



The Road Weather Bulletin

Road Weather Management Publications and Training Materials

Spring 2011, FHWA-JPO-11-087

General

Road Weather Research Agenda, November 2010

This document summarizes results from the Road Weather Policy Forum held November 8-9, 2010 in Washington, D.C. The agenda outlines a research framework, broad research needs, and the various roles and responsibilities of several stakeholder sectors.

<http://www.ametsoc.org/atmospolicy/documents/RoadWeatherResearchAgenda.pdf>

Seasons of Achievement – Accomplishments of the Road Weather Management Program, April 2010

This publication summarizes the transportation challenges associated with weather, the latest Road Weather Management Program (RWMP) products and accomplishments, and the various research and development, training, outreach, and coordination activities of the RWMP.

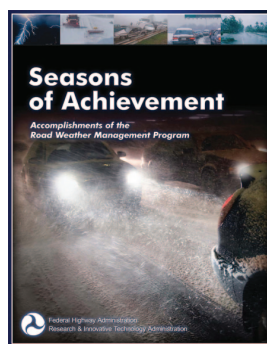


Photo courtesy of RWMP

http://ntl.bts.gov/lib/32000/32600/32612/BR1_FHWA_RoadWeather_Oct09__REVISED_.pdf

Maintenance Management

Benefit-Cost Assessment of a Maintenance Decision Support System (MDSS) Implementation: The City and County of Denver, December 2009

The use of MDSS by the City and County of Denver over two consecutive winters (2007 to 2009) resulted in budget savings that exceeded costs of the system while maintaining the level of service on the roadways. Overall, management and staff were satisfied with the utility and performance of the MDSS in supporting their maintenance decisions.

http://ntl.bts.gov/lib/33000/33100/33156/denver_mdss_bca_report_final.pdf

MDSS – A Proven, Cost-effective Tool for State and Local DOTs, February 2010

http://ntl.bts.gov/lib/33000/33700/33722/mdss_pdf.pdf

Traffic Management

Weather Information Integration in Transportation Management Center (TMC) Operations, February 2011

This report presents the results of the third phase of FHWA's ongoing study on weather integration in Transportation Management Center (TMC) operations. The report briefly describes the earlier phases, and summarizes the findings from implementation and evaluation of automated weather alert systems in the Sacramento, California TMC. It also highlights the efforts of four other TMCs (Cheyenne, Wyoming; Colorado Springs, Colorado; Kansas City, Missouri; and Louisiana) that used the self-evaluation guide to identify their needs. Lessons learned and recommendations are included to encourage greater weather integration.



Photo courtesy of Wyoming DOT

http://ntl.bts.gov/lib/38000/38600/38677/TMC%20Final%20Report%20Website%206.13.11/tmc_integration_report_final.pdf

Data Mining and Gap Analysis for Weather Responsive Traffic Management Studies (WRTM), December 2010

This report describes existing and potential sources of traffic and weather data in the U.S. and abroad that can be used for WRTM studies. In addition to a literature search and a survey of transportation analysts, researchers, and operators were contacted to determine what is currently available and what is needed.

<http://ntl.bts.gov/lib/38000/38100/38165/HTML/dmga.pdf>

“Anytime, Anywhere Road Weather Information”

Traffic Analysis Tools (TAT) Volume XI – Weather and Traffic Analysis, Modeling, and Simulation, December 2010

This new module in the TAT series explains existing models and tools that can be used by transportation agencies to analyze the impacts of weather on traffic flow at the macroscopic (aggregate) and microscopic (individual vehicle) levels.

http://ntl.bts.gov/lib/37000/37800/37841/TAT%20Vol%20XI%20-%20508%20Files/tat_xi.pdf

Implementation and Evaluation of Sacramento Regional Traffic Management Center Weather Alert Notification System, August 2010

This report describes the results of Sacramento RTMC's weather integration self-evaluation as well as their experiences developing and evaluating a weather alert notification system. The system is one of the strategies identified to make better use of weather information.

http://ntl.bts.gov/lib/36000/36100/36168/sac_evaluation_report_final.pdf

Human Factors Analysis of Road Weather Advisory and Control Information: FHWA Report, March 2010

Analysis procedures and design guidelines for road weather messages and dissemination methods were developed to assist transportation operators in communicating pre-trip and in route road weather information to meet the needs of drivers and travelers under different weather conditions and travel scenarios.

