Dynamic of Atmospheric Aerosols over the Indo-Gangetic Plains and Regional Climate

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The Indo-Gangetic Plains(IGP) is one of the most agriculturally productive and densely populated basins in the world. In the last three decades, due to population growth, growing energy demand and urbanization, anthropogenic emissions have increased. The impact of growing atmospheric pollution is seen in the form of increasing fog formation, dense haze and smog in the basin during winter season. Recent analysis of multi satellite sensors has shown that the coal-based thermal power plants are one of the primary contributors of the atmospheric aerosol loading and emissions in the basin. During pre-monsoon season, wind-blown desert dust from the Arabia Peninsula and the Thar desert are also transported to the IGP, and mix with the anthropogenic emissions, further influencing the aerosol optical properties, atmospheric chemistry and regional climate. Detailed analysis of satellite and surface measurements of aerosol loading, emissions and meteorological parameters over major cities in the IG basin and around the power plants will be presented.