## 5<sup>th</sup> International Conference on GIS and Remote Sensing

September 16-17, 2019 | Rome, Italy

## The regression analysis of PM, and its driving factors in typical urban agglomerations

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Cince PM, has a high specific surface area, it can absorb harmful substances and bring it into the human body, Ocausing various respiratory, circulatory, and immune diseases, which have extremely adverse effects on human health, it is significant to study on the response of  $PM_{25}$  to land use change. A large number of existing studies have focused on their spatial distribution, trends, and driving forces, but relatively little research has been concentrated on the spatial heterogeneity of PM, s. Moreover, the scale of domestic-related research is mainly at the street level, city level, or a certain number of relatively developed urban agglomerations such as Beijing-Tianjin-Hebei, Pearl River Delta and Yangtze River Delta, so we selected five typical urban agglomerations of different geographical locations in China, including Beijing-Tianjin-Hebei, Chengdu-Chongqing Urban Agglomeration, middle reaches of Yangtze River, Yangtze River Delta, and Pearl River Delta, By studying the spatial autocorrelation of the PM<sub>2</sub>. spatial distribution and using the GWR model and the SEG model for analysis, comparison and verification, the point data of PM<sub>2</sub>, is derived from the meteorological stations of various provinces and cities in the country. The results show that: (1) There are different degrees of spatial non-stationarity in PM2.5 and the Moran's I values are 0.75, 0.38, 0.16, 0.84 and 0.69 in the BTH, CUA, YRD, PRD, and MYR respectively. (2) The SEG results of the study area were all better than those of GWR. The R<sup>2</sup> values of BTH, CUA, YRD, PRD, and MYR were 0.854, 0.552, 0.416, 0.655 and 0.774, respectively. (3) After a single factor correlation analysis, it was found that there was no obvious correlation between the Normalized Difference Vegetation Index and PM25 concentration among the seven factors, therefore it was removed. Among the remaining six factors, the density of construction land, nighttime light index, and water density have a positive effect on the  $PM_{25}$  concentration, precipitation, and elevation have a significant negative impact on the PM<sub>25</sub> concentration, while the timberland density only affects the BTH, indicating that the relationship between PM25 and its influencing factors is different among the five urban agglomerations, The main factors affecting PM25 for BTH is elevation, construction land density, and timberland density; for CUA is precipitation, elevation, and nighttime light index and density of construction land; for YRD is precipitation and timberland density, for PRD is elevation, construction land density, timberland density, and water density; for MYR is precipitation, elevation, nighttime light index, and construction land density.



## Biography

Jingjing Liu received her degree in science from Huazhong Agricultural University when she was 22 years old. She also entered the Wuhan University in the same year to pursue a master's degree in engineering. Her academic research is in geographic information science. During her four-year undergraduate study, she participated in many mathematical modeling competitions and won the provincial first prize of 2016 China Undergraduate Mathematical Contest in Modeling, and won the 2009 Honorable Mention of 2017 Mathematical Contest In Modeling. Because of her excellent academic performance, she has twice won the honor of three good students and won the title of outstanding graduates.