

Site-specific Road Condition Forecast for Maintenance Services

*J. Heierli, Boschung Mecatronic,
Route d'Englisberg 21, 1763 Granges-Paccot, Switzerland*

Abstract

The road condition model BorrCast24¹ forecasts the evolution of critical road parameters such as surface temperature, surface water amount and freezing point up to 24 h in advance. The computation relies on data provided by direct measurement on chosen sites of the road system, as well regional 24 hour weather forecasts provided by national meteorological institutes or other specialists². The road surface temperature is predicted by the energy flux budget at the surface and heat diffusion within the depth of the road. The hydrological budget accounts for the amount of frozen or liquid surface water, combining precipitation, phase change and drainage in the estimation. Both models are closely linked and interact through data exchange. The resulting output is used to predict the likely road conditions, as well as quantity and type of the forecasted ice cover, from which corresponding alarm levels are issued. The model has been tested on a section of road at the Swiss meteorological institute in Payerne and b) compared with measurements on a section of freeway near Bern. The accuracy for both perfect-previousion and actual forecast is presented in detail below.

¹ BOSCHUNG Road & Runway Conditions and Safety Trend

² SWIS for example, introduced by DWD on request of BOSCHUNG mecatronic.