

## Postdoctoral Research Position in Atmospheric Science

**Location:** Laboratoire d'Optique Atmosphérique, France (<https://www.loa.univ-lille.fr/>)

**Duration:** 2 years (already funded, renewable based on performance and funding)

**Starting date:** As soon as possible

The Laboratoire d'Optique Atmosphérique at the University of Lille (Northern France) is seeking a dynamic and motivated postdoctoral researcher to contribute to our innovative research in cloud physics and aerosol-cloud interactions. We are looking for a person with a strong background in atmospheric physics, meteorology and climatology, with experience in cloud microphysical processes, aerosol-cloud interactions and ideally experience in chemical transport modelling.

The Arctic, as a key region within the global climate system, is currently undergoing rapid and unprecedented environmental change. Among the interrelated factors influencing the Arctic climate, aerosols and clouds are emerging as key players. Aerosols can have complex interactions with clouds, affecting radiative properties, cloud formation and precipitation processes.

This postdoctoral research will focus on the in-depth study of aerosol-cloud interactions in the Arctic region, with particular emphasis on the action of aerosols as cloud condensation nuclei and ice-nucleating particles, with special attention to mixed-phase clouds. Aerosol ageing also plays a crucial role in modifying cloud properties. Over time, aerosols undergo chemical and physical processes that change their composition and size. These changes directly affect their ability to act as condensation nuclei for the formation of water droplets or ice crystals. By altering the size distribution of droplets or crystals, aerosol ageing can have significant effects on the reflectivity, lifetime and precipitation of clouds. Understanding these aerosol modification processes is essential to gain insight into the complex interactions between aerosols, clouds and climate. It also helps to refine climate models to better predict future weather changes.

Throughout this research, the candidate will seek to elucidate the microphysical and dynamical processes governing aerosol-cloud interactions in the Arctic, using a combination of satellite data. Reanalysis and chemical transport models will provide information on aerosol types and concentrations, and back trajectories initiated from cloud observations will help to understand the ageing processes of air parcels and the physico-chemical changes of aerosols.

In summary, this postdoctoral project aims to make a significant contribution to the understanding of the fundamental mechanisms and climate impacts of aerosol-cloud interactions in the Arctic. It will contribute to the advancement of knowledge of polar and global climate systems, with implications for climate change prediction and mitigation strategies on a broader scale.

**Requirements:**

- A Ph.D. in atmospheric sciences or a related field by the start of the appointment.
- Expertise in cloud processes, aerosol-cloud interactions
- Advanced programming skills (Python, bash, etc.).
- Demonstrated ability to work collaboratively in a research team.
- Strong oral and written communication skills
- Strong mentoring skills and/or desire to develop these skills
- Optional: expertise in chemistry-transport modelling

**Application procedure:** Interested candidates are invited to send their CV, a letter of motivation and the contact details of two academic referees to [quentin.coopman@univ-lille.fr](mailto:quentin.coopman@univ-lille.fr). The position is expected to start as soon as possible.