

3rd
Forest
ENGINEERING
2007
C o n f e r e n c e

**SUSTAINABLE
FOREST
OPERATIONS**

The FUTURE is
NOW!

Mont-Tremblant, Quebec, Canada
October 1-4, 2007

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Message from the Technical Director



FERIC, the Forest Engineering Research Institute of Canada, is pleased to welcome you to the 3rd Forest Engineering Conference (FEC) under the theme “Sustainable Forest Operations: The future is now!”. The 3rd FEC follows the successful first meeting held in Edinburgh, Scotland in 1999, and the equally-successful second FEC meeting held in Vaxjö, Sweden in 2003.

The Forest Engineering Conference provides a dynamic forum for forest engineers from around the world to share experiences, knowledge and viewpoints. This year, the Forest Engineering Conference is held jointly with the 2007 COFE (Council of Forest Engineering) annual meeting, and also with IUFRO’s (International Union of Forest Research Organizations) Division 3 mid-term meeting.

As Technical Director of the event, I hope that you will enjoy the interesting technical and social programs we have assembled for these four days. I would like to sincerely thank all presenters of oral presentations or poster displays, field day cooperators, government and private organization sponsors, the FEC technical committee and all FERIC staff involved in helping make this event a success for all participants. Welcome again to the beautiful region of Mont-Tremblant and enjoy the magnificent color palette of the Laurentian hills in full bloom!

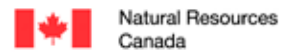


Jean-François Gingras
FEC Technical Director

Important Dates

- June 30, 2007 Cancellation deadline
- July 2nd, 2007 Post-Conference registration deadline
- July 16, 2007 Early registration deadline (reduced rates)
- July 16, 2007 Post-Conference Western Canadian Tour confirmation
- August 31, 2007 Final paper expected
- October 1-4, 2007 3rd Forest Engineering Conference
- October 7-11, 2007 Post-Conference Western Canadian Tour (Optional)

Partners:



Gold sponsor:



Bronze sponsors:



Conference Themes

Discussions will be structured around concerns such as economic aspects and technology related to harvesting, human factors, environmental issues, energy efficiency, alternative energy and economic benefits through added-value operations. Technical sessions will be organized under five themes:

“Log on!” – Innovations in Forest Operations

During the last thirty years, use of technology in forest operations and management activities has certainly evolved. The improvement of mechanical and hydraulic systems and the introduction of cutting edge electronic systems now allow advanced automation as well as innovative monitoring of planning, harvesting, transport and silvicultural activities. This technical session review the latest technologies in forestry equipment, transport, forest management and associated activities.



Running Positive-impact Operations

Forest operations are often in the spotlight with respect to environmental issues. However, when best practices are applied, forest interventions can be made harmoniously with other uses of the forest, while maintaining ecosystem integrity. This session will discuss best practices and new approaches that result in a positive environmental or social impact.



Optimizing the Wood Supply Chain

Because of competition from regions with low production costs such as South America, Quebec and Canada must turn to specialty and added-value products. It is possible to add value at each production step, but we must start in the forest. This technical session will present innovations in processing optimization, improved attribution and selection techniques of products adapted to the requirements and specifications of mills, and electronic management methods of the supply chain.

The Human Issues - “Who Will Log in the Future?”

In Canada, there is an obvious shortage of qualified people willing to enter the logging workforce. We must find a way to make these jobs more appealing and be prepared to provide appropriate training, as many countries have already done. Finding strategies to attract young Canadians in the forest industry would ensure a medium and long-term succession. This session will cover the latest developments on training the next generation, winning solutions for recruitment and human factor issues at local, national and international levels.



Green Energy

With the fast rise of fuel prices, the “Peak Oil” theory and the major preoccupation over climate change, forest biomass and biofuels represent a growing energy pathway. In this technical session, we will discuss techniques and technologies of forest biomass recovery, the use of biomass for energy and the use and production of biofuels.



COFE Annual Meeting

The Council on Forest Engineering (COFE) is an international professional organization interested in matters relating to the field of forest engineering. Its annual business meeting will be held during the 3rd Forest Engineering Conference.

IUFRO Division 3 Business Meeting

IUFRO is a non-profit, non-governmental, international network of forest scientists. Its objective is to promote international cooperation in forestry and forest products research. A business meeting for IUFRO Division 3 will also take place during the conference.



Companion Program

A program for travel companions has been developed to ensure they enjoy all that Mont-Tremblant has to offer.

Gondola Ride and Lunch on the Mountain Top – Tuesday, October 2, 2007

Autumn at Mont-Tremblant is something to behold so plan to be there to see it all! Ride the panoramic gondola to the top of the highest peak in the Laurentians and discover spectacular views and a wide range of activities. Travel the many hiking trails presenting the different facets of nature or visit the 360° observation tower. Eat lunch on the mountain while enjoying the magnificent view.



Quebec Sugar Shack Dinner – Wednesday, October 3, 2007

Spring is synonymous with family and friends gathering together for a great feast that we call “Sugaring Off”. This

happens when sap from maple trees begins to flow and is collected in large vats and is then boiled down into thick maple syrup. But these days we celebrate “Sugaring Off” through out the year and the event has become a traditional Quebecois “Soiree”. As guests arrive they are each presented with a traditional “Ceinture Flechée” (a woven cloth sash worn about the waist) as a memento of the evening. Entertainment will be provided by a musical duo playing typical French Canadian folk songs, teaching the guests how to play the spoons and dance a traditional jig. Guests feast on a typical Quebecois “Sugaring Off ” meal served family style, on tables covered in red-check cloths. Dress comfortably for the occasion (pants with an extra sweater).

Scandinavian Baths – Thursday, October 4, 2007

A trip to this Tremblant spa will add a level of soothing relaxation you never though possible. Enjoy the Finnish sauna, Norwegian steam bath, outdoor Jacuzzi, year-round swimming in the river, Nordic waterfall and deer observation. Only 2 to 3 hours are required to fully enjoy baths.

