

Water Management 2008

## Climate Change Impacts on Hydroelectric Water Resource Management

October 8 - 9 2008, Montreal QC

**Keynote Speaker - Dr. Robert Wilby, world renowned consultant specializing in the field of climate change and adaptation.**

Hydropower plays an important role in the future supply of renewable energy. Climate change can have a profound impact on small and large scale hydroelectric power production. Therefore water managers must be informed of the potential impacts of climate change on their river system.

What changes can we expect and what impact will these have on hydroelectric power production and the users of the water system? Would water supplies remain as experienced over the past years or will the hydrologic pattern shift or/and change? Will these

changes create opportunities or vulnerabilities? There is a need to foster increased relationships between water managers and the scientific community studying climate change in an attempt to “bridge the gap of uncertainty” and increase our knowledge of changes to regional water supplies. The goal of this year’s workshop is to bridge the gap between scientists and practitioners studying climate change impacts on short, medium and long term water resource planning. Presentations and discussions will focus on the following:

### 1. Technical Challenges for Adaptation to Climate Change

- Global Climate Models/ Regional Climate Models
- Statistical and dynamical downscaling
- Evaluation of uncertainties in climate change flow projections
- Modeling extremes
- Watershed & operational modeling
- Improved monitoring
- Paleo-climate studies

### 2. Adaptation on Short / Medium / Long Term Planning

- How to manage uncertainties?
- What are the risk indicators associated with hydroelectric power generation?
- What are the expectations of changing water priorities?
- Adjusting operating practices
- Evidence of changes in extremes and their impacts
- Adaptation on operating water management strategies
- Ensemble forecasting



## Who Should Attend:

We invite environmental specialists, scientists, researchers, water managers, planners and operators, project owners, regulating agency representatives, compliance experts, public information specialists, consultants and equipment manufacturers to come to Montreal, Quebec, October 8-9, 2008 to share their experiences in the challenging field of managing, adapting and projecting regional water supplies in the face of climate change.

## Bridging the Gap between Scientists and Practitioners Short, Medium and Long Term Planning

Complementing the 21st Entretiens du Centre Jacques Cartier International Symposium  
“Electricity and Climate Change: Carbon Markets and Adaptation Measures”  
October 7, 2008 at the Holiday Inn Montreal-Midtown

For more information and to register: [http://www.qvc.qc.ca/centrejacquescartier/default\\_en.htm](http://www.qvc.qc.ca/centrejacquescartier/default_en.htm)  
Luncheon Speaker: Mr. Thierry Vandal, Hydro Quebec President and Chief Executive Officer

# Climate Change Impacts on Hydroelectric Water Resource Management

## Technical Challenges for Adaptation to Climate Change

7:30 - 8:00

Breakfast

08:00 - 08:15

Welcoming & Opening Remarks

08:15 - 09:30

Keynote Speaker – Dr. Robert Wilby, world renowned consultant specializing in the field of climate change and adaptation.

9:30 - 10:00

Break in Exhibitor Hall

### Session A1 - Climate Change Impacts

Chair: Efrem Teklemariam, Manitoba Hydro

10:00 - 10:30

The Impact of Climate Change on Hydropower Generation

Andre Musy, Ouranos

10:30 - 11:00

Statistically Downscaled Climate Projections to support Risk-Based Investigations of Climate Change Impacts on Hydropower

Levi Brekke, Bureau of Reclamation, U.S. Dept of Interior

11:00 - 11:30

Projected Large Flood Event Sensitivity to Projection Selection and Temporal Downscaling Methodology

David Raff, US Bureau of Reclamation

11:30 - 12:00

The Regional Climate Model as a tool for long-term planning of Québec water resources

Anne Frigon, Ouranos

12:00 - 1:00

Lunch in Exhibitor Hall

### Session A2 - Hydroclimatic Variability

Chair: Dave Raff, US Bureau of Reclamation

1:00 - 1:30

Inter-annual to Multi-decadal Variability in Prairie Water Resources over the Past Millennium

David Sauchyn, PARC, University of Regina

1:30 - 2:00

Water, Ice and Timber: A Geophysical Perspective on Water Resources in the Western Canadian Prairies

Scott St. George, Geological Survey of Canada

2:00 - 2:30

Hydroclimate Variability: Comparing Dendroclimatic Records and Future GCM Scenarios

