



## **The impact of vertical resolution in mesoscale model AROME forecasting of radiation fog**

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Airports short-term forecasting of fog has a security and economic impact. Numerical simulations have been performed with the mesoscale model AROME (Application of Research to Operations at Mesoscale) (Seity et al. 2011). Three vertical resolutions (60, 90 and 156 levels) are used to show the impact of radiation fog on numerical forecasting. Observations at Roissy Charles De Gaulle airport are compared to simulations. Significant differences in the onset, evolution and dissipation of fog were found. The high resolution simulation is in better agreement with observations than a coarser one. The surface boundary layer and incoming long-wave radiations are better represented. A more realistic behaviour of liquid water content evolution allows a better anticipation of low visibility procedures (ceiling < 60m and/or visibility < 600m). The case study of radiation fog shows that it is necessary to have a well defined vertical grid to better represent local phenomena.

A statistical study over 6 months (October 2011 – March 2012 ) using different configurations was carried out. Statistically, results were the same as in the case study of radiation fog.

Seity Y., P. Brousseau, S. Malardel, G. Hello, P. Bénard, F. Bouttier, C. Lac, V. Masson, 2011: The AROME-France convective scale operational model. *Mon. Wea. Rev.*, 139, 976-991.