NOTE: Pregnant women are not allowed in the baths. The activities of Scandinavian baths may not be suitable for persons suffering from health conditions such as heart disease, respiratory problems, angina, hypertension or diabetes.

Location and Hotel

Experience Mont-Tremblant

Located in the Laurentian mountains of Quebec, Canada, this superb region offers a large array of activities to suit all tastes. The splendors of nature and the lively village makes it the perfect setting for sightseeing, shopping, a wide array of outdoor activities and relaxing moments at a spa.

The world renown fall colors will be on full display during the conference, providing a spectacular backdrop to the venue.



Visit www.tremblant.ca to view all the possible activities, attractions and events in this magnificent region.

Fairmont Tremblant: a Reputation for Excellence

Nested in the center of the region's most charming village, Fairmont Tremblant is located in the heart of the grandiose Laurentian mountains. Experience a Laurentian escapade at this 5-star château, one of the 500 Best Hotels in the World.



To reserve a hotel room at the Fairmont Tremblant, please dial 1-800-441-1414. Mention the Forest Engineering Research Institute of Canada (FERIC) to obtain the conference rate of \$219 per night.

General Program

	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	20:00	21:00	22:00										
Monday, Oct. 1 st																																								
	Registration – Fairmont Hotel, 1 st floor Foyer																Poster display set-up Kamichat-Sasseville-Joseph Rooms				Cocktail Mali I and II Room																			
Tuesday, Oct. 2 nd			Registration – Fairmont Hotel, 1 st floor Foyer																																					
		Breakfast exterior Marquis			Plenary session Mali IV Room						Lunch exterior Marquis		Session 1 “Log on! INNOVATIONS in Forest Operations” Mali I and II Room <i>(Break & poster displays: 14:40–15:15*)</i>				Session 2 BIOMASS – The Green Energy Mali III Room <i>(Break & poster displays: 14:40–15:15*)</i>				Session 3 HUMAN ISSUES – Who Will Log in the Future? Mali IV Room <i>(Break & poster displays: 14:40–15:15*)</i>				Dinner exterior Marquis															
Wednesday, Oct. 3 rd	Breakfast			Laurentian Field excursion Departure from Fairmont Hotel BBQ lunch will be provided on site																Quebec Sugar Shack Dinner																				
Thursday, Oct. 4 th			Breakfast exterior Marquis			Session 4 Log On” INNOVATIONS in Forest Operations Mali I and II Room <i>(Break & poster displays: 9:50–10:15*)</i>						Lunch exterior Marquis		Session 7 Log On! INNOVATIONS in Forest Operations Mali I & II Room				IUFRO division 3 business meeting Mali I & II Room																						
						Session 5 Optimizing the Wood Supply Chain Mali III Room <i>(Break & poster displays: 9:50–10:15*)</i>								Session 8 SUPPLY CHAIN Mali III Room				COFE 2007 business meeting Mali III Room																						
						Session 6 Running POSITIVE IMPACT Operations Mali IV Room <i>(Break & poster displays: 9:50–10:15*)</i>								Session 9 HUMAN ISSUES Mali IV Room				Poster display dismount*																						

* All breaks & poster displays will be held in the Kamichat-Sasseville-Joseph Rooms.

Technical Program

Monday, October 1st, 2007

14:00–20:00 — Registration – Fairmont Hotel, 1st floor Foyer

14:00–17:00 — Poster display set-up – Kamichat-Sasseville-Joseph Rooms

18:00–20:00 — Cocktail – Mali I and II Room

Welcome addresses from the meeting co-hosts

- Jean-François Gingras, Technical Director, 3rd Forest Engineering Conference
- Hans R. Heinemann, Coordinator, IUFRO Division 3 Forest Operations, Engineering and Management
- Daniel Y. Guimier, Chairman, 2007 COFE Executive Committee

Tuesday, October 2nd, 2007

7:00–12:00 Registration – Fairmont Hotel, 1st floor Foyer

7:00–8:30 **Breakfast**, exterior Marquis

8:30–12:00 Plenary session, Mali IV Room (Note: Simultaneous translation services offered during this session)

Welcome speeches

- Regional representative, Hautes-Laurentides Region (to be confirmed)
- **Mrs Paule Têtu**, Ing.f. M.Sc. Assistant Deputy Minister, Ministère des Ressources Naturelles et de la Faune du Québec
- **Mr. James Farrel**, Assistant Deputy Minister, Natural Resources Canada (to be confirmed)
- **Mr. Guy Chevette**, Executive Director, Quebec Forest Industry Council

Keynote addresses – What to expect during the conference technical sessions

Session host: Daniel Y. Guimier

1. **Log on! Innovations in forest operations.** Jan Fryk, President, SkogForsk, Sweden.

Mr. Fryk has an M.Sc. (Forestry) from the Royal College of Forestry in Stockholm and a Ph.D. (Forestry) from the Swedish University of Agricultural Sciences. He worked with harvesting, silviculture and operational planning in one of the largest Swedish forests companies from the mid 1970's to the early 1980's. He joined the Forest Operations Institute (Skogsarbeten) in 1983 as research leader for silviculture, then President in 1989. He became president of Skogforsk when the new institute was established in 1992, and he has held that position since then. He is a board member/chair of several Swedish forest related organizations. He is also member of the Royal Swedish Academy of Forestry and Agriculture, the Royal Swedish Academy of Engineering Sciences and the Russian Academy of Agriculture.

2. ***Running positive-impact operations.*** Russel A. Waycott, Vice-President, Woodlands, StoraEnso Port Hawkesbury Ltd., Port Hawkesbury, Nova Scotia, Canada.

