

Spatial disaggregation of traffic emission inventories in large cities using simplified top-down methods

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Simple, inexpensive and accurate methods for assessing the spatial distribution of traffic emissions are badly needed for the environmental management in South American cities. In this study, various spatial disaggregation methods of traffic emissions of carbon monoxide are presented and evaluated for a large city (Santiago de Chile). Previous methods have used a simplified road network as a proxy for deriving spatial patterns of emissions. However, these approaches resulted in underestimation of emissions in urban centers, industrial zones and highly loaded roads, as well as overestimation in residential zones. Here we modify these methods by adding data correlated with the emissions (e.g. traffic counts, vehicles mean speed, road capacity) solving partially or completely the indicated problems. After an accuracy-simplicity analysis two methodologies stand out over the others: using traffic count classification and using a land use map, both combined with a simplified road network. Bo