

Post-doctoral position (Oct. 2021 – Sept. 2022)
Air pollution monitoring and atmospheric physics

Keywords	Atmospheric dynamics; Turbulence; Air pollution; Remote sensing; Doppler (wind) lidar
Project summary	<p>The objective of the NETPLUME project (<i>“remote sensing and network of in-situ sensors for the surveillance, the early warning and the monitoring of industrial particle plumes”</i>) is to detect an anomaly in the particle emissions of an industrial site, in order to give an early warning, then help the risk-management operators to take back control of the incident by providing tools to locate the particle plume and its origin, and characterize its content. The project’s methodology associates the scanning Lidar technology to characterize the atmosphere and locate the plumes, with in-situ measurement and sampling devices. This will allow to alert the authorities and the public, but also to preserve samples for later analysis of the pollution composition. A preliminary test phase of the sensors and sampling device will take place in the lab during autumn and winter 2021, before a field deployment in Dunkerque city in Spring 2022, for several months. The post-doc’s job will include four tasks:</p> <ul style="list-style-type: none"> (i) Develop an automated plume-recognition algorithm to locate the plumes on the horizontal scans of the Doppler lidar (Leosphere WLS100), in collaboration with lab colleagues that are experts in machine learning and pattern recognition. This part can be started even before field deployment, using data recorded during previous campaigns with the same instrument, and from the same place. (ii) Participate in operating the fleet of in-situ sensors and sampling devices once it will be deployed in Dunkerque. (iii) Process the data from the in-situ sensors and help to analyze chosen samples of the aerosols collected by the sampling devices, in collaboration with lab colleagues that are experts in electronic microscopy. (iv) Interpret the results in regards with the local meteorological observations (wind profiles from a Doppler lidar, turbulence parameters from a sonic anemometer...).
Qualifications	The candidate should have a PhD in a domain that provides a good knowledge of meteorology and atmospheric physics. Experience with lidars would be a plus. Skills in data analysis and computer programming (Matlab or equivalent) are mandatory, 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 the PhD and previous post-docs, a cover letter and the name and contact details of two referees that could be contacted.
Salary	2,035 € net monthly income, before taxes (~1,904 € after income tax, for a single person)
Dates	The contract is for 12 months, with a possible extension to 18 months. The contract can start as early as September 1 st 2021 or when the candidate is available but preferentially no later than January 1 st 2022.
Lab location	Laboratory of Physics & Chemistry of the Atmosphere (LPCA) University of Littoral & Opal Coast (ULCO) 189A, avenue Maurice Schumann, 59140 Dunkerque, France
Contacts	Pr. H. Delbarre (LPCA/ULCO), herve.delbarre@univ-littoral.fr , +33(0)3 28 23 76 29 Dr. B. Guinot (LAERO/Univ. Toulouse), benjamin.guinot@aero.obs-mip.fr , +33(0)6 04 53 09 75
Covid warning	Candidates from Covid red-zone countries are not permitted to enter France at the moment, even with a valid scientific visa and a vaccination certificate. Application from those countries will be assessed in regards with the evolution of the health situation.