

## **JOB OFFER**

### **AIR QUALITY MODELING SCIENTIST**

**Publication date :** 04/08/2023

**Place of work :** Verneuil-en-Halatte (60), France – 40 min from Paris by train

**Type of contract :** permanent contract

**Contact :** [Click here to apply](#)

#### **CONTEXT**

The Atmospheric Modeling and Environmental Mapping (MOCA) unit of the French Institute on industrial environment and risks (INERIS) develops and uses air quality management tools as part of its research activities, in support of public authorities and in response to requests from private clients in France, Europe and abroad.

Air quality modeling for decision support is one of the main activities of the unit. It can apply for exposure assessments (chronic or accidental), short-term air quality forecasts or long-term projections (prospective or retrospective). The spatial scales range from an industrial site, an urban area, to a country or a continent (in Europe or beyond).

The expertise of INERIS in this field is widely recognized through a number of research and operational projects in France and abroad in support of decision-makers (Ministry of Ecological Transition and Territorial Cohesion, European Commission, European Environment Agency or United Nations).

In this position, you will carry out studies and developments in regional air quality modeling. The preferred tool will be the CHIMERE chemistry-transport model, co-developed by CNRS and INERIS over the last twenty years<sup>1</sup>. CHIMERE is a deterministic model representing all the processes involved in the short- and long-term evolution of atmospheric trace species. Its development requires expertise in the physical and chemical mechanisms at play in the atmosphere and at its interfaces.

#### **MISSION**

Your main task will be to contribute to the development of the CHIMERE model by integrating new functionalities or processes in order to improve the model reliability and performance, focusing on the following priorities:

- Improving the representation of physical and chemical processes involved in the formation of different types of aerosols or gaseous pollutants, including certain chemical substances such as pesticides, persistent organic pollutants or heavy metals;

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<sup>1</sup> <https://www.lmd.polytechnique.fr/chimere/>

- Strengthening the representation of coupling at air/surface interfaces (natural or anthropogenic emission fluxes and surface deposition);
- Integrating in the model new processes and indicators depending on the emerging scientific challenges in relation to air quality (source tracking, particle oxidation potential, deposition fluxes of various substances)
- Ensuring the robustness of the overall architecture of the scientific computing code, by keeping a close eye on its overall organization, its performance in terms of computing time and scalability, and by ensuring the continuity of couplings with the various peripheral modules.

The aim of all these developments is to ensure the relevance of CHIMERE to the Institute's support activities, which can range from short-term forecasting (like the French national air quality forecast platform Prev'Air<sup>2</sup>) to prospective studies of management scenarios. You will therefore also be involved in these applications.

This work will be carried out as part of research projects, public policy support missions or consultancy work for private, national or international clients.

## PROFILE

With a PhD, you have technical and scientific knowledge on air quality modeling, with at least 3 years of experience in this field. You are proficient in computer programming under Linux in a high-performance computing context: knowledge of Fortran, C++, Python, R or similar languages is required.

In addition, you have the following skills:

- Ability to develop and use air quality modeling tools;
- Ability to maintain a network of partners;
- Eager to work in project team;
- Excellent communication skills (written and oral) in English (drafting of scientific reports and articles, oral presentations, etc.). Willingness to learn French for non-French speakers.

## APPLICATION

Send resume and application letter through the following [link](#)

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<sup>2</sup> <http://www2.prevair.org/>