



## Variation of Aerosol Optical Properties Over Delhi in 2017-18

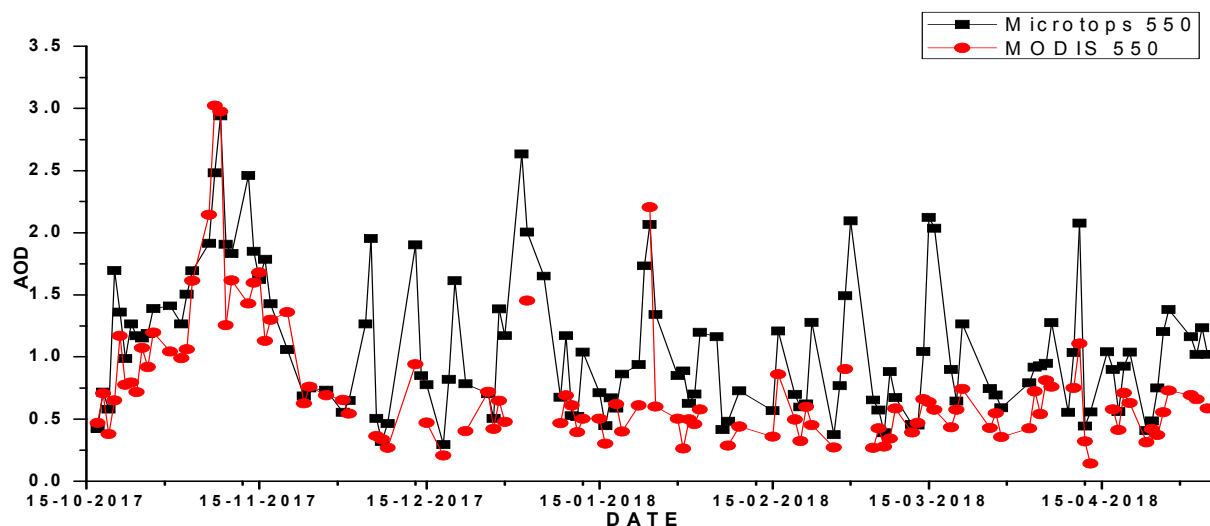
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Aerosols play a crucial role in the Earth's radiation budget through direct, indirect and semi direct effects. Distribution of aerosols is an important factor that affects the weather and climate of the Earth-atmosphere system in many ways (1). The measurements were carried out in the campus of the National Physical Laboratory, New Delhi (28.25° N, 77.55° E and ~230 m above mean sea level). The measurements were taken using hand held and portable multiband Sunphotometer MICROTUPS-II which is developed by Solar Light Company. It computes five different 380, 500, 870, 936 and 1020 nm wavelengths and provides the corresponding AOD. Using the knowledge of the solar intensity at the top of the atmosphere, the optical depth is being calculated by extending the solar radiation intensity at a certain wavelength (2). AOD data for Delhi was obtained from MODIS Terra (MOD08\_D3 v6.1) satellite as a daily mean gridded average in  $1^\circ \times 1^\circ$  spatial resolutions and is downloaded from the website <https://giovanni.gsfc.nasa.gov/giovanni/> (3).

In this study, the variation of aerosol optical properties for Oct 2017–May 2018 over the observation site is investigated, which shows the impact of increased concentration of aerosols in ambient air during November - January in comparison to March & April. It was also observed that the aerosol loading (AOD) was high over Delhi during winter and it leads to substantial air pollution and degradation of visibility. For validation of Microtops sunphotometer AOD data, we used MODIS derived AOD data. MODIS AODs are derived at 550nm while Microtops AODs are derived at 500 nm. The Figure 1 depicts the variation of daily AODs at 550nm calculated from Microtops and MODIS data for 2017-18.



**Figure 1:** Comparison of AOD at 550 nm with the MODIS & MICROTUPS-II over Delhi during 2017-18

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