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| Title | Time Series Analysis and Forecasting of Air Quality Index of Dhaka City of Bangladesh | | |
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| Published Journal Name | 2023 IEEE World AI IoT Congress (AIIoT) | | |
| Type of Publication | Conference | | |
| Volume |  | Issue |  |
| Publisher | IEEE | | |
| Publication Date | 2023/6/7 | | |
| ISSN |  | | |
| DOI | [10.1109/AIIoT58121.2023.10174539](https://doi.org/10.1109/AIIoT58121.2023.10174539) | | |
| URL | <https://ieeexplore.ieee.org/abstract/document/10174539> | | |
| Other Related Info. |  | | |
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| Abstract |  |
| In Dhaka, the capital city of Bangladesh, various sources including vehicle emissions, industrial activities, brick kilns, building sites, and open rubbish burning contribute to the air pollution problem. To assess the air quality, the Air Quality Index (AQI) is utilized, which categorizes air quality based on pollutant concentration. In this study, we have built ARIMA, Auto-ARIMA, SARIMAX, and VAR models to predict the air quality of Dhaka. Unlike previous studies, we have utilized hourly air pollutants factors such as PM 2.5 , PM 10 , SO 2 , CO, NO 2 , and O 3 to forecast air quality. Our novel approach enables us to predict the monthly and weekly air quality of Dhaka city. Our analysis reveals that the SARIMAX model, which takes into account seasonal patterns, trends, and external factors, is the most accurate in predicting Dhaka city’s air quality. The model’s prediction performance is assessed using statistical indicators such as mean absolute percentage error and root mean square error. The study highlights that the SARIMAX model could aid policymakers in evaluating the efficacy of air pollution control measures. | |