Research Fellow
SCHOOL OF BIOLOGICAL SCIENCES

Closing date: 04 January 2023
Interview date: To Be Confirmed
Reference number: SBS126R
INTRODUCTION

The appointee will work in the School of Biological Sciences in the Environmental Modelling Group. Research within the School of Biological Sciences has a broad cross-cutting theme of understanding the fundamental biological consequences of environmental change. Our research incorporates theoretical, empirical and experimental studies on plants, animals and microbes, and spans from gene to global scales, from the deep ocean to high altitude, and from the Arctic to Antarctic.

The School of Biological Sciences comprises approximately 45 academic staff, 90 postdoctoral researchers, 150 postgraduate research students and five independent research fellows. Current active research grant holdings total over £25M (c. 29M €, 39M US$) secured from government, non-governmental organisation, industrial and charitable sources.

The environmental modelling group specialises in computer modelling at spatial scales from plot to global, and at temporal scales of hours to millennia. We develop and use mathematical models using a range of approaches, and the group is represented by researchers with expertise in soil science, plant science, biology, environmental science, mathematics, physics, computer science, engineering, social science and others.

We model all aspects of the environment, but specialise in global change impacts on ecosystems, soils, agricultural and land based options to mitigate climate change, greenhouse gas emissions, environmental and agricultural sustainability, global carbon cycle, ecosystem modelling, food security, ecosystem services, bioenergy and other forms of energy modelling. As modelling specialists, we have numerous collaborations with experimental laboratory and field scientists within the University, elsewhere in the UK, and globally.

JOB DESCRIPTION

MAIN PURPOSE OF THE ROLE:
This post is for a soil modeler to develop, evaluate and apply a new model of hydrogen (H₂) uptake and release by soils.

KEY RESPONSIBILITIES:

Design and construction of a process-based soils model for H₂ - The structure of a new model of H₂ uptake and release will be developed. This will build on existing modelling work, but will aim to devise a functional model, that can be run using only data available in national datasets to provide global scale simulations. This requires that the model include only processes that are important at the larger scale. Experimental evidence from the literature will initially be used to develop the structure of the model by determining controlling factors and response functions for H₂ uptake and release by soils. The process-based model of H₂ uptake and release for a single spatial point will be constructed around the well-established and widely used Roth-C model of soil organic matter decomposition and respiration. Additional processes of diffusion, H₂ assimilation and release will be added using the controls determined from the literature. A geographically explicit version of the model will then be constructed to run using nationally available datasets at the national to global scale. This will use the same descriptions as in the point-based model, driven by data from national datasets.

Model evaluation and application. The model will be evaluated against data produced by the project team. This evaluation will determine the uncertainty in the simulations as the root mean squared error between the simulations and the measurements, also testing the association between simulations and measurements using the correlation coefficient. Scenarios for simulations will be constructed. The input data for global simulations will be collated into a database describing land use and climate scenarios. These scenarios will include changes in climate (especially precipitation and land-use). The global simulations will be run using the constructed scenarios and the results analysed to predict potential future changes in H₂ uptake and release by soils. The evaluation of the model will be used to determine the uncertainty in the predicted values.
CANDIDATE BACKGROUND

The candidate should be adept in literature and database searches, and the use of appropriate statistical methods to (1) determine the controls for H2 diffusion, assimilation and release from soils, and (2) evaluate the developed model. The candidate should also have skills in computer programming, Fortran, Python or C++.

TERMS OF APPOINTMENT

Salary will be at the appropriate point on the Band 6, £35,333 - £42,155 per annum and negotiable with placement according to qualifications and experience.

Any appointment will be made subject to satisfactory references and probation period. For further information on various staff benefits and policies please visit www.abdn.ac.uk/staffnet/working-here

This role is based in the UK and as such the successful candidate will be required to live and work in the UK.

Should you require a visa to undertake employment in the UK you will be required to fulfil the minimum points criteria to be granted a Certificate of Sponsorship under the requirements of the Skilled Worker visa. At the time an offer of appointment is made, you will be asked to demonstrate that you fulfil the criteria in respect of qualification and competency in English. For research and academic posts, we will consider eligibility under the Global Talent visa. Please do not hesitate to contact Lucy Redmayne, HR Adviser (e-mail: lucy.redmayne@abdn.ac.uk) for further information.

The candidate appointed to this post may be eligible for homeworking on an occasional or regular basis. For more information, please refer to our Homeworking Policy.