<http://ntl.bts.gov/lib/33000/33000/33047/index.htm>

Microscopic Analysis of Traffic Flow in Inclement Weather, November 2009 and December 2010

Part 1 of this FHWA study examined existing literature and developed traffic analysis models that relate weather conditions to driver behavior, including car-following (acceleration/deceleration), gap acceptance, and lane changing. Part 2 used the previous study to calibrate the car-following model and gap acceptance in snowy, icy, and rainy conditions using real data and to develop procedures for integrating the microscopic models in existing traffic analysis tools, including CORSIM and VISSIM.



Photo courtesy of RWMP

http://ntl.bts.gov/lib/32000/32500/32539/tfiw_final.pdf. Part 2 can be found at <http://ntl.bts.gov/lib/38000/38000/38026/matfiw.pdf>.

Incorporating Weather Impacts in Traffic Estimation and Prediction Systems, September 2009

This FHWA study developed weather-sensitive traffic prediction and estimation models and incorporated them into existing Traffic Estimation and Prediction Systems (TrEPS). The models address both supply and demand aspects of traffic response to adverse weather, including user responses to various weather-specific interventions such as advisory information and control actions.

<http://ntl.bts.gov/lib/31000/31400/31419/14497.htm>

Integration of Weather Information in Transportation Management Center (TMC) Operations: Self-Evaluation and Planning Guide, June 2008

This FHWA self-evaluation and planning guide is designed to help TMCs assess their weather integration needs and identify strategies to improve the use of weather information in their daily operations. The results of the self-evaluation serve as input to support the preparation of a weather information integration plan for TMCs.

<http://ntl.bts.gov/lib/30000/30400/30471/14437.pdf>

Flyers

Weather Responsive Traffic Management, April 2009

http://ntl.bts.gov/lib/32000/32500/32521/weather-responsive_traffic.pdf

Weather Integration in TMC Operations, April 2009

http://ntl.bts.gov/lib/32000/32500/32519/weather_integration.pdf

Incorporating Weather Impacts in Traffic Estimation and Prediction Systems, February 2010

http://ntl.bts.gov/lib/33000/33700/33723/treps_pdf.pdf

Research Studies on Weather and Traffic Flow: Modeling Traffic ... in Adverse Weather, February 2010

http://ntl.bts.gov/lib/33000/33700/33721/TrafficFlow_508_web/trafficflow_pdf.pdf

Road Weather Information for Travelers: Improving Road Weather Messages and Dissemination Methods, February 2010

http://ntl.bts.gov/lib/35000/35300/35363/human_factors.pdf

Performance Measures

Road Weather Management Performance Metrics – Implementation and Assessment, August 2009

The RWMP worked with stakeholders in the transportation and meteorological communities to define 11 performance measures that can be used to determine the extent to which the program goals are being met. This report discusses the performance measures and presents results that illustrate the social, scientific, and organizational benefits that can be attributed to the products and activities of the RWMP.



Photo courtesy of RWMP

http://ntl.bts.gov/lib/31000/31600/31611/14492_files/14492.pdf

Baselining Current Road Weather Information, June 2009 and January 2011

This FHWA study identified six attributes that can be used to characterize the quality and importance of road weather information. The attributes were quantified using surveys of transportation professionals, conducted in 2008 and 2010.

<http://ntl.bts.gov/lib/31000/31000/31065/14486.htm>
and http://ntl.bts.gov/lib/37000/37800/37840/2010_BaselineSurvey_FinalReport-508.pdf

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Road Weather Management Performance Measures: A Way to Measure Achievement, November 2009

http://ntl.bts.gov/lib/33000/33700/33724/performance_metrics.pdf

Baselining Current Road Weather Information: Characterizing Sources and Evaluating Attributes, February 2010

http://ntl.bts.gov/lib/33000/33700/33720/baselining_pdf.pdf

Clarus and Road Weather Information Systems

Clarus Quality Checking Algorithm Documentation Report, December 2010

This FHWA-JPO report describes the upgraded data quality checking algorithms created by the National Center for Atmospheric Research (NCAR) now running in the Clarus system.

http://ntl.bts.gov/lib/38000/38500/38545/TOPR2_508_FHWA-JPO-11-075.pdf

Weather or Not? State Liability and Road Weather Information Systems (RWIS), April 2010

This National Conference of State Legislatures (NCSL) report helps state legislators and departments of transportation (DOT) understand the liability concern related to the use of RWIS and provides a menu of strategic options for addressing those concerns. These options not only reduce a state's exposure to liability, but also maximize the benefits of RWIS for the traveling public and the agencies that manage the nation's roadways.

