Job Related Information

This document includes information about the role for which you are applying and the information you will need to provide with your application.

- Role Details

<table>
<thead>
<tr>
<th>Vacancy reference</th>
<th>14565</th>
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</thead>
<tbody>
<tr>
<td>Job title:</td>
<td>Post Doctoral Research Associate</td>
</tr>
<tr>
<td>Reports to:</td>
<td>Reader in Earth System Science</td>
</tr>
<tr>
<td>Salary:</td>
<td>£29,799 – £38,833</td>
</tr>
<tr>
<td>Terms and conditions:</td>
<td>Research</td>
</tr>
<tr>
<td>Grade</td>
<td>AC1/2 (appointment dependent on experience)</td>
</tr>
<tr>
<td>Duration of post:</td>
<td>FTC to 31/05/2021</td>
</tr>
<tr>
<td>Working hours:</td>
<td>Full Time</td>
</tr>
<tr>
<td>Location:</td>
<td>Milton Keynes</td>
</tr>
<tr>
<td>Closing date:</td>
<td>03/05/2018, noon</td>
</tr>
<tr>
<td>Type of application form accepted:</td>
<td>Short Application Form</td>
</tr>
<tr>
<td></td>
<td>CV</td>
</tr>
<tr>
<td></td>
<td>Covering letter detailing how you meet the person specification</td>
</tr>
<tr>
<td>Number of referees required:</td>
<td>Three</td>
</tr>
<tr>
<td>Unit recruitment contact:</td>
<td>Zoe Anderson</td>
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</tbody>
</table>
The Leverhulme Centre for Climate Change Mitigation (LC3M) is a 10-year project, funded by a £10 million grant from the Leverhulme Trust and based at the University of Sheffield, in collaboration with nine other institutes including the Open University. The goal of the Centre is to assess the potential of enhanced weathering as a technique to remove CO₂ from the atmosphere and thereby contribute to climate change mitigation. Enhanced weathering (EW) involves the distribution of crushed silicate rock over vegetated land, leading to the acceleration of natural rock-weathering processes, which act as a stabilising Earth system feedback on high concentrations of atmospheric CO₂ on long (geological) timescales. Amongst other options for 'soft' geoengineering and greenhouse-gas removal techniques EW has the additional advantage of reducing ocean acidification, restoring degraded soils and increasing crop yields. Maintaining global temperatures within 2 °C or less of pre-industrial conditions, as required by the 2015 Paris agreement, is likely to demand that geoengineering options such as EW are employed in addition to stringent emission reduction and energy efficiency measures. However, the science, economics and social science of large-scale EW is currently only poorly understood.

Within LC3M, work package four (WP4) addresses the real-world feasibility of EW through integrated assessment modelling of its environmental and socio-economic impacts as well as ethical and supply chain-related questions. In this context, the OU, in collaboration with Cambridge Econometrics and Radboud University in the Netherlands, is developing a novel, fully dynamic and highly detailed integrated assessment model (IAM) that overcomes many of the shortcomings of classical integrated assessment and economic modelling frameworks. The new model will, uniquely, account for the effects of EW on crop yields, in the context of climate-induced changes in plant and soil biogeochemistry, coupled with evolving agricultural processes and technologies and related economic changes, including macroeconomic feedbacks. This will be achieved by coupling the detailed, dynamic macro-econometric model E3ME with a new ‘future technology transitions’ (FTT) model of the agricultural system, and statistical emulators of Earth system impacts. The role of the LC3M PDRA on climate change mitigation modelling will be to lead the development and application of the new integrated model in the specific context of the EW problem. This will involve developing simplified models of environmental impacts using statistical techniques developed at OU and emerging results from other groups in LC3M; developing the coupling between the economic, technological and natural system components of the model in collaboration with other researchers in WP4, including supply-chain modelling work at Sheffield, and applying the model to test the actual feasibility of various combinations of realistic policy scenarios in consultation with policy experts associated with the Centre.

You will hold a PhD, or be near to completing your PhD, in a relevant discipline (e.g. mathematical, physical or environmental science or socio-economic modelling). You must have substantial experience of numerical modelling techniques.

The main duties of the post are research-oriented, but the candidate will have the opportunity to contribute to teaching activity within the department of Environment, Earth and Ecosystems.

Main Duties
The work will involve:

- Developing simplified models of environmental impacts using statistical techniques and emerging results from other groups in LC3M
- Developing the coupling between the macro-economic, technological and natural system components of the coupled model, including supply-chain analysis, in collaboration with other researchers in WP4
- Setting up the integrated E3ME-FTT-GENIE model, obtaining appropriate input fields, including estimates of uncertainty ranges for inputs and model parameters
- Designing and performing experiments and sensitivity analyses using statistical principles
- Analysing and interpreting the results in consultation with policy experts associated with LC3M and preparing high-impact papers for submission to leading journals.
Other duties
- Undertake any other duties which may reasonably be required.
- Take reasonable care of the Health and Safety of themselves and that of any other person who may be affected by your acts or omissions at work.
- Demonstrate a strong commitment to the principles and practice of equality and diversity.

Person specification

Requirements  (E = Essential/ D = Desirable)

Education, qualifications and training
- PhD or equivalent in mathematical, physical or environmental science, socio-economic modelling or a related discipline.

Knowledge, work and other relevant experience

Essential:
- Expertise in numerical modelling of physical or socio-economic systems.
- Experience in scientific programming and data visualisation.

Desirable:
- Broad technical knowledge of Earth system processes and modelling techniques.
- Knowledge of macro-economics and the politics of climate change and geoengineering.
- Experience of a variety of computing environments and graphical packages, and complex numerical models.
- Knowledge of experimental design and model emulation.

