EMS Annual Meeting Abstracts
Vol. 10, EMS2013-585, 2013
13th EMS / 11th ECAM

Use of WRF for winter road forecasting

H Hartmann, J Wisse, and D van Dijke
Netherlands (mureau@weer.nl)

Accurate and detailed road surface temperature forecasts are essential for winter road safety. During winter, these forecasts are used to decide when and where to grit resulting in more public safety and less unnecessary gritting actions.

MeteoGroup has developed an energy balance model to forecast for each road segment in a network the road surface temperature and condition. This model requires information from the local road environment like shading and sky view as well as detailed weather information.

Measurements of air temperature along routes (i.e. an air temperature fingerprint) in complex terrain have revealed significant air temperature variations, especially during stable atmospheric conditions. These air temperature variations have a substantial impact on the local road surface temperature and road conditions. The decision about when and where to grit is therefore highly depending on accurate local forecasts of the air temperature.

This presentation discusses the capabilities of the high resolution meso-scale WRF model in resolving the local air temperature variations. If successful, the simulated WRF air temperature fingerprints can be used as input to the energy balance model.

Two case studies will be presented for a route in Wales (UK) under clear and calm nocturnal conditions.