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**Research Applications
Laboratory**

Pikalert®: Road Weather Intelligence

Weather Intelligence for Smarter Decisions

Pikalert® delivers advanced road-weather intelligence to inform transportation agencies to make safer, more efficient maintenance decisions before hazardous conditions develop, and deliver actionable messaging to the traveling public.

Winter storms, freezing temperatures, heavy rain, and rapidly changing road conditions pose significant challenges for transportation agencies. Every maintenance decision, whether to pre-treat a roadway, deploy snowplows, or issue travel advisories, can have major impacts on public safety, mobility, and operating costs. Pikalert transforms complex weather, pavement, and traffic information into easy-to-use decision support that helps agencies anticipate hazards, improve roadway safety, and use maintenance resources more effectively.

Pikalert combines cutting-edge atmospheric science with operational transportation expertise to provide reliable forecasts of road conditions and weather impacts. By delivering timely, location-specific information, the system helps agencies move from reactive responses to proactive planning, reducing uncertainty before hazardous weather strikes. Today, Pikalert supports transportation agencies across North America with science-based guidance that improves both daily operations and emergency response.

Benefits & Impacts

- Safer travel through road-weather guidance
- Improved roadway maintenance & treatment decisions
- Reduced costs through optimized use of labor & materials
- Better mobility, safety, & resilience for transportation systems

Contact Us!

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Road Intelligence

Pikalert combines weather forecasts, road observations, pavement models, connected vehicle information, and maintenance data into a single operational platform. The system predicts pavement temperature, precipitation type, frost, snow accumulation, ice formation, visibility impacts, and other roadway hazards hours before they occur, giving maintenance personnel valuable lead time to prepare.

Interactive maps, customizable displays, and automated alerts provide a clear picture of current and forecast conditions across entire transportation networks. Rather than requiring users to interpret multiple weather products, Pikalert presents information in an operational context, helping managers quickly identify where hazardous conditions are developing and prioritize areas needing immediate attention.

Science-driven road-weather intelligence improving safety, mobility, & operational efficiency.

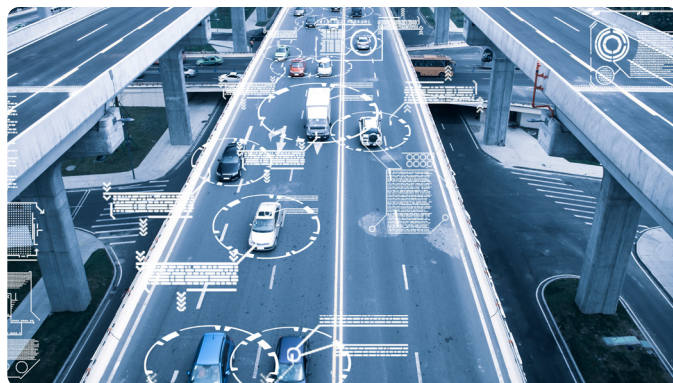
Smarter Operations

Rather than simply displaying weather forecasts, Pikalert delivers actionable guidance tailored to transportation operations. Maintenance managers can determine when and where to deploy crews, apply anti-icing treatments, schedule plowing operations, and monitor changing conditions in real time. This proactive approach improves roadway safety while reducing maintenance costs and making more efficient use of labor, materials, and equipment. Traffic management operations can be streamlined by integrating Pikalert tactical and forecast hazard alerts into public messaging.

By transforming cutting-edge atmospheric science into practical decision-support tools, Pikalert helps transportation agencies improve safety, enhance mobility, strengthen community resilience, and keep travelers moving during hazardous weather.

Operational Tools

Pikalert is designed to meet the operational needs of state departments of transportation, local agencies, and maintenance organizations. Flexible visualiza-



Turning weather science into roadway decisions.

tion tools, customizable alerts, mobile access, and user-friendly interfaces provide situational awareness for decision makers whether they are in the office, at a traffic management center, or in the field.

The system continues to evolve through ongoing research and close collaboration with partners across sectors, ensuring new capabilities address emerging operational challenges and incorporate the latest advances in road-weather science, forecasting technology, and decision support.

Research in Action

Pikalert represents decades of NSF NCAR RAL research in road-weather forecasting, pavement modeling, and transportation decision-support systems. By partnering with federal, state, and local transportation agencies and the private sector, our scientists and engineers continually improve forecasting techniques and operational tools that address real-world transportation challenges.

By transforming cutting-edge Earth system science into practical solutions, Pikalert helps transportation agencies improve safety, strengthen community resilience, enhance mobility, and make more informed decisions before, during, and after hazardous weather events.

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