Susan Lapp, Prairie Adaptation Research Collaborative

2:30 - 3:00

Variation among sub-basins of the Nelson River in relation to precipitation, discharge and the Pacific Decadal Oscillation

Greg McCullough, University of Manitoba

### Session A3 - Downscaling of Climate Models

Chair: Kristina Koenig, Manitoba Hydro

1:00 - 1:30

Comparison of statistical downscaling methods for climate change assessment in Manitoba

Peter Rasmussen, University of Manitoba

1:30 - 2:00

Possible Impacts of Climate Change on Heavy Rainfall-related Flooding Risks in Ontario, Canada

Chad Shouquan Cheng, Environment Canada

2:00 - 2:30

Assessing Uncertainty in Climate Change Impacts on Water Resources: Bayesian Neural Network Approach

Paulin Coulibaly, McMaster University

2:30 - 3:00

Potential Changes in the Extreme Climate Conditions at the Regional Scale: from Observed Data to Modelling Approaches and Towards Probabilistic Climate Change Information

Philippe Gachon, Environment Canada, Adaptation and Impacts Research Division

3:00 - 3:30

Break in Exhibitor Hall

### Session A4 - Global Climate Models and Regional Climate Models

Chair: Andre Musy, Ouranos

3:30 - 4:00

Sensitivity of Hydrological Modeling to the Type of Meteorological Data and Implication for Climate Change Studies

Luc Roy, Hydro-Québec / Ouranos

4:00 - 4:30

Hydrology of Major North American Watersheds as Simulated by the CRCM: A Sensitivity Study

Biljana Music, Ouranos

### Session A5 - Watershed Modelling

Chair: Doug Smith, BC Hydro

3:30 - 4:00

Runoff Simulation using the North American Regional Reanalysis Data Set

Peter Rasmussen, University of Manitoba

4:00 - 4:30

Uncertainty of Climate Change Impacts and Consequences on the Prediction of Future Hydrological Trends

Francois Brissette, École de Technologie Supérieure

4:30 - 5:00

Modelling Detailed Hydro-Climate Surfaces and Runoff Response in Large Diverse Watersheds

James Byrne/Stefan Kienzle/Ryam MacDonald, University of Lethbridge

5:45 - 7:30 Join us in the exhibition hall following the technical presentations for our evening cocktail reception Mingle and make new contacts - don't forget to bring business cards!



## Adaptation on Short/Medium/Long Term Planning

7:30 - 8:00

Breakfast

8:00 - 8:30

Welcome

### Panel Discussion

Chair: Rene Roy, Hydro Quebec

08:00-09:30

**Rob Wilby**, world renowned consultant specializing in the field of climate change and adaptation

**David Sauchyn**, Professor of Geography and Research Coordinator at the Prairie Adaptation Research Collaborative (PARC) at the University of Regina

**Brad Bass**, Manager, Adaptation & Impacts Research Division, Atmospheric Science & Technology Directorate, Science & Technology Branch Environment Canada at the University of Toronto

**Claude Demers**, a science communicator from Hydro Quebec who gives numerous lectures in Canadian universities and participates at many panels related to hydroelectric issues

9:30 - 10:00

Break in Exhibitor Hall

### Session B1 - Climate Change Adaptation

Chair: Rene Roy, Hydro Quebec

10:00 - 10:30

**Adapting Water Resources Management and Infrastructure to Climate Change**

Rene Roy, Hydro-Québec

10:30 - 11:00

**Adaptation potential to climate change of the Péribonka river (Québec, Canada) water resources system**

Robert Leconte, École de Technologie Supérieure

11:00 - 11:30

**US Army Corps of Engineers Sustainable Water Management for Climate Change**

Kate White, US Army Corps of Engineers

11:30 - 12:00

**Climate Change Impacts on Operations and Planning of Hydro-Québec's Generation System**

Marcel Paul Raymond, Hydro Quebec

12:00 - 1:00

Lunch in Exhibitor Hall

### Session B2 - Operations & Planning

Chair: Nancy Stephan, Bonneville Power Administration

1:00 - 1:30

**Forecasting Potential Impacts of Development and Climate Variability on Sedimentation of a Hydropower Reservoir**

Mark Riedel, Baird Associates

1:30 - 2:00

**Development of Climate Change Scenarios to Evaluate the Impact of Temperature Change on the Energy Demand in South of Québec**

