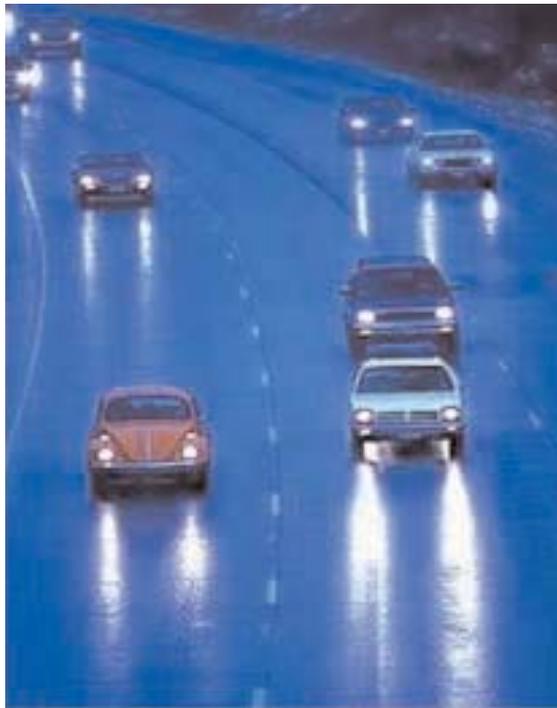


# Clarus

A Clear Solution For Road Weather Information

*“Weather forecast for tonight: dark. Continued dark overnight, with widely scattered light by morning.”*

These words by comedian George Carlin, while not a real weather forecast, demonstrate how insufficient forecasting can be. While the accuracy of weather forecasting has improved substantially over the last few years, when it comes to the nation’s roadways, it’s not enough. More precise, relevant, and timely weather information, and its effects on the road – *road weather information* – is critical for saving time, money, and most importantly – lives.



The U.S. Department of Transportation (U.S. DOT) and the National Oceanic and Atmospheric Administration (NOAA) have joined forces to help roadway users, transportation managers, and weather providers be more prepared to deal with any adverse weather condition – be it rain, sleet, snow, ice, fog, wind, flooding, or dust. This is the reason for *Clarus*.

*Clarus* is the 21<sup>st</sup> Century’s answer to the need for timely, high quality road weather information. The new road weather and forecasting capabilities created by *Clarus* will collect weather observations from both weather and transportation sources and turn them into valuable road weather information. On the weather side, these sources include Doppler radar, personal observations, weather balloons, measurements of barometric pressure, and computer models used by meteorologists. In transportation, it is the roadway surface information collected by the over 2500 weather stations that gather data from sensors imbedded in the roadway, by roadside sensors, and in the future by in-vehicle technology as well.

The result is a more complete, accurate weather picture that is available to any user, at any time, anywhere in the U.S. “States use different data sets,” said Ralph Patterson, Weather Operations Manager for the Utah Department of Transportation. “It’s helpful if we can look at what’s going on in the states around us to better prepare.”

**“States have good road weather information in their own systems, but they don’t share it. Clarus allows for a seamless sharing of information across state boundaries.”**

*Curt Pape, Road Weather Information System Coordinator  
Minnesota Department of Transportation*

*Clarus* will standardize data across regions, allowing a transportation manager to review data from neighboring states. This includes not only the air temperature, but temperatures on road surfaces, which is a critical element in treating roadways for ice and snow.





As any traveler knows, weather does not stop when crossing a state line. Weather is a regional phenomenon that *Clarus* addresses by collecting and analyzing data for accuracy and then packaging it in formats tailored to meet the needs of each end user. Transportation managers use road weather information to make a number of critical decisions – when and where to treat roads for ice and snow; what travel advisories should say to the public; and where roads should be closed due to ice, drifting snow, high winds, low visibility, or flooding. Weather providers use the information to give up-to-date forecasts to the traveling public which uses weather reports to not only decide whether to grab an umbrella, but when they should travel and what routes they should take.



Insufficient or poor quality road weather information can be costly in both human and economic terms. The wrong decision on when to deploy snow plows and treat for ice and snow can either result in crews waiting hours for the first snowflake to fall, or in dangerous untreated road conditions. For travelers, bad weather often results in increased risk of a traffic crash or hours of delay.

According to the Transportation Research Board's report, *"Where the Weather Meets the Road – A Research Agenda For Improving Road Weather Services,"* weather has a severe impact on transportation:

- Adverse weather is associated with over 1.5 million motor vehicle crashes each year resulting in over 800,000 injuries and 7,400 fatalities.
- The injuries, loss of life, and property damage caused by weather-related crashes cost an average of \$42 billion.
- Drivers endure over 500 million hours of delay due to fog, snow, and ice.

*Clarus* – the Latin word for clear – will provide clear benefits to everyone involved in weather and transportation:

- *Transportation managers* will have enhanced decision-making tools (e.g., the Maintenance Decision Support System (MDSS)) allowing them to more efficiently manage resources, more effectively maintain their roadways, and to give credible and precise travel advice.
- *Weather providers* will be able to provide high resolution weather forecasts and real time travel conditions via radio, television, and the internet. The accuracy of *Clarus* could tell a traveler about a specific route and the time bad weather is likely to arrive.
- And *travelers* will no longer have to engage in guess work when it comes to driving in bad weather or place themselves and others at risk by driving on dangerous roadways.

A multi-disciplinary group of transportation and weather professionals from the public and private sectors is developing the software, tools, and training that will make this initiative a success. Full support and participation by all state departments of transportation and weather providers, by providing their data to the *Clarus* system, will create an invaluable resource. Ultimately this new resource will be integrated into NOAA's surface weather observing system. The benefits for the traveling public could not be clearer. For more information on *Clarus*, visit the web site at <http://clarusinitiative.org>.

**"Clarus is an integrated decision support system that people can really use."**

*Ray Ban, Executive Vice President, Meteorology  
The Weather Channel*



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