



Using mobile observations in road weather forecasting

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Fixed road weather stations are too sparsely located to provide information about road conditions along the full road network. However, the detailed data would be important for road weather forecasting. High quality forecasts help the road authorities to keep the roads safe during harsh conditions, but also enable savings when unnecessary operations can be avoided. Observations from mobile sources can be used to make more detailed road weather forecasts. It was tested in this study how best use the mobile observations in a road weather model (RWM) run by Finnish Meteorological Institute (FMI). The observations were made with a Teconer RCM411 optical instrument attached to a local commuter bus in the city of Oulu during a measurement campaign in December 2015. The campaign was collaboration between the University of Oulu, Oubus Company and FMI within the national Data to Intelligence Program. The bus commuted the 15 km route 18 times during an optimal day, which allowed using the observations both in model initialization and in forecast verification. Two alternative versions of the RWM utilizing mobile observations were run for 23 selected points along the road and then compared against the control run without mobile observations. The root mean square errors (RMSE) were calculated for different model versions and for different lead times. The bus observations not used in the model initialization were included in the calculation. The results show that the use of bus observations in the model clearly decreased the error values compared to the control run. Unfortunately, there are still not enough open source mobile observation data available to be used for operational forecasting in Finland, but they are expected to possess great potential to improve forecast quality in the future.