UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Orographic Precipitation in the Indian Monsoon

School of Earth and Environment, Faculty of Environment

Salary: Grade 7 (£33,199 – £39,609 p.a.) Due to funding restrictions this post will not be appointed at higher than £38,460 p.a.

Reference: ENVEE1353

Closing date: 6 September 2019

Fixed-term for 18 months

Job share and flexible working arrangements will be considered

Research Fellow in in Orographic Precipitation in the Indian Monsoon, National Centre for Atmospheric Sciences, University of Leeds

School of Earth and Environment, Faculty of Environment

Do you have a background in tropical meteorology, dynamical meteorology, convection, climate and weather model evaluation, or a related field? Do you want to further your career in one of the UK's leading research-intensive universities?

IMPROVE (Indian Monsoon PRecipitation over Orography: Verification and Enhancement of understanding) is a collaborative project between University of Leeds and the University of Reading and is funded under the Met Office Weather and Climate Science for Services Partnership (WCSSP) India Programme and led by University of Reading. The project's institutional lead at Leeds is Jennifer Fletcher, working with Co-Investigators Andrew Ross and Stephen Griffiths (School of Maths). The post-holder will join a team of researchers in the IMPROVE project at University of Leeds and University of Reading.

The Indian monsoon supplies around 80% of annual rainwater to more than a billion people in South Asia. This rainfall is not uniformly distributed, and the heaviest seasonal rainfall — and many of the worst flooding events — occurs on the windward side of mountain ranges. As the post-holder you will use observational, numerical, and theoretical methods to improve understanding of orographic rainfall over India. You will evaluate the Met Office Unified Model (MetUM) performance in representing rainfall over mountainous regions in India, analysing simulations of both typical and extreme rainfall events. You will use the MetUM and high resolution simulations with the Weather Research and Forecasting (WRF) model to diagnose the key mechanisms associated with orographic rainfall and evaluate whether they are missing in the MetUM.

You will be joining one of the most research active universities for atmospheric science in the UK (Leeds is rated 7th in the world on the Shanghai global rankings for atmospheric science, and 1st in the UK). Within the National Centre for Atmospheric Science (NCAS) and the Institute for Atmospheric Science (ICAS), you will be joining a large group of tropical meteorologists and dynamicists, who together have an outstanding track record on India, the tropics and convection. Together with the



opportunity to work with world-leading scientists in Reading, UEA, Edinburgh, and India, this provides an excellent opportunity for an individual with a long-term interest in this field.

You will have a PhD (or close to obtaining) in a quantitative physical science, such as Atmospheric Science, Physics, Applied Mathematics or Meteorology, and have experience in dynamical and/or tropical meteorology. You will be experienced in the analysis of large observational and/or numerical model datasets within a programming language such as NCL or Python, have excellent communication skills and a willingness to travel to India.

What does the role entail?

As a Research Fellow, your main duties will include the following:

- Using satellite and reanalysis data to characterise the effect of monsoon low pressure systems and western disturbances on precipitation in the Himalayan mountains (in collaboration with University of Reading);
- Evaluating the diurnal cycle or orographic precipitation in the MetUM;
- Analysing simulations of a well-observed case of orographic rainfall at a range of resolutions, investigating physical mechanisms and evaluating model performance;
- Using a theoretical model of flow over a ridge, as well as a suite of sensitivity tests with the Weather Research and Forecasting (WRF) model, to identify physical mechanisms for orographic rainfall in a high resolution simulation.
- Drafting internal reports on findings for funder;
- Communicating or presenting research results through publication or other recognized forms of output;
- Traveling within the UK and one short visit to India for project meetings;
- Presenting your results at an international conference;
- Working closely with the project partners in the UK and India, and develop new external research links where possible;
- Maintaining your own continuing professional development and act as a mentor to less experienced colleagues as appropriate;
- Evaluating existing methods, techniques and results, and relate them appropriately to your own work;
- Contributing to the research culture of the Institute, where appropriate.



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 close to completion i.e. the initial thesis needs to have been handed in at the point of application) in a related quantitative physical science, such as Atmospheric Science, Physics, Applied Mathematics or Meteorology;
- A background or interest in tropical or dynamical meteorology;
- Experience in scientific programming in a language such as NCL or Python and experience with the Linux operating system;
- An ability to analyse and extract key information from various (data) sources, and to construct corresponding physical interpretations;
- Willingness and ability to travel to India for a short visit, and within the UK for project meetings;
- A strong commitment to delivering high impact research;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- Excellent written and verbal communication skills including presentation;
- The ability to collaborate and communicate effectively with a wide range of project partners;
- 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 track record of successful, high quality, publications on tropical atmospheric dynamics and orographic rainfall;
- Experience in mesoscale atmospheric dynamics;
- Experience of handling and analysing large volumes of observational or numerical model data;
- Experience in using theoretical models to evaluate processes in weather or climate models.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information. 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:

Jennifer Fletcher, Senior Research Scientist
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Additional information

Find out more about the Faculty of Environment.

Find out more about our Research and associated facilities.

Working at Leeds
Find out more about the benefits of working at the University and what it's 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 in our Accessibility information 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.