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| Title | DYNAMICS OF AIR QUALITY AND SELECTED METEOROLOGICAL PARAMETERS IN DHAKA CITY ACROSS PRE, DURING, AND POST-COVID-19 TIMESPANS | | |
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| Abstract |  |
| This research delves into the intricate interconnection between air quality and specific meteorological parameters within Dhaka City over three distinct periods: the pre-COVID-19 era, the COVID-19 pandemic, and the post-COVID-19 phase. The advent of the COVID-19 pandemic and the associated lockdown measures presented a unique opportunity to scrutinize the interplay between human interventions, meteorological variables, and air quality on a global scale. Our study relies on an extensive dataset comprising various air quality metrics, including particulate matter (PM2.5 and PM10), nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), ozone (O3), alongside meteorological parameters such as temperature, relative humidity, wind speed, and precipitation. The data were gathered from multiple monitoring stations throughout Dhaka City. Through statistical and temporal analyses, our study elucidates striking fluctuations in air quality and meteorological conditions across the timeframes. During the COVID-19 lockdown, Dhaka City experienced a significant reduction in vehicular emissions and industrial activities, leading to a marked enhancement in air quality, particularly evident in the decreased levels of NO2 and CO. However, the pandemic also brought forth distinctive meteorological effects, including alterations in atmospheric stability and temperature patterns. These meteorological facets played a pivotal role in molding air quality during the lockdown period. In the post-COVID-19 phase, as restrictions eased and normality resumed, a resurgence in air pollution levels was observed, underscoring the substantial influence of human activities on air quality. The intricate relationship between meteorological conditions and air quality in a rapidly urbanizing context like Dhaka City underscores the urgency of implementing sustainable urban planning and pollution mitigation measures. This study augments our comprehension of the multifaceted connection between meteorology and air quality within urban landscapes, emphasizing the critical significance of sustainable urban development strategies to alleviate the detrimental impact of air pollution on public health and the environment. | |