



## Variability in air pollutants and AOD over Varanasi region for years 2005-2010

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This study is carried out in order to examine long term (2005-2016) trends of different air pollutants viz. (AOD, BC, SO<sub>2</sub>, NO<sub>2</sub>, CO and dust) over Varanasi, India. Varanasi (25.3° N, 83.0° E, 83 m amsl), located in the west bank of the Ganges river in the central Indo-Gangetic Plain region. Varanasi has a population of around 1.5 million, with very high traffic density and anthropogenic pollution, while the surrounding regions are very fertile for growing rice, wheat and major cereal crop production.

In this study AOD data has been collected from MODIS onboard Terra satellite, NO<sub>2</sub> from OMI and BC, SO<sub>2</sub>, CO from MERRA-2 modelled data for a long period (2005-2016) and seasonal variability is analysed for all these years. January, February are considered as Winter season and similarly March, April, May as Pre-monsoon June, July, August, September as Monsoon and October, November, December as Post-Monsoon period consecutively [1].

AOD was observed lowest for monsoon season for all the years and comparatively higher values for winter and post monsoon seasons. BC is observed highest during post monsoon season and winter and comparatively lower in pre monsoon and monsoon [2-3]. NO<sub>2</sub> column was observed highest during pre-monsoon period and subsequently lower for winter and post monsoon period for all the years and lowest for monsoon period. SO<sub>2</sub> is observed highest for most of the years during post monsoon season and is recorded higher in winter as well as a result of burning of fossil fuels in this season and it attains lower values for both the seasons viz. monsoon and pre monsoon. CO also shows increase in winter season due to burning of fossil fuels in this season and lowest value in monsoon period is observed due to its wet removal in this season. NO<sub>2</sub>/SO<sub>2</sub> ratio is also calculated in which we can observe that this ratio varies between 3 to 4 which further indicates dominance of anthropogenic activities in the city. Correlation between AOD and Dust explains foggy weather in winter and clear days in other seasons.

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### References:

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