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J O I N T S E M I N A R

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Impacts of Climate and Biosphere Changes on Air Quality and Public Health

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Abstract

Air pollution is highly sensitive to weather, and thus climate change could significantly impact air quality. Model projections of fine particulate matter (PM2.5), a major pollutant of public health concern, remain largely uncertain due to poor understanding of the complex dependence of PM2.5 on meteorological conditions. Using multivariate analyses of PM2.5 and meteorological observations and simulated results from a chemical transport model, we find that PM2.5 concentrations are dominantly controlled by synoptic-scale meteorological modes including cyclone and frontal passages, and the apparent correlations of PM2.5 with temperature and relative humidity largely reflect covariation with these modes. We further show how time series analysis of these modes enables a robust estimate of the effects of climate change on PM2.5 air quality. We will discuss how vegetation changes mediated by climate and human land use may further complicate future air quality planning, and lay out a vision for an integrated climate-chemistry-biosphere modeling framework to address pressing global change issues.

Biography

Mr. Amos P.K. Tai is a Ph.D. student in environmental (atmospheric) sciences and engineering at Harvard. HIs research interests center around the core question of how future global change will impact the environment and society at large. He has focused on the effects of climate change on air quality and public health through modification of natural emissions and weather patterns. Mr. Tai is also interested to explore new topics including the impacts of climate and land use changes on food and water supplies, and how an assessment of such can inform policy planning.

Date: 3 October 2011 (Monday)
Time: 4:30 p.m.
Venue: Room 5510, Lift 25-26, HKUST

~~~ All are welcome ~~