The Woodlands Unit of StoraEnso Port Hawkesbury Ltd., became in 1998 the first forest operation in Canada, and the second in North America, to receive ISO 14 001 registration of its Environmental Management System., In 2004, the company subsequently achieved dual certification of its sustainable forest management system to both the CSA Z809 and the SFI standard. The SEPH Woodlands Unit has been an active participant in certification activities in the Maritimes Region of Canada including the Nova Scotia SFI Implementation committee and the FSC Maritimes steering committee. The unit is currently preparing for an FSC certification audit.

3. ***Optimizing the wood supply chain.*** Ian de la Roche, President, FPInnovations, Canada.

Ian de la Roche joined the forest sector in 1992, when he was appointed President of Forintek Canada Corp. He subsequently assumed the responsibilities of FERIC in 2004 and, more recently, of Paprican. In September 2006, he was appointed President and CEO of FPInnovations. This new institute, comprising FERIC, Forintek, and Paprican as divisions, will also include oversight responsibility for the Canadian Forest Service Fibre Centre, thereby covering the full length of the value chain “from seed to market.” The four units of FPInnovations will have a staff complement of approximately 650 and an annual operating budget of \$80 million, making it the world’s largest private forestry and forest products research institute.

Dr. de la Roche brings to the new institute more than 30 years of experience in research, in strategic planning, and in the creation of partnerships between State and industry. As part of his former functions, he played a prominent role in the development of programs promoting the commercialization of new technologies and major mixed research and development projects bringing together industry, government, and university partners.

4. ***The human issues – “Who will log in the future?”*** Dr. Richard W. Brinker, Dean, School of Forestry and Wildlife Sciences, Auburn University, U.S.A.

Richard (Dick) W. Brinker is Dean and Professor in the School of Forestry and Wildlife Sciences at Auburn University in Alabama since 1998. He has a B.S. in Forestry from LSU, an MBA from the University of Southern Mississippi, and a Ph.D. in Forestry from LSU. He worked in the forest industry for 12 years with experience in land management, wood procurement, timber harvesting, and lumber mill management. Dick received the SAF National Technology Transfer Award in 2001, is a Fellow in the Society of American Foresters, and was inducted into the Alabama Foresters Hall of Fame in 2001. He currently Chairs the SFI External Review Panel and provides input on forest research issues to the USDA Secretary of Agriculture as a member of the Forest Research Advisory Committee.

5. ***Green energy.*** Geoff Freedman, Director, Forestry Commission, UK.

Geoff Freedman, Ph.D. B.Sc. CEng CEnv FICE FIAgrE, is Head of Design in the Forestry Civil Engineering Department of the Forestry Commission in Edinburgh, UK. He is a chartered civil engineer, a chartered agricultural engineer and a chartered environmentalist. He is a founder member of the FEG (Forestry Engineering Group) in UK and the convener of the 1st International Forestry Engineering Conference in Edinburgh (1999). He is author of approximately 50 conferences and published papers on Forestry/Timber Engineering topics and has 42 years experience in civil and forestry engineering design/construction. He is organizing a multi-sponsored (UK) national conference on Green Energy to be held in the spring of 2008.

12:00–13:00 LUNCH – exterior Marquis

Session 1 — Log On! INNOVATIONS in Forest Operations — Mali I and II Room

- 13:00–13:25** An “Angled Crane” for Harvesting Behind Corners – A World Wide Sensation Both for conventional Thinning and Thinning of Young Stands. *Tomas Nordfjell, Department of Forest Resource Management and Geomatics, Swedish University of Agricultural Sciences, Sweden.*
- 13:25–13:50** Adapting Aggregate Thickness Design Standards for Unpaved Forest Roads Traveled by Trucks at Reduced Tire Pressures. *Glen Légère and Steve Mercier, Forest Engineering Research Institute of Canada (FERIC), Canada.*
- 13:50–14:15** Besten (“The Beast”), a Remote-controlled Harvester System. *Isabelle Bergkvist, Skogforsk, Uppsala Science Park, Sweden.*
- 14:15–14:40** Using Traditional Harvesting Equipment to Harvest Non-traditional Products: Experience with Western Juniper. *Elizabeth M. Dodson, College of Forestry and Conservation, The University of Montana, U.S.A.*

14:40–15:15 BREAK and POSTER DISPLAYS — Kamichat-Sasseville-Joseph Rooms

- 15:15–15:40** Modern Information and Communication Technologies in Mechanised Harvesting Operations – The Validation of ProFor in South African Forestry Industry. *Pierre Ackerman, Department of Forest and Wood Science Faculty of AgriSciences Stellenbosch University, South Africa.*
- 15:40–16:05** Going Wireless – Using Synthetic Rope in the Logging Industry. *Howard Wright, Application Engineer – Industrial Division, Samson Ropes, U.S.A.*
- 16:05–16:30** Loader-decking, an Alternative to Conventional Skidder-decking? *Bjorn Andersson, Forest Engineering Research Institute of Canada (FERIC), Canada.*

Session 2 — BIOMASS – the Green Energy — Mali III Room

- 13:00–13:25** Holistic Design of Forest Energy Supply Chains in Varying European Conditions. *Dominik Roser and Lauri Sikanen, Finnish Forest Research Institute, Finland.*
- 13:25–13:50** Storage of Forest Biomass Bundles and its Effect on Fuel Quality. *Dr. Muhammad Afzal, Faculty of Forestry and Environmental Management, University of New Brunswick, Canada.*
- 13:50–14:15** Conceptual Evaluation of Ground-based Harvesting Systems for Fuel Reduction and Biomass Collection Using System Dynamics. *Tetsuhiko Yoshimura, Kyoto University, Japan.*
- 14:15–14:40** Woody Biomass Resources and Utilizations in West Virginia. *Jingxin Wang; Shawn Grushecky and Joseph McNeel, West Virginia University, Division of Forestry and Natural Resources, U.S.A.*

