Crop Modeller Position.
The James Hutton Institute.
Deadline: 8th March.

The Vacancy

We are seeking an experienced Crop Modeller to develop our research on linking crop science and agricultural systems, thereby contributing to our global food security and environmental sustainability research agenda. Working with experimental and application focussed scientists, you will focus on modelling interactions between crop genetics, physiology, phenotypic traits and the environment, and evaluate crop characteristics and management practices that enhance resource use efficiency and reduce risks associated with climate change.

You should have a PhD directly relevant to crop modelling, demonstrable experience in modelling biological systems at a range of spatial scales, and a high level of technical capability to undertake large and complex simulations. A track record of high-quality scientific publications in this area is required as is evidence of grant-winning abilities and demonstration of international collaboration. You should also have experience in working and communicating with scientists from multiple disciplines. Expertise in spatial analysis would be highly advantageous.

This post will require interacting with teams at both the Hutton Aberdeen and Dundee sites.

All individuals wishing to work within the UK must be entitled to do so before they can be employed.

Further information is available from www.hutton.ac.uk/careers.

Main Purpose of Job

The purpose of the post is to undertake research to integrate crop physiological mechanisms with environmental processes and management interventions to address concerns about the sustainability of agricultural production in the light of challenges such as food security and environmental sustainability, all within the wider context of climate change, the economy, and supply of ecosystem services.

The focus will be on identifying trade-offs and synergies at different spatial levels, evaluating ways in which the agriculture sector might contribute to meeting Scottish Government net zero emissions targets without adversely affecting crop production, and understanding how crops, crop management practices and cropping systems may adapt to future climates. The role will also contribute to developing the Institute's capabilities regarding use of emerging digital data collection for precision agriculture and yield forecasting purposes. The ideal candidate is someone who can undertake high quality crop modelling research at a range of spatial scales and can conduct detailed spatial analyses.

The work will contribute to the Scottish Government's Strategic Research Programme, Centres of Expertise on climate (ClimateXChange) and water (CREW), and other work currently being carried out on various externally funded projects.

Main Duties of Postholder

- To develop, adapt or use state-of-the-art crop models, and specifically DSSAT based models, to advance our understanding of the interactions between plant traits, physiological processes and environmental variables.
- Collate and evaluate data for model calibration and validation purposes.
- Utilise existing Institute High Performance Computer parallelisation capabilities to undertake large simulation runs using high resolution spatial input data and multiple climate model projections and present results spatially as maps.
- To collaborate with scientists across a broad range of disciplines and scales to apply these models to evaluate the impact of changes in climate, land use and management on crop production and sustainability at the field, farm and landscape levels.
- Apply spatial modelling skills to assess climate change impacts on soils, water and natural Capital.
- Publish high-quality peer reviewed scientific papers.
- Contribute to the writing of successful research proposals for external funding.
- Communicate research results to a range of audiences (e.g. policy makers, practitioners, the public) in appropriate formats.

The successful candidate would be expected to develop links with other research groups and international networks, and eventually establish their own research team by securing external funding. The post will integrate their research with the wider effort across the Institute.

Person Specification

Education/Experience/Skills

Essential

- Qualifications: PhD in a relevant subject such as mathematics, mathematical biology, plant physiology, physics or engineering.
- Experience:
    - Postdoctoral experience in modelling biological processes and/or environmental modelling.
    - A track record of high-quality scientific manuscript preparation and publication.
    - A track record in winning external funding.
- Skills:

    - Knowledge of crop physiological processes and how these are affected by genotype, environmental and management interactions.
    - Computer programming/coding.
    - Data manipulation, statistical and analytical assessment.
- Other skills and attributes:
    - Integrative skills with a willingness to work as part of a team.
    - Ability to see the wider picture and translate real-world questions into researchable forms addressable by crop modelling.
    - Ability to plan work and nurture project teams.
    - Ability to work at pace and to deadlines.

Desirable

- **Experience:**
    - Use of existing state-of-the-art crop models.
    - Evidence of the ability to publish in high-quality scientific journals.
    - Collaborative research with experimental scientists and technical support.
- **Skills:**
    - Computer programming and technical: use of computing clusters and HPC, use of R and databases.
    - Understanding of the issues of uncertainty in modelling.
    - Ability to access data and critically assess it.
    - Use of tools for spatial data, GIS.
    - Knowledge of remote sensing techniques.
- **Other Skills:**
    - Experience of working in international collaborations.
    - Knowledge of agrometeorology and climate.
    - Ability to communicate research results to a range of audiences (particularly within industry and/or policy) in appropriate formats.
    - Understanding of Scottish geography and agriculture.

Other Skills

- Driving license

Additional notes/Requirements

- The post may require working at both Aberdeen and Dundee sites.
- Due to potential lockdown requirements, the ability to undertake remote working (accessing and using institute computing facilities remotely).

Our Commitment to Equality and Diversity
We will not consider the use of 3rd party recruitment agencies for the sourcing of candidates for this position.

The James Hutton Institute is an equal opportunity employer. We celebrate diversity and are committed to creating an inclusive environment for all employees.

The James Hutton Institute is a: Stonewall Diversity Champion; Athena SWAN Bronze Status Holder; Disability Confident Committed Employer and a Living Wage Employer.

The James Hutton Institute is Happy to Talk Flexible Working.

The Company
The James Hutton Institute combines strengths in crops, soils and land use and environmental research, and makes a major contribution to the understanding of key global issues, such as food, energy and environmental security, and developing and promoting effective technological and management solutions to these.

James Hutton (1726 – 1797) was a leading figure of the Scottish Enlightenment, an eighteenth century golden age of intellectual and scientific achievements centred on Edinburgh. He is internationally regarded as the founder of modern geology and one of the first scientists to describe the Earth as a living system. His thinking on natural selection influenced Charles Darwin in developing his theory of evolution.