

Ph.D. Candidate Dissertation Defense Announcement

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1:00 PM, Friday, November 4

Wexler Hall, Room A306

Urban Green Infrastructure: Modelling and Implications to Environmental Sustainability

The combination of rapid urban growth and climate change places stringent constraints on multisector sustainability of cities. Green infrastructure provides a great potential for mitigating anthropogenic-induced urban environmental problems; nevertheless, studies at city and regional scales are inhibited by the deficiency in modelling the complex transport coupled water and energy inside urban canopies. This work is devoted to incorporating hydrological processes and urban green infrastructure into an integrated atmosphere-urban modelling system, with the goal to improve the reliability and predictability of existing numerical tools. With the new tool, the following key issues on environmental performance of urban green infrastructure have been addressed: 1) Impact of green roofs on building energy efficiency and urban climate at the city scale under different geographical and climatic conditions; 2) Potential of adjusting irrigation schemes for urban lawn to achieve optimal water-energy trade-off; 3) Seasonal variation of the effect of green roofs on regional hydroclimate in a coupled land-atmosphere system; and 4) Potential water buffering capacity of urban green infrastructure and its implications for water management towards a city of multisector sustainability.

Committee members:

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