HOW TO MEASURE AEROSOLS ?

$AOD^{(1)}_{OZONE}$ (0.00 to 0.016)

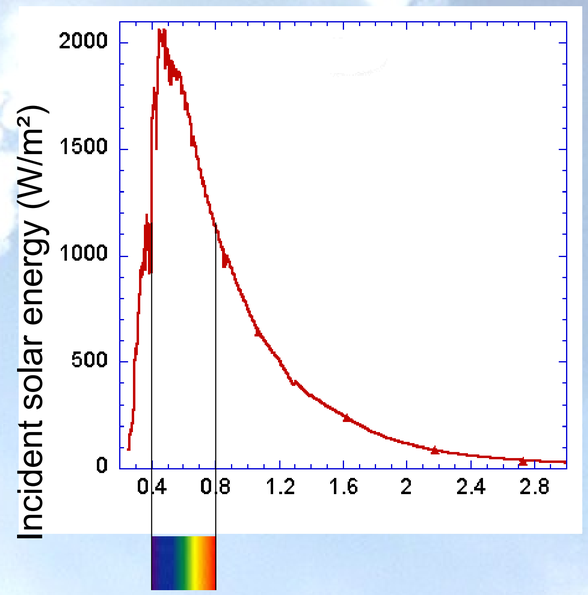
$AOD_{RAYLEIGH}$ (0.05 to 0.20)

AOD_{CLOUD} (0.5 to 50)

$AOD_{AEROSOL}$ (0.01 to 5)

AOD_{TOTAL}

Energy source : the Sun



The integral over the entire solar spectrum gives us : 1367 W/m² (at the top of the atmosphere)

$$AOD_{TOTAL} = AOD_{AEROSOL} + AOD_{CLOUD} + AOD_{RAYLEIGH} + AOD_{OZONE}$$

Measured parameter
Data measured in 3 lengthwaves to determine aerosol size

Search parameter
Depends on particle quantity and particle size

Null parameter
Measurements are made during sunny cloudless weather

Known parameter
Depends on wavelength.

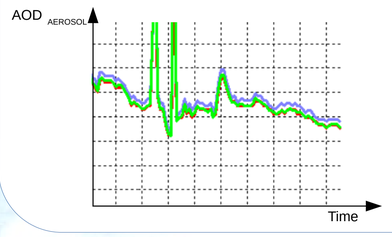
Red = 0.06281
Green = 0.10637
Blue = 0.19490

Known parameter
Given by satellite data.

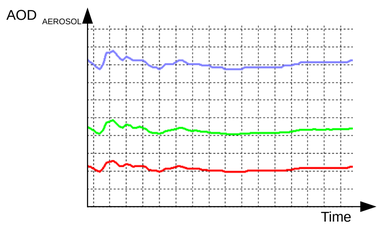
Red = 0.0154
Green = 0.0128
Blue = 0.0

How to determine aerosol sizes ?

When the three AOD curves are close together, we have large particles



When the three AOD curves are spaced away, we have small particles



(1) AOD : Atmospheric Optical Depth

Tenum