

# WEATHER INFORMATION FOR SURFACE TRANSPORTATION NATIONAL NEEDS ASSESSMENT REPORT



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FCM-R18-2002

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OFFICE OF THE FEDERAL COORDINATOR  
FOR  
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

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WEATHER INFORMATION FOR SURFACE TRANSPORTATION  
NATIONAL NEEDS ASSESSMENT REPORT

FCM-R18-2002  
Washington, DC  
December 2002

## Foreword

Surface transportation in the United States faces significant weather threats on a nearly continuous basis. This report provides a compilation of weather information needs across the six surface transportation sectors--roadway, railway, transit, marine transportation, pipeline systems, and airport ground operations--and an analysis of these needs. The findings in the report provide a framework for actions to substantially improve surface transportation operations in the future.

In September 1998, the Federal Committee for Meteorological Services and Supporting Research (FCMSSR) was briefed on the Office of Federal Coordinator for Meteorology (OFCM) "Look to the Future." The briefing identified priority areas, issues, problems, and ideas to improve the effectiveness of interagency coordination and cooperation. Surface transportation needs (including ground and marine transportation modes) were emphasized. Weather support for surface transportation was described as minimal and safety and economic productivity were at stake. Coordination among the Federal Highway Administration (FHWA), other partners from the Departments of Transportation and Commerce, state and local entities, and others in the public and private sectors would be essential for defining requirements and developing tailored decision aids. The FCMSSR agreed on the importance of addressing users' needs for weather information for surface transportation (WIST) through a coordinated effort.

Subsequently, the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR) directed that a Joint Action Group be formed to address mission needs and meteorological requirements for surface transportation. Two WIST symposia followed; the first (November - December 1999) helped to identify WIST user needs, and the second (December 2000) reviewed the progress of compiling and analyzing the data collected over the previous year. FCMSSR endorsed the continuation of this process in November 2000.

As I review this report in its final form, I want to emphasize four significant points:

- **Environmental Support to Homeland Security.** Most of the effort to identify, compile, and analyze WIST needs occurred prior to the tragic events of September 11, 2001. Nonetheless, there were WIST needs identified in each of the transportation sectors that are directly relevant to our national resolve to be better prepared for any future acts of terrorism. For example, airport ground operations will continue to be an important nexus of weather-related and security concerns. As a second example, a nationwide network (or "infostructure") to collect key transportation performance information, including road weather data, will support the needs of emergency services personnel for more timely information. Public and private entities would also be able to use this information to create more accurate models of atmospheric dispersion, in the event of an atmospheric release of hazardous materials. WIST will play a critical role in emergency preparedness at all levels of federal, state, and local planning and response. We have known this for a long time with respect to preparedness for natural disasters. *Now we also need better weather information to support the emergency response to disasters inflicted on our communities by those who would do us harm.*

- **The Twin Values of Safety and Economic Productivity.** The report demonstrates how the sometimes competing values of safety and economic benefits are closely intertwined when we consider the potential for improving the information available to all those who make decisions concerning surface transportation systems and activities. From the templates in this report, we find that many of the impacts that increase costs, slow down a transportation activity, or divert resources from other tasks result from actions necessary to mitigate risks to the safety of personnel across the spectrum of transportation sector activities. *By meeting the requirements for provision of WIST to users, as outlined in this report, we can often increase safety and realize economic benefits at the same time.*
- **Primary Use for Decision Support.** In a sense we have always used weather information as one input into life's daily decisions: what to wear, when to plant or harvest, whether to move up or delay a shipment or a ship. This study corroborates and expands on a key point made in numerous other technical and program documents on transportation weather. The weather information provider community must better understand how users can incorporate more detailed weather information (which is also more accurate and at finer spatial and temporal scales) in operational decision-making processes. These can be as simple as the new "511" telephone advisory services for travelers, or any of the prototype demonstration projects underway today. The ultimate test of these systems will be their acceptance by the users.
- **Essential Cooperation among Weather Information Providers.** The report stresses that the broad requirements for provision of weather information to meet surface transportation needs fall on the weather information provider community as a whole. The specificity and detail of information needed for individual users speak to important and expanding roles for private sector providers. The federal agency partners can provide basic weather and environmental observations and forecasts, encourage the transfer of research results into operations, and support the fundamental research and technology innovation needed to advance the state of the art. The report's use of the term "information provider community" is not a euphemism. *Success in meeting these requirements will entail cooperative efforts and working partnerships among federal agencies; among federal, state, and "private-public" entities; and between the governmental and commercial sectors.*

I wish to thank all those who participated and contributed to this report, particularly the many nonfederal participants, from whom we learned a great deal. The WIST Needs Templates, which constitute Appendix B of this report, derive much of their value from validation by representatives of the six surface transportation sectors. I am indebted to the members of the FCMSSR and ICMSSR for their support and guidance and to the members of the Joint Action Group for Weather Information for Surface Transportation for their perseverance. Without this support, our ability to identify and resolve specific, time-critical issues and projects would not have been possible.

The WIST project does not end with this report. The process is dynamic; support capabilities mature; and future needs evolve. Even the most successful weather information system requires nurturing and maintenance to remain healthy and relevant. It remains for us, the readers, and particularly the weather service providers, to make maximum use of this information on WIST

needs and requirements. We must re-invigorate existing support capabilities, initiate creative new solutions, and exercise judicious use of assets to maximize the cooperative interests of government and private sector participants for the benefit of the surface transportation public we serve.

Samuel P. Williamson  
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and Supporting Research

# Weather Information For Surface Transportation

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