

**THE UNIVERSITY OF MANCHESTER**  
**PARTICULARS OF APPOINTMENT**  
**FACULTY OF SCIENCE & ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**DEPARTMENT OF CIVIL ENGINEERING AND MANAGEMENT**  
**RESEARCH ASSOCIATE (REMOTE SENSING OF AGRICULTURE AND IRRIGATION)**  
**VACANCY REF: SAE-029780**

**Salary:** Grade 6 £37,694 to £42,254 per annum, depending on relevant experience

**Hours:** Full Time

**Duration:** Fixed Term from 1 January 2026 for 36 months (in the first instance)

**Location:** Oxford Road, Manchester

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**Enquiries about the vacancy, shortlisting and interviews:**

Name: Dr Tim Foster

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**About the Role**

The [Agriculture, Water and Climate Research Group](#) and [Manchester Environmental Research Institute](#) (MERI), led by Dr Tim Foster, are seeking to appoint a talented and enthusiastic Postdoctoral Research Associate (PDRA) to play a key role in delivering an exciting new investment project (IrrEO) that will satellite-based irrigation mapping tools for governments and development actors in Sub-Saharan Africa (SSA).

Expanding irrigation is critical for climate adaptation and improving food security in SSA. Yet, the ability to design and implement sustainable and cost-effective irrigation investments remains constrained by a lack of data on the current extent of irrigation and how irrigated areas have responded to past investments. The IrrEO project seeks to address this major knowledge gap by leveraging advances in Earth Observation (EO) and data science techniques to develop EO mapping tools and capacity that empower governments, financing and development actors with information to target, monitor, and assess irrigation investments.

As part of the IrrEO project, the PDRA will lead the development and validation of national-scale irrigated area and agricultural mapping algorithms in two of the project's three case study countries (Nigeria, Ethiopia, Kenya). The PDRA's work will combine extensive groundtruth data

collected by local field teams, Earth Observation imagery (SPOT, Sentinel-1 and -2, Landsat), and machine and deep learning techniques to quantify historic dynamics of small-scale irrigated agriculture and develop an interactive irrigation mapping toolbox for government and end users. Leveraging mapping data generated by this research, the PDRA will then collaborate with social science specialists at UoM and in-country research partners to target in-depth field investigations of irrigation hotspots to deepen understanding of the drivers and socio-economic outcomes of (un)successful small-scale irrigation initiatives.

The PDRA will be an integral member of the IrrEO project team, working closely with Principal Investigator Dr. Tim Foster (Department of Civil Engineering and Management), Co-Investigators Dr. Polyanna da Conceição Bispo (Department of Geography) and Dr. Rose Pritchard (Global Development Institute), as well as two other PDRAs (remote sensing and social science) and a dedicated project manager, all based at the University of Manchester. The role also involves close collaboration with academic and non-academic partners in the project's case study countries (Kenya, Nigeria, and Ethiopia) and active engagement with UK and international partners including Airbus, the World Bank, and the Bill & Melinda Gates Foundation.

The IrrEO project is funded by a four-year (2025-2029) investment from the Bill & Melinda Gates Foundation. Due to the nature of the funding, this post is available for a fixed term of up to 36 months in the first instance. We are looking for a candidate to start in either late 2025 or early 2026, with some flexibility over the exact start date.

### **Key Responsibilities, Accountabilities or Duties**

The PDRA's range of duties will include:

- Develop and validate satellite-based machine learning algorithms to map the spatial and temporal locations and dynamics of irrigated croplands in two of IrrEO's case study countries
- Apply mapping algorithms to quantify contemporary and historic changes in irrigated areas, identify hotspots of irrigation growth and decline for targeted field investigations, and evaluate performance of past irrigation investments.
- Co-develop an interactive data dashboard and user-friendly code workflows (e.g. Jupyter notebooks) to support uptake of irrigated mapping algorithms and datasets by government and development end users in Sub-Saharan Africa.
- Design and lead training activities for academic and government partners in IrrEO's case study countries to build in-country capacity to apply irrigation mapping tools and datasets for investment planning.
- Lead the writing and preparation of original research papers for publication in international excellent peer-reviewed journals.
- Disseminate research findings and methodologies to scientific and practitioner audiences through a range of media.
- Attend and present research at project meetings, conferences, workshops, and other events
- Pursue independent and original research ideas in related subject areas, including contributing to the development of funding proposals in collaboration with colleagues.
- Provide support to other research activities, including junior colleagues, within the research group based on your expertise in remote sensing and machine learning.

## **PERSON SPECIFICATION**

### **Essential**

- Hold a PhD (or equivalent), or be close to completion, in remote sensing, agriculture, land use science, physical geography, environmental sciences, or a related discipline including those candidates with a background in computer science or data sciences.
- Experience of analysing EO imagery (optical and/or radar) and developing classification models based on EO and other geospatial data.
- Strong quantitative skills including experience of developing and applying machine learning and/or artificial intelligence algorithms, preferably in Python or R.
- An emerging track record, relative to career stage, of publications in internationally excellent peer-reviewed journals.
- Excellent written and verbal communication skills, including the ability to present research to both scientific and non-technical audiences.
- Ability to build and maintain constructive working relationships with a wide diversity of actors, including interdisciplinary and/or international working relationships
- Good time management and organisational skills, including the ability to coordinate project activities and reliably meet deadlines for deliverables.
- Willingness to travel and participate in events, meetings, and capacity development activities related to the project internationally including within Africa.

### **Desirable**

- Experience of working in any of the IrrEO case study countries (Nigeria, Kenya, Ethiopia) or other parts of Sub-Saharan Africa
- Experience of using high performance computing or cloud computing facilities (e.g., Amazon Web Services, Google Earth Engine)
- Expertise in the use of RADAR/SAR datasets for mapping land cover and/or land use change
- Experience of developing open-source software tools and/or data products, and commitment to open science principles
- Experience of developing and/or conducting training or teaching on Earth Observation techniques.
- Experience of working with non-academic organizations to co-develop research methods, tools, and/or outputs