



## **Assessment of a physical model for the prediction of surface temperature to prevent the ice formation on roadway**

**J. C. Yahia** (1), J. -L. Paumier (1), P. Personne (2), H. Isaka (2)

(1) Laboratoire Régional des Ponts et Chaussées de Clermont-Ferrand, Clermont-Ferrand, France (jamal-charles.yahia@i-carre.net), (2) Laboratoire de Météorologie Physique, Université Blaise Pascal, CNRS, Clermont-Ferrand, France

For few years, our society is more and more sensitive to the problem of the road safety. In order to insure the wintertime viability of road network and to prevent the ice formation, a physical numerical model for predicting the roadway surface temperature has been developed. The model is validated using a database including 10 years of meteorological observations and forecasts onto the motorway A75 located in the département of Cantal in the middle of France. This fully automated model requires meteorological input data from the six forecast sites located onto the motorway for the five days before the current date and weather forecast for the next 24 hours from Météo France, the national center of weather forecast. The first relevance of this model is that it provides the surface temperature forecast for the next 24 hours with a maximum bias of 2°C allowing to a fast and targeted intervention onsite. Secondly, the performance of the model is better during the night. Results show that the forecast for the surface temperature have an averaged error of 1.7°C and a standard deviation less than 1.4°C at nighttime. Moreover, 86% of frost and no-frost situations are successfully predicted during the night.