



## Job description

Post	Postdoctoral Research Associate in Earth Observation & Data Science
Department	Biology
Division	Mathematical, Physical and Life Sciences Division (MPLS)
Location	11a Mansfield Road, Oxford, OX1 3SZ South Parks Rd, Oxford, OX1 3RB
Grade and salary	Grade 7.1 – 7.5: £36,024 - £40,521 p.a.
Hours	Full time
Contract type	Fixed Term until 31 December 2026
Reporting to	Dr Gwilym Rowlands
Application deadline	12 noon (GMT) on Friday 5 January 2024
Vacancy reference	169223
Recruitment contacts	HR: <a href="mailto:hr@biology.ox.ac.uk">hr@biology.ox.ac.uk</a> or PI: <a href="mailto:Gwilym.Rowlands@biology.ox.ac.uk">Gwilym.Rowlands@biology.ox.ac.uk</a>
Additional information	

Research topic	Marine and Coastal Remote Sensing
Principal Investigator / supervisor	Dr Gwilym Rowlands
Funding partner	The funds supporting this research project are provided by the Pew Charitable Trusts





## The role

The **Postdoctoral Research Associate (PDRA)** will develop and apply algorithms for the classification of remotely sensed satellite imagery into seagrass habitat maps. Working as part of an international team of researchers, they will deliver maps of seagrass habitat across the Western Indian Ocean, with a specific focus on Kenya, Tanzania, Mozambique, and Madagascar. They will take a leading role in delivering geospatial and remote sensing analysis, technical writing, literature synthesis, collaborative meetings, field planning and logistics. This position is tailored towards an individual interested in work at the interface of ocean science, conservation, and policy.

**The Project:** Extensive seagrass meadows provide many ecosystem services including important fish habitat, nursery grounds for juvenile fishes, and food and habitat for endangered species such as sea turtles and dugong. They are also a recognized nature-based solution (NbS) for climate change as they can sequester and store carbon besides. The PDRA will work a new research project funded through The Pew Charitable Trusts that seeks to generate information on the distribution and extent of seagrass meadows in the Western Indian Ocean, with a particular focus on coastal and offshore marine environments of Kenya, Tanzania, Mozambique, and Madagascar. Led by the University of Oxford in partnership with institutions and organizations in each of these four focal countries, the project will build the scientific baseline necessary to support the inclusion of seagrass protections into Nationally Determined Contributions (NDCs) to the Paris Agreement and support Marine Spatial Planning (MSP) in the region. Drawing on advances in satellite remote sensing and field data collection, researchers across the project will collaborate to address data gaps to determine the health, distribution, and extent of seagrass, a necessary step for soil carbon stock assessments.

**The Role:** The PDRA will be supervised by Dr Gwilym Rowlands and work independently on methods development, data curation and analysis, technical writing, literature review and other project related tasks. The PDRA will have the opportunity to work with an international and interdisciplinary team of social and physical scientists, and other research staff, supporting project work while learning about the social, legal, and biophysical underpinnings of marine resource management decisions.

The PDRA will support the main goals of this award, delivering maps of seagrass habitat across the Western Indian Ocean (with a specific focus on Kenya, Tanzania, Mozambique, and Madagascar), accelerating seagrass research in the region, and helping develop engagement with partners in the UK and overseas. We are seeking to appoint a PDRA with a deep interest and existing skill sets related to marine geospatial science, remote sensing, and tropical coastal ecosystem studies. The candidate will have strong technical skills and an analytical approach. The post holder must have a demonstrated ability to synthesize and write technical and scientific materials suitable for academic publication. Experience with aligned marine field work is also highly desirable. The PDRA will also provide guidance to less experienced members of the research group, including postdocs, research assistants, technicians, and PhD and project students, as well as collaborators in partner organizations. The PDRA will be able to access the Advanced Research Computing (ARC) service which provides access to High Performance Computing (HPC) resources, support, and advice.

