UNIVERSITY OF LEICESTER

Job Summary

Job Title: Research Associate in Mathematics of Planet Earth
Grade: 7
Salary: £39,906 to £41,064 per annum, due to external funding restrictions, pro-rata if part-time
Department: School of Computing and Mathematical Sciences
Hours/Contract: Full time or job share, fixed term contract from 01 September 2026 to 31 August 2030
Reference: 13084

Role Purpose

To have specific responsibilities with an established research programme. To work collaboratively and independently as part of a research team to achieve defined milestones and produce high quality research as part of a wider programme.

Main Duties and Responsibilities

Research Activities

- Develop and analyse process-based mathematical models of various complexity aimed at advancing our understanding of the tipping points in marine ecosystems due to various scenarios.
- Apply newly built as well as existing theoretical models to predict cascading effects of tipping across trophic levels and spatial scales, with case studies including several concrete marine ecosystems (e.g., Northern Atlantic Ocean, Baltic Sea, North-western Mediterranean, Bay of Biscay)
- Develop and apply efficient numerical modelling tools supporting theoretical investigations in ecosystem modelling through extensive numerical simulations.
- Perform the analysis of large datasets and validate models using appropriate big data.
- Provide reliable evidence for occurrence of tipping based on available spatiotemporal datasets using advanced time series methods.
- Producing user-friendly software in MATLAB and/or Python.
- Lead in writing up research developments for dissemination amongst the research team and broader international community, and develop ideas and contributions for future grants, technical outputs.
- Represent the research group by disseminating results/findings at national and international conferences and broader community.

Impact and Knowledge Exchange

- To work, contribute and collaborate with current and potential academic partners.
- To engage positively and pro-actively in research impact of the university.

Professional Development

- Attend conferences, seminars and workshops to engage in work that supports your own professional development.
- Write, publish and present research papers in leading academic venues.

Leadership and Citizenship

- Provide mentorship, support and guidance to other team members, research staff, students, and early career researchers.

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Internal and External Relationships

- Work with other university staff and students, act as a mentor for junior researchers
- Investigate and propose new research ideas related to critical transitions in the Earth system and other complex systems
- Interact, collaborate and build partnership with external university linkages, industry partners and academic institutes.
- Present research to potential industry partners and academic venues such as conferences, workshops and seminars.
- Work with other university staff and students, act as a mentor for junior researchers and may assist in teaching responsibilities.

Planning and Organising

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Must prioritize tasks within agreed work schedules. The candidate should be able to work independently and also with the principal investigator if needed to prioritize tasks and come up with realistic work schedules.
- Must plan for specific aspects of research incorporating issues such as deadlines, project milestones and overall research aims.
- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project.

Qualifications, Knowledge and Experience

Essential

- Achieved a PhD in mathematics, physics, or cognate discipline*****
- Strong knowledge of dynamical systems (deterministic and stochastic), mathematical modelling in life sciences, and data analysis methods for complex systems*****
- Research experience (proved by a list of research publications)
- Advanced knowledge of ecosystem modelling*****

Desirable

- Experience in interdisciplinary research activities and environment.
- Experience with large datasets.
- Good experience in coding

Skills, Abilities and Competencies

Essential

- Excellent writing and presentation skills
- Good communication skills.
- Willingness and ability to work with internal and external stakeholders*
- Evidence of continued development of subject expertise*

- Excellent communication skills – written* and verbal evidenced by the ability to communicate complex information
- Evidence of working effectively as part of a team and the ability to work independently
- Working towards independence and ability to be involved in collaborative research
- Evidence and commitment to Continuous Professional Development (CPD) for yourself, and encourage commitment to learn and develop in others
- Collegiate member of a research team

Criteria to be used in shortlisting candidates for interview

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

Supporting University Activities

As a University of Leicester citizen, you are encouraged to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We encourage all staff as citizens to work flexibly across the University if required. If supporting these activities is likely to affect your workload, please speak to your line manager in the first instance

University Values

Inclusive - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

Inspiring - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

Impactful - As Citizens of Change we will generate new ideas which deliver impact and empower our community

Freedom of Speech

The University is committed to upholding freedom of speech and academic freedom within the law throughout our recruitment processes. We ensure that all candidates are considered based on merit and suitability for the role, without regard to their lawful viewpoints or the expression of challenging or controversial ideas. Our recruitment policies and practices are designed to protect applicants from discrimination or adverse treatment on the basis of their opinions, and to foster an environment where open debate and diverse perspectives are valued as essential to our academic mission.

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Equity and Diversity
We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.