

Presentation at Dept. of Earth Sciences, National Taiwan Normal University

Applying research-grade low-cost sensors in environmental health studies

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Abstract

This presentation will introduce how research-grade low-cost sensors can be applied in environmental research, using the well-known air pollutant in Taiwanese society in recent years, PM_{2.5}, as an example. The talk will present the international trends in using low-cost sensors for PM_{2.5} research and describe the efforts of our team to improve the data quality of low-cost sensors. We have integrated three types of research-grade low-cost PM_{2.5} sensors: outdoor, indoor, and personal sensors. The talk will also provide examples of how research-grade outdoor low-cost sensors can be used to investigate the contribution of PM_{2.5} pollution sources within communities to the surrounding air quality. Additionally, the sensor technology provides opportunity to have a breakthrough in examining peak PM_{2.5} exposure and immediate health impacts on individuals. This was accomplished through the recruitment of volunteers, the use of personal microsensors, questionnaire surveys, and statistical analysis to investigate environmental and behavioral factors that can reduce PM_{2.5} exposure and health risks.