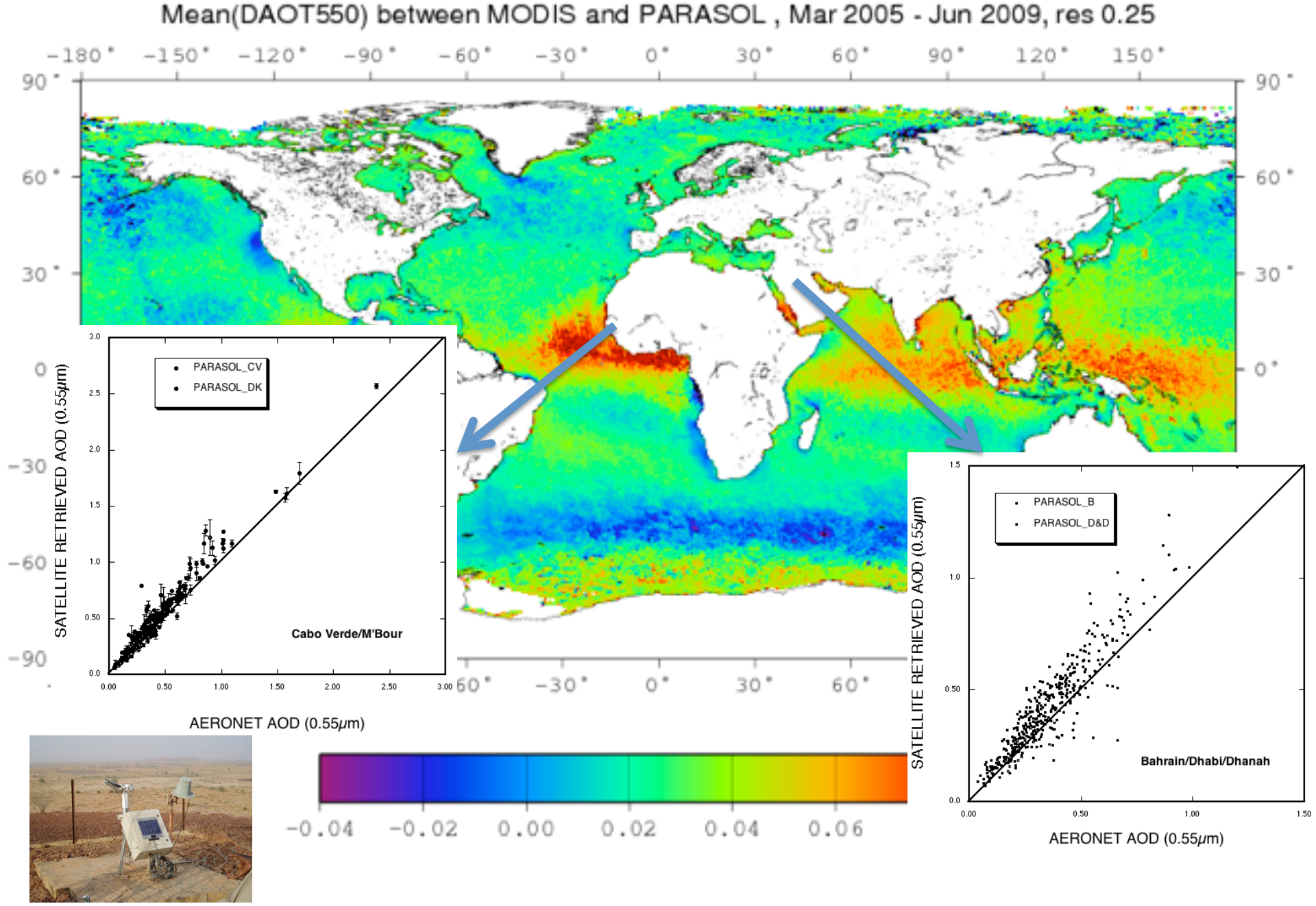


(Kleidman et al., 2011)

