

## FOREST HYDROLOGY—NOVEMBER 3-5, 2004



The Canadian Ecology Centre  
Centre écologique du Canada

### **Forest Hydrology:**

#### **key concepts, issues and practices**

#### **Overview of the Workshop**

Conservation of water resources is recognized as one of the key criteria of sustainable forest management in Canada. Implementation of best management practices that will promote sustainable forestry while conserving these resources requires an appreciation of both the role of forests in the hydrological cycle and how this role may be affected by forest management. The Scalable Indicators of Disturbance (SID) project is currently studying the hydrological consequences of forest disturbance in Ontario. This project is supported by the Sustainable Forest Management Network (a National Centre of Excellence). The following is a brief overview of the project's aims and approach:

Forest harvesting impacts on streamflow in Ontario have received little attention. Applicability of results from other locations to Ontario is unclear, as is the relevance of small-scale studies to either the current or proposed expanded scale of harvesting in Ontario. We must predict the cumulative impacts of harvesting on streamflow across a range of spatial scales to ensure sustainable forest management; however, we currently lack this predictive capacity.

We will develop this capacity through a combined monitoring-modeling approach to identify harvesting impacts on streamflow, based on data from sites representing the major Ontario forest ecozones. Forest disturbance records at each site will be input to a Geographical Information System, enabling mapping of disturbance type, amount, location and spread. Comparing these patterns to streamflow at various spatial scales at each site will identify if, when and where harvesting has altered streamflow. Hydrologic modeling will also compare streamflow following disturbance to that expected under undisturbed conditions, and predict streamflow response to various harvesting strategies. Both approaches will identify the amount, type and location of harvesting that causes significant changes in streamflow at each site.

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We will develop criteria and indicators for determining harvesting impacts on water quantity at varying spatial scales across forest landscapes, and produce a planning tool for predicting specific hydrological consequences of a given forest management plan in a particular landscape as well as the cumulative effects of harvesting across spatial scales over longer timescales. Both will aid forest companies in incorporating hydrological principles into their management practices, thus assisting them in obtaining certification of sustainability by demonstrating a rigorous forest management planning system that minimizes impacts on water resources.

This workshop is intended to expose forest managers from both industry and government to the key hydrological processes operating in forest landscapes in Ontario, and how these processes can be modified by various forest management strategies. Its goals are to increase overall awareness of hydrologic issues in forest management, while at the same time demonstrating the relevance of the results of the SID project to forest managers in Ontario.

As a workshop participant you will learn:

- the basic physical processes that govern the movement and storage of water within forest landscapes, and how such processes may vary under different forest types
- some of the field techniques available to measure these processes
- how forest management strategies can

### **Description of the Workshop**

“Forest hydrology: key concepts, issues and practices” will be presented in a three day segment at the Canadian Ecology Centre, 6905 Highway 17, Mattawa ON.

The workshop will be based on theme material that will be introduced to participants via the WorldWideWeb prior to the meeting at Mattawa. This material will cover basic hydrological concepts and processes, and will summarize the results of research into the hydrologic implications of forest management.

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The workshop in Mattawa will focus on the measurement of hydrologic processes in the forest environment and the analysis of the resulting data in order to understand these processes. Principles underlying various measurement and analytical techniques in hydrology will be introduced through short lectures by the course instructor. Participants will then learn:

- how to design monitoring networks to monitor various hydrologic processes
- how to construct, install and monitor various hydrologic instruments
- how to analyze the data from the instruments and networks
- how to interpret the data in terms of the relevant hydrologic processes

### **Workshop Faculty**

**Jim Buttle, PhD** – Jim Buttle is Professor of Geography at Trent University. He teaches physical geography, with a focus on hydrology. His research focuses on water pathways in forest landscapes, and the implications of forest disturbance on water quantity and quality. He is the principal investigator on the SID project. Jim is responsible for the overall design of the present workshop, will be providing the pre-workshop web-based material, and will conduct the short lectures on monitoring and analysis during the workshop.

**Abe House, MSc** – Abe House is a Research Associate at Trent University working on the SID project. Abe has been responsible for designing the monitoring network, installing instrumentation, and acquiring and analyzing streamflow and other hydrologic data in two of the five study landscapes in the SID project. He has considerable experience (both in industry and academia) in the field monitoring of hydrologic processes and in the interpretation of the resulting data.

**Craig Murray, MSc** – Craig Murray is a PhD student at Trent University. He conducted his MSc research on clearcutting effects on snow accumulation, melt and water infiltration in tolerant hardwood forests north of Sault Ste Marie. Craig is currently studying the impact of forest buffers on water and solute transport from harvested areas to small lakes in the boreal forest of northeastern Ontario.

### **Schedule**

- November 3-5, 2004

To be held at The Canadian Ecology Centre, 6905 Highway 17, Mattawa, ON.

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### Registration and Eligibility.

The class size is limited to 25 individuals. The course is expected to be oversubscribed, and admission is on a first-come basis. Early applications are encouraged.

### Application Procedure.

Please visit The Forestry Research Partnership—Canadian Ecology Centre Website at [www.forestresearch.ca/whats\\_happening/index.htm](http://www.forestresearch.ca/whats_happening/index.htm) to register online or to download a registration form.

### Tuition

Cost, including all course materials, accommodations and meals, is \$700 ( + GST). Fee is payable by Visa, Master Card, American Express or cheque upon registration. Please contact Canadian Ecology Centre front desk attendant at 705-744-1715, dial "0" for credit card payment if you do not register online. Cheques are payable to "The Canadian Ecology Centre" and should be sent to:

The Canadian Ecology Centre  
c/o Forest Hydrology  
Box 430, Hwy 17 West  
Mattawa, ON  
P0H 1V0

### Cancellations

Because attendance is limited, we ask that cancellations be made promptly so that others may attend who may be on the waiting list.

### For additional information, or for registration forms, please contact:

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