PRELIMINARY PROGRAM

Fourth National Conference on Surface Transportation Weather
Improving Transportation Through Weather Information

Seventh International Symposium on Snow Removal and Ice Control Technology

Sheraton Indianapolis City Centre
Indianapolis, Indiana
June 16-19, 2008

Sponsored by
Transportation Research Board
of the National Academies

In Cooperation with
Indiana Department of Transportation
American Association of State Highway and Transportation Officials
Federal Highway Administration
U.S. Department of Transportation
The objectives of the 4th National Conference on Surface Transportation Weather and the 7th International Symposium on Snow Removal and Ice Control Technology are to provide a forum for the exchange of information on the state-of-the-art and state-of-the-practice in research and technology applications to improve surface transportation using weather information, and to improve snow removal and ice control operations. These conferences are integrated in a dual track program that included papers and presentations on national perspectives on surface transportation weather and assessing technologies; application of weather information in transportation agencies; modeling and forecasting temperature in surface transportation; blowing and drifting snow; relationships between weather events and traffic operations; using weather information to improve traffic safety and driver decisions; weather sensors and data collection; maintenance decision support systems; relationships between winter service and weather; environmental stewardship; benefits and costs of winter maintenance; characteristics of materials; role of surface friction in winter maintenance; snow plow operations and equipment; weather and pavements; and, winter events, fog and performance measures. Maintenance engineers and researchers from the following countries have been invited to present their papers: Canada, Denmark, France, Germany, Japan, Norway, Sweden, Switzerland and the United States.

These conferences are being conducted by the Transportation Research Board (TRB) Task Force on Surface Transportation Weather and the Committee on Winter Maintenance in cooperation with the Indiana Department of Transportation, American Association of State Highway and Transportation Officials (AASHTO) and Federal Highway Administration (FHWA).

Participation in the symposia is open to all interested parties. TRB extends a special invitation to representatives of meteorological community, federal, state, county and city departments of transportation, universities, consultants, maintenance management firms, and manufacturers of snow removal and ice control products.

**REGISTRATION**

**Technical Program.** The registration fee for attendees is $525 for those who advance register by May 28, 2008 and $575 for those who register after this date or at the conference. The registration fee for technical program attendees covers the Monday afternoon break and evening reception; Tuesday, Wednesday and Thursday breakfasts and breaks; Tuesday and Wednesday lunches; and a copy of the conference proceedings. Registration is on-site only after May 28. Refunds will be issued, less a $50.00 cancellation fee, for all cancellations received in writing by Monday, May 19, 2008. No refunds will be issued thereafter.

**Registrations Fees**

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<th>Registration Type</th>
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<td>Both Conferences</td>
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<td>Full</td>
<td>$525</td>
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* Includes state DOT and FHWA employees

**Open Format Spouse/Guest Activities.** The advance registration fee for spouse/guests is $100. The fee covers the Monday evening reception, and, Tuesday, Wednesday, and Thursday breakfasts. The Tuesday morning breakfast will provide an opportunity for accompanying persons to get acquainted and a list of activities in the Indianapolis area will be provided for individuals to develop their own agenda.
ACCOMMODATIONS

The conference will be held at the Sheraton Indianapolis City Centre, 31 West Ohio Street Indianapolis, Indiana 46204 United States. Limited rooms are available at the hotel on a first-come, first-served basis at the TRB conference rate of $97.00 per room for single/double occupancy plus applicable taxes (currently 15%) until May 19. Contact Sheraton Indianapolis City Centre by Phone (317) 635-2000 or Fax (317) 638-0782, and ask for the Transportation Research Board rate. Reservations will be accepted after May 19 based on availability.

GROUND TRANSPORTATION

Carey Limo and taxi services are available to provide transportation between Indianapolis International Airport (IND) and Sheraton Indianapolis City Centre. The current cost for Carey Limo’s Shared Ride is $12.00 per passenger and for Carey Limo’s Private Sedan is $47.20 per passenger each way. Reservations for Carey Limo should be made at http://careyindiana.hudsonltd.net/res. The current meter rates for taxi service are $2 per mile, plus 40¢ per minute waiting time and 65¢ per each additional passenger for the 8.32 mile trip.

ACKNOWLEDGEMENTS

TRB Task Force on Surface Transportation Weather

Surface Transportation Weather Program Committee
Wilfrid A. Nixon, Roemer Alfelor, Peter P. Neilley and Leon F. Osborne, Jr.

