

Pattern the Location and Area of Earth-Dumping Stations from Vehicle GPS Data in Taiwan

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Abstract : The objective of this study explores GPS (Global Positioning System) applied to trace construction vehicles such as trucks or cranes, help to pattern the earth-dumping stations of traffic construction in Taiwan. Traffic construction in this research is defined as the engineering of high-speed railways, expressways, and which that distance more than kilometers. Audit the location and check the compliance with regulations of earth-dumping stations is one of important tasks in Taiwan EPA. Basically, the earth-dumping station was known as one source of particulate matter from air pollution during construction process. Due to GPS data can be analyzed quickly and be used conveniently, this study tried to find out dumping stations by modeling vehicles tracks from GPS data during work cycle of construction. The GPS data updated from 13 vehicles related to an expressway construction in central Taiwan. The GPS footprints were retrieved to Keyhole Markup Language (KML) files so that can pattern the tracks of trucks by computer applications, the data was collected about eight months- from Feb. to Oct. in 2017. The results of GPS footprints identified dumping station and outlined the areas of earthwork had been passed to the Taiwan EPA for on-site inspection. Taiwan EPA had issued advice comments to the agency which was in charge of the construction to prevent the air pollution. According to the result of this study compared to the commonly methods in inspecting environment by manual collection, the GPS with KML patterning and modeling method can consumes less time. On the other hand, through monitoring the GPS data from construction vehicles could be useful for administration to development and implementation of strategies in environmental management.

Keywords : automatic management, earth-dumping station, environmental management, Global Positioning System (GPS), particulate matter, traffic construction

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