UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Atmospheric Ice Nucleation, Faculty of Environment

Salary: Grade 7 (£39,355 – £46,735 p.a. depending on experience)

Reporting to: Dr Thomas Whale

Reference: ENVEE1814

Fixed term for up to 36 months with a maximum end date of 31/5/28 - to complete specific time limited work

Location: University of Leeds (with scope for hybrid working)

We are open to discussing flexible working arrangements

Overview of the Role

Would you like to help understand the feasibility of climate cooling approaches that might "buy time" to decarbonise? Do you have an established background in experimental cloud and aerosol research, and do you want to further your career in a one of the world's leading atmospheric science institutes?

We are seeking a highly motivated and skilled Postdoctoral Research Fellow to join our team in the exciting field of Atmospheric Ice Nucleation. The successful candidate will play a pivotal role in building, developing and using a new isothermal diffusion chamber for measuring ice nucleation particle (INP) concentrations in the upper troposphere. This project is a collaborative effort between the University of Leeds, the National Oceanic and Atmospheric Administration (NOAA) and Imperial College London. You will become a key member of the Ice-Nucleating Particles in the Upper Troposphere: Advancing Cirrus Control and Experimental Science Strength (INPUT:ACCESS) team focused on quantifying the concentration of ice-forming particles present in the upper troposphere (UT). This job is part of an Advanced Research + Invention Agency-funded project, subject to contract negotiations.

Background: Water vapor and cirrus ice clouds in the upper troposphere significantly impact Earth's radiation balance by trapping long-wave radiation. Three proposed methods aim to reduce global climate forcing by manipulating upper tropospheric/lower stratospheric water vapor and cirrus clouds: cirrus cloud thinning (CCT), contrail management (CM), and intentional stratospheric dehydration (ISD). However, these methods depend on poorly understood climate phenomena, and current models and measurements are inadequate to ensure their effectiveness.

INPUT:ACCESS will develop the capability for routine measurement of upper tropospheric water vapor concentration, (INP) concentrations and cirrus crystal profiles using balloon-borne instruments. This innovative approach will facilitate evaluation of cirrus-related climate interventions by determining INP characteristics within the context of aerosol populations and air mass conditions. To do this NOAA will develop a balloon-borne INP collector and cirrus ice crystal counter and will conduct a campaign of weather balloon launches to collect INPs from the upper troposphere. The successful candidate will be responsible for building and using an isothermal diffusion chamber capable of exposing collected INPs to cirrus cloud conditions to determine INP concentrations in the upper troposphere.

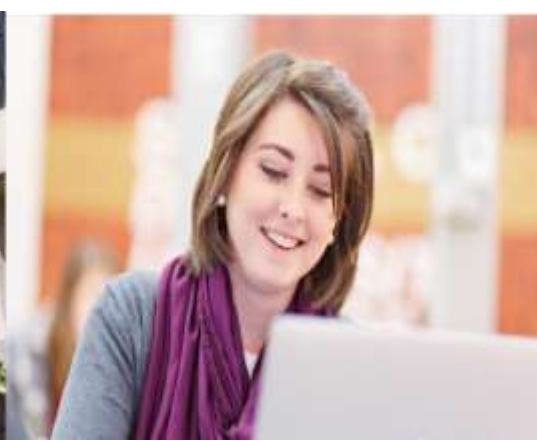


Main duties and responsibilities

- Working with Dr Tom Whale and the INPUT:ACCESS team to ensure the objectives and deliverables of the project are successfully met;
- Designing, constructing and testing a new Isothermal Diffusion Chamber (IDC) for offline measurement of INPs collected from the upper troposphere;
- Coordinating with colleagues at NOAA to ensure interoperability of the IDC with an electrostatic precipitator designed and built by the NOAA postdoc and team;
- Adapting existing techniques for using Scanning Electron Microscopy with Energy Dispersive X-ray analysis (SEM-EDX) to assess composition of aerosol collected using the NOAA electrostatic precipitator.
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.





Qualifications and skills

Essential

- A PhD at or near completion - i.e. the initial thesis needs to have been handed in at the point of application - in a relevant physical science, engineering or a closely allied discipline;
- A strong background in experimental science working with complex instrumentation;
- Experience of working with experimental data and of processing experimental data to address scientific questions and hypotheses;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A track record of peer-reviewed publications;
- Excellent written and verbal communication skills including presentation skills;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

Desirable

- A strong background in scientific programming (e.g. Python);
- Experience working with aerosol particles and knowledge of aerosol science;
- Knowledge of aerosol-cloud interactions;
- Knowledge of atmospheric ice nucleation;

Additional information

Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information please visit: www.gov.uk/skilled-worker-visa

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: https://www.gov.uk/global-talent



Find out more about the Faculty of Environment.

Find out more about the School of Earth and Environment.

Find out more about our Research and associated facilities.

Find out more about Equality and Inclusion in the faculty.

Working at Leeds

We are a campus based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

Our University

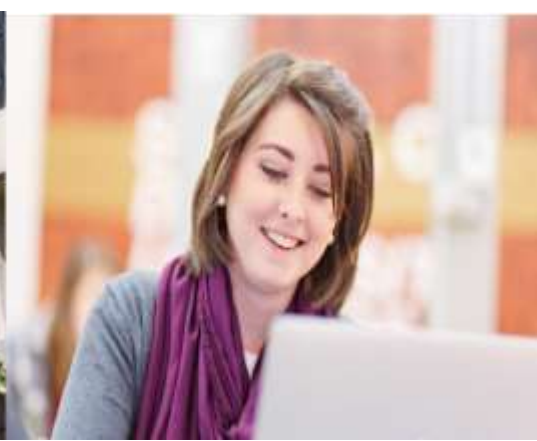
As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Environment we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian, people who belong to a minority ethnic community; people who identify as LGBT+; and disabled people. Candidates will always be selected based on merit and ability.

The Faculty of Environment has received a prestigious Athena SWAN silver award from Advance HE, the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

Information for disabled candidates

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at hr@leeds.ac.uk





Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any ‘unspent’ criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.