

Assessment on aerosols optical properties from the observations during AERONET campaign over an urban location in India

Sunita Verma[†]; Swagata Payra; Manish Soni; Divya Prakash; Brent Holben

[†] Birla Institute of Technology Mesra, India

Leading author: verma.sunita@gmail.com

Aerosols are an important atmospheric constituents that interact with solar and terrestrial radiation and influence the energy balance of Earth - atmosphere system. Due to heterogeneous nature of aerosols, their impact on climate must be understood and quantified on a regional rather than just a global-average basis. In an effort to improve our understanding, continuous in-situ observations on aerosol optical thickness under Aerosol Robotic Network (AERONET) are being pursued at Jaipur located near to Thar Desert in the state of Rajasthan, India. In present study the variations in Aerosol Optical Thickness (AOT) and its spectral properties over non-cloudy days in summer and winter seasons in year 2009 and 2010 from Sun photometer data and available ancillary data sources are studied. The AERONET Level 2 quality controlled data is used in the present study. The preliminary results show that fine-mode aerosols are dominant during winter months due to the stable atmospheric conditions but coarse-mode particles dominate in summer. Back trajectory analysis shows that the dust particles from Thar Desert contribute significantly to the coarse mode concentration of aerosols. Another inference is that the percentage difference in fine and coarse modes was found to be lower during winter months and higher during summer. Columnar aerosol optical depth and Angstrom exponent have also been studied. It shows positive correlation during winter period and negative during summer.