

THE POST

College/Service:	College of Engineering, Mathematics and Physical Sciences
Post:	Data Analyst: Vegetation Model Evaluation for the ECCLES project
Reference No:	P63830
Grade:	F
Reporting To:	Professor Peter Cox

The above part-time (0.5 FTE) post is available from 1 October 2018 for 36 months in the College of Engineering, Mathematics and Physical Sciences.

Job Description

The post holder will join the team of Prof Peter Cox on his ERC Advanced Grant project called ECCLES ('Emergent Constraints on Climate-Land interactions in the Earth System').

The ECCLES project aims to reduce uncertainties in climate-carbon projections using Emergent Constraints. Emergent constraints are relationships between observable variations in the Earth System and future changes, which are evident across an ensemble of models. ECCLES will provide a general theoretical basis for these, and identify new constraints on the role of the land biosphere in the Earth System.

This post is one of a team of 3 PDRAs, 3 PhDs, and a data analyst, who will be working with Professor Cox. In particular, the holder of this post will analyse data on tree-size distributions from forest inventory data and forthcoming satellites. He/she will evaluate simulations carried-out with the University of Exeter's new model of *Robust Ecosystem Demography (RED)* against these observational datasets, and help develop improvements to *RED* where required.

Key responsibilities

The ECCLES Data Analyst will be responsible for developing appropriate mathematical analyses and software tools to analyse key features and changes in forest demography. Expertise in data analysis and vegetation modelling are therefore essential, as are two-way communication and team-working skills. It is expected that