AT A GLANCE

SALARY:
Grade 6
£35,333 - £42,155

HOURS OF WORK:
Full time: 37.5

CONTRACT TYPE:
Limited Funding: 24 months

LOCATION:
Aberdeen
## PERSON SPECIFICATION

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<tr>
<td><strong>Education/Qualifications</strong></td>
<td>Academic, technical and professional education and training</td>
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<td></td>
<td>• PhD in environmental science, soil science or biogeochemistry</td>
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<td><strong>Work and Other relevant experience (including training)</strong></td>
<td>e.g. Specialist knowledge, levels of experience, supervisory experience, research</td>
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<td>• Adept in a programming language such as Fortran, Python or C++.Experience of statistical analysis</td>
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<td><strong>Personal qualities and abilities</strong></td>
<td>e.g. initiative, leadership, ability to work on own or with others, communication skills</td>
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|                          | • Ability to work on own  
• Ability to work in a team                                           | • Good oral communication  
• Strong writing skills                                                                                     |
| **Other**                | e.g. special circumstances (if any) appropriate to the role such as unsocial hours, travelling, Gaelic language requirements etc. | • None                                                                                                 |
University of Aberdeen

Open to all and dedicated to the pursuit of truth in the service of others

The University of Aberdeen is a broad-based, research intensive University, and we put students at the centre of everything we do. Outstanding in a wide range of discipline areas, Aberdeen is credited for its international reach and commercialisation of research ideas into spin out companies. The University has over 16,000 matriculated students and 3,600 staff representing 130 nationalities. We encourage bold thinking, creativity and innovation, and we nurture ambition with many opportunities for professional and personal development in an inclusive learning environment which challenges and inspires.

Current Context

The University continues to uphold the principals of the foundational purpose. We remain committed to delivering positive change both locally and globally. We work together and with our partners in an interdisciplinary way, catalysing world-leading research in our areas of strength: Energy Transition; Social Inclusion and Cultural Diversity; Environment and Biodiversity; Data and Artificial Intelligence; and Health, Nutrition and Wellbeing. We are investing in our future and have committed £100m to upgrading our campus, including the new fully digitised Science Teaching Hub, the regeneration of the historic King’s Quarter and a new Business School building. Our commitment to our students, campus and community has led to us being named a Top 20 UK institution in two major league tables¹ and 4th in the UK for overall student satisfaction².

¹ The Times and Sunday Times Good University Guide 2023 and the Guardian University Guide 2023
² National Student Survey (NSS) 2022
ABERDEEN 2040

On our 525th anniversary as a University we launched Aberdeen 2040, our strategic vision for the next 20 years. Four strategic themes will shape our learning and discovery, underlined by 20 commitments we have made against each theme:

- **Inclusive**
  We welcome students, staff and partners from all backgrounds, organisations and communities. We value diversity.

- **Interdisciplinary**
  We innovate in education and research by generating, sharing and applying new kinds of knowledge. We learn together.

- **International**
  We connect with others and extend our networks and partnerships around the world. We think across borders.

- **Sustainable**
  We understand and nurture our environment, and take care of our resources, including our people and finances.
  
  We work responsibly.

**OUR EDUCATION**

Recognised as the Scottish University of the Year in the Times and Sunday Times Good University Guide 2019, we remain true to our roots as an ancient Scottish university, combining breadth and depth in our degree programmes and drawing strength from the quality of our research. Our flexible curriculum encourages students to grow as independent learners and therefore to thrive as graduates in the diverse workplaces of the future. Our education is open to all and we are setting ambitious targets to further widen access.

**OUR RESEARCH**

Researchers at the University of Aberdeen have been at the forefront of innovation and excellence throughout the centuries, generating insights in medicine, science, engineering, law, social sciences, arts and humanities. This research has contributed to five Nobel prizes as well as other awards such as the Queen’s Anniversary prize. Our research is intellectually rigorous working within our established areas of excellence as well as new methods of enquiry. We will continue to generate new knowledge addressing economic and societal issues with ambition and imagination, ensuring that it is globally excellent and locally relevant.

**INTERNATIONAL**

Aberdeen is increasing its international presence, positioning the University as a global organisation and building on established global partnerships around the world, including Qatar, China, North America, Europe. We feature in the top 50 institutions worldwide for international students\(^1\).

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\(^1\) Times Higher Education World University Rankings 2021
IMPACT

In 2020 the University signed the United Nations Sustainable Development Goals accord, solidifying our commitment to developing the world in a sustainable way. In 2022 we were listed in the global Top 100 for 8 of these goals\textsuperscript{4}.

Our highly cited work in zero-carbon technology and global outlooks makes us Scotland’s best institution for environmental research\textsuperscript{5}.

\textsuperscript{4} Times Higher Education Impact Rankings 2022
\textsuperscript{5} QS World University Rankings 2022

Updated October 2022
THE SCHOOL OF BIOLOGICAL SCIENCES

At the heart of the school is the delivery of world class research and education (https://www.abdn.ac.uk/sbs/)

There is clear evidence that we achieve this: the school delivers a substantial contribution to the institution’s international collaboration and high citation values; there is a high student satisfaction at UG and PGT level; the school meets and exceeds competitor benchmarks for research grant income and for publication output. The school is renowned as a centre that can combine theoretical science with end-user needs and applications and to engage with industry and stakeholders. This makes for compelling impact case studies.

