Angström Turbidity in the Lower Layers of the Troposphere

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We know :

The Angström turbidity is the optical parameter which characterizes the air masses and consequently air quality.

Motivation

To establish the air quality and the horizontal visibility we have calculated the Angström turbidity for Magurele.

Angstrom turbidity :

$$A(\lambda) = \beta\lambda^{-\alpha} \quad \Rightarrow \quad \text{Turbidity}$$

α - Angström exponent

λ - wavelength

β - turbidity coefficient

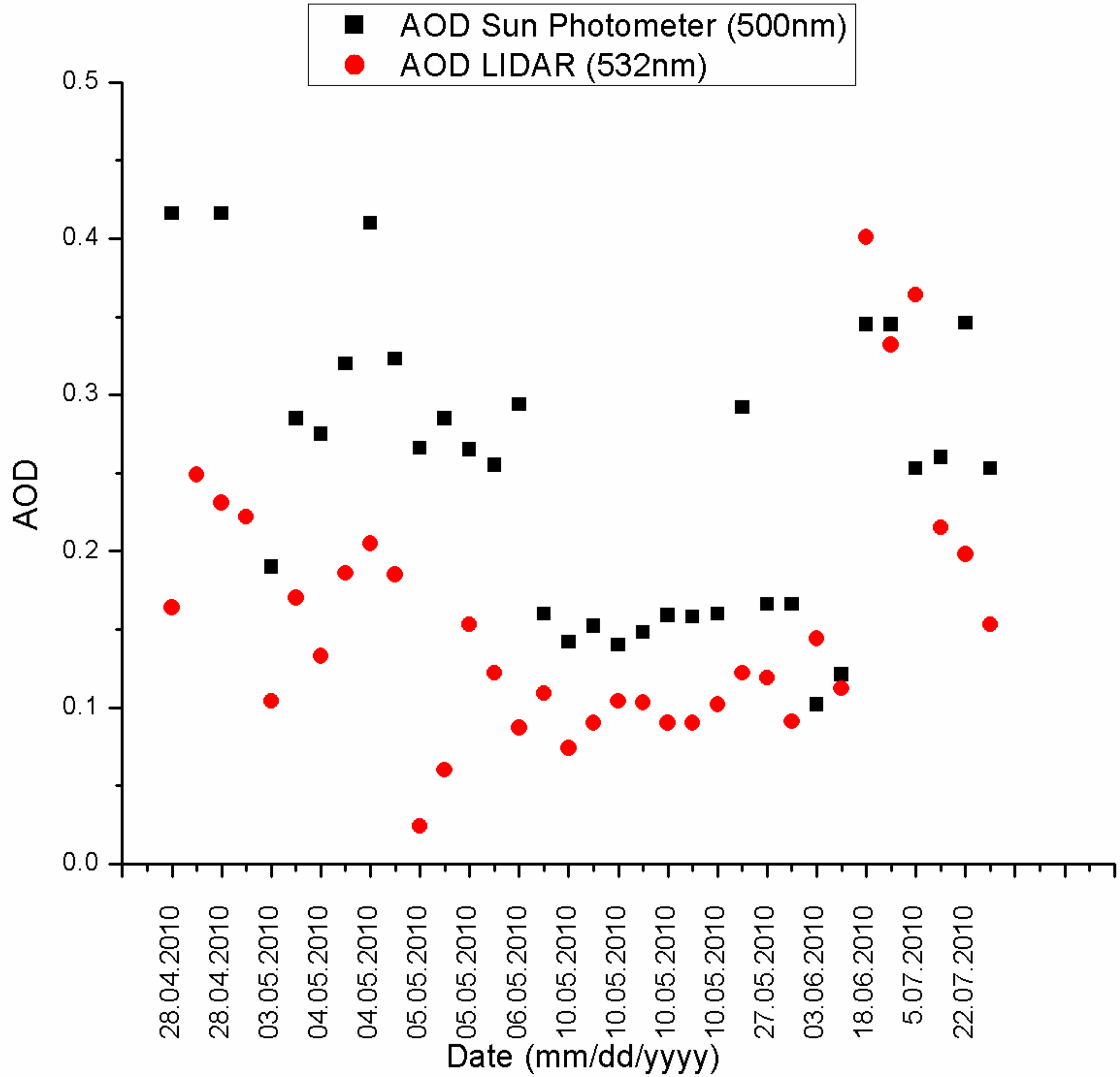
Data from :

Sun Photometer (AERONET)

