

Linking Atmospheric Chemistry Researches with Health Studies

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Monday, November 5th, 2012, 3:30 p.m.

3:00 p.m. – Refreshments & Socializing

Foothills Lab 2, Room 1022

Abstract

This presentation will introduce the conceptual research framework of atmospheric chemistry researches linking with health studies with examples from Taiwan. The advancement of atmospheric chemistry instrumentation and methodology can assist in monitoring/modeling more time and spatial resolved air pollutant concentrations in street levels which would enhance the understanding of human exposure changing over time and space and in turn improve the damage coefficient estimation on human health impacts due to air pollutants. The essence and methodology of exposure science and environmental epidemiology will be introduced with emphases on the linkage with atmospheric chemistry researches.

Studies aim at evaluating residents' exposure to aerosols during daily activities in Taiwanese communities will be presented. The residential communities in Taiwan have mixed commercial and industrial sources within communities, such as restaurants, temples, and home factories; these are typical Asian characteristics. Moreover, Asian residential housings are built along the roadways with heavy traffic in front of them. The intra-community spatial distribution of air pollutants in residential communities assessed with small and light-weight monitors on a miniaturized mobile platform will be presented. Additionally, the health impacts of temperature and aerosols evaluated in an epidemiological study conducted with such light-weight monitors will be introduced.

Furthermore, an overview on an integrated research project "Taiwan Megacity Environmental Research" will be presented to explore the potential collaborative opportunities with NCAR scientists. The objective of this project is to assess the potential impacts of aerosols on air quality, regional climate, and human health in Taiwan megacity. In phase I of "Taiwan Megacity Environmental Research" (2010.8-2013.7), there are eleven sub-projects including two chamber studies, five field sampling/observation and chemical analysis works, two health-impact evaluation studies, and two modeling works. Phase II is expected to be carried out starting from August 2013.