<http://www.ncsl.org/?tabid=20241>

Road Weather Information System (RWIS) Environmental Sensor Station (ESS) Siting Guide – Version 2.0, November 2008

In 2005, the RWMP published Version 1.0 of the RWIS ESS Siting Guidelines. This document contains recommendations on where to place weather stations and sensors to collect road weather information for general and local road weather problems. Version 2.0 contains an updated metadata table as well as a few changes to Version 1.0 based on inputs from the users.



Photo courtesy of Pennsylvania DOT

<http://ntl.bts.gov/lib/30000/30700/30705/14447.pdf>

Flyers

Clarus Success Stories, November 2009

http://ntl.bts.gov/lib/33000/33100/33153/clarus_success.pdf

For access to Clarus System go to:

<http://www.clarus-system.com/>

Connected Vehicles

Road Weather Connected Vehicle Applications

The U.S. Department of Transportation's Research and Innovative Technology (RITA) web site includes a home page that focuses on the weather aspects of the connected vehicle. To learn more about the applications and services that assess, forecast, and address the impacts that weather has on roads, vehicles, and travelers, go to:

http://www.its.dot.gov/connected_vehicle/road_weather.htm

An Analysis of Temperature and Pressure Data from Connected Vehicles in the Developmental Testbed Environment, July 2009

This report describes the effort to develop a Vehicle Data Translator (VDT) that incorporates vehicle-based

measurements of the road and surrounding atmosphere with other weather related data sources. Report will be posted soon.

http://ntl.bts.gov/lib/38000/38500/38551/TOPR1_508_FINAL_10_062.pdf

Weather and Climate Impacts on Commercial Motor Vehicle Safety, April 2011

The Federal Motor Carrier Safety Administration (FMCSA) has an interest in how adverse weather may influence trucking industry practices, and what climate change might mean for future FMCSA efforts to reduce weather-related crashes. Weather conditions influence commercial motor vehicle (CMV) operations and driver safety through wet pavement, impaired visibility, heavy precipitation, frozen precipitation, flooding, high winds, extremes of temperature, and other factors. This report examines the impact of weather and climate change on commercial vehicles and whether FMCSA may need to explore different strategies for reducing weather-related crashes.

<http://www.fmcsa.dot.gov/facts-research/research-technology/report/Weather-Impacts-on-CMV-Safety-report.pdf>

National Weather Service (NWS)

NWS Policy Memo, Guidance for NWS Support for State/Local DOTs, June 2009

The memo states NWS will regularly interact with DOTs to ensure understanding of standard NWS products and hazardous weather but does not have expertise in road weather such as pavement forecasts, road treatment, etc. NWS refers DOTs to private sector for comprehensive and/or customized consulting services.



Photo courtesy of NWS

<http://www.wdwb.noaa.gov/courses/roadweather/nws-policy-on-dot-support.pdf>

Training

Four training courses have been developed for weather and transportation professionals providing solutions to alleviate adverse weather impacts.

Principles and Tools for Road Weather Management (NHI Course #137030). This one-day course for highway maintenance and operations personnel provides tools and strategies to address road weather management problems. The course includes basic knowledge of meteorology, available technical and institutional resources, and information on implementing RWIS. To attend in person, visit

<http://www.nhi.fhwa.dot.gov>. Web-based versions (independent and instructor led) are available from the Consortium for ITS Training and Education (CITE).

<http://www.citeconsortium.org/curriculum.html>

RWIS Equipment and Operations. This course, which builds on the Principles and Tools for Road Weather Management course and the ITS/America Rocky Mountain RWIS course, shows how RWIS can improve the safety and operation of the transportation system along with information on RWIS design, siting, financial and procurement issues, and more. Web-based versions (independent and instructor led) are also available from the Consortium for ITS Training and Education (CITE).

<http://www.citeconsortium.org/curriculum.html>

Weather and Road Management. Offered by the Cooperative Program for Operational Meteorology, Education, and Training (COMET), this web-based training provides information about NWS products, forecasts, and warnings. It also includes information on weather observations, road weather hazards, and NWS forecast products that can be used to support transportation operations and maintenance.

https://www.met.ed.ucar.edu/training_module.php?id=489

User Needs to Mitigate Societal Impacts: Road Weather is a course designed for NWS forecasters to help them understand the needs of the transportation community.

<http://www.wdwb.noaa.gov/courses/RoadWeather/>

Photos in banner courtesy of the RWMP.



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