UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Atmospheric Boundary Layer Modelling, Faculty of Environment

Salary: Grade 7 (£36,333 – £43,155 p.a.)

Reference: ENVEE1659

Fixed-term until 31 May 2026 – due to external funding

Location of the post is University of Leeds (with scope for hybrid working)

We are open to discussing flexible working arrangements

School of Earth and Environment, Faculty of Environment

Are you an ambitious researcher with a passion for the weather? Do you want to further your career as part of a large and dynamic research group in climate and atmospheric science, working in collaboration with the Met Office?

UMBRELLA (UM Boundary Layer Representation with Land-Atmosphere Interactions) is a project funded by the Natural Environment Research Council as part of the directed programme on "Improving model representation of turbulent atmospheric processes" joint with the Met Office. The overarching aim of the programme is to improve the representation of turbulent processes in the next generation of km and sub-km scale weather and climate models. Within the programme UMBRELLA will:

- Evaluate the boundary layer representation in the Met Office Unified Model (UM) across a range of grid spacings needed for km and sub-km scale modelling;
- Provide the underpinning science on which BL structures initiate moist convection and how this is affected by surface variability, informing parametrisation development;
- Exploit new observations, including from the Wescon field campaign taking place in summer 2023 over SW England and from the new Meteosat Third Generation satellite.

The post-holder will work closely with other members of the project team at the Universities of Leeds and Reading and the UK Centre for Ecology and Hydrology, as well as with other projects funded within the programme and with the Met Office. This post will focus primarily on the effects of surface variability on the boundary layer and on the coupling of the boundary layer to moist convection using both idealised large-eddy simulations as well as case studies with the UM. Observations from Wescon and other field campaigns and long term observations will be used to evaluate the models at various resolutions. As atmospheric models are moving toward the sub-km scale they will begin to resolve large scale boundary structures. This breaks some of the underlying assumptions of boundary layer parametrisations. The aim of this project is to understand the key processes controlling the coupling of the boundary layer and convection over variable surfaces in order to improve parametrisation of both the boundary layer and convection across a range of model resolutions.

Based in the Institute of Climate and Atmospheric Science in the School of Earth and Environment you will join a large dynamic research community with internationally recognised expertise in atmospheric dynamics and convection. As one of the founder members of the Met Office Academic Partnership, Leeds has a long-standing and close collaboration with the Met Office and the post-holder will work closely with them to ensure pull-through of the research to operations.

What does the role entail?

As a Research Fellow, your main duties will include:

- Using observational in-situ and remote sensing data to identify interesting case studies for further analysis;
- Conducting idealised large eddy simulations and/or realistic case studies with the UM;
- Analysing the model simulations and observations to understand the processes controlling boundary layer structure over variable terrain and how these couple to convection alongside evaluating the representation of these processes at different model resolutions / with different parametrisation schemes;
- 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 a relevant quantitative physical science such as Atmospheric Science, Meteorology, Physics or Applied Maths, or a closely allied discipline;
- A strong background or interest in atmospheric science;
- Experience in scientific programming in a language such as Python or Matlab and experience with the Linux operating system;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- 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.

You may also have:

- A proven track record of peer-reviewed publications in high impact factor journals;
- A track record of successful research on boundary layer meteorology or moist convection;
- Experience in atmospheric dynamics;
- Experience in handling and analysing large volumes of observational or numerical model data;
- Experience of running atmospheric models such as the MetUM or large eddy models;
- Experience of using observations to evaluate weather or climate models;
- Experience of pursuing external funding to support research.



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:

Dr Andrew Ross, Associate Professor in Dynamical Meteorology
Email: A.N.Ross@leeds.ac.uk

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.

Find out more about our School of Earth and Environment

Find out more about the Faculty of Environment

Find out more about our Research and associated facilities

Find out more about equality in the Faculty.

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 and ethnically diverse people; people who identify as LGBT+; and people with disabilities. 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.

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.

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.