## Responsibilities

- Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines.
- Development of novel algorithms and/or application of existing approaches using a broad spectrum of remote sensing software within cloud and local servers, machine learning and other data science techniques.
- Analyse scientific data from a variety of sources, curating, reviewing and refining workflows as appropriate.
- Generation of training material and manuals to streamline data collection and analysis across the project, including contribution(s) to training workshops in the study region.
- Collaborate in the preparation and delivery of scientific reports journal articles and occasionally present papers and posters.
- Act as a source of information and advice to other members of the group on analytical protocols and experimental techniques.
- Represent the project and research group at workshops, external meetings/seminars, either with other members of the group or alone.
- Collaboration with the broader project team and end-users of the data to ensure data are fit for use.
- Teach or undertake ad-hoc teaching (this may include lecturing, demonstrating, small group teaching, tutoring of undergraduates and graduate students and supervision of projects).
- Embed the principles of mutual respect, equality, diversity, inclusivity and sustainability in all aspects of your work; undertake training as and when asked to do so.

## Selection criteria

### Essential selection criteria

- You will hold, or be close to completion, of a relevant PhD/DPhil, together with relevant experience.
- You will have expertise in using or developing tools or algorithms for handling different types of geospatial data and classifying Earth Observation (EO) image data from a range of satellite data providers into GIS-ready thematic habitat maps.
- You will have expertise working across local computing, GIS software (e.g., ArcGIS), high performance computing clusters, and/or cloud-based platforms (e.g., Google Earth Engine) to tackle problems covering timeseries, image analysis and integration of geospatial data collected from multiple sources across different spatial and temporal scales.
- You should be familiar with the challenges and technical solutions for optical remote sensing and mapping in marine and coastal environments.
- You will have the ability to manage your own academic research and associated activities and will have experience of independently managing a discrete area of a research project.
- You should have previous experience of contributing to academic publications and presentations.
- You will have excellent written and verbal communication skills in English (but see also *Desirable Criteria #4*), including the ability to write for publication, present research proposals and results, and represent the research group at meetings and other fora.



- You should be passionate about collaboration and exhibit an enthusiasm to work as part of a large and dispersed international team of researchers, including use of video conferencing software (Zoom, Microsoft Teams etc).

#### **Desirable selection criteria**

- You will have experience working with and analysis of supporting data such as single or multi-beam acoustic and backscatter data and/or benthic photo and video data.
- You will have experience with planning, supporting, or direct collection of field data in coastal environments.
- You will have a passion for producing well designed and documented code, with development skills in Python, Matlab, JavaScript, or a similar coding language/environment.
- You will be familiar with one or more of the following languages: French, Malagasy, Kiswahili, Portuguese

### **Pre-employment screening**

#### **Standard checks**

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: <https://www.jobs.ox.ac.uk/pre-employment-checks>

#### **Hazard-specific / Safety-critical duties**

This job includes hazards or safety-critical activities. If you are offered the post, you will be asked to complete a health questionnaire which will be assessed by our Occupational Health Service, and the offer of employment will be subject a successful outcome of this assessment.

The hazards or safety-critical duties involved are as follows:

- Lone Working
- Work in hot or cold environments
- Travel outside of Europe or North America on University Business



## About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit [www.ox.ac.uk/about/organisation](http://www.ox.ac.uk/about/organisation).

## The Department of Biology

You will be joining the Department of Biology at an exciting time. The Department established from August 2022 as a result of a merger between the Departments of Zoology and Plant Sciences, and is preparing to move into the new state-of-the-art Life and Mind Building in two to three years time.

The Department of Biology is recognised internationally for its research in a wide range of fields spanning all levels from molecules to ecosystems, and tackling global challenges through fundamental bioscience research. Over time, the research interests of the Department has been focused on five primary themes: Behaviour & Biomechanics; Ecology & Conservation; Evolutionary Biology; Microbiology & Infectious Disease; and Molecular Plant Biology. Research is conducted in all spheres from laboratory and in silico analysis to theoretical and field-based research.

At all times we seek to reinforce the connections between research and our education offering, at both graduate and undergraduate level. The Department teaches a four-year undergraduate degree MBiol course in Biology, with fourth-year students undertaking a Masters-level research project. It also supports a variety of graduate placements and hosts the University's DPhil in Biology.

