Atmosphere-biosphere interactions:
Implications for air quality, food security and public health under global climate change

Speaker

Prof. Amos Tai
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Amos P. K. Tai (戴沛權) recently joined CUHK as an Assistant Professor in the Earth System Science Programme under Faculty of Science. His research examines various atmosphere-biosphere interactions focusing on aspects that directly impact human society such as air pollution, agriculture, and public health. His approach is to integrate observations and modeling of the Earth system to understand the mechanisms and project the consequences of global environmental change. Before he joined CUHK, Prof. Tai was a postdoctoral fellow at MIT with Croucher Fellowship, and graduated from Harvard with a Ph.D. in Environmental Science and Engineering. In addition to his expertise in atmospheric science, he has great interest in life sciences and strives to become an amateur zoologist.

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Abstract

Climate, air composition and the biosphere form a highly coupled system, and their future evolution will have significant impacts on many aspects of our life including the air we breathe and the food we eat. A realistic assessment of such impacts is crucial for sustainable urban planning, but it also requires a better understanding of the complex interactions between climate, atmospheric chemistry, and the biosphere. In this talk, we will show how a combination of statistical and process-based models enables us to examine various facets of atmosphere-biosphere interactions relevant to human society and inform policy formulation. Using satellite-derived land cover data and a chemical transport model, we show that both climate variability and human land use change are important drivers of air quality in past and present. Using a coupled Earth system modeling framework, we also show that the future trends in climate and air pollution can greatly threaten global food security and worsen malnutrition in developing countries. These findings call for greater collaboration between air quality and agricultural managers to achieve coordinated economic and public health goals.

Enquiry: 3943 6012   All are welcome