14:40–15:15 BREAK and POSTER DISPLAYS — Kamichat-Sasseville-Joseph Rooms

- 15:15–15:40** Potential of Intensified Harvesting for Increasing the Biomass Removal in Thinning of Young Stands. *Tahvanainen, T.; Ahtikoski, A.; Siren, M.; Hynynen, J.; Lehtonen, M. and Heikkilä, J., Finnish Forest Research Institute, Finland.*
- 15:40–16:05** Technology for Increasing the Energy Yield in Hardwood Stands. *Kjell Suadicani, Copenhagen University Faculty of Life Science Department of forest and wood products, Denmark.*
- 16:05–16:30** Harvesting Forest Biomass with a Small Chipper on a Southern Pine Stand in Tree-length Thinnings and Clearcuts. *Dale Greene, Center for Forest Business, University of Georgia, U.S.A.*
- 16:30–16:55** Effects of Energy Wood Thinning on Forest Management of Scots Pine and Norway Spruce Stands. *Dr. Matti Siren; Mr. Jani Heikkilä; Ms. Tiina Sauvula and Dr. Jari Hynynen, Finnish Forest Research Institute, Vantaa Research Unit, Finland.*

Session 3 — HUMAN ISSUES – Who Will Log in the Future? — Mali IV Room

- 13:00–13:25** Long Periods with Sustained Low-level Muscle Activity Among Forest Machine Operators – a Risk for Neck Pain? *Østensvik, T.; Veiersted, K.B. and Nilsen, P., Norwegian Forest and Landscape Institute, National Institute of Occupational Health, Sweden.*
- 13:25–13:50** Automation and Human Machine Interaction – Improvements of Forest Machines. *Björn Löfgren, Skogforsk, Uppsala Science Park, Sweden.*
- 13:50–14:15** Modeling the Economic Impacts of 24/7 Logging. *Glen Murphy, Forest Engineering Department, Oregon State University, U.S.A.*
- 14:15–14:40** Experience with Simulator-based Help for Operator Training at CFPML. *Paul Freedman, Simlog, Canada.*
- 14:40–15:15** **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms
- 15:15–15:40** Impacts of Shift Work on Forest Workers. *Dana Mitchell, Southern Research Station Forest Operations Research Unit, U.S.A.*
- 15:40–16:05** The Power of Productivity in Forest Operations. *Lennart Rådström, Skogforsk, Uppsala Science Park, Finland.*
- 16:05–16:30** Evaluating the Needs and Requirements of Forest Contractors to Develop a Performance Dashboard. *Dave Lepage, Université Laval, Canada.*
- 16:30–16:55** Health and Performance – A Key to Attractive Forestry Work. *Maryse Bigot and Edgar Kastenholz, AFOCEL – Domaine de l'Étançon / ENFE, France.*
- 18:00–20:00** **DINNER** – exterior Marquis

Wednesday October 3rd, 2007

Field excursion

6:00–7:30 — Breakfast, exterior Marquis

7:30 — Departure from Fairmont Hotel

The field excursion will provide meeting participants with an opportunity to view interesting applications of forest engineering in harvesting, silviculture, trucking and other topics all grouped together on one site about an hour away from Mont-Tremblant. The site consists of a walking loop running through natural forests of tolerant hardwood and mixedwood stands. Several technology displays, especially as they apply to the tolerant hardwood context will be featured on the site. These will include:



- Mechanized selection harvesting and skidding in hardwoods
- Mechanized processing of hardwoods
- Optimized bucking of hardwood stems
- Maintaining fiber quality through cold storage
- Regeneration strategies
- Star logging truck
- Small-scale biofuel production
- Sensitive site harvesting with synthetic fibers and remote controls

A BBQ lunch will be provided on site. Please bring sturdy walking shoes or hiking boots, and some rainwear. Documentation on the exhibits will be provided in the shuttle buses.

18:00 — The evening dinner returning from the exhibition site will take place at a typical Quebec sugar shack located close to Mont-Tremblant. A hearty meal highlighting local cuisine and of course the famous Quebec maple syrup will be provided. Local musicians will entertain participants with folklore music, stories and dancing. Visits to the syrup production facility will be possible.

22:00 — Return to Mont-Tremblant

Thursday, October 4th, 2007

6:00–7:30 — **Breakfast**, exterior Marquis

Session 4 — Log On! INNOVATIONS in Forest Operations — Mali I and II Room

8:30–9:00 The Combo Concept and the North America Experience. *Daniel Chastenais, Quadco Equipment Ltd, Canada.*

9:00–9:25 Development of the Forest Road Design Technique Using LiDAR Data of the Funyu Experimental Forest. *Masashi Saito, Kazuhiro Aruga, Keigo Matsue and Toshiaki Tasaka, Utsunomiya University, Faculty of Agriculture, Department of Forest Science, Japan.*

9:25–9:50 Innovations to Improve Harvester Performance in First Thinnings in the Maritime Pine Forest of South West France. *Richard Emeyriat, AFOCEL Station Sud-Ouest, France.*

9:50–10:15 **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms

10:15–10:40 FERIC's Energy Efficiency Research Program. *Marius-Dorin Surcel, Mark Brown and Jan Michaelsen, Forest Engineering Research Institute of Canada (FERIC), Canada.*

10:40–11:05 Investing in Iron: Technology Adoption in the Logging Industry. *Tom Steele, Associate Scientist and Superintendent, Kemp Natural Resources Station, University of Wisconsin-Madison, U.S.A.*

11:05–11:30 Timber Extraction from Small Inaccessible Sites. *Jim Christie, Forest Engineering Group, Forestry Commission, UK.*

11:30–11:55 Logging in Steep Terrain – Planning and Choice of System. *Jan Bjerketvedt, Norwegian Forest and Landscape Institute, Sweden.*

