The Canadian Society for Civil Engineering
La Société canadienne de génie civil

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NATIONAL LECTURE TOUR
Climate Change and Water Management:
The Renaissance of Systems Approach

April 2010

The Presentation

The global climate is changing due to human activities and is projected to change even more rapidly. The consequences of climate change could be devastating, with increased atmospheric greenhouse gas concentrations resulting in large-scale, high-impact, non-linear changes in physical and biological systems. Climate models focus only on natural systems, and do not represent socio-economic systems that affect and are affected by natural systems.

This presentation will focus on two examples of using a systems approach in addressing the practical issues related to climate change and its impact on water resources engineering practice. The *first example* to be addressed in this presentation is aimed at answering the question: How do the expected paths of climate, environmental, and economic variables change when feedbacks between the economy and the environment are more fully modeled? The proposed approach provides for improved representations of the physical processes involved in the climate system and carbon cycle, and includes the socio-economic sectors. The *second example* will deal with the question: What are the impacts of climate change on water resources management on a local scale? An original inverse approach is developed to assess these impacts.

The developed approach starts with the analysis of existing guidelines and management practices in a river basin with respect to critical hydrological exposures that may lead to failure of the water resources system or parts thereof. In the next step the critical hydrologic exposures (flood levels for example) are transformed into corresponding critical meteorological conditions (extreme precipitation events for example). These local weather scenarios are then statistically linked to possible large-scale climate conditions that are available from the Global Circulation Models. The developed procedure allows for the assessment of the vulnerability of river basins with respect to climate forcing. It also provides a tool for identifying the spatial distribution of the vulnerability and risk.

The Speaker

Slobodan Simonovic, PhD., P.Eng., is a professor of Civil and Environmental Engineering and Director of Engineering Studies at the Institute for Catastrophic Loss Reduction at the University of Western Ontario. He has over thirty years of research, teaching and consulting experience in water resources engineering. His primary research interest focuses on the application of systems approach to, and development of the decision support tools for, management of complex water and environmental systems. Most of his work is related to the integration of risk, reliability, uncertainty, simulation and optimization in hydrology and water resources management. Dr. Simonovic has published over 300 professional publications and one major textbook. He has received a number of awards for excellence in teaching, research and outreach.

NLT SCHEDULE

Please contact your Section Chair for venue and registration details.

DATE	LOCATION	TIME	CONTACT	EMAIL	PHONE
April 8, 2010	TORONTO, ON	6:00 p.m.	Peter Langan	plangan@rvanderson.com	416-497-8600
April 13, 2010	SASKATOON, SK	7:00 p.m.	Marc Bourassa	Marc.Bourassa@genivar.com	306-665-6223
April 14, 2010	CALGARY, AB	12:00 p.m.	Dan Dankevich	ddanke2@telus.net	403-802-0216
April 14, 2010	EDMONTON, AB	6:30 p.m.	Eva Cheung	eva.cheung@edmonton.ca	780-944-7678
April 15, 2010	VICTORIA, BC	12:00 p.m.	Kevin Baskin	Kevin.Baskin@gov.bc.ca	250-387-7737
April 15, 2010	VANCOUVER, BC	7:00 p.m.	Shiva Tiwari	dambartiwari@gmail.com	778-893-7448
DATE	LOCATION	TIME	CONTACT	EMAIL	PHONE
April 19, 2010	HAMILTON, ON	7:00 p.m.	Mike Tait	taitm@mcmaster.ca	905-525-9140
April 21, 2010	ST. JOHN'S, NL	7:00 p.m.	Bing Chen	bchen@mun.ca	709-737-8958
April 22, 2010	FREDERICTON, NB	7:00 p.m.	Andy Small	andy.small@amec.com	506-458-1000