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Title:

Spatial Analysis of Fine Particulate Matter in Taiwan

Abstract:

Fine particulate matter (PM_{2.5}) has gained increasing attention due to its adverse health effects to human. In Taiwan, it was conventionally monitored by large environmental monitoring stations of the Environmental Protection Administration. However, only a small number of 77 monitoring stations are currently established. Recently, a project using a large number of small sensing devices, called AirBoxes, was launched in March 2016 to monitor PM_{2.5} concentrations. Although thousands of AirBoxes have been deployed across Taiwan to give a broader coverage, they are mostly located in big cities, and their measurements are less accurate. In this research, we propose a spatial prediction method to combine these two types of data. In addition, we develop a spatio-temporal control chart that monitors anomalous measurements.