Development of weather tools to forecast adverse road weather in Catalonia

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ABSTRACT

Nowadays there is an increasing demand of more specific, georeferenced and high resolution meteorological information, due to the impact that meteorology has on several economic activities and also on the daily living.

Traffic is an example of this outstanding necessity. In the case of Catalonia, a country with a complex terrain that gives rise to climatological variability, it is necessary to supply precise information about ice, snow, fog, rain, hail and strong wind with the aim to solve the local particularities of each region.

So, for example, while it is essential to provide an accurate gust wind forecast to avoid the risk of overturning trucks in south regions, it is required to have an accurate fog model inland where the lack of visibility causes important collisions. Furthermore, independently to seasonal conditions, the management of intense showers that cause landslides and fast changes in visibility is crucial to avoid dangerous driving situations.

Consequently, the Meteorological Service of Catalonia provides a wide range of products that adapt to the particularities of each region. Among the last developments the 11th day forecasting stands out, thanks to the implementation of ensemble statistical prediction. On the other hand, the accuracy of prediction models with a higher resolution (up to 400 m) ensures the development of products that can simulate local conditions.

All these improvements combined with specific weather models for traffic including variables as fog, hail, visibility and type of precipitation, and with a system of alarms generated from radar information, can allow a better forecasting of adverse phenomena and a substantial benefit to apply management measures and for the activation of emergency plans.