

ABSTRACT

This study discusses the spatio-temporal distribution of $PM_{2.5}$ and CO_2 concentrations on horizontal structures in the Greater Bandung Basin. Because the Greater Bandung Basin has a unique topography that resembles a bowl, pollutants from local emissions can be trapped in it. The installation of this air quality monitoring system is to determine the pattern of data distribution in the area, whether it occurs homogeneously or heterogeneously. The homogeneity test was carried out using the independent t test and one-way ANOVA. The measurement locations are Telkom University, BRIN Pasteur, and BRIN Taman Sari. Monitoring will take place in June-July 2022. From the measurement results, each station has its own unique pattern. The increase in $PM_{2.5}$ at BRIN Taman Sari and BRIN Pasteur stations occurred on weekends, while for CO_2 there was no significant difference between weekdays and weekends. For Telkom University stations, $PM_{2.5}$ increased from the end of June to July, while for CO_2 there was no increase and fluctuated. For $PM_{2.5}$ there were several anomalies that caused the data trend at the three stations to be not the same or heterogeneous. This is caused by local emissions that occur only at stations for a certain period that are not readable at other stations and occur when the cardinal directions at the station where the anomaly occurs are different from the dominant cardinal directions in the measurement period. Meanwhile, CO_2 at the three stations shows heterogeneous data trends, this is not only due to local emissions, each station also has different characteristics of green open space so that the reduced CO_2 is different.

Keywords: Air Quality Monitoring System, spatial-temporal distribution, CO_2 , $PM_{2.5}$