

AROME Airport: Nowcasting with a High-Resolution Configuration of the Operational French Meso-Scale AROME Model

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AROME Airport is a further development of the AROME-NWC [1] and is designed to provide hourly forecasts with a 500 m resolution for the area around an airport which can help in the planning of the use of the runways, particularly as part of a system to support the dynamic separation of aircrafts.

AROME Airport is initialised by the forecasts from the operational AROME model [2] which provide the initial and lateral boundary conditions for a version of AROME-NWC with the same resolution as the operational model (2.5 km) but run on a smaller domain, where the data assimilation is performed. This data is then used for the initial and boundary conditions of the high-resolution AROME Airport.

In this study we present the first results from AROME Airport at Paris – Charles de Gaulle airport during two test periods; early summer 2011 and autumn 2012. The forecasts from AROME Airport are validated against screen level observations of temperature and wind speed as well as dedicated wind profiler data, available from the observation campaigns during these two periods. The impact of using these profiler data in the data assimilation is also discussed as well as the sensitivity of the data assimilation system of AROME Airport. The performance of AROME Airport is compared to the performance of its coupling model and the operational AROME model.

References

- [1] Auger, L., Dupont O., Brousseau, P., Hagelin, S. and Brovelli, P. "AROME-NWC : an Adaptation of the Meso-Scale NWP Model AROME to Nowcasting", this conference
- [2] Seity, Y., Brousseau, P., Malardel, S., Hello, G., Bénard, P., Bouttier, F., Lac, C. and Masson., V " The AROME-France convective-scale operational model", MWR, vol. 139, pp. 976-991, 2011.