



## **Viamet: Advanced integration of meteorological data to achieve high resolution winter road condition forecasts**

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During winter, weather road maintenance operators are facing many challenges in making decisions about keeping the roads safe, basically removing the snow and salting to avoid the ice formation over the pavement. Traditionally, these decisions were taken only with the experience of the operators using few automatic weather stations, but without having an objective criteria.

In the last years, developments in numerical weather prediction and temperature sensors have provided useful tools to be used in winter road maintenance, improving the efficiency in snow removal and reducing the ecological footprint of thrown salt on the road. Using numerical models in points with automatic weather station (AWS) allows to have forecasts of the road condition and temperature for several hours, on the other hand obtaining a thermal mapping of the road using infrared temperature sensors helps to generate the forecasts beyond the points with AWS.

Despite these developments, usually road condition forecasting has been done only at locations where an automatic weather station is available. Since the installation and maintenance costs of the stations are high, some dangerous areas are not covered by the forecasts, especially in mountainous zones, where conditions can be very different in small regions.

Viamet adds advanced use of the available meteorological information to be able to have the forecasts at all the detected dangerous locations, even at the points that there isn't AWS. Further, the temperature is estimated all along the road, taking data from a thermal map. In this work, The METRo (Model of the Environment and Temperature of Roads) is used to generate forecast road conditions.

The presented product is already operational and used by two road operators in the El Berguedà region in the Pyrenees. The data is presented in an easy interface so all the staff involved in the road operation can understand it, but presenting all the advanced station and forecast data plus some useful remote sensing products.