G-P-1

EFFECT OF METEOROLOGICAL PARAMETERS ON AEROSOL NUMBER DENSITY DURING PRE-MONSOON SEASON

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ABSTRACT

Aerosol number density distribution for different size ranges have been studied in relation with some meteorological parameters (relative humidity, temperature, rainfall and wind speed) during South–East (SE) pre-monsoon (May-July 2001) at Roorkee (77°53′ E, 29°52' N and 275m at hmsl). The measurements were done with the help of Optical particle counter by exposing the particles to light. The scattered light from aerosols of different size range generates the electrical pulse of different height. The counter monitors the particle concentration in four different size ranges viz: 0.3-0.5 μm, 0.5-1.0 μm, 1.0-2.0 μm and 2.0-5.0 μm. These size ranges are mainly responsible for the optical effect, cloud condensation and radiation budget in the atmosphere.

An analysis has been done taking the daily average number density of aerosols and meteorological parameters during pre-monsoon season. The present study indicates that the number density of aerosol is affected by the meteorological parameters. The rain has played significant role to modulate the aerosols concentration. In the month of July the concentration of aerosol was less than that from the month of June and it was maximum in May during pre-monsoon season. The large size ranges (1.0-2.0 μm and 2.0-5.0 μm) were much effective compared to the lower size ranges (0.3-0.5 μm and 0.5-1.0 μm). The decrease of concentration for aerosols in the month of July has been attributed to the scavenging by the prevailing monsoon rain. The wind speed was not significantly effective in changing the aerosol number during this period.