



Stage de Recherche: Modelling of air quality and ultrafine particles over Barcelona

Description : High concentrations of particulate matter are frequently observed in urban areas, particularly due to the proximity of sources: traffic, residential sector, industry. Particulate matter compounds can be primary or secondary (i.e. formed by physico-chemical transformations of gaseous precursors resulting from interactions of different sources). The spatial heterogeneity of the urban environment and the proximity of sources make the modelling of aerosols and particles complex, because the characteristic times of evolution are short and require a fine representation. The high concentrations observed in the urban environment have an impact on visibility, buildings and people's health. Fine-scale urban modelling is essential for representing the population's outdoor exposure to pollutants, for understanding the sources of pollution and for remedying them. Health impacts are large for particles, with varying effects depending on the particle diameters. The modelling of ultrafine particles (diameters lower than 0.1 μm) has improved recently, but still remains a challenge in terms of computing time and understanding of the precursors. We are looking for an enthusiastic and skilled scientist to simulate urban air quality including fine and ultrafine particles.

You will use a regional chemistry-transport model to simulate the concentrations of pollutants and particles in Barcelona, taking into account all sources of pollutants and the formation of secondary aerosols. You will be working on comparisons between models and measurements in order to improve the models.

Formation/skills:

This project is addressed to physicist candidates interested in the modelling aspects of the research and motivated by the atmospheric impact of air quality.

Job situation and conditions :

You will be working in the atmospheric composition modelling team at CEREAA (Paris region), and you will collaborate with the Barcelona Supercomputing Center.

Period: 5 to 6 months in 2024

This internship may be followed by a thesis for which financing has already been secured.

Contacts: Please send your cv and motivation letter to Karine Sartelet (karine.sartelet@enpc.fr) and Oriol Jorba (oriol.jorba@bsc.es)