



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Soil Modeler (KTP Associate), School of Geography,
Faculty of Environment



Salary: £33,000 – £40,000 p.a. plus training allowance of £4,667. This position is not on the University of Leeds salary scale.

Reference: CSRIS1214

Fixed-term for 30 months due to external funding

**Based at the company partner's premises at The Old Station Works,
Station Lane, Shipton by Beningbrough, York YO30 1BS**

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Do you want to be part of a project aiming to enhance our understanding of sustainable farming systems?

Quantifying the potential of different agricultural practices and interventions to sequester soil carbon (C) and reduce greenhouse gas (GHG) emissions is key for reaching Paris Climate Agreement goals and the UK's net zero target. Agriculture industry representatives, the NFU have set ambitious commitments to achieve net-zero greenhouse gas (GHG) emissions by 2040. However, greenhouse gas removals (GGRs) will be required to offset residual emissions associated with agriculture. Therefore, we must improve our understanding of both GHG emissions and the potential for carbon dioxide removals via land-based solutions at the individual farm level. Assessing the potential for soil carbon sequestration through soil and crop management with reliable methods is essential in this context.

Static models are not adequate to understand the complex nature of carbon sequestration in soils. We require process-based dynamic soil carbon models to reflect the impact of multiple management practices more accurately which could be incorporated into farm-scale emissions calculators to inform management decisions. The challenge, however, is that those models require detailed management information at the field level which is difficult to access. Map of Agriculture (Map of Ag) have established a secured data integration platform capable of incorporating data feeds from >100 sources, including farm management software used by individual farmers. This provides a mechanism for collecting, controlling data access, and organising activity data. This has been used to great effect in improving the accuracy of GHG emissions measurement. and establishing reports for farmers and dashboards for supply chain customers.

Map of Ag seeks to link activity data repository to a dynamic soil carbon model to deliver a more accurate view of the on-farm GHG balance and of product carbon footprints. This is especially important and timely, given targets set by food supply chain companies and industry representatives. some already work with Map of Ag on reporting emissions across their supply chain. Through this KTP with the University of Leeds, Map of Ag seeks to acquire new expertise in soil carbon modelling and develop scientific computational pipelines capable of scale-up to manage big data. This will



accelerate the delivery of the company's vision to provide and scale up effective solutions for both GHG emissions and soil carbon flux to enable the achievement of net-zero targets.

We are looking for an enthusiastic Post-Doctoral Associate with a background in process-based modelling of soil-carbon dynamics and soil-vegetation interactions to develop this new platform in collaboration between Map of Ag and the University of Leeds.

You should have a PhD (or be very close to obtaining a PhD) in soil science, crop science, spatial ecology, environmental modelling, or a closely related discipline, and have a significant component of process-based modelling experience. You should be able to demonstrate a combination of enthusiasm and expertise in biogeochemical modelling, commercial awareness and interest to work in a commercial setting, and excellent communication skills to engage with Map of Ag leadership, staff and customers across the farming and agri-business sector.

What does the role entail?

As a Soil Modeler (KTP Associate), your main duties will include:

Contributing to the development of a new cloud-based server platform linking farm management data stream with process-based soil carbon model you will:

- Reviewing existing process-based soil carbon models and adapt them to fit agricultural industry requirements and UK context;
- Testing the model(s) using data management information collected by Map of Ag platform and analyse uncertainties and sensitivity;
- Supporting the development of a scalable cloud-based server application and API linking to Map of Ag data system APIs;
- Demonstrating and improve the system using agile development cycles, working with Map of Ag customers' data;
- Supporting the construction and develop content for a prototype online Dashboard to visualize outputs of the models tailored to customers needs and technical requirement;
- Producing high quality research paper(s) for publication in academic journals;
- Contributing to the development of business-model and marketing strategy for new revenue source based on the developed platform;



- Working both independently and as part of a Map of Ag business, while engaging and co-supervised by University of Leeds academics;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Coordinating between MapOfAg and University of Leeds, chair management meetings, liaise with funders including InnovateUK.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As a Soil Modeler (KTP Associate), you will have:

- A PhD in soil science, crop science, spatial ecology, environmental modelling, or a closely related discipline;
- Excellent familiarity and experience in the development and/or application of soil and/or crop process-based models;
- Excellent knowledge of Python and/or R;
- Experience with GIS, remote sensing, and spatial analysis;
- Strong analytical skills, with the ability to work accurately and carefully, designing, executing, and writing up research independently;
- Excellent written and verbal communication skills, including presentation skills;
- A developing track record of peer reviewed publications in international journals;
- The ability to work well both independently and as part of a team;
- Strong initiative and a pro-active approach, with excellent organisational, planning, and self-management skills, including the ability to prioritise workloads and deliver high quality work to deadlines;
- Willingness to travel within the UK to attend sector conferences, project meetings and dissemination events.

You may also have:

- Experience working with cloud-based virtualization on Amazon Web Services, Microsoft Azure, or Google Cloud Platform;
- Experience using orchestration cloud tools (e.g. Kubernetes) and containers (e.g. Docker);



- Experience developing serverless applications / microservices;
- Experience with web development and/or dashboard development;
- Experience working in a commercial environment, engaging customers, and acting as part of an agile R&D project.

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

Contact information

To explore the post further or for any queries you may have, please contact:

Prof. Guy Ziv

Chair in Socio-Environmental Systems

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Hugh Martineau

Map of Ag, Head of Sustainability

074366145445

Email: Hugh.martineau@mapof.ag

James Hartford

Innovation Support Coordinator – University of Leeds

Email: J.Hartford@leeds.ac.uk

Working as a KTP Associate

Benefits:

- All KTP Associates spend 10% of their time on Personal Development, making full use of a £4,667 PD budget;
- Access to two residential training sessions aimed at developing project management skills;
- Opportunity to gain both management and academic experience;



- Potential to fast-track a career in industry;
- Access to a wealth of academic resources;
- Access to a Travel & Subsistence and Consumables budget;
- Access to mentoring sessions through Innovate UK.

You will be an employee of the University of Leeds and will have access to University facilities. However, you will be based at the company premises in Melton, working to their terms. You will have access to the University's USS pension scheme, with generous employer contributions.

Additional information

Find out more about the [Faculty of Environment](#)

Find out more about the [School of Geography](#)

Find out more about our [research and associated facilities](#)

Find out more about [Athena Swan in the Faculty of Environment](#)

Find out more about our [Faculty initiatives](#)

Find out more about [Map of Agriculture](#)

Find out more about [Innovate UK](#)

Interview location

Online via MS Teams or other video conferencing application. Details will be provided should you be successful in gaining an interview.

A diverse workforce

The Faculty of Environment has received a prestigious Athena SWAN silver award from [Advance HE](#), the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.



Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

Faculty and School Information

Further information is available on the research and teaching activities in the links contained within the text above.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at hr@leeds.ac.uk.

The post is located at the company premises. Candidates with disabilities wishing to review access to the building are invited to contact James Hartford (Research and Innovation Service), J.Hartford@Leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