TRB Committee on Winter Maintenance

Snow Removal and Ice Control Technology Program Committee
John P. Burkhardt, Dennis W. Belter, Richard L. Hanneman, William Mahoney, Wilfrid A. Nixon

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Monday, June 16, 2008

9:00 a.m. – 7:00 p.m.  Registration and Information

Session 1
1:00 p.m. – 3:00 p.m.  Welcome
John P. Burkhardt, Indiana Department of Transportation, presiding

Welcome:
• TBD, City of Indianapolis
• Brandye Hendrickson, District Deputy Commissioner, Indiana Department of Transportation

Keynote Addresses:
• Progress in Intermodal and Interagency Actions Since the 3rd National Surface Transportation Weather Symposium
  Samuel P. Williamson, Federal Coordinator for Meteorology, National Oceanic and Atmospheric Administration (NOAA)
• Global Perspectives on the Role of Surface Transportation Weather in Improving Transportation Safety and Operations Efficiency
  William H. Hoffman, Chief Maintenance and Operations Engineer, Nevada Department of Transportation

Charge to Conference/Symposium Participants:
• Identification of gaps in knowledge, understanding and practice, and development of Research Needs Statements (RNS) to address these issues.
• Identification of Conference/Symposium “Practice Ready Papers.”

3:00 p.m. – 3:30 p.m.  Break

Session 2
3:30 p.m. – 5:00 p.m.  National Perspectives and Assessing Technologies
Wilfrid A. Nixon, University of Iowa

A New Paradigm in Observing the Near Surface and Pavement: Clarus and Vehicle Infrastructure Integration (Weather08-012)
  Paul Pisano and Patrick J. Kennedy, Federal Highway Administration; Andrew D. Stern, Noblis, Inc.

Winter Operations in View of Vision Zero (Snow08-041)
  Torgeir Vaa, SINTEF Roads and Transport; Åge Sivertsen, Norwegian Public Roads Administration

Proposed Test Bed for Surface Transportation Weather Technologies (Weather08-025)
  Mark A. Askelson and Leon F. Osborne, University of North Dakota

5:30 p.m. – 6:30 p.m.  Reception, Cash Bar
7:00 a.m. – 5:00 p.m.  Registration and Information
7:00 a.m. – 8:30 a.m.  Continental Breakfast

Session 3A
8:00 a.m. – 10:00 a.m.  Modeling and Forecasting Temperature in Surface Transportation
Leon F. Osborne, Jr., University of North Dakota, presiding

Modeling Rail Temperature Using Real Time Weather Data (Weather08-001)
Yu-Jiang Zhang, ENSCO, Inc.; Sung Lee, Federal Railroad Administration

The Road Temperature Forecast Tool (Weather08-009)
Daniel Battig, University of Applied Sciences - Bern, Switzerland

Spatial and Temporal Mapping of Pavement Temperatures for Optimal Winter Road Maintenance Operations (Snow08-009)
L. Fu, B. Hashemloo, and F. Feng, University of Waterloo, Canada; Max Perchanok, Ontario Ministry of Transportation

Night Icing Potential Demonstration Project (Snow08-045)
Paul J. DeLannoy, AMEC Earth and Environmental; Paul Richard and Bernie MacDonald, Nova Scotia Transportation and Public Works; Shawn Allan, Terry M. Bullock, John D. McClintock, Greg Moffatt, David Robbins, Robert Sayer, and Philip Woodhams, AMEC Earth and Environmental

Session 3B
8:00 a.m. – 10:00 a.m.  Characteristics of Materials
Richard L. Hanneman, Salt Institute, presiding

Eutectic Depressants: Relationship of Eutectic, Freezing Point, and Ice Melting Capacity in Liquid Deicers (Snow08-008)
Scott Koefod, Cargill, Incorporated

Amount of Salt on Road Surfaces After Salt Application: Discussion of Mechanisms and Parameters (Snow08-013)
Kai Rune Lysbakken and Harald Norem, Norwegian University of Science and Technology

Wet Dust Sampler: Technological Innovation for Sampling Particles and Salt on Road Surface (Snow08-028)
Per Jonsson, Göran Blomqvist and Mats Gustafsson, Swedish National Road and Transport Research Institute (VTI)

Numerical Evolution of De-Icer Amount on Pavement Surface: Traffic and Weather Influences (Snow08-046)
Marchetti Mario, Duval Rodolphe, and Livet Jean, Centre d’Etudes Techniques de l'Equipement (CETE), France; Maurice Francois and Pecquenard Philippe, Station d’Essais de Matériels Routiers, France; Guillevic Pierre, Laboratoire Central des Ponts et Chaussées (LCPC), France

