

Intelligent Road Weather Application Development at Finnish Meteorological Institute

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Road weather applications are highly instrumental constituents supporting present day ITS (Intelligent Transport System) development. Consequently, the ITS framework can be seen both as an important data provision and distribution channel to exploit timely meteorological information to enhance safety on the roads. End-user focused road weather applications have begun to make extensive use of new, unconventional observation data originating from roadside units and moving vehicles. However, adaptation of e.g. vehicle based data is not a trivial meteorological undertaking due to the non-triviality of the assimilation (matching) process of these novelty data types. Nevertheless, deployment of vehicle on-board measurements and instrumentation is expected to lead to new innovations and avenues both in road weather modelling as well as in service provision to road end-users. In this context, new types of forecasting applications are under active development to provide weather generated impact forecasts to the end-user community supporting the more traditional road weather forecasts. Finnish Meteorological Institute (FMI) has been highly active in these research areas during past several years. This paper gives an overview of the Institute's R&D activities serving both the (road) weather and the ITS communities in Finland as well as abroad, by having exported the developments to different environments, along many European highways and even serving as meteorological guidance the Sochi 2014 Winter Olympics.

References:

- Atlaskin, E, Nurmi, P and Dimov, D. 2015. Final Outcome of the FOTsis Project: Intelligent Road Weather & GIS Services for End-users. *22nd ITS World Congress, Bordeaux, France, 5-9 October 2015*.
- Karsisto, V, Nurmi, P, Kangas, M, Hippinen, M, Fortelius, C, Niemelä, S and Järvinen, H. 2016. Improving road weather model forecasts by adjusting the radiation input. *Meteorol. Appl. Accepted*.
- Karsisto, V and Nurmi, P. 2016. Using Car Observations in Road Weather Forecasting. *18th SIRWEC, Fort Collins, USA, 28-29 April 2016*.
- Nurmi, P. 2015. Road Wise: The latest road-weather modeling system. *Meteorological Technology International, April 2015 issue, pp. 28-31*.
- Nurmi, P, Karsisto, V and Atlaskin, E. 2014. Exporting FMI Road Weather Expertise: Applications for Sochi 2014 Winter Olympics and for Spanish Highways. *17th SIRWEC, La Massana, Andorra, 30 January to 1 February, 2014*.
- Sander T, Molendijk, M, Karsisto, V, Atlaskin, E, Nurmi, P and Dekker, J. 2015. Applicability of the FMI Road Weather Model for use in winter maintenance activities for the Dutch highways. *EMS2015-393. 12th European Conference on Application of Meteorology (ECAM), Sofia, Bulgaria, 7-11 September 2015*.