11:55–13:25 **LUNCH** – exterior Marquis

Session 5 — Optimizing the Wood Supply Chain — Mali III Room

8:30–9:00 Virtual Transportation Manager: a Web-based System for Transportation Optimization in a Network of Business Units. *Jean-François Audy, FOR@C Research Consortium, Université Laval, Interuniversity Research Center on Enterprise Networks, Logistics and Transportation (CIRRELT), Canada.*

9:00–9:25 Evaluating Costs on Wood Supply Chain for Supporting Slovenian and Italian Forest Cooperation. *Janez KRC, Department of Forestry University of Ljubljana, Biotechnical Faculty, Slovenia.*

9:25–9:50 Traceability for Improved Logistics – an Ambitious Goal. *Erlend Ystrøm Haartveit, Norwegian Forest and Landscape Institute, Sweden.*

9:50–10:15 **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms

10:15–10:40 Implementation of a Decision Support System for Routing of Log Trucks. *Gert Andersson, Skogforsk Uppsala Science Park, Sweden.*

10:40–11:05 South of Scotland Timber Truck Optimising Programme. *Gordon Dugan, Forestry Services Manager, UPM Tilhill, Scotland.*

11:05–11:30 New Tools to Reduce Costs along the Forest Supply Chain. *Jean Favreau, Forest Engineering Research Institute of Canada (FERIC), Canada.*

11:30–11:55 The Cost Effect of Forest Machine Relocations on Logging Costs in Finland. *Kari Väättäinen, Finnish Forest Research Institute, Finland.*

11:55–13:25 **LUNCH** – exterior Marquis

Session 6 — Running POSITIVE IMPACT Operations — Mali IV Room

- 8:30–9:00** Reducing Impacts of Logging Operations – Looking for Practical Solutions. *Didier Pischedda, ONF and Emmanuel Cacot, AFOCEL – Station Centre-Ouest, Domaine des Vaseix, France.*
- 9:00–9:25** A GIS-based Spatial Analysis Tools to Balance Forest Road Construction Cost and Environmental Impacts. *Fan-Rui Meng, Faculty of Forestry and Environmental Management, UNB, Canada.*
- 9:25–9:50** Conservation of Soil and Water Resources: an Approach Founded on Results! *Alain Schreiber, Ministère des Ressources Naturelles et de la Faune du Québec, Canada.*

9:50–10:15 **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms

- 10:15–10:40** Contemporary Paired Watershed Studies in the Pacific Northwest: Evaluating the Effectiveness of Contemporary Forest Practices. *Arne Skaugset, Department of Forest Engineering, Oregon State University, U.S.A.*
- 10:40–11:05** A Case Study Using by GIS Database for Determining Dimensions of Hydraulic Construction of Forest Roads for Stream Crossing. *Ress. Assist. Erhan ÇALIŞKAN, Prof. Dr. H. Hulusi ACAR, Blacksea Technical University, Faculty of Forestry, Turkey.*
- 11:05–11:30** Reduced Impact Logging in Certified Hardwood Stands. *Bruce Talbot, Forest and Landscape Denmark Danish Centre for Forest, Landscape and Planning, Denmark.*
- 11:30–11:55** Designing Forest Roads to Minimize Sediment Production with Wet-weather Hauling. *Elizabeth M. Toman, Department of Forest Engineering, Oregon State University, U.S.A.*

11:55–13:25 **LUNCH** – exterior Marquis

Session 7 — Log On! INNOVATIONS in Forest Operations — Mali I and II Room

- 13:25–13:50** Theoretical Technologically Necessary Used Forest Space for Timber Skidding in Dynamic Stand Development. *Bostjan Kosir, University of Ljubljana, Biotechnical Faculty, Department of Forestry and Forest Resources, Slovenia.*
- 13:50–14:15** Constant Reduced Tire Pressure (CRP). A Low-cost Way to Improve Truck Traction and Flotation. *Allan Bradley, Forest Engineering Research Institute of Canada (FERIC), Canada.*
- 14:15–14:40** Wood Value Trial 2006 – Study of CTL Harvesters Bucking Computer Program and Measuring Accuracy. *Johan J Möller and John Arlinger, SkogForsk, Uppsala Science Park, Sweden.*
- 14:40–15:15** Study of Wood Extraction System in Two Planned and Unplanned Landing Conditions (Asalem northern Iran). *Ramin Naghdi, Iraj Bagheri, Mehrdad Nikooy and Jabar Javadpour, Dep. of Forestry, College of Natural Resources, University of Guilan, Iran.*

15:15–15:30 **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms

Session 8 — Optimizing the Wood Supply Chain — Mali III Room

13:25–13:50 Bucking-to-demand to Improve the Match between Sawmill Demand and Log Supply in Norway. *Erlend Nybakk, Norwegian Forest and Landscape Institute, Sweden.*

13:50–14:15 Forest-level Bucking Optimization Including Transportation Cost, Product Demands and Stand Characteristics. *Jori Uusitalo, Finnish Forest Research Institute (METLA) Parkano, Finland.*

14:15–14:40 Intelligent CTL Harvesting Based on Cost-benefit Analyses for Value Chain Optimization. *Lars Wilhelmsson, John D. Arlinger, Lennart Moberg and Johan J. Möller, SkogForsk, Uppsala Science Park, Sweden.*

14:40–15:15 MatchWood – From the Standing Tree to the Wood Product – Product-specific Allocation of Raw Material to the Wood Industry. *Bernd Becker and Albert-Ludwigs, University Freiburg Institute for Forest Utilization and Work Science, Germany.*

15:15–15:30 **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms

Session 9 — HUMAN ISSUES – Who Will Log in the Future? — Mali IV Room

13:25–13:50 Comparative Work Studies – Evidences for the Operator Influence in Empirical Studies. *Ola Lindroos, Department of Forest Resource Management and Geomatics, Swedish University of Agricultural Sciences, Sweden.*