10:00 a.m. – 10:30 a.m.  Break

Session 4A
10:30 a.m. – Noon  Using Weather Information to Improve Traffic Safety
Roemer Alfelor, Federal Highway Administration, presiding

Comprehensive Winter Maintenance Management System to Increase Road Safety and Traffic Flow (Snow08-052)
Thorsten Cypra, Boschung Mecatronic AG, Switzerland

Advanced Road Safety and Weather Warning System (Weather08-007)
Paul G. Knight, Jonathan Aguero-Valverde, and Paul P. Jovanis, Pennsylvania State University

Improving Traffic Safety Under Adverse Weather Conditions (Weather08-018A)
Charla Gaskins, Nathan Huynh, and Emmanuel U Nzewi, North Carolina A&T State University
Session 4B
10:30 a.m. – Noon  Environmental Stewardship
Charles C. Goodhart, Pennsylvania Department of Transportation, presiding

Winter Model: Roadside Salt Exposure Under Different Weather Conditions (Snow08-026)
Göran Blomqvist and Mats Gustafsson, Swedish National Road and Transport Research Institute (VTI)

Impacts of Magnesium Chloride Based-Deicers on Roadside Vegetation (Snow08-050)
Nichole A Trahan, University of Colorado, and Curt M. Peterson, West Virginia University

Road Dust and Air Quality in Sweden (Snow08-027)
Mats Gustafsson, Göran Blomqvist and Per Jonsson, Swedish National Road and Transport Research Institute (VTI)

Noon – 1:00 p.m.  Lunch

Session 5A
1:00 p.m. – 3:00 p.m.  Maintenance Decision Support Systems
Paul Pisano, Federal Highway Administration, presiding

Providing Winter Road Maintenance Guidance: Update of the Federal Highway Administration
Maintenance Decision Support System (MDSS) (Snow08-019)
Kevin R. Petty, William P. Mahoney, James R. Cowie, Arnaud P. Dumont, and William L. Myers, National Center for Atmospheric Research

Development of Winter Maintenance Support System: Overview and Status (Snow08-022)
Naoto Takahashi, Roberto A. Tokunaga and Motoki Asano, Civil Engineering Research Institute for Cold Region, Japan

Overview of Implementation and Deployment of the Pooled Fund Study Maintenance Decision Support System (Snow08-038)
Robert D. Hart, John J. Mewes, Benjamin W. Hershey, and Leon F. Osborne, Meridian Environmental Technology, Inc., and David L. Huft, South Dakota Department of Transportation

MDSS Is Not Just for State DOTs (Snow08-029)
William (Pat) Kennedy, City and County of Denver Public Works

Session 5B
1:00 p.m. – 3:00 p.m.  Snow Plow Operations and Equipment
Dennis W. Belter, Indiana Department of Transportation, presiding

The High Speed-/Environmental Snow Plow (Snow08-025)
Pontus Gruhs, Swedish Road Administration

Plowing Wider and Faster on 21st Century Highways by Effectively Using 14’ Front Plows and Trailer Plows (Snow08-003)
Robert Glenn Lannert, Missouri Department of Transportation

GPS Controlled Salt Spreading: From Idea to Implementation (Snow08-030)
Freddy Knudsen and Bo Sommer, Danish Road Directorate

Tools to Gain Faster Snow and Ice Response while Ensuring Preservation of Equipment: Especially with Part-Time or Seasonal Snow Plow Operators (Snow08-009)
Larry E. Nelson, Minnesota Department of Transportation

3:00 p.m. – 3:30 p.m.  Break
Session 6
3:30 p.m. – 5:00 p.m. Application of Weather Information in Transportation Agencies
Tina Greenfield, Iowa Department of Transportation, presiding
Guidance for Creating and Maintaining Written Snow and Ice Control Plan and Policy Documents (Snow08-001)
Duane E. Amsler, Sr., AFM Engineering Services
Follow-Up Study of Winter Standard as a R&D Project (Snow08-042)
Torgeir Vaa, SINTEF Roads and Transport; Ivar Hol, Norwegian Public Roads Administration
Integrating Weather into Transportation Operations: A UDOT Case Study (Weather08-005)
Christopher Strong and Xianming Shi, Montana State University

