



## Advanced Visualization System for Road Weather Station Data and Forecasts as a Support for CHMI Forecasting Service

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The number of road weather sites is usually several times higher than the quantity of classic meteorological stations in the countries with developed monitoring systems. In case of several measuring technologies providers it is important to reach mutual agreement on common data code. In the Czech Republic we managed to introduce road weather BUFR template developed by WMO experts Eva Cervena (CHMI) and Sibylle Krebber (DWD) for the purpose of cross-border internal data exchange [1].

The implementation of standard WMO code procedure enables utilization of special software developed for visualization of meteorological data – for example Visual Weather by IBL Software Engineering (VW). Compared to information systems delivering data to road authorities in the way suitable for their activities (e.g. special alarms, freezing temperature, 24 hours graphs) VW makes it possible to present road weather data in combination with other sources, for example synop or radar data and to define own warning thresholds (e.g. visibility, difference of dew point and road surface temperatures) or colour gradients. Forecasters can set up preferred time range for graphs to observe trends, to compare measurements from two stations or between forecast and measured values to verify outputs from energy balance models.

Road surface temperatures and conditions are forecast by commercial tools like IceBreak or Climator in the combination with thermal mapping outputs. In 2014 the CHMI launched an operational forecast produced by METRo model developed in Canada and implemented to our conditions in co-operation with the Institute of Atmospheric Physics AS CR [2]. The model calculates new forecast every hour using all measurements available from the roads. VW offers several ways of METRo outputs presentation, for example a multiview of maps with measured and forecast data from more than 400 sites until next 3 hours for nowcasting of black ice, freezing fog, hoar-frost or heavy snowfall. The next step is an application of ensemble forecasts [3].

[1] Sulan J., Endrulat T., 2006. Bufr template for road weather data. Proceedings of SIRWEC 13th International Road Weather Conference, Torino, Italy, 25–27 March 2006. <http://www.sirwec.org/Papers/torino/28.pdf>

[2] Sokol Z. et al., 2014. First experience with the application of the model METRo in the Czech Republic. Proceedings of SIRWEC 17th International Road Weather Conference, La Massana, Andorra, Jan 30 – Feb 1, 2014. <http://www.sirwec.org/Papers/andorra/13.pdf>

[3] Sokol Z. et al., 2016. Ensemble of road surface temperature by the METRo-CZ model. Proceedings of SIRWEC 18th International Road Weather Conference, Ft. Collins, Colorado, USA, 27-29 April, 2016. <http://www.sirwec.org/Papers/2016-ftcollins/005.pdf>