

Local winds, wind shear and orographic effects on the Clermont-Ferrand airport

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The Clermont-Ferrand Auvergne airport located in the middle of southern France and surrounded by the Massif Central mountains is frequently perturbed by near surface wind shear events.

Complex local winds are indeed developing under certain conditions from large scale wind interactions with orography in the vicinity of the airport.

A project including a field experiment has started in 2017 in order to improve our ability to forecast and understand these events.

The instruments deployed include a scanning Doppler wind lidar, a lidar wind profiler, a DEGREANE-Horizon UHF radar wind profiler, a microwave radiometer and several automatic weather stations.

A high resolution version of the numerical weather prediction model AROME has also been specially set up.

The project main objectives are on the one hand to evaluate the ability of the UHF radar wind profiler to detect the wind shear events and to improve forecasts regarding these events, on the other hand to better understand the mechanisms leading to these events at local scale.

This paper will present the field experiment and its first results, with a particular focus on the second main objective mentioned above.