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Variation of aerosol properties in a tropical urban environment during intense cyclone period - A case study

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The present study provides an account of changes in aerosol properties associated with an intense tropical cyclone, the so-called “Mala”, occurred during April 2006, in the bay of Bengal. This cyclone, accompanied with very strong surface winds reaching 240 km/hr, caused extensive disasters in houses and beach resorts in the coastal areas of Myanmar. Cyclone effects seemed to be also significant at continental areas of southeastern India, regarding strong changes in atmospheric structure, turbidity conditions, water-vapor content and relative humidity. Ground-based measurements of Aerosol Optical Depth (AOD), particle-size distribution and erythemal UV radiation (UVery) in the neighboring urban environment of Hyderabad, India, showed significant variations due to changes in wind velocity and direction associated with the cyclone event. The results show an increase in ground measured PM1.0, PM2.5, and PM10 concentrations, probably associated with the strong surface winds on 28th April, the day which the cyclone affected the study region. In contrast, the AOD on that day exhibited significant decrease since the winds probably acted as a ventilation tool of the atmosphere. The TERRA/MODIS satellite images showed prevalence of dust particles over the region on the next day of the cyclone.