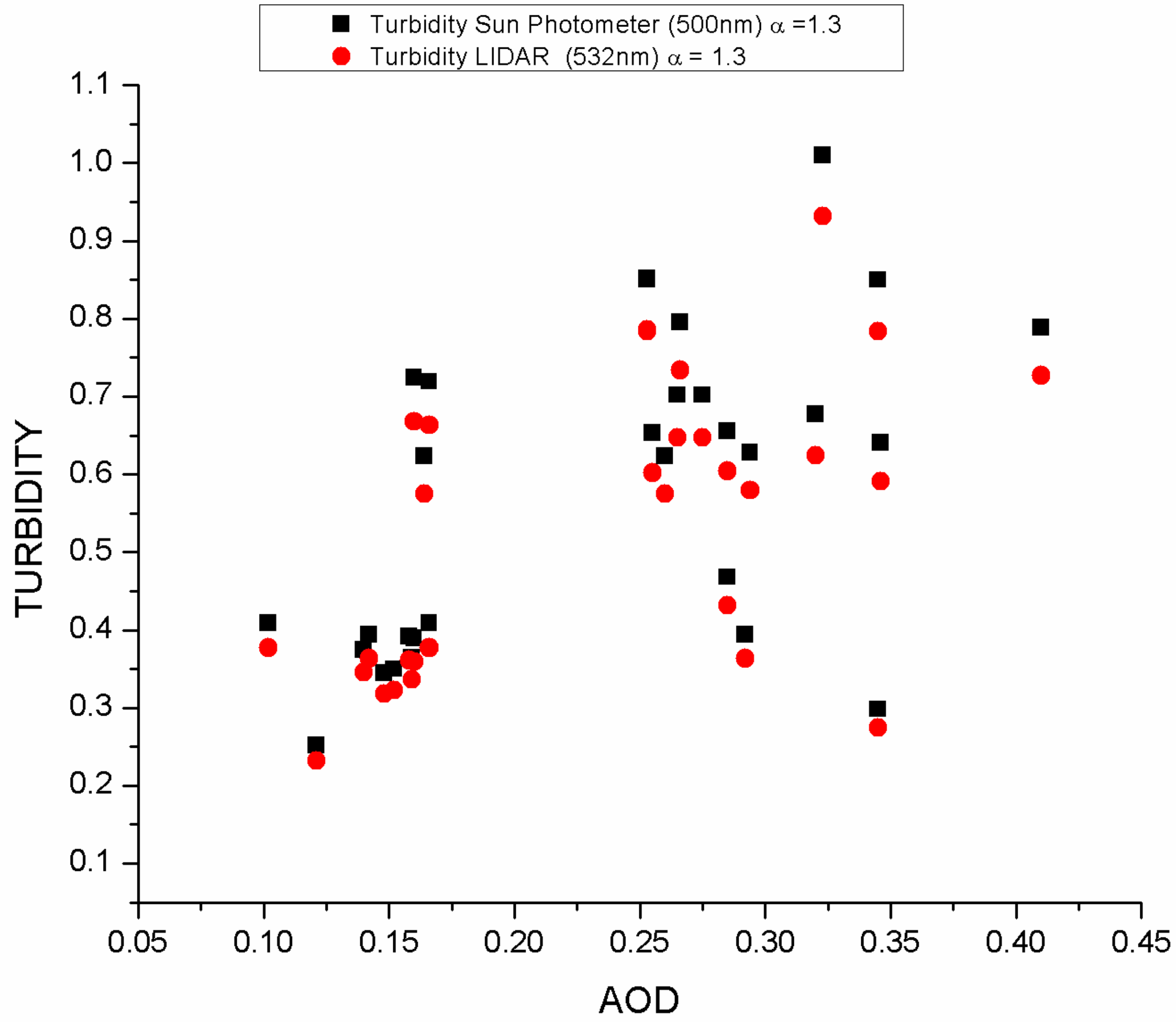
Raman LIDAR (INOE 2000)

The Angstrom turbidity coefficient has been determined only for 20 days were simultaneous measurements with Lidar and Sun-photometer were available.

Values for AOD



Values for turbidity :



Why this differences ?

•**Different Wavelengths** - Sun Photometer - 500 nm
- Lidar - 532nm

Solution *: shifting the wavelength*

• **Full overlap > 1 km –** under 1km the LIDAR doesn't see an important part of the PBL

• During the day for the LIDAR **the extinction coefficient is estimated** using the LIDAR Ratio.

For more information and results:

POSTER 06