



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in the Dynamics of Cumulus Clouds

School of Earth and Environment and National Centre for Atmospheric Science



Salary: Grade 7 (£33,797 – £40,322 p.a.)

Reference: ENVEE1358

Closing date: 5 October 2019

Interview date: 17 October 2019

Fixed term for 30 months

We will consider job share / flexible working arrangements

Research Fellow in the Dynamics of Cumulus Clouds

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Do you have a background in meteorology, applied mathematics, physics or a related field? Would you like to be part of a large international project that aims to understand the behaviour of low clouds and their role in climate? Do you want to further your career in one of the UK's leading universities?

We seek an ambitious scientist with interests in Geophysical Fluid Dynamics to contribute to a programme of original research into the dynamics of cumulus clouds, integrating into the UK-wide project on Representation of Convection in models (ParaCon) and the international project on Elucidating the role of clouds-circulation coupling in climate (EUREC4A). ParaCon aims to provide new physical insight on convection to improve the representation of convection in models across scales and EUREC4A focusses specifically on tradewind cumulus clouds as these are a key uncertainty in current model predictions of climate sensitivity.

EUREC4A involves a field campaign in early 2020 that will measure clouds and their environment in the winter trades of the North Atlantic, windward of Barbados. EUREC4A-UK will contribute to EUREC4A by: leading research into the role of aerosols, cloud microphysics and boundary-layer processes in the life cycle of shallow trade cumulus clouds; placing the analysis in the context of the EUREC4A problems by modelling the two-way interactions between the cloud processes and the large-scale dynamics; and applying the results by testing and improving the new convection scheme being developed in ParaCon in the Unified Model (UM) and using the improved model to determine the dominant processes controlling the cloud fields.

You will be jointly funded through EUREC4A-UK and ParaCon. You will be part of a large collaborative research team at Leeds with scientists in the National Centre for Atmospheric Science (NCAS) and the Institute for Climate and Atmospheric Science (ICAS) at the School of Earth and Environment. You will also collaborate closely with our partners involved in ParaCon and EUREC4A, including scientists at several universities in the UK, the British Antarctic Survey, the Met Office, CNRS (Paris) and the Max Planck Institute for Meteorology (Hamburg). There is a possibility that you will be participating in the EUREC4A field campaign in Barbados in January and February 2020.



You will be expected to contribute to the ongoing research in Atmospheric Science and Fluid Dynamics in NCAS and the School. Your work will lead to significant publications in atmospheric and climate science and you will also present your research at national and international meetings.

You will have a PhD (or be close to submitting) in a quantitative physical science, such as Physics, Applied Mathematics or Meteorology. You will also have a strong interest in and some experience in Geophysical Fluid Dynamics in addition to having experience of numerical modelling. You will have an excellent track record of publication in high-quality journals. Experience with programming on a linux or unix operating system is desirable.

What does the role entail?

As a research fellow your main duties will include:

- To undertake research into the dynamics of shallow clouds, using the observations gathered in EUREC4A-UK and theoretical approaches. To identify the dominant physical processes in the convection scheme that control the resulting cloud field;
- Performing numerical model simulations with both Large Eddy models and the new Met Office convection scheme. Contributing to new developments in the Met Office convection scheme, such as a better representation of variations in the moisture and temperature field below the grid scale;
- To develop statistical tools that enable objective quantification of the performance of the convection scheme against observations, such as measures of the cloud area, the cloud shapes and structures;
- Maintaining collaborations with colleagues at the University of Leeds, the Met Office, BAS and the Universities of Manchester, Oxford, Exeter, Reading and Cambridge;
- Developing new external research links within the ParaCon and EUREC4A projects (and elsewhere) where possible;
- To disseminate research results by presentation at national and international meetings, maintenance of web-based information, and prepare manuscripts for publication;
- To plan and manage own research activity in collaboration with others;
- To use initiative and creativity to identify areas for research, and develop new research methods and extend the research portfolio;
- Identifying other research project opportunities and directions as they arise, and assisting in the writing of grant proposals;



- To interact with, and provide assistance to, other staff in the research groups at Leeds;
- Participation in outreach activities and communication of results to the general public;
- Where there is the opportunity and where appropriate, to contribute to teaching activity, for example by contributing to lectures, tutorials and/or seminars, developing and updating the content of these sessions as appropriate to help develop student research skills.

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 be close to submitting - i.e. the initial thesis needs to have been handed in at the point of application) in a quantitative physical science, such as Physics, Applied Mathematics or Meteorology;
- Strong mathematical skills;
- A strong interest and experience in aspects of Geophysical Fluid Dynamics relevant to this project, such as the dynamics of convective structures;
- Appropriate level of understanding of atmospheric convection;
- An excellent track record of publication in high-quality journals;
- Expertise in scientific programming;
- Expertise in running numerical models and analysing results;
- Ability to work in a team and independently;
- Evidence of innovation in research;
- Good organisational skills and a flexible approach;
- An ability and willingness to travel to international conferences and workshops twice a year.

You may also have:

- Expertise in dynamics of the atmosphere;
- Familiarity with the role of trade-wind cumuli in influencing future global warming;
- Experience in stochastic modelling;
- Experience with the linux or unix operating system;



- Familiarity with atmospheric data analysis;
- Experience running numerical weather prediction and/or climate models.

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.

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

Professor Alan Blyth, Professor of Atmospheric Science

Email: alan.blyth@ncas.ac.uk

Tel: +44 (0)113 343 1632

or Dr Andrew Ross, Associate Professor

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Tel: +44 (0)113 343 7590

Additional information

Find out more about the [National Centre for Atmospheric Science](#)

Find out more about the [Faculty of Environment](#)

Find out more about the [School of Earth and Environment](#)

Find out more about the [Institute for Climate and Atmospheric Science](#)

The University of Leeds' commitment to women in science has been recognised with a national accolade. The University has received the Athena SWAN Bronze Award and the Faculty of Environment holds the Athena SWAN Bronze Award in recognition of our success in recruiting, retaining and developing/promoting women in Science, Engineering and Technology (SET). We are proud of our commitment to equality and inclusiveness. Find out more about [Athena Swan](#) in the Faculty.

The University also offers family friendly policies including generous maternity and paternity leave; full details of the policies can be found here <http://hr.leeds.ac.uk/policies>



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.

