



Geostatistical Analysis of Particulate Matter Concentration: A Case Study of Pune

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Abstract:

Air pollution is a major anxiety in many large cities in developing countries around the world. To deal with these problems at the regional level, the air quality in cities have to be monitored and managed. Air quality modeling is used for determining and visualising the significance and impact of emissions to the atmosphere. They are especially useful to policy-makers whose decisions are often based on emission measurements. A model can provide estimates of concentrations in areas where one doesn't have measurements, and at least, allows for certain refinements. Knowledge about the spatial distribution of the pollutant concentrations in the area is therefore required, and models are appropriate tools to obtain this information. Hence an attempt has been made to study the spatial concentration of particulate matter (RSPM) by using Geostatistics techniques. Another main advantage to be gained from using models in assessment and management of air quality is that it enhances the ability to map the spatial distribution of the pollutant concentrations. Pune the city, selected for the study of urban Air quality modeling is one of the fast developing urban agglomerations in Asia and it was declared as 13th most polluted city in India in terms of its air pollution levels. In particular, Pune city's pollution has been always concerned with concentrations of particulate matter (PM) and it is above the standard level. PM is an important component of air pollution, having both long-term as well as short-term effects on human health such as cardiovascular, lung and skin diseases, which sometimes leads to premature death. A major challenge facing most GIS modelers is to generate the most accurate surface possible from existing sample data as well as characterize the error and variability of the predicted surface. In this aspect, the present study confirms that geostatistical interpolation technique such as Kriging is the most suitable technique for air quality modeling. Key words: Particulate matter (PM), Geostatistics, Kriging.