



## **The Passy-2015 field experiment: wintertime atmospheric dynamics and air quality in a narrow alpine valley**

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Wintertime anticyclonic conditions lead to the formation of persistent stable boundary layers which may induce severe air pollution episodes in urban or industrialized area, particularly in mountain regions. The Arve river valley in the Northern Alps is very sensitive to this phenomenon, in particular close to the city of Passy (Haute-Savoie), 20 km down valley past Chamonix. This place is indeed one of the worst place in France regarding air quality, the concentration of fine particles and Benzo(a)pyrene (a carcinogenic organic compound) regularly exceeding the EU legal admissible level during winter.

Besides air quality measurements, such as the ones presently carried in the area by the local air quality agency Air Rhône-Alpes or in the DECOMBIO project led by LGGE, it is crucial to improve our knowledge of the atmospheric boundary layer dynamics and processes at the valley scale under these persistent stable conditions in order to improve our understanding on how it drives pollutant dispersion.

These issues motivated the Passy-2015 field experiment which took place during the winter 2014-2015. A relatively large set-up of instruments was deployed on a main measurement site in the valley center and on four other satellite sites. It includes several remote sensing instruments, a surface flux station, a 10 m instrumented tower, a large aperture scintillometer, a fog monitoring station among others. Most of the instruments were present from early January to the end of February. During two intensive observation periods, 6-14 February and 17-20 February, the instrumental set-up was completed on the main site with high frequency radio-soundings (up to one per 1h30), a tethered balloon, a remote controlled drone quadcopter and a sodar.

The field campaign, the instruments, the meteorological situations observed and preliminary results will be presented.

This field experiment is part of the Passy project funded by ADEME through the French national programme LEFE/INSU and by METEO FRANCE. The project involves teams from Air Rhône-Alpes, CNRM-GAME, LEGI, LGGE, LTHE and NCAS (UK). The field experiment was led by CNRM-GAME while LEGI is the principal investigator of the LEFE project.