13:50–14:15 Learning Cultures in Small Enterprises in Forest Operations. *Siegfried Lewark, Institute for Forest Utilization and work science, University of Freiburg, Germany.*

14:15–14:40 Forestry in South Africa – Mechanization of Forest Operations and the Future Role of Contractors. *Dirk Längin, Department of Forest and Wood Science Faculty of AgriSciences Stellenbosch University, South Africa.*

14:40–15:15 Physical Workload and Other Stories – Focus on the Brushcutter! *Denise Dubeau, Direction de la recherche forestière, Forêt Québec, Canada.*

15:15–15:30 **BREAK and POSTER DISPLAYS** — Kamichat-Sasseville-Joseph Rooms

15:30 – 16:30 — IUFRO division 3 business meeting

15:30 – 16:30 — COFE 2007 business meeting

15:30 – 16:30 — **Poster display dismant**

LIST OF POSTERS

Presentation	Speaker	Organization
Stand Damage in a Balsam Fir Cut-to-Length Commercial Thinning Study	Edwin Swift	Natural Resources Canada, Canadian Wood Fibre Centre
Use of a Spatial Modeling of Variable Retention Cutting in Order to Study the Effects on Wood Procurement Cost in the Abitibi Clay Belt	Osvaldo Valeria	Chaire Industrielle CRSNG-UQAT-UQAM en Aménagement Forestier Durable Université du Québec en Abitibi-Témiscamingue
Usage of Operations Research Tools for Logistics Support in Forest Operations at Sveaskog after the Storm Gudrun	Håkan Broman	The Forestry Research Institute of Sweden, Uppsala, Sweden
South African Harvesting and Transport System Costing Model – an Innovation in Cost Estimation and Forecasting	Pierre Ackerman	Department of Forest and Wood Science Faculty of AgriSciences Stellenbosch University
Two Technologies for Capturing Additional Value through In-Forest Measurement of Internal Log Properties	Glen Murphy	Forest Engineering Department Oregon State University
Fuel Consumption in Forestry Continues to Fall	Claes Löfroth	Skogforsk, Uppsala Science Park
Spatial Analysis of Hill-Slope Soil Movement in Central Appalachian Forested Watersheds	Greg Hamons, Graduate Research Assistant, Jingxin Wang, Associate Professor, Pam Edwards, Research Hydrologist	West Virginia University, Division of Forestry and Natural Resources; USDA Forest Service, Northern Research Station
Mathematic-statistical Model for Estimation Forest Stand Disruption of Fully Mechanized Logging System in Spruce Stand	Radomir Klvac	Mendel University of Agriculture and Forestry in Brno, Faculty of Forestry and Wood Technology, Department of Forest and Wood Technology
Decision Support System FlowOpt for Optimal Transportation Planning – from Research to Practice	Martin Ekstrand	The Forestry Research Institute of Sweden, Uppsala, Sweden
Spatial and Temporal Variability of the Hydrology of a Forested Watershed in Western Oregon	Amy Simmons	Forest Engineering Department Oregon State University
Optimizing the Energy and Pulp Wood-supply-chain Using Productivity Models	Tobias Cremer and Gero Becker	Albert-Ludwigs-University, Institute of Forest Utilization and Work Science, Germany
Comparing Optimal Bucking of a Timber Stand from the Viewpoint of the Sale and Processing Values	Malinen Jukka, Kilpeläinen Harri, Wall Tapio and Verkasalo Erkki	Finnish Forest Research Institute, Joensuu Research Unit
Impacts of Selective Cutting on Soil Respiration of Natural Stands in Northeast of China	Yaoliang Li	Dean College of Engineering and Technology Northeast Forestry University, Harbin
Waste Management Solutions for Harvesting Contractors	Nicolas NGUYEN-THE	AFOCEL Sud
Cable Yarding Challenges and Solutions in the British Columbia Interior	Brian Boswell	FERIC

Presentation	Speaker	Organization
Long-term Feasibility of Timber and Forest Biomass Resources at a Mountainous Area – Examining the Optimum Scale of an Energy Plant	Kazuhiro Aruga, Masashi Saito, Toshiaki Tasaka, Takuyuki Yoshioka and Edwin S. Miyata	Utsunomiya University, Faculty of Agriculture, Department of Forest Science
Forest Fuel Procurement in Iceland – Unbelievable but True	Dominik Roser and Lauri Sikanen	Finnish Forest Research Institute
Measurement Accuracy During Log Manufacture of a Cut-to-Length Harvester	Douglas Turner	University of New Brunswick, Faculty of Forestry and Environmental Management
High Retention Harvesting Systems in Coastal BC	Stephen Chatwin	Forest Practices Board, British Columbia
Assessment of Forest Road Hydrology Modeling by the Distributed Hydrology Soil Vegetation Model (DHSVM)	Chris Surfleet or Arne Skaugset	Department of Forest Engineering, Oregon State University
Energy Requirement and Environmental Impact in Timber Transport	Staffan Berg	The Forestry Research Institute of Sweden, Uppsala, Sweden
Partnership Approaches to Technical Road Haulage Problems	Simon Armstrong	Forest Engineering Group, UK Forestry Commission (to be confirmed)
Value Recovery and Product Sorting in the Southeastern United States: A Comparison of Conventional and Modified Tree-length Systems	Dale Greene	Center for Forest Business University of Georgia
Negotiation-based Distributed Wood Procurement Planning within a Multi-firm Environment	Daniel Beaudoin	Faculté de foresterie et géomatique, Université Laval Québec, Canada
Using the Decision Support System RoadOpt for Planning of Forest Road Upgrading	Mikael Frisk	The Forestry Research Institute of Sweden, Uppsala, Sweden
Rationalization Possibilities of Young Stand Harvesting	Vesa Tantt	TTS Institute
Autonomous Weeder in Silviculture	Frans Theilby	Royal Veterinary and Agricultural University
Optimize the Logging Resources	Sten-Gunnar Skutin	The Forestry Research Institute of Sweden
Enhancing the Sustainability of Forest Trail Construction and Maintenance using Forest Engineering Design Principles	Chad Bolding	Department of Forestry and Natural Resources
Effects of Best Management Practice Performance in Conventional Harvesting in Natural Forests of IRAN	Mehrdad Nikouye Siahkalmahalleh, Hooshang Sobhani, Baris Majnonian	Natural Resources Faculty of Tehran university
Animal Skidding — An Environmentally Sound Prevailing Ground Skidding Way in Northeast of China	Lihai Wang	College of Engineering Northeast Forestry University
Implementation of a Data Exchange Standard in the French Wood Supply Chain	Christophe Ginot	AFOCEL – Station territoriale Nord-Est
From Reactive Contractors to Proactive Entrepreneurs	Klas Norin	Skogforsk, Uppsala Science Park

