

Air pollution is a critical problem of urbanization and industrialization all over the world and it has created number of problems in the city of Colombo. It is responsible for eradicating of plants, animals and causing human health problems. The study has examined the spatial variation in NO₂ and SO₂ concentration pertaining to air pollution and some areas have been identified as vulnerable areas. It is vital to discover spatial distribution pattern of air pollution in urban area and study the vulnerable sites using Remote Sensing (RS) and Geographic Information Systems (GIS). These technologies helped to satellite image analysis and spatial analysis. Very few academic literatures exist on correct usage of these technologies for studies. Traditional methods of data collection have limited access to analyze data and updated information which are vital for urban planners & policy makers. This book will provide information for the new techniques of data collection, updating existing data, exposure of vegetation cover, surface temperature & identification of highest polluted & vulnerable areas of the city which should be valuable to researchers & Professionals in urban planning.



Thamara Dissanayake
Karunadasa Dissanayake



Thamara Dissanayake

P.R.Thamara Kumari Dissanayake, BA(Geography Special) and PGDip(Geoinformatics) Studied at IHRA, University of Colombo, Sri Lanka, GIS Assistant at Urban Development Authority. D.M.K.Dissanayake, BA, MPhil studied Geography at University of Colombo, Senior Lecturer, Department of Geography, University of Colombo

Urban Air pollution and Vulnerable Area

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GIS: A Case Study in the City of Colombo, Sri Lanka



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P.R.Thamara Kumari Dissanayake, BA(Geography Special) and PGDip(Geoinformatics) - Studied at IHRA, University of Colombo, Sri Lanka, GIS Assistant at Urban Development Authority.

D.M.K. Dissanayake, BA, Mphil studied Geography at University of Colombo, Senior Lecturer, Department of Geography University of Colombo

ABSTRACT

Air pollution is a critical problem of urbanization and industrialization all over the world and there is no exception in Sri Lankan context where it has created number of problems in its capital city of Colombo. General public and the institutions concerned in this sector have conducted various studies in order to evaluate the air quality in relation to the changes associated with socio-economic and physical development factors. The study has examined the spatial variation in NO₂ and SO₂ concentration pertaining to air pollution and some areas have been identified as vulnerable areas.

GIS technology has been used for various factors to display the spatial distribution pattern of air pollution. Other factors such as topographic features, weather conditions of the area have been considered even though in large areas climate may change within a short period. Air pollution is not similar everywhere due to land use pattern, surface temperature, vertical & horizontal space of the buildings and urbanization process.

With regard to analysis, GIS model, spatial analysis, Regression analysis and many algorithms were used to represent the air pollution by using secondary data and also ERDAS IMAGINE 9.2. The methods of analysis of air pollution are very useful because of high resolution images, influential thermal bands which can detect the urban heat of the area. Other visible range sensors have been used for the Normalized Difference Vegetation Index (NDVI).

This study is based on the spatial distribution pattern of air pollution. It was therefore possible to draw maps for highly vulnerable sites by using multi criteria analysis.

Using GIS technology it is possible to analyse these variations in spatial terms as well as examine the vulnerability of the city using ArcGIS, Arc MAP and ERDAS IMAGINE 9.2.