PhD position (oct. 2017 – sept. 2020)

Remote-sensing analysis of small-scale dynamical phenomena
in the atmospheric boundary layer – impact on pollutants dispersion

Keywords	Atmospheric dynamics; Turbulence; Air pollution; Remote sensing; Doppler (wind) lidar
Project summary	Experimental studies investigating the impact of atmospheric dynamics on air quality often limit to a one-dimensional approach (dilution of pollutants into an atmospheric boundary layer of varying depth). In parallel, the numerous experimental studies bearing upon the three dimensional structuration of atmospheric turbulence (e.g. convective rolls) rarely show interest for the impact of those structures on the vertical and horizontal dispersion of pollutants. This PhD will make use of the rich experimental means owned by the LPCA in the field of active remote-sensing (scanning wind lidar, wind radar…) in order the characterize the turbulent structures and dynamic phenomena, and determine their influence upon pollutant dispersion. A particular attention will be paid to phenomena occurring in coastal areas (breezes, coastal jets…), to phenomena responsible for winter pollution peaks (strong thermal inversion, atmospheric stratification in stable atmospheres…) and to nocturnal phenomena (nocturnal jets, nocturnal turbulence…). This work will build on the observations recorded during previous field campaigns in Dunkerque and in M'bour (Senegal) in the framework of the CaPPA Labex, but also on future field campaigns that will be organized in the Haut-de France region in the framework of the CLIMIBIO and IRENE regional projects, campaigns in which the PhD student will take part.
Qualifications	The candidate should have a Master's degree in physics, with a major in fluid mechanic or in environment, or a Master's degree in meteorology. Skills in data analysis and computer programming (Matlab or equivalent) are also required, as well as a good level in English.
Application	Candidates are invited to send their application by email, including a CV, a description of their research activities during lab training periods, a cover letter and the name and email of two referees (teachers, training tutors) that could write a recommendation letter. The scholarship will be granted after validation of the candidate's record by the university post-graduate school.
Salary	1430 € monthly net wages. Teacher assistant possibility in 3rd year if good spoken French (+290 € net / month).
Dates	From October 1st 2017 to September 30th 2020.
Lab location	Laboratory for Physico-Chemistry of the Atmosphere (LPCA) Université du Littoral-Côte d'Opale (ULCO) 189A, avenue Maurice Schumann, 59140 Dunkerque, France
Contacts	Pr. H. Delbarre (LPCA/ULCO), herve.delbarre@univ-littoral.fr, +33(0)3 28 65 82 73. Dr. E. Dieudonné (LPCA/ULCO), elsa.dieudonne@univ-littoral.fr, +33(0)3 28 65 82 70.