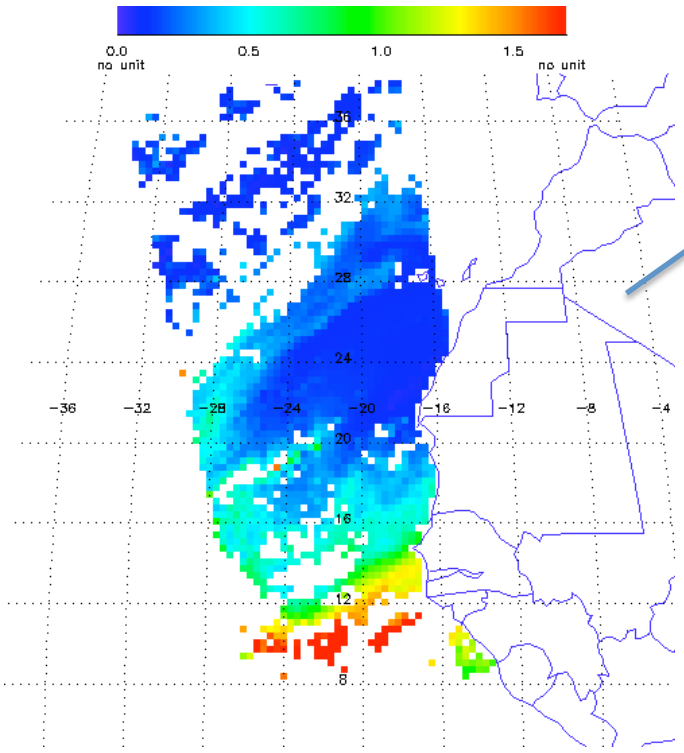
MODIS C05

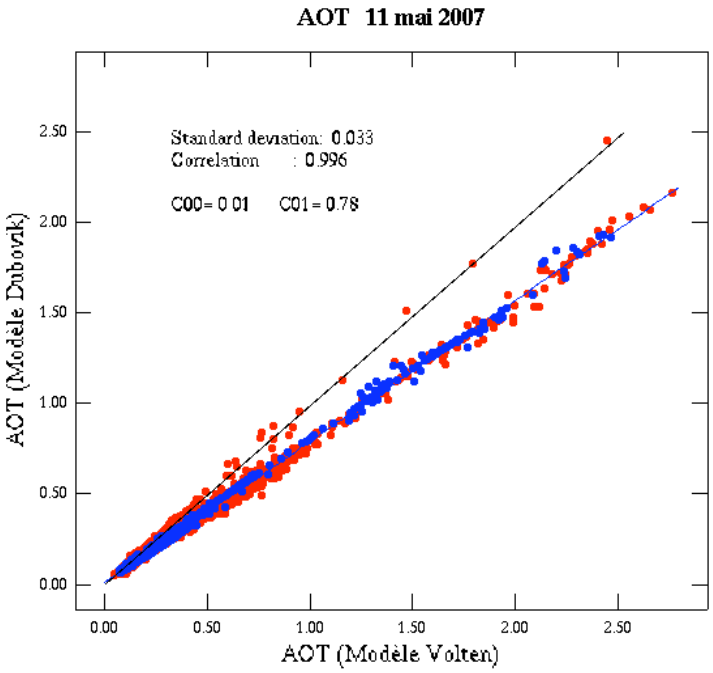


AOD(PARASOL—AOD(MODIS)

