Seasonal Heterogeneities in Aerosol Characteristics over a Tropical Urban Station in India

P. R. Sinha[1], R. K. Manchanda[1], Y Bhavani Kumar[2] and S. Sreenivasan[1]
[1] *National Balloon Facility, Tata Institute of Fundamental Research,Hyderabad - 500 062, India*
[2]*National Atmospheric Research Laboratory, Gadank-517112, India*

The direct and indirect aerosol effects on earth's radiation budget and earth climate system are highly variable with space and time due to the aerosol short residence time, and hence, a large uncertainty is still associated in the assessment of aerosol radiative forcing. In view of this, continuous measurements of aerosol optical and physical properties were made at National Balloon Facility (NBF) of Tata Institute of Fundamental Research (TIFR) a tropical urban Station Hyderabad (Lat 17.28^0N, Long 78.56^0E) in India as part of ARFI of ISRO-GBP. A significant seasonal variation in AOD_{500}, from ~0.25 to 0.6, with the lower values in the winter (December-January) and higher in premansoon (May-June). The daily mean BC mass concentration varied from ~1 to 16 μg m^{-3}. However, seasonal variation of BC mass concentration shows decreasing trend from winter to monsoon and attains a peak value during winter. Vertical profiles aerosol indicate a layer of aerosols exists in the free troposphere in the altitude range of 2 to 4 km.

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