Wednesday, June 18, 2008

7:00 a.m. – 5:00 p.m. Registration and Information

7:00 a.m. – 8:30 a.m. Continental Breakfast

Session 7A
8:00 a.m. – 10:00 a.m. Role of Surface Friction in Winter Maintenance
Richard M. Balgowan, Hamilton Township, New Jersey, presiding
Approach to Terrain Classification to Improve MDSS Road Condition Forecasts (Snow08-039)
Max Perchanok, Ontario Ministry of Transportation
A Probabilistic Model for Discriminating Road Surface Conditions Based on Friction Measurement (Snow08-033A)
L. Fu and F. Feng, University of Waterloo; Max Perchanok, Ontario Ministry of Transportation
Feasibility Study on Friction for Winter Road Management (Snow08-020)
Roberto A. Tokunaga, Makoto Funahashi, Naoto Takahashi, and Motoki Asano, Civil Engineering Research Institute for Cold Region, Japan
Measurements of Pavement Condition and Road Weather Environment Within North Dakota Using a Tow-Hitch Mount Road Grip Tester (Snow08-016)
Jeffrey S. Tilley, Scott S. Kroeber, and Jennifer Green, University of North Dakota; Diana Clonch, Ohio Department of Transportation; Don Halliday, Halliday Technologies, Inc.

Session 7B
8:00 a.m. – 10:00 a.m. Blowing and Drifting Snow
Richard Wagoner, National Center for Atmospheric Research, presiding
Physical Nature and Prediction of Blowing Snow Within the Roadway Environment (Snow08-018)
Benjamin W. Hershey, Meridian Environmental Technology, Inc. and Leon F. Osborne Jr., University of North Dakota
Geospatial Variability of Roadway Vegetation and Blowing Snow (Snow08-031)
Scott S. Kroeber, Damon Grabow and Leon F. Osborne, Jr., University of North Dakota
Computer-Aided Design of Passive Snow Control Measures (Snow08-054P)
Stuart S. Chen, State University of New York at Buffalo
Spatial Modeling for Evaluation and Remediation of Snow Drifting on Ontario Highways (Snow08-036A)
Max Perchanok, Ontario Ministry of Transportation; Steve McArule, Patrick Grover, and Aleksey Naumov, 4DM Inc.

10:00 a.m. – 10:30 a.m. Break
Session 8A
10:30 a.m. – Noon  Weather Sensors and Data Collection
Jan Olander, Swedish Road Administration, presiding

Non-Invasive Road Weather Sensors (Weather08-002)
Paul Bridge, Vaisala, Inc.

Using the Probe Vehicle to Gather Information on Visibility in Snowstorms (Snow08-006)
Masaru Matsuzawa, Yasuhiko Kajiya, Yuma Matsuyama, Civil Engineering Research Institute for Cold Region, Japan; Takashi Nishida, Fuji Heavy Industries Ltd., Japan; and Yasuhiro Nagata, Japan Weather Association

Operational Considerations in the Integration of AVL/MDC Technologies into Decision Support Systems for Maintenance and Operations (Snow08-037)
John J. Mewes, Robert D. Hart, Benjamin W. Hershey, and Leon F. Osborne, Meridian Environmental Technology, Inc.; David L. Huft, South Dakota Department of Transportation

Session 8B
10:30 a.m. – Noon  Relationships Between Weather Events and Traffic Operations
Tony Myhra, Cryotech Deicing Technology, presiding

Toward Weather-Responsive Traffic Management on French Motorways (Weather08-014)
Nour-Eddin EL Faouzi, Olivier De Mouzon, and Romain Billot, INRETS, France

A Long Term Analysis of the Reductions in Traffic Volume Across the State of New Hampshire During Winter Storms (Weather08-011)
Melissa Grace Wellman, Hometown Forecast Services; Samuel Miller, Plymouth State University; Stephen Gray, New Hampshire Department of Transportation; Joseph Zabransky (Retired), Plymouth State University

Impact of Snow on Video Detection Systems at Signalized Intersections (Weather08-013)
Juan C. Medina, Madhav V. Chitturi, and Rahim F. Benekohal, University of Illinois at Urbana-Champaign

Noon – 1:00 p.m.  Lunch

Session 9A
1:00 p.m. – 3:00 p.m.  Relationships Between Winter Service and Weather
Yasuhiro Kajiya, Civil Engineering Research Institute for Cold Region, Japan, presiding

Modeling Winter Maintenance Activities Using Classification Trees (Weather08-010)
Jean Andre, Alexander Brenning, and Denis Kirchhoff, University of Waterloo; Brian Mills, Environment Canada; Max Perchanok, Ontario Ministry of Transportation