Presentation	Speaker	Organization
From Research to Implementation	Magnus Thor and Åke Thorsén	SkogForsk
Investigation into the Use of Tracking Systems in Harvesting Operations in SA Forest Plantations	Pierre Ackerman	Department of Forest and Wood Science Faculty of AgriSciences Stellenbosch University
Cost Calculators for the Procurement of Small-sized Thinning Wood, Logging Residues and Stumps for Energy	Juha Laitila	Finnish Forest Research Institute
Soil Compaction as a Results of In-woods Chipping	Prof. Dr. Fernando Seixas, Prof. Dr. Ezér Dias de Oliveira Jr. (presented by Dana Mitchell)	LCF-ESALQ/USP; - FAIT/FAEF
Possibilities of Automatic Tree Mapping in Mechanized Harvesting	Mr. Jani Heikkilä* and Dr. Jari Ala-Ilomäki	Finnish Forest Research Institute
Evaluation of the Performance of Harvester Operators Related to Training with Virtual Reality Simulators	Eduardo da Silva Lopes, Enerson Cruziniani, Antonio J. de Araujo, Paulo Candido da Silva	Professor, Department of Forestry, Central Western Parana State University
Développement de la foresterie rurale au Cameroun : Amélioration des techniques agrosylvicoles et Évolution de la production des ligneux introduits en milieu paysan dans les hautes terres de l'Ouest.	Pierre Paul Mbarga	Station Spécialisée de Recherche en Aquaculture et Forêts de Transition, Coordination Forêt et Environnement, Cameroun
Preliminary Study on Development of Assessing Physical Load of Forestry Workers: Approaching % V . O ₂ max Trough Heart Rate	Dr. Efi Yuliati Yovi	Bogor Agricultural University
Information Exchange with CTL Machines. Recent development of StanForD – a Communication Standard	John D Arlinger and Johan J Möller	SkogForsk, The Forestry Research Institute of Sweden Uppsala Science Park
The Effect of Selected Harvesting Systems on Residual Stand Damage during the Thinning of Pinus Patula Sawtimber Stands in the Mpumalanga Forestry Region, South Africa	Campbell Sanderson	Institute for Commercial Forestry Research (ICFR)
Operational Savings Realized with the Use of Tire Pressure Control Systems (TPCS) – A Case Example	Brian Spreen, President	TPC International
Optimized Mechanized Harvesting Operations for Large-sized Wood in Uneven-aged, Mixed Stands	Manuela Bacher-Winterhalter	University of Freiburg Institute for Forest Utilization and Work Science
Development of the Containerized Seedlings Planting Machine	Takeshi Yamada and Toshiaki Endo	Forestry and Forest Products Research Institute Department of Forest Engineering, Machine Technology Laboratory
Building a New Harvesting Head to Cut and Process Small and Medium Broadleaved Trees	Emmanuel Cacot	AFOCEL
Wood chips for biomass in Austria	Karl Stampfer	University of Natural Resources and Applied Life Sciences

Presentation	Speaker	Organization
Allocation Effects on Sustainability in the European Forest-Wood-Chain's Part from Forestry to Industry	Diana Vötter	Albert-Ludwigs-Universität Freiburg, Institute of Forest Utilization and Work Science
The influence of the harvester operator for productivity models	Thomas Purfurst	Institut of Forest Utilization and Forest Technology, Faculty of Forest-, Geo- und Hydro-Science, University of Technology Dresden

Registration

Register at www.feric.ca/FEC2007

Registration fees for the 3rd Forest Engineering Conference¹:

	Before July 16, 2007 ²	After July 17, 2007 ²
Participants	\$740.68	\$968.58
Students ³	\$592.54	\$774.86

Companion program

Option A: companion participation in conference events (Oct. 1 Cocktails, Oct. 2 Dinner, Oct. 3 Field excursion and Sugar Shack Dinner and Oct. 4 Lunch)	\$270
Option B: Gondola ride and lunch on the mountain top	\$30
Option C: Quebec Sugar Shack dinner	\$40
Option D: Scandinavian baths	\$50

Transportation

Airport to hotel	\$45/person
Hotel to airport	\$45/person

1. For Quebec residents: 90% of the costs associated with this conference are eligible for tax credits under the Act to Foster the Development of Manpower Training.
2. All prices are in CAD and all applicable taxes are included (GST # R102496973 – PST # 1006163285TV0001).
3. Limited number of registrations available. Must be enrolled in a college or university in an accredited full-time forestry program or in a related field.

Registration fees for participants include:

- Oct. 1 – Evening Cocktail
- Oct. 2 – Access to all meals and sessions
- Oct. 3 – Laurentian field tour including transportation, meals and sugar shack dinner
- Oct. 4 – Breakfast, farewell lunch sessions and COFE and IUFRO business meetings.

