Road Weather – an emerging area of research and operations.

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The safety and efficiency of operation of our nation's roadways could be significantly increased if road weather information were provided to road users in a timely manner. "Users" here includes the driving public, commercial drivers, dispatchers, road maintainers, law enforcement, and emergency responders, among others. Indeed, the diversity of users is one of the challenges to be met in providing information when and where needed. From science perspective, the road environment is a special case of micrometeorology, with the fluxes of energy and moisture between the atmosphere and the road surface being of special interest. Another challenge arises from the road environment having the form of a narrow corridor or ribbon traversing complex terrain. Soil type beneath the road, shadowing from nearby structures and terrain, and the surrounding mesoscale meteorological conditions all enter into determining what is happening on and immediately above the road surface. From an observation perspective, routine measurements must made in very difficult situations, i.e., in the atmosphere, close to the surface, and on the road surface itself. In many cases, the chemical mix in the slurry present on a wet road surface is of great interest. From a human factors perspective, complex information must be communicated to users who are already very busy operating vehicles, sometimes under difficult conditions. The information must be packaged and presented in a manner that facilitates a decision-making process without distracting the vehicle operator. While these and other challenges appear to be daunting, technology has reached the point where is it now possible to address many of them. This presentation will discuss some of the information gathered during a recent study by a committee convened by the National Research Council to examine the research opportunities and required services needed to support improved weather-related information for the nation's roadways. This information, gathered from vehicle manufacturers, road and traffic engineers, snow and ice removal experts, specialized weather providers, and others suggests that there are many opportunities for research and for the development of new products and services, and the means of communicating them.