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First experience with application of road condition model METRo in the Czech Republic

P. Zacharov, V. Bliznak, Z. Chladova, J. Hosek, P. Pesice, P. Sedlak, and Z. Sokol

Institute of Atmospheric Physics ASCR, Dept. of Meteorology, Prague, Czech Republic (petas@ufa.cas.cz)

Forecast of road surface conditions in the cold part of year is important for operational safety. In addition to that, such forecast can help improving and optimizing road maintenance, which may save significant financial resources.

To forecast road conditions we chose the Model of the Environment and Temperature of Roads (METRo) and adopted it for use on motorways and roads in the Czech Republic. METRo is a physical model developed at Environment Canada. It evaluates the complex interactions between the ambient environment and the road surface, including the radiation budget and phase changes of any moisture on the road surface. Our version of METRo (METRo-CZ) uses on-line measurements of road weather stations and forecasts of the NWP model ALADIN which is the operational model of the Czech Hydrometeorological Institute.

We applied METRo-CZ to the winter season 2012/2013 in semi-operational mode. The forecast was calculated with the most typical model setup and three other modifications. The versions differed in source of input radiation flux (either indirect calculation using total cloud cover or values provided by ALADIN) and in inclusion/skipping of a statistical postprocessing of ALADIN outputs.

First results indicate that METRo-CZ can provide useful information for improving road safety and maintenance. The best results are obtained when a statistical postprocessing to ALADIN outputs is applied.