For more information, please contact:

Shirley Smith
Conference manager

☎ 514-694-1140 #332

☎ 514-694-4351

✉ shirley-s@mtl.feric.ca

Cancellation Policy:

Notification of cancellations received by June 30, 2007 will be refunded, less a \$50 cancellation fee. No refunds after June 30, 2007, but substitutions are permitted.

Transportation and Driving Directions

Transportation from Montréal-Trudeau airport to Mont-Tremblant

Individuals arriving at Montréal-Trudeau airport requiring transfers to Fairmont Tremblant can take advantage of our shuttle service. The average transfer time is one hour and forty-five minutes.

Montréal-Trudeau airport to Fairmont Tremblant

- Sunday, Sept. 30, 2007
Between 14:00 and 20:00
- Monday, Oct. 1, 2007
Between 10:00 and 16:00

Important:

You must request and pay for this service on your registration form.

Fairmont Tremblant to Montréal-Trudeau airport

- Thursday, Oct. 4, 2007
In the afternoon and evening
- Friday, Oct. 5, 2007
In the morning



Driving directions from Montreal

The Fairmont Tremblant is located about 1 1/2 hour drive from Montreal's Trudeau airport.

1. Take hwy 15 N to Sainte-Agathe. Hwy 15 changes to hwy 117 at Sainte-Agathe.
2. Continue until Saint-Jovite and take exit 119 towards Tremblant.
3. Turn right on Montée Ryan and continue until the end to Lake Tremblant.
4. At Lake Tremblant, turn right on Chemin de la Chapelle until you reach the hotel.

Post-Conference Western Canadian Tour *(optional)*

Forest Practices on the British Columbia Coast

Delegates are invited to participate in an optional post-conference tour of forest operations on British Columbia's coast. The tour will focus on southern Vancouver Island, where examples of harvesting, road construction and silvicultural activities will be presented by several forest companies operating in the region. A scenic route is promised, including travel across Georgia Strait to Vancouver Island



on B.C. Ferries. Participants will see the Island's diverse ecology and varied terrain, observe second-growth forest management and walk through a towering forest of ancient Douglas-fir trees. The spectacular marine environment of Vancouver Island's west coast will also be experienced during a stay at Bamfield, the northern terminus of the popular West Coast Trail.



Other tour activities include visits to:

- Historic MacLean's Sawmill near Port Alberni
- Flying Tanker Inc. base at Sproat Lake, home of the famous Martin Mars water bombers
- B.C. Ministry of Forest's Cowichan Lake Research Station
- B.C. Forest Discovery Center at Duncan

Itinerary — Post-Conference Western Canadian Tour (optional)

Sunday, October 7

- Evening welcome and introduction (location in Vancouver to be announced).

Monday, October 8

- Morning travel from Vancouver to Nanaimo on B.C. Ferries.
- Enroute to Port Alberni, visit MacMillan Provincial Park (Cathedral Grove), historic MacLean's Sawmill and the Flying Tankers base.
- Overnight at the Barclay Hotel in Port Alberni.

Tuesday, October 9

- Visit forest operations between Port Alberni and Bamfield.
- Overnight at the Bamfield Marine Sciences Center.

Wednesday, October 10

- Visit forest operations between Bamfield and Duncan, including a stop at the Cowichan Lake Research Station.
- Overnight at the Silver Bridge Inn in Duncan.

Thursday, October 11

- Visit the B.C. Forest Discovery Center at Duncan and, if time permits, the North Cowichan Municipal Forest.
- Travel to Victoria for an afternoon of sight seeing.
- Return to Vancouver on B.C. Ferries' (Swartz Bay to Tsawwassen route).

Registration Fees — Post-Conference Western Canadian Tour (optional)

Single occupancy¹ \$1378

Double occupancy¹ \$1166

1. Note: All prices are in CAD and all applicable taxes are included. GST # R102496973

- Fees include accommodation, meals and transportation.
- Transportation to Vancouver is NOT included.
- Participants must arrange and pay for their own travel to Vancouver. Please wait until tour confirmation prior to making your travel arrangements to and from Vancouver. In the event that the tour is cancelled, the registered participants will be reimbursed for the entire fee of the Post-Conference Western Canadian Tour. Losses incurred on travel arrangements will not be reimbursed.
- Participants must arrive no later than Sunday October 7th, 2007.
- The tour may be cancelled if a minimum number of participants are not registered by July 2nd, 2007. Tour participants will be notified by July 16th, 2007, if the tour must be cancelled or not.

Co-hosts for the tour will be of FERIC's Western Division:

- Doug Bennett
dbennett@vcr.feric.ca
- Ed Proteau
ed-p@vcr.feric.ca

Links to some sites of interest — Post-Conference Western Canadian Tour

1. Bamfield Marine Sciences Centre — www.bms.bc.ca
2. Bamfield Chamber of Commerce — www.bamfieldchamber.com/main.html
3. Barclay Hotel — www.bestwesternbarclay.com
4. B.C. Ferries — www.bcferries.com
5. B.C. Forest Discovery Centre — www.bcforestmuseum.com
6. B.C. Ministry of Forests and Range, Cowichan Lake Research Station — www.for.gov.bc.ca/hre/history/cowlake.htm
7. British Columbia — www.britishcolumbia.com/trails/?id=12
8. City of Port Alberni — www.city.port-alberni.bc.ca/ThingsToDo/index.htm
9. Flying Tankers Inc. — www.martinmars.com
10. MacMillan Provincial Park (Cathedral Grove) — www.env.gov.bc.ca/bcparks/explore/parkpgs/macmillan.html
11. Silver Bridge Inn — www.travelodgeduncan.com
12. Scenes from Vancouver — www.vancouverscenes.com/
13. Tourism Vancouver — www.tourismvancouver.com/visitors/
14. Tourism Victoria — www.tourismvictoria.com/Content/EN/128.asp

