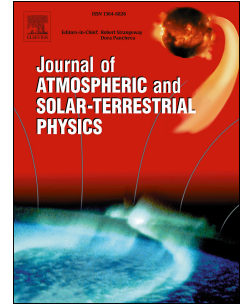


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Season-dependent size distribution of aerosols over the tropical coastal environment of south-west India

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1 **Season-dependent size distribution of aerosols over the tropical coastal environment of**  
2 **south-west India**

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9  
10 **Keywords:** Aerosols; Size dependence; Number size distribution; Meteorology

11 **ABSTRACT**

12 This paper presents the results of a detailed study on the size  
13 characteristics of aerosols at the tropical coastal site Thiruvananthapuram based on the in-situ  
14 measurements of size resolved aerosol number density using an aerosol spectrometer,  
15 covering a period of 28 months from September 2011 to December 2013. The diurnal pattern  
16 of aerosol number density is characterized by day time low and a two-fold increase during  
17 nighttime and these changes are closely associated with the strong mesoscale features namely  
18 the sea breeze and land breeze prevailing at the site. Aerosol Number Size Distribution  
19 (NSD) depicts a multi-modal nature with two prominent modes, one  $\leq 0.1\mu\text{m}$  and other  
20  $\sim 1\mu\text{m}$ . Two other less pronounced modes are also observed in the NSD, one  $\sim 0.3\text{-}0.5\mu\text{m}$  and  
21 other  $\sim 5\text{-}8\mu\text{m}$ . The NSDs also exhibited strong seasonal changes linked with the synoptic  
22 meteorological feature of this region namely the South Asian monsoon. The seasonal NSDs  
23 were parameterized and analyzed. In addition to this, the effects of meteorological parameters  
24 temperature, relative humidity, and wind speed and airflow patterns on aerosol number  
25 density as revealed by partial correlation analysis were found to be aerosol size dependent.

26

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