

Quantifying Transboundary Air Pollution in Bangladesh: Seasonal Trends and Variations in PM_{2.5} Concentrations using Low-Cost Sensors

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Abstract

Air quality monitoring in low- and middle-income countries (LMICs) is often challenged by data scarcity and limited resources. In this study, low-cost BlueSky (TSI incorporation, USA) sensors were employed to assess the seasonal trends and variations of PM_{2.5} concentrations in both the northwestern (Panchagarh and Rajshahi) and southern (Bhola) regions of Bangladesh. Our research focuses on understanding transboundary air pollution dynamics, an issue critical for effective air quality management in the region. We utilize backward air mass trajectory analysis to identify potential sources influencing air quality in the specified regions. By tracing the origins of air masses, we aim to pinpoint the contributing factors to the observed pollution levels. To further quantify the contribution of transboundary air pollution, we employ the Generalized Additive Model (GAM). By integrating observational data from the low-cost sensors and meteorological information into the model, we aim to enhance our understanding of the spatial and temporal distribution of transboundary pollution in Bangladesh. Our findings not only contribute to the development of effective air quality management strategies in the studied regions but also demonstrate the feasibility of utilizing low-cost sensor networks for comprehensive air quality assessments in data-scarce LMICs.

Early Career Scientist

YES, I am an early career scientist.

IGAC Activities

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