

# Remote Sensing of Aerosol from MODIS

- 1. Introduction** - Yoram Kaufman
- 2. The physical basis** - Didier Tanré
- 3. Cloud mask alteration for aerosol** - Vanderlei Martins
- 4. Validation: MODIS&AERONET matrix** - Charles Ichoku
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**MODIS Science Team Meeting Jan 2001**

# Remote Sensing of Aerosol from MODIS:

## Results so far:

- We can derive the optical thickness, effective radius of aerosol within the accuracy or better than predicted in 1997. Land aerosol is also derived as planned.
- We can differentiate between fine particles and coarse salt particle. Dust will require to conquer the nonsphericity

**what is next:** - dust nonsphericity  
- regional applications

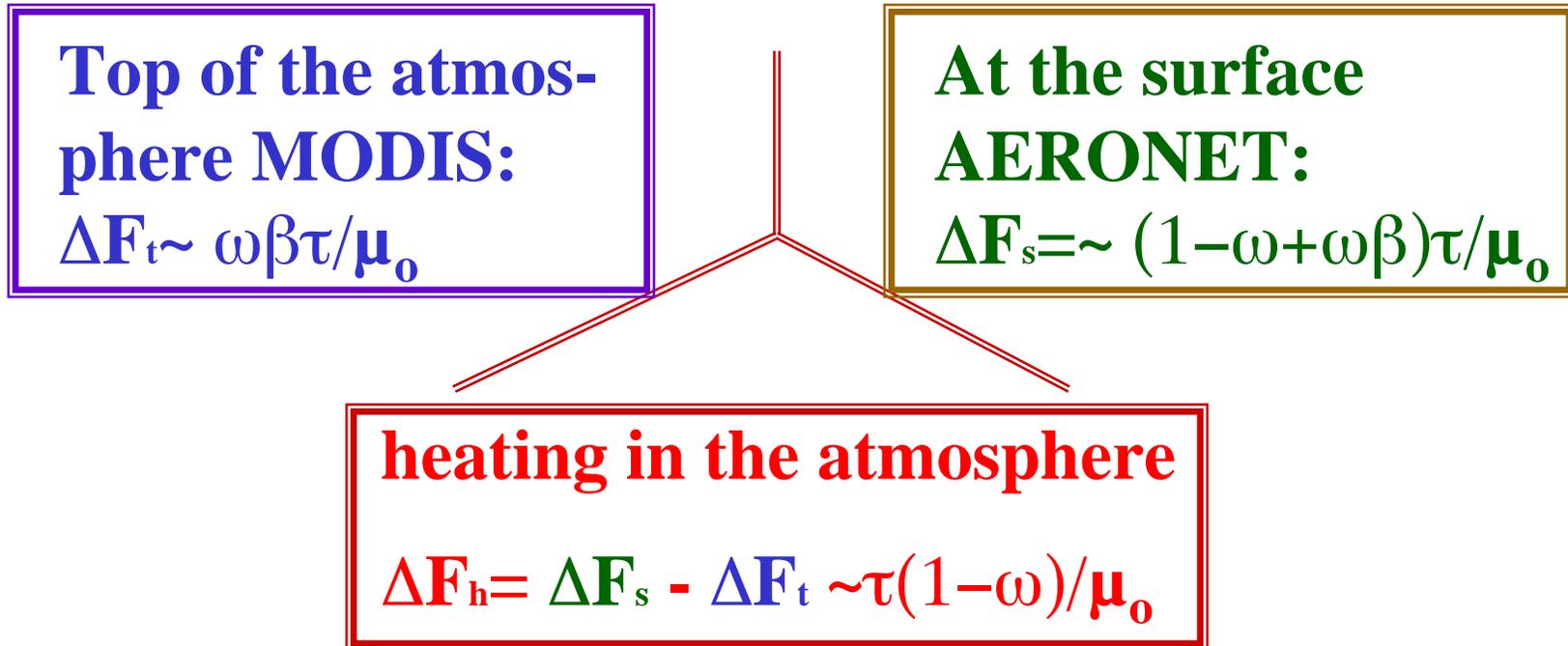
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## Implications to climate change:

- $\tau$ ,  $R_{\text{eff}}$ , fine/coarse ratio  $\Rightarrow$  climate forcing:

Find aerosol effect on:

- solar flux at the top of atmosphere
- irradiation of the surface
- solar heating in the atmosphere
- cloud properties and reflectance



