MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Job description

Typical occupation or job*: Researcher
* REME, REFERENS, BIBLIOPHILE

Duties: LES modelling researcher

Category: A
Body: Researcher
BAP (if ITRF) :

The activities that make up the job description are subject to change according to candidate profile and the needs of the service.

Presentation of Sorbonne University

To disseminate knowledge, understand the world and meet the challenges of the 21st century, a new university was born on 1er January 2018, resulting from the merger between the universities of Paris-Sorbonne and Pierre and Marie Curie. Sorbonne University is a multidisciplinary, research-intensive and world-class university. Anchored in the heart of Paris, it is committed to the success of its students and strives to meet the scientific challenges of the 21st century. www.sorbonne-universite.fr

Presentation of the structure (laboratory, training department, central service, etc.)

Description (missions, team, ...): The Institut Pierre-Simon Laplace (IPSL) federates 9 laboratories whose research topics concern climate and environmental sciences from the regional to the global scale. IPSL leads and participates in several national and European projects. Applied projects aimed at facilitating climate change adaptation or mitigation policies are becoming increasingly important in the activities of the Institute.

This position is part of the Climaviation project (https://www.climaviation.fr), a partnership between Sorbonne University and the French Aerospace Lab (ONERA), funded by the Direction Générale de l'Aviation Civile (DGAC). This project aims to improve the scientific understanding of the climate impacts of aviation. The objectives of the project are: 1) To better quantify the climatic impacts of aviation, in particular the non-CO_2 impacts of contrails, aerosol cloud interactions and atmospheric chemistry, 2) To evaluate the impacts linked to new fuels such as synthetic hydrocarbons or hydrogen, 3) To propose solutions to minimise these climate impacts.

Location: Your office will be located at the Institut Pierre-Simon Laplace (IPSL) on the Pierre-et-Marie-Curie (Jussieu) campus of Sorbonne University in Paris. Work meetings will take place in Palaiseau (ONERA), Saclay (LSCE) and Toulouse.

Main tasks and activities

Mission (purpose of the post):

The researcher will study the mechanisms and time scales of the dissipation of induced contrail and cirrus clouds. Recent airborne observations indicate that a significant fraction of contrails and cirrus clouds evolve out of balance with their environment, i.e. in regions of the atmosphere that are subsaturated with respect to ice. It is not known how long this transient state lasts, and whether it is maintained by dynamical phenomena that could make ice crystals last for longer. The work will use numerical simulations on the scale of a cloud field, taking into account the initial state of the atmosphere.

Main activities (maximum 10):

- To simulate as closely as possible the contrails and cirrus clouds observed by the aircraft measurements made during the ML-CIRRUS campaign. This activity will be based on a Large Eddy Simulation model.
- Identify the processes by which contrails and cirrus clouds dissipate when the relative humidity with respect to ice falls below 100%.
- Present and publish the results of the activities above.

Line management responsibilities: NO
~~**No. of staff supervised by category: … A - … B - … C**~~

Knowledge and Skills*.

Cross-cutting knowledge required:

- PhD. in atmospheric, climate or related sciences.
- Knowledge of atmospheric physics.
- Demonstrated experience in atmospheric modelling, including large-scale climate modelling, or LES or DNS simulation.
- Demonstrated knowledge of Fortran programming.
- Knowledge of the Python programming language and associated scientific libraries.
- Knowledge of Unix/Linux and bash programming.

Know-how:

- Excellent writing of scientific articles.
- Excellent oral and interpersonal communication skills.
- Be able to plan your work and work independently towards overall goals.

Cross-cutting skills:

- Scientific rigour.
- Initiative and adaptability.
- Be able to work in a team with a variety of expertise.

Skills (3 maximum):

- Excellent interpersonal skills
- Sense of service
- Reliability

Type of contract: 12 or 24 month fixed-term contract depending on profile

Gross monthly salary: According to experience

Desired start date: Early 2023

To apply, send a CV, the name of two referees and a motivation paragraph to gregoire.dannet@ipsl.fr, olivier.boucher@ipsl.fr and nicolas.bellouin@ipsl.fr.

* In accordance with the annex to the order of 18 March 2013 (NOR: MENH1305559A)