A new air monitoring system assessment and application: a case study of source identification in local area

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ABSTRACT:
As a worldwide problem, air pollution catch concerns for long times, which posed significant health threats to human beings and cannot be ignored. Undergoing innovation and new techniques make miniature air monitoring sensor possible, which are both portable and less expensive, meanwhile satisfied the high temporal and spatial resolution needs [1]. At the same time, community air pollution monitoring increased concerns involving public attention on local air quality in the long run, which allow citizens developing community-based strategies to reduce air pollution exposures [2]. In this research, we based on long term air quality measurement of Village Green Project (VGP) which deployed in Hong Kong region, and compared with nearby reference instruments measurements of Hong Kong Environmental Protection Department (EPD) station. The results exhibited good performance for Ozone ($R^2>0.76$) and PM$_{2.5}$ ($R^2>0.74$) hourly measurements, while the VGP site shows different variation of 2 pollutions compared with EPD station and PM$_{2.5}$ shows higher trend which indicates local sources affect. Meanwhile, a Nonparametric Trajectory Analysis [3] which based on receptor-oriented back-trajectory model were applied for pollution source identification, the whole time series measurements were analysed monthly and illustrated a nearby particle source changing by times.

KEYWORDS: community measurement, nonparametric regression, back-trajectory models

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