∴ For smoke in Brazil  $\Delta F_h = \Delta F_s - \Delta F_t$

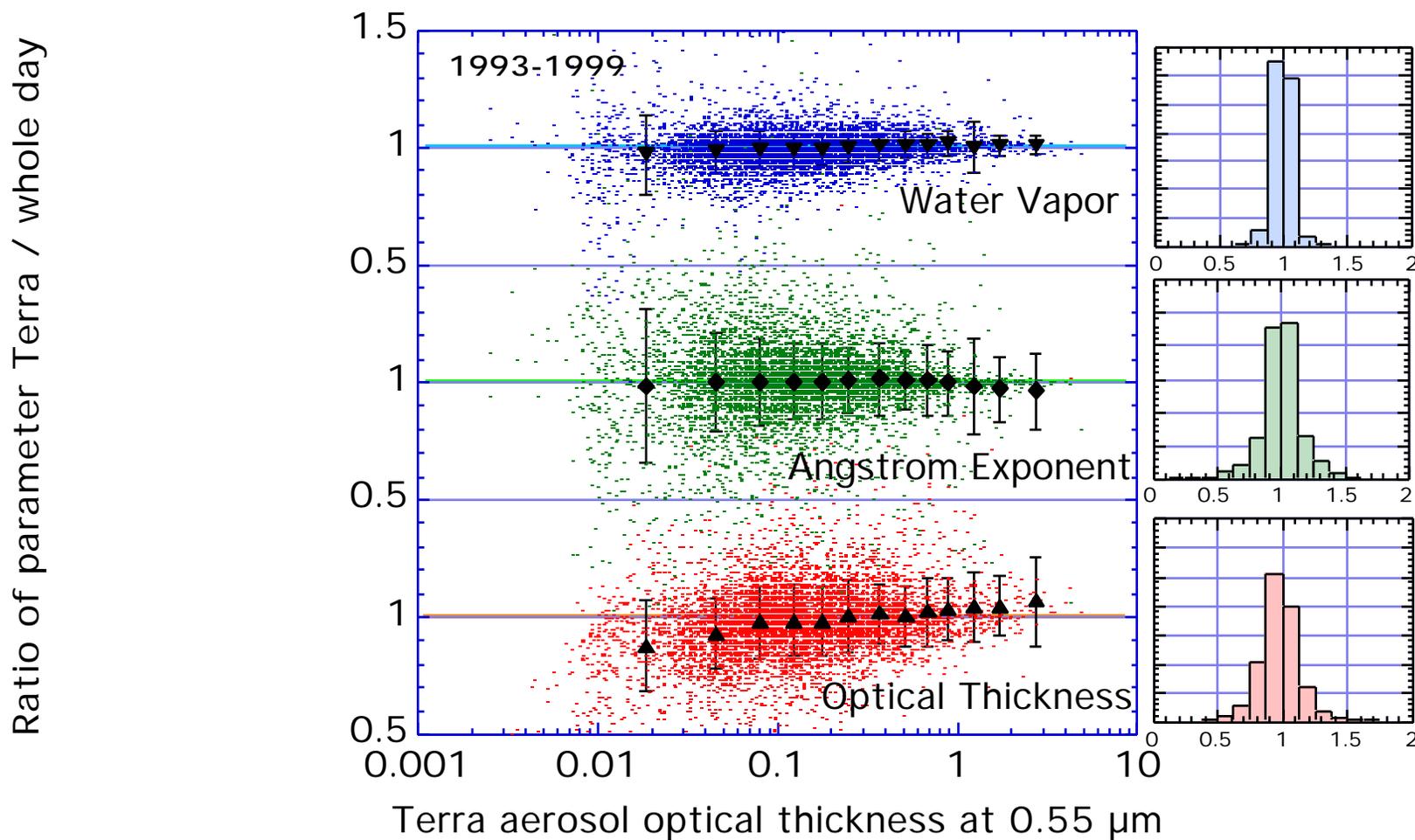
$$55_{w/m^2} = 80_{w/m^2} - 25_{w/m^2}$$

## **Missing factors:**

- **How to integrate on the daily cycle ?**
- **How to subtract the background ?**
- **How to differentiate natural from man-made impact ?**

# How to integrate on the daily cycle ?

⇒ AERONET data 1993-1999 has the answer (GRL, 2000):



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