Personal abilities and qualities

Essential:
- Good written communication skills including clear communication of complex concepts.
- Good time management and aptitude for collaborative group work.

Desirable:

4. Role specific requirements e.g. Shift working

5. About the unit/department

Faculty of Science, Technology, Engineering & Mathematics
The newly formed Faculty of Science, Technology, Engineering and Mathematics (STEM) comprises:
- School of Computing & Communications
We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges

The Faculty of STEM consists of 700 staff and 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting more than 20,000 students (full time equivalents) which is 29% of the OU total.

We are proud of our distinctive values and capabilities underpinning our aspiration:

We are inclusive:
- We transform people’s lives, ensuring STEM education is openly accessible to many thousands of students from diverse backgrounds – our students express high satisfaction with their study experience
- We engage the public in exciting citizen science and engineering, including through free open educational resources, multi-platform broadcasting, outreach to inspire the next generation and with programmes to encourage more women into STEM

We are highly innovative:
- We are at the forefront of innovative developments in teaching practical science and engineering at a distance, through simulated and remote access laboratories and practical experimentation
- Our high quality teaching and curriculum are informed by world-leading research, strong links with professional bodies and communities of practitioners, as well as by scholarship focused on continuously improving our STEM pedagogy

We deliver significant social and economic impact:
- We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach and further growth potential
- We inject transferable STEM skills and knowledge direct into the workplace for immediate employee and employer benefit, as students combine study while working
- The employability value of our courses is underpinned by accreditation from leading STEM Professional Bodies and Learned Societies, as well as partnerships and sponsorship with leading employers
- Our high quality, applied and academically relevant teaching and research addresses real-world issues, delivering impact for industry and society, including addressing pressing STEM skill-shortages across the UK

School of Environment, Earth and Ecosystem Sciences
The School of Environment, Earth and Ecosystem Sciences comprises approximately 50 academic and research staff, along with an average of 20 PhD students, working in fields as diverse as biodiversity, biogeochemistry, ecology, palaeoenvironmental change, geochemistry, oceanography, palaeontology, sedimentology, tectonics and volcanology. We also have >150 Associate Lecturers located across the UK and Ireland, and who are integral to the support and delivery of our curriculum.

Our curriculum centres around two inter-related disciplines: Earth Science and Environmental Sciences, and is available to study globally. We currently offer qualifications in: Earth Sciences; Environmental Science (accredited by the Institution of Environmental Sciences); Geography and Environmental Science (in
collaboration with the Open University Faculty of Arts and Social Sciences); and Natural Sciences with either an Earth Science or Environmental Science specialism. We are passionate about developing innovative and agile approaches to curriculum design best suited to the delivery of science in an online and distance learning environment. In line with this, we are currently refreshing our honours level Environmental Science curriculum and plan to expand our Masters offerings in Earth and Environmental Sciences in the near future.

Our research centres round four interlinked themes: Dynamic Earth; Earth systems modelling; Ecosystems; and Palaeoenvironmental change. Within these groups, we investigate both short-term and long-term processes to advance knowledge and understanding of interactions between past and present Earth and environmental systems. Key specialisms include: understanding the formation of mountain belts; modelling global ecosystems and processes; developing and using marine and terrestrial proxies to assess palaeoenvironmental change; the biogeochemistry of terrestrial ecosystems; the anthropogenic influence on terrestrial ecosystems; deciphering igneous processes and monitoring active volcanoes.

Supporting our research are some exceptionally well-equipped research facilities, which are shared across the Faculty. Specifically within the School, our facilities include:

- a suite of newly refurbished ecosystem laboratories designed for ecohydrology, biogeochemistry and biodegradable waste management, comprising controlled environment growth chambers, a soil-physics lab, flexible preparation laboratory space including walk-in cold stores, incubators, drying ovens and furnaces, and analytical facilities tailored for analysis of soil, water and air samples as well as a full range of biological and environmental materials;
- a suite of Earth Science laboratories comprising radiogenic, noble gas and stable isotope mass spectrometry facilities, Cameca NanoSIMS ion imaging system and a dual beam FIB-SEM, ICP-MS facilities, electron probe microanalysis, and palaeoenvironmental/pollen analysis facilities, all supported by world-class clean laboratory facilities enabling the processing of low level geological samples uncompromised by environmental contamination.

Overall, our mission statement “investigating past and present environments, to create positive actions for a sustainable future”, is central to all our teaching, research, enterprise and external engagement activities, while our strong sense of collegiality and community continues to shape and direct the interdisciplinary approaches used throughout our work.

6. How to obtain more information about the role or application process

If you would like to discuss the particulars of this role before making an application please contact Dr Neil Edwards on +44 (0)1908 659358 or email: neil.edwards@open.ac.uk.

If you have any questions regarding the application process please contact Zoe Anderson on +44 (0)1908 332313 or email: STEM-Recruitment@open.ac.uk.

7. The application process and where to send completed applications

Your application should contain:
- Short application form
- CV
- Covering letter detailing how you meet the person specification

Please ensure that your application reaches the University by: Noon – 3 May 2018

E-mail your application to: STEM-Recruitment@open.ac.uk
### 8. Selection process and date of interview

<table>
<thead>
<tr>
<th>The interview panel will be chaired by:</th>
<th>Dr Neil Edwards, Reader in Earth System Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>The other members of the interview panel will be:</td>
<td>To be confirmed</td>
</tr>
<tr>
<td>The interviews will take place on:</td>
<td>To be confirmed</td>
</tr>
<tr>
<td>The selection process for this post will include</td>
<td>To be confirmed</td>
</tr>
</tbody>
</table>

We will let you know as soon as possible after the closing date whether you have been shortlisted for interview. Further details on the selection process will also be sent to shortlisted candidates.

Applications received after the closing date will not be accepted.