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## **Professor Slobodan P. Simonovic awarded three new grants to continue research**

Slobodan P. Simonovic, a professor in Department of Civil & Environmental Engineering, and Director, Engineering Studies for the Institute for Catastrophic Loss Reduction, has received new funding to continue his research into the impact of climate change on water resources management. Simonovic is internationally recognized for his work on attempting to predict how climate change is influencing precipitation patterns and the potential impacts of changing conditions on the water resources management infrastructure.

Recently it was announced he is receiving new funds from the City of London for two studies. One will be designed to update the City's current Intensity Duration Frequency curves (IDF), using the data collected at the London Airport from 1965 until 2007. The second deals with the vulnerability of municipal infrastructure to climate change.

Simonovic will also work with colleagues from the University of Waterloo on an extension of the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS) study titled: "Quantifying the Uncertainty in Modelled Estimates of Future Extreme Precipitation Events."

From the City of London, Prof. Simonovic will receive \$20, 000 (over 3 months) to update the city's IDF curves, and \$180, 000 (over 18 months) for his flood risk study. CFCAS is providing \$195, 200 (over two years) to continue the joint work between the University of Waterloo and Western that is looking into modelling estimates of future extreme precipitation events.

### **Background Information on Studies:**

In June 2007, Professor Simonovic completed a large study (\$320,000 over 3 years) entitled: "Assessment of Water Resources Risk and Vulnerability to Changing Climatic Conditions", with the support of CFCAS. This study was the first serious attempt to model the impacts of climatic change on water resources management on local – watershed scale. The Upper Thames River basin was used as a case study.

The results of the analyses were used to provide three sets of recommendations for changing current basin management guidelines:

- 1) Regulatory (review of rules, regulations and operation procedures for existing water management infrastructure)
- 2) Budgetary (investment in new infrastructure and increase in cost of operating existing facilities)
- 3) Engineering (review of current design standards and practices).

The results of this work are available at: <http://www.eng.uwo.ca/research/iclr/fids/cfcas-climate.html> in the form of 11 reports.

### **The summary findings were that:**

- a) Under climatic change the flooding in the Upper Thames river basin will significantly increase in frequency and magnitude
- b) The drier climate conditions do not show a tendency towards more extreme drought conditions.

The results of this study were picked up by local media, including the London Free Press, Londoner and TV Channel A, who featured some of its conclusions and raised questions about how well the City is addressing the climate change issue.

Professor Simonovic then received an invitation from the City to inform them about the study. Following his presentation to Council, the London community reacted with questions and concerns, and a new, small research study (\$30,000 over 3 months) was initiated and completed under the title: "Development of rainfall intensity-duration-frequency curves for the City of London under the changing climate". The study was completed in December 2007 (available at <http://www.eng.uwo.ca/research/iclr/fids/london-idf.html>).

Following these developments, the City of London began to look towards what can be done in the future to adopt to a changing climate. On December 17, 2007, Council approved a two-phased Climate Change Adaptation Strategy:

**a) Phase 1 - Climate Change Transition Strategy that includes:**

- A review of other Ontario municipalities practices and standards with respect to climate change transition strategies
- An update to the City's current Intensity Duration Frequency curves (IDF), using the data collected at the London Airport from 1965 until 2007
- Use of the updated IDF for the design of storm drainage infrastructure
- Discussion with the Planning Department, Upper Thames River Conservation Authority and the Ministry of the Environment to address the implications of this review
- Undertaking of a general risk and consequence analysis associated with predicted rainfall events in order to assist in determining an acceptable level of service.

**b) Phase 2 - Climate Change Adaptation Long Term Strategy that includes:**

- Updating the Subwatershed studies to develop a long term water resources management strategy for London
- Development of a Green Infrastructure Plan to incorporate an environmental/ecological approach to water resources management.

On June 9, 2008, Council approved \$1.3 M over the next three years for the implementation of a Climate Change Adaptation strategy. Two studies awarded to Prof. Simonovic are part of Phase 1 – transition strategy.

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