The institution has invested £39.5 million into a Science Teaching Hub which will deliver world class science skills training and the school is seeking innovative educationalists to capitalise fully in this opportunity. The state of the art facility will transform the way in which STEM practical classes are delivered and is fully equipped and staffed to enable this. During lockdown delivery of curriculum was online and then hybrid so the school welcomes innovative approaches that enhance the student journey.

For the Research Excellence Framework, in recent years the school has submitted to Units of Assessment including 5 (Biological Sciences), and 7 (Earth Systems and Environmental Science). This means we continue to have close collaborative research strategies with other schools including Geosciences and Medicine, Medical Sciences and Nutrition.

We have a school management structure that is underpinned by the importance of transparency and evidence-led decision making. Health, safety and wellbeing are key components in our research, education and training.

We encourage, nurture and secure independent research fellows because they deliver the highest quality cutting-edge science. Some our most successful staff have come through this pathway and secured tenure of appointment.

ABERDEEN AND ABERDEENSHIRE

Scotland’s third largest city, Aberdeen sits on the coast between the mountains of Aberdeenshire and the stunning North Sea coastline. The Aberdeen City region is a can-do place that is actively investing, at scale, in its future.

Renowned as a Global Energy Hub, Aberdeen is a vibrant, entrepreneurial region, home to a unique mix of business opportunities and specialist skills across various sectors including energy, technology, life sciences and food & drink. More than 20% of Scotland’s top businesses are located in this region.
which is taking great strides to ensure that it continues to compete on a world stage. Investments of more than £10 billion of public and private infrastructure is due to be delivered before 2030, marking an exciting time to be part of a genuine world-class location.

Built from sparkling local granite Aberdeen has earned the name of the Silver City. As the energy capital of Europe, Aberdeen nevertheless retains its old-fashioned charm and character making it an attractive place in which to live, work and study. Due to its global business and international energy industry credentials, Aberdeen is well served by local and national transport infrastructure with excellent rail networks that run both North and South of Scotland and the rest of the UK. It also acts as an international travel hub. Flying time to London is just over one hour with regular daily flights and serves international travel to European centres such as Amsterdam (Schiphol) and Paris (Charles de-Gaulle) as well as flights to other European destinations.

The City and the surrounding countryside provide a variety of urban, seaside and country attractions. Aberdeen has first class amenities including His Majesty’s Theatre, Music Hall, Art Gallery, the P&J Arena, Museums, and Beach Leisure Centre. The City is framed by its accessible beach front which is within a short walk of the city centre and there are an array of activities available across the region such as hill walking; mountaineering; sailing; surfing; salmon, trout and sea fishing; golf; sailing; surfing and windsurfing. The surrounding countryside, known as Aberdeenshire, is also one of Scotland’s most appealing regions. Royal Deeside and the Cairngorms National Park are within easy access of the city, and there are a variety of towns and villages scattered along the coastline.

The city and the surrounding area have ranked consistently highly in nationally recognised quality of life surveys, coming out top 10 as one of the best places to live in Scotland in 2020 in the annual Bank of Scotland survey.

To find out more visit www.visitabdn.com

**EQUALITY AND DIVERSITY**

The University values a diverse working environment and recognises the benefits this can bring. The University is keen to receive applications from individuals from across all of the equality protected characteristics (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation).

The University supports opportunities for flexible working for a range of reasons and has policies in place to facilitate this. The policies can be found at https://www.abdn.ac.uk/staffnet/working-here/flexible-working--5607.php.

The University’s commitment to gender equality has been recognised through the achievement of an Athena SWAN Bronze award at an institutional level and across all its subject areas. The University is also a Stonewall Diversity Champion to further LGBT+ equality.

The University is signed up to Advance HE’s Race Equality Charter, affirming the University’s commitment to the charter’s aim of improving the representation, progression and success of minority ethnic staff and students within higher education.

Updated October 2022
Candidates who are British Sign Language (BSL) users can contact us directly by using contact SCOTLAND-BSL.

The University is delighted to be accredited as a Disability Confident employer and strives to ensure that disabled staff and students have the opportunity to work and study in an inclusive, accessible and supportive environment.

www.abdn.ac.uk/staffnet/governance/equality-and-diversity-277

HOW TO APPLY

Online application forms are available at www.abdn.ac.uk/jobs

The closing date for receipt of applications is **04 January 2023**

Should you wish to make an informal enquiry please contact:

**Jo Smith, Professor of Soil Organic Matter and Nutrient Modelling**

jo.smith@abdn.ac.uk

Please do not send application forms or CVs to Jo Smith

Please quote reference number **SBS126R** on all correspondence