UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Aerosol-cloud-climate interactions derived from Degassing VolcANiC Eruptions: ADVANCE, Faculty of Environment

Salary: Grade 7 (£33,797 – £40,322 p.a.) Please note that an appointment will not be made above £34,804 p.a.

Reference: ENVEE1410

Fixed-term for 20 months

We will consider job share / flexible working arrangements

Research Fellow in Aerosol-cloud-climate interactions derived from Degassing VolcANiC Eruptions: ADVANCE School of Earth and Environment, Faculty of Environment

Are you an ambitious atmospheric scientist looking for your next challenge? Do you want to work with world leaders to understand aerosol-cloud interactions? Do you want to further your career in one of the UK's leading research-intensive Universities?

The overarching objective of the NERC funded ADVANCE project is to constrain and improve the representation of cloud responses to aerosols by challenging models with observations from real-world-laboratory sulphur dioxide emissions generated by non-explosive volcanic activity. Using observations and models from global climate to km-scale high resolution, we will test whether: 1) sulphur dioxide emissions form sulphate aerosol that seed clouds, leading to a detectable reduction of cloud droplet sizes, 2) the reduction in cloud droplet sizes leads to reduced droplet coalescence, reduced rainfall and hence a detectable impact on cloud liquid water and cloud reflectivity.

ADVANCE will use a well-observed volcanic event to test these two hypotheses and quantify the associated uncertainty in anthropogenic aerosol-climate interactions. This will lead to improved representation of aerosol impacts in weather forecasting and climate modelling, providing more robust future climate scenarios.

You will be working with scientists from the Universities of Exeter and Cambridge to successfully deliver the Leeds component of the NERC funded ADVANCE project.

Your main role will be to carry out regional-scale modelling and process-level evaluation. You will explore aerosol-cloud interaction with the most realistic weather forecast tools currently available using spatial resolutions of <1km and domains ~3000km, allowing cloud-scale dynamics, cloud production and cloud dissipation to be accurately modelled. This km-scale modelling allows us to study cloud dynamical feedbacks allowing us to test buffering hypotheses.

What does the role entail?

As a Research Fellow, your main duties will include:

- Developing expertise in the use and development of the Unified Model UKCA-CASIM aerosol-cloud modelling suite;

- Accurately simulating and validating, against observations, aerosol-cloud interactions in large domains (~1000km);
- Understanding the dominant physics acting in different cloud-aerosol regimes using realistic case studies and idealised frameworks;
- Collaborating with aerosol-cloud groups at the Met Office, University of Exeter and University of Cambridge;
- 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.

What will you bring to the role?

As a Research Fellow, you will have:

- A PhD or near completion - i.e. the initial thesis needs to have been handed in at the point of application in atmospheric science or a closely allied discipline;
- A strong background in atmospheric physics;
- Proven experience in numerical programming, handling of large datasets and data visualisation;
- Working knowledge of FORTRAN and UNIX;
- Ability to work successfully as part of a team and also be strongly self-motivated to carry out research;



- Demonstrable experience with running and analysing weather and/or climate models.
- 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 proven track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience of using cloud/aerosol observations.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

Contact information

To explore the post further or for any queries you may have, please contact:

Prof Paul Field, Professor of Climate Science
Email: p.field@leeds.ac.uk;

or

Prof Ken Carslaw
Tel: +44(0)113 343 1597
k.carslaw@leeds.ac.uk

Additional information

Find out more about our Faculty

Find out more about our School

Find out more about our Research and Associated Facilities

Find out more about Athena Swan in the Faculty

A diverse workforce
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.

Working at Leeds
Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our Working at Leeds information page.

Candidates with disabilities
Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at disclosure@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.