External research income to the Department is derived from over 50 different funding agencies, with the principal current funders being the European Research Council, the Royal Society, the Wellcome Trust, BBSRC and NERC. The Department has a significant record in integrating broader societal impacts of its research, including the provision of policy to government at the highest level, as well as supporting the commercialisation of research through spin-out companies and licensing arrangements that have generated hundreds of millions of pounds' worth of innovation.



The Department is located in the University's Science Area at two sites and will move into the new £200m Life and Mind Building in 2024 that will include extensive laboratory provision with controlled environment rooms, glasshouses and an imaging suite. The Department also benefits from extensive facilities at the John Krebs Field Station at Wytham, with Wytham Woods nearby, as well as partnerships with organisations in the area such as the Oxford Botanic Gardens and Oxford Natural History Museum.

For more information please visit: <https://www.biology.ox.ac.uk>

## About the Mathematical, Physical, and Life Sciences (MPLS) Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University, alongside the Humanities, Social Sciences and Medical Sciences Divisions. It is led by an academic Head of Division (Professor Sam Howison) and an administrative Divisional Registrar (Dr Tracy Gale) and comprises nine of the University's academic departments – Biology, Chemistry, Computer Science, Earth Sciences, Engineering Science, Materials, the Mathematical Institute, Physics, and Statistics – as well as Begbroke Science Park, the multidisciplinary Ineos Oxford Institute for Antimicrobial Research and an interdisciplinary Doctoral Training Centre.

MPLS is proud to be home to some of the most creative and innovative scientific thinkers and leaders in academia, whose interdisciplinary research is tackling major societal and technological challenges, from new energy solutions or improved cancer treatments to understanding climate change processes and helping to preserve biodiversity, tackling antimicrobial resistance, advancing AI and quantum technologies and space exploration, and much more. The quality and impact of our work have been recognised by successive rounds of the national Research Excellence Framework and Teaching Excellence and Student Outcomes Framework exercises, and our departments frequently top the major higher education league tables. We teach around 7,300 students (including around 3,400 graduate students) and are playing a key part in training the next generation of leading scientists.

Divisional activity is co-ordinated and represented by the MPLS Divisional Office based at 9 Parks Road, in the heart of Oxford's Science Area. The Divisional Office, which is led by the Divisional Registrar, has around 55 dedicated members of staff, as well as a number of colleagues who are embedded in divisional teams but based in central University services (e.g., in Finance, HR and Development).

To find out more, please visit: [www.mpls.ox.ac.uk](http://www.mpls.ox.ac.uk).



## How to apply

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website <https://www.jobs.ox.ac.uk/how-to-apply>.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application, you will be asked to provide details of two referees and indicate whether we can contact them now.

You will be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants)

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

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## Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

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## If you need help

Application FAQs, including technical troubleshooting advice is available at: <https://staff.web.ox.ac.uk/recruitment-support-faqs>

Non-technical questions about this job should be addressed to the recruiting department directly at [HR@Biology.ox.ac.uk](mailto:HR@Biology.ox.ac.uk)

To return to the online application at any stage, please go to: [www.recruit.ox.ac.uk](http://www.recruit.ox.ac.uk).

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.





## Important information for candidates

### Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: <https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy>. The University's Policy on Data Protection is available at: <https://compliance.admin.ox.ac.uk/data-protection-policy>.

### The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82**, which with effect from 1 October 2023 will be 30 September before the 70<sup>th</sup> birthday. The justification for this is explained at: <https://hr.admin.ox.ac.uk/the-ejra>.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: <https://hr.admin.ox.ac.uk/the-ejra>.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

### Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.



## Benefits of working at the University

### Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See <https://hr.admin.ox.ac.uk/staff-benefits>

### University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See [www.club.ox.ac.uk](http://www.club.ox.ac.uk) and <https://www.sport.ox.ac.uk/>.

### Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See <https://welcome.ox.ac.uk/>

There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependants. See <https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme>

### Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See <https://hr.admin.ox.ac.uk/my-family-care>

The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.

For full details, including how to apply and the costs, see <https://childcare.admin.ox.ac.uk/>

### Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see <https://edu.admin.ox.ac.uk/disability-support>

### Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at <https://edu.admin.ox.ac.uk/networks>

### The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See [www.newcomers.ox.ac.uk](http://www.newcomers.ox.ac.uk).

