

# **Aerosol optical properties at low and high altitude stations in the Indo-Gangetic Plain during April 2005 desert dust event from Thar and Margo region**

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There has been continuous interest in the scientific community to identify and characterize the desert dust. This objective has been tried exhaustively by various observation techniques and model estimates during past two decades. It is reported that the radiative affect of mineral aerosol on a regional scale can sometimes even exceed the radiative affects by sulfates and smoke from biomass burning. Thar desert of northwest India along with the desert fields of Afghanistan and Pakistan (Margo region) is the main source of such mineral dusts in northern India. Although the highest occurrence of such dust storms are during June month, but on April 7, 2005, one such dust storm initiated from Thar and Margo Desert and subsequently covered the parts of north India during few days. To understand the effect of this dust storm on the ambiance of two locations in the Indo-Gangetic Plains - a low altitude station, Delhi (28.50N, 77.20E, 325 m asl) and at a high altitude station, Manora Peak (29.40N, 79.50E, 1958 m asl), the collected data during second week of April 2005 has been analyzed. Results show an increase in aerosol optical depths by about 2.6 times at lower wavelength and 4.6 times at higher wavelength in the range 340-1020 nm at Delhi, however, it was about 1.6 to 3.2 times for Manora Peak. The Angstrom turbidity parameter ( $\beta$ ) during the storm is found to increase about 4.5 and 3 times for Delhi and Manora Peak, respectively. Angstrom exponent ( $\alpha$ ) for both the stations, however, remained close to zero during the study period. The effect of this dust event is seen as a considerable reduction in the broadband global radiative flux at both the stations. The reduction of about  $\sim$ 34% is found in the 400 -1100nm wavelength band at Manora Peak.