

**MODELING OF DUST PARTICLE CONCENTRATION  
(PM<sub>10</sub>) ON AIR POLLUTION IN SURABAYA CITY  
USING GEOGRAPHICALLY-TEMPORALLY WEIGHTED  
REGRESSION**

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**Abstract**

*The concentration of dust particles (PM<sub>10</sub>) in Surabaya is the first ranks in East Java. This is because the activity of the population of Surabaya which causes air pollution. Dust particles (PM<sub>10</sub>) is one pollutant that when inhaled directly into the lungs and settles in the alveoli may be harmful to the respiratory system. In air quality monitoring, measuring equipment concentration of dust particles (PM<sub>10</sub>) is often broken, so the data is not measured pollutant or not available (missing). Given the importance of these data, it is necessary to estimate the concentration data of dust particles (PM<sub>10</sub>) in locations that are not measurable. One method used is Geographically-Temporally Weighted Regression (GTWR) to predict the concentration of dust particles (PM<sub>10</sub>) using meteorological parameters. The concentration of dust particles depends on location and time. The study concluded that the condition of the air pollution in the city of Surabaya in 2010 was declared good, meaning valued below the threshold. The results of the prediction method GTWR is more accurate than the regression non-spatial. GTWR can accommodate the influence of spatial and temporal heterogeneity in the concentration of dust particles (PM<sub>10</sub>).*

**Keywords** : *Dust particle (PM<sub>10</sub>), Regression, Spatial, Temporal*