Diane Chamount, Ouranos

2:00 - 2:30

**Climate Change, Water and Hydropower**

Smriti Das, Adaptation and Impacts Research Division (AIRD), Environment Canada

### Session B3 - Risk Assessment & Uncertainty

Chair: Marcel Paul Raymond, Hydro Quebec

1:00 - 1:30

**Risk Assessment of Hydro Projects in the Face of Climate Change, A Case Study**

Wing Chen/ Tony Kilduff, Seattle City Light

1:30 - 2:00

**A Preliminary Look at the Impacts of Warming on the Federal Columbia River Power System**

Nancy Stephan, Bonneville Power Administration

2:00 - 2:30

**Addressing Climate Change Impacts and Trans-boundary Agreements on the Columbia River**

Seshu Vaddey, U.S. Army Corps of Engineers

2:30 - 3:00

Break in Exhibitor Hall

### Session B2 - Operation & Planning

Chair: Richard Mueller, New York Power Authority

3:00 - 3:30

**Should Anticipated Impacts of Climate Change on Hydrology Modify Water Management Practices**

Richard St-Jean, Énergie Renouvelable Brookfield

3:30 - 4:00

**Climate Change Studies for Newfoundland and Labrador Hydro**

Ken Snelgrove, Memorial University of Newfoundland

4:00 - 4:30

**Climate Impact on BC Hydro's Water Resources**

Dave Rodenhuis/Doug Smith, BC Hydro

### Session B4 - Extreme Events

Chair: David Bowling, Tennessee Valley Authority

3:00 - 3:30

**Changes in the Timing and Magnitude of Floods in Canada**

Juraj Cunderlik, Conestoga Rovers & Associates

3:30 - 4:00

**Climate Change Effects on Design Floods for Dams in Sweden**

Johan Andreasson, Swedish Meteorological and Hydrological Institute

4:00 - 4:30

**Dam Safety and Water Management during Unusual and Extreme Hydrologic Events**

Jerry Webb, US Army Corps of Engineers

04:30-05:00

Workshop Wrap - Up Session

Posters will be on display in the Exhibition Hall

Water Management 2008

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October 8-9, 2008  
Montreal, QC, Canada



## Registrant Information

Name

Organization

Street Address

City, Province/State

Postal/Zip Code

E-mail

Phone

Fax

## Payment Options



- VISA  
 MasterCard  
 American Express

Card No.

Expiry Date  /  MM/YY

Signature

Cardholder

## Dietary Information

- Please check if you wish to be contacted about allergies or other dietary requirements

## Pricing

- \$595 Standard Registration  
 \$495 CEATI Hydro Participants  
 \$395 CEATI WMIG Participants  
 \$295 Speaker / Poster Presentation  
 \$295 Students\*

\*Students are required to be studying full time and submit a copy of their student card along with their registration.

### Early Bird Discount:

Register before July 15, 2008 and save \$45

## Exhibition

- \$1295 Exhibition Space (Includes 1 pass)  
 \$595 Additional Exhibitor Representative (Includes 1 pass)

All prices subject to applicable taxes.

Sponsorship opportunities for exhibitors are also available. Please visit [www.ceati.com/WM2008](http://www.ceati.com/WM2008) or contact [workshops@ceati.com](mailto:workshops@ceati.com) for more information.

## Important Information

Registration fees include meals and breaks where indicated on the schedule, evening reception and proceedings packages. All prices are listed in Canadian Dollars (\$CAD). Charges will appear as 'CEATI International Inc.' Please note that CEATI cannot guarantee currency exchange rates for credit card transactions.

All cancellations received before September 1st, 2008 will be subject to a \$100 processing fee. There will be no refunds granted after this date. Delegate substitution is permitted at no extra cost.

All workshop inquiries should be directed to [workshops@ceati.com](mailto:workshops@ceati.com). Please visit [www.ceati.com/WM2008](http://www.ceati.com/WM2008) for more information.

## Hotel Information

Hotel reservations can be made at the Holiday Inn Montreal Midtown. Please mention the CEATI group code before August 25, 2008 to obtain a rate of \$129/night on your reservation!



Holiday Inn Montreal-Midtown  
420 SHERBROOKE W. HWY 2, QUEBEC  
MONTREAL, QC  
H3A1B4 CANADA

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