Tracking the influence of long range transport of dust aerosols on their chemical characteristics observed in the North-West Indo Gangetic Plains.

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Long transported dust storms mark a major natural event in north India which loads the atmosphere with enormous amount of aerosols. Thus, this study aimed at tracking the key features of aerosol composition, particularly on the days of major dust storms, along the trajectory of dust storms in the Indian region. Dustfall was monitored at five sites, with important geological locations, in the northwestern region from April to June, 2015. The dustfall flux was the highest at western most sites of Jaipur (JP) (1206 mg/m^2/day) and Bikaner (BK) (516.3 mg/m^2/day). These sites not only mark the entry point of dust storms from middle east and African regions but also are surrounded by the Indian Thar desert, as seen in the NOAA HYSPLIT model trajectories during dust storm period. Interestingly, Ca fluxes varied in accordance with the dustfall fluxes which were also found to be the highest at JP (87.9 mg/m^2/day) followed by BK (59.1 mg/m^2/day). The variation of Ca flux further matched well with the pattern of SO_4^{2-} flux, where again JP (11.9mg/m^2/day) recorded the highest value followed by BK (9.5mg/m^2/day). This is indicative of the scavenging of the $SO4^{2-}$ by Ca present in the resuspended dust. The following eastward sites of Hisar (HS), the capital city of Delhi (DL) and Agra (AG) represent a shift of geology and also the source of aerosols as are urban centres. These urban centres, on the other hand recorded the fluxes of NO^{3-} (DL - 0.9 mg/m^2/day) and F^- (HS - .1 mg/ m^2/day). These findings shed light on the nature of chemical composition of aerosols from dust, along the trajectory of dust storms in the northwestern region of Indian.

Key words: long range transport of dust, dust storm events, dust aerosols in Indo Gangetic Plains