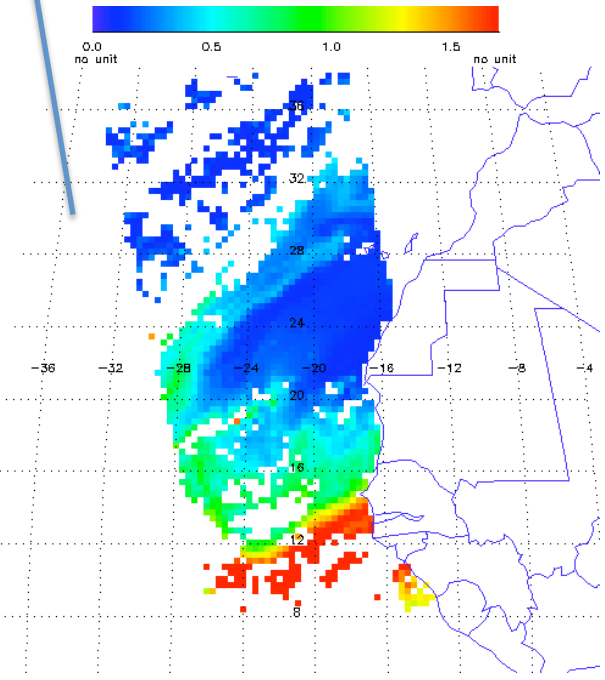

Mean(DAOT550) between MODIS and PARASOL , Mar 2005 - Jun 2009, res 0.25
-180° -150° -120° -90° -60° -30° 0° 30° 60° 90° 120° 150°
90° 60° 30° 0° -30° -60° -90°
PARASOL_CV
PARASOL_DK
Cabo Verde/M'Bour
SATELLITE RETRIEVED AOD (0.55μm)
AERONET AOD (0.55μm)
PARASOL_B
PARASOL_D&D
Bahrain/Dhabi/Dhanah
SATELLITE RETRIEVED AOD (0.55μm)
AERONET AOD (0.55μm)
-0.04 -0.02 0.00 0.02 0.04 0.06

Spheroid (Dubovik)





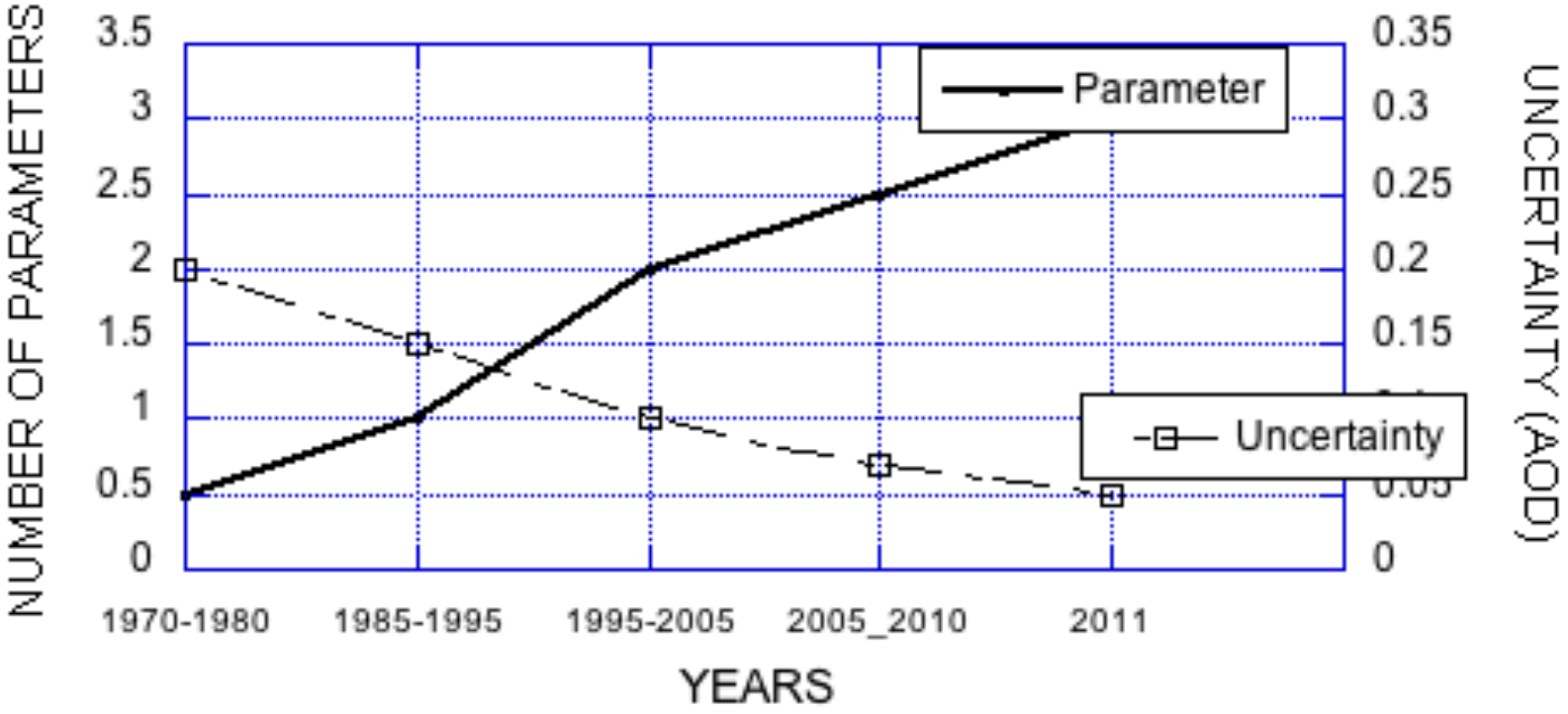
Dust (Volten)



11 mai 2007.

