

An Empirical Approach to Modelling the Spatial Distribution of Carbon Monoxide Concentrations

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ABSTRACT

A simple semi-empirical model for the prediction of carbon monoxide concentrations near busy roads is presented. The model relies on pre-existing air pollution, wind speed and wind direction monitoring. The model does not require extensive knowledge of traffic flow parameters, meteorological parameters or any information on the building structures or topography surrounding the site which are generally required by commercial models. The model is tested on both an inner city and a suburban site in Hamilton, New Zealand. Model predictions compare favourably with the observed time series of carbon monoxide concentrations when tested on independent data. Empirical models of this type provide the opportunity for relatively small cities with limited budgets to make estimates of the spatial distribution of carbon monoxide concentrations using only one carbon monoxide monitor rotated between several meteorological sites in order to make best use of limited resources.