Possibility to Implement the Management Cycle of Winter Maintenance by Performance Measurement (Snow08-007)
Motoki Asano and Roberto A. Tokunaga, Civil Engineering Research Institute for Cold Region, Japan

Winter Model: Road Condition Sub-Model (Snow08-011)
Staffan Möller, Swedish National Road and Transport Research Institute (VTI)

Estimating the Relationship Between Snow and Ice Maintenance Performance and Current Weather Conditions (Snow08-053)
Thomas H. Maze, Massiel A. Orellana, Chris Albrecht, and Alicia Carriquiry, Iowa State University
Session 9B
1:00 p.m. – 3:00 p.m.  Weather and Pavements
William H. Hoffman, Nevada Department of Transportation, presiding

Physical Processes that Affect Runway Surface Conditions During Winter Time - A Conceptual Model (Snow08-014)
  Alex Klein-Paste, Norwegian University of Science and Technology
Pavement Precipitation Accumulation Estimation System (PPAES) (Snow08-017)
  Mark Askelson, University of North Dakota
Temperature and Precipitation Sensitivity Analysis on Pavement Performance (Weather08-019)
  James Trevor Smith, Susan L. Tighe, Brian Mills, and Jean Andrey, University of Waterloo
SafeLane™ Overlay Performance Testing, Winter 2005-06 (Snow08-004)
  Wilfrid A. Nixon, University of Iowa

3:00 p.m. – 3:30 p.m.  Break

Session 10
3:30 p.m. – 5:00 p.m.  Using Weather Information to Improve Driver Decisions
Peter P. Neilley, Weather Services International, Inc., presiding

Personal Weather Advisor: Providing Drivers with In-Vehicle, Real-Time Weather Awareness (Weather08-008A)
  Daniel R. Gallagher, Bob Baron, Bob Dreisewerd, Baron Services, Inc.; John McHenry and Don Olerud, Baron Advanced Meteorological Systems
Study on Expression of Winter Road Information and Its Effects on Drivers’ Travel Decision Making (Snow08-021)
  Yasuhiro Kajiya, Yasuaki Matsuda and Tetsuro Matsushima, Civil Engineering Research Institute for Cold Region, Japan
Driving Decisions Related to the Colorado Front Range December 20-21, 2006, Winter Storm (Weather08-023)
  Sheldon Drobot, University of Colorado

Thursday, June 19, 2008

7:00 a.m. – 11:00 a.m.  Registration and Information

7:00 a.m. – 8:30 a.m.  Continental Breakfast

Session 11A
8:00 a.m. – 9:30 a.m.  Winter Events, Fog and Performance Measures
Max S. Perchanok, Ontario Ministry of Transportation, presiding

Role of Risk, Reliability and Probability in the Interaction of Weather and Surface Transportation (Weather08-016A)
  Wilfrid A. Nixon, University of Iowa
Fog Forecast Provision Experiment for a Mountain Pass (Snow08-024)
  Yuma Matsuyama, Tatsuo Miyoshi, Yasuaki Matsuda, Masaru Matsuzawa, and Yasuhiro Kajiya, Civil Engineering Research Institute for Cold Region, Japan
Performance Measures for Snow and Ice Control Operations (Snow08-051)
  Tom Maze, Chris Albrecht, and Dennis Kroeger, Iowa State University
Session 11B
8:00 a.m. – 9:30 a.m.  Benefits and Costs of Winter Maintenance
Leland D. Smithson, American Association of State Highway and
Transportation Officials, presiding

Benefits and Costs Associated with Maintenance Decision Support Systems (MDSS) (Weather08-004A)
Christopher Strong, Montana State University; David Huft, South Dakota Department of Transportation

A Snow Removal Cost Estimation Model Using the Snow Removal Unit Cost Curve (Snow08-044)
Shigeyuki Nakamae, Ministry of Land, Infrastructure and Transport, Japan; Jun’ichi Oshima, Snow
Research Center, Japan; Takahiro Okawado and Fumihiro Hara, Hokkaido Development Engineering
Center, Japan; Shin’ei Takano, Hokkaido University, Japan

9:30 a.m. – 10:00 a.m.  Break

Session 12
10:00 a.m. – 11:00 a.m.  Conference Summary, Research Needs Statements
and ‘Practice Ready Papers’
John P. Burkhardt, Indiana Department of Transportation, and Wilfrid A.
Nixon, University of Iowa, presiding