NON_SPHERICITY

(Deuzé, 2011)

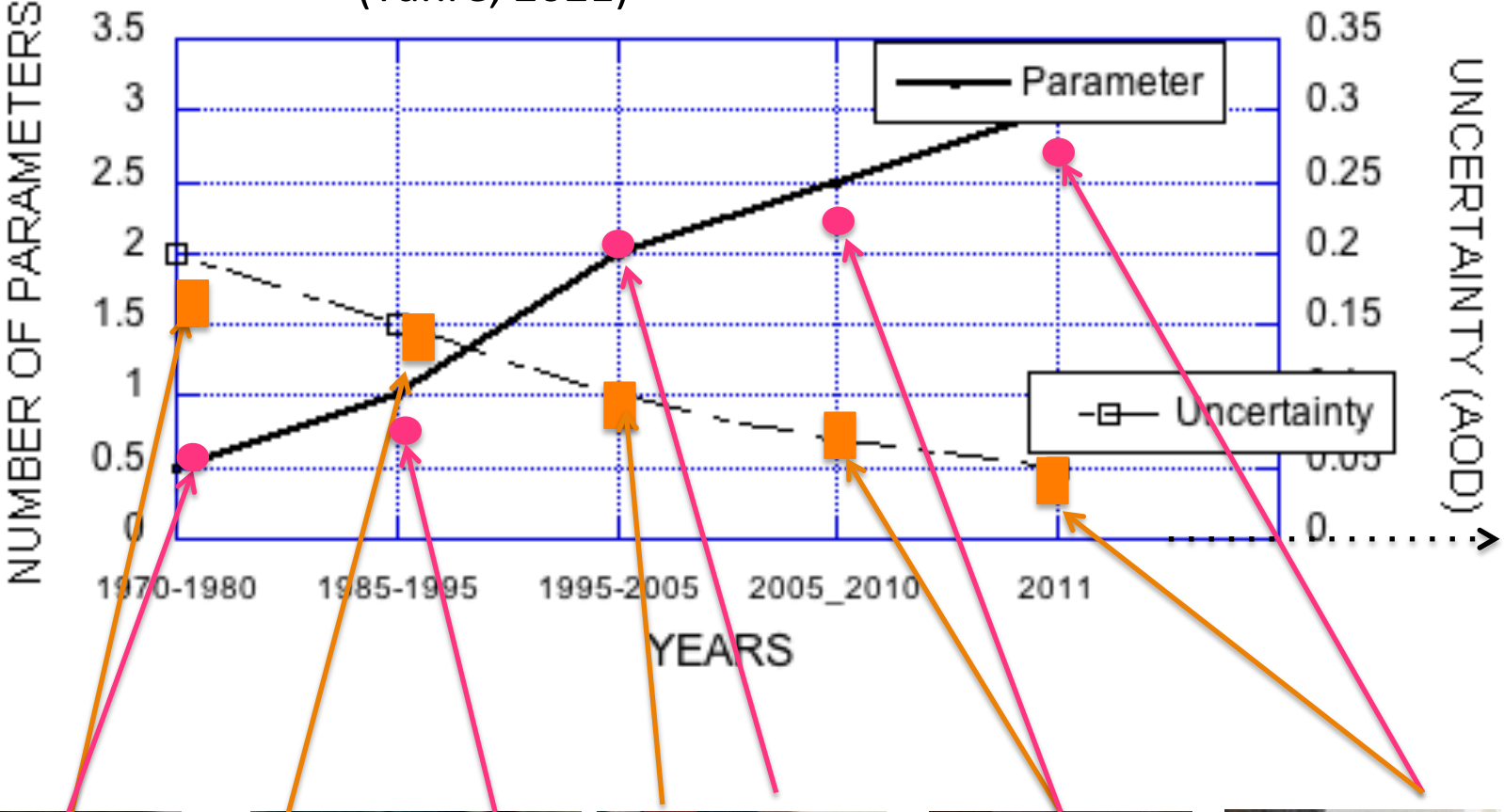


Improvements of the instruments

New algorithms for PARASOL(Dubovik et al., 2010)

« Ratio of Grey Hair » (Arbitrary unit)

(Tanré, 2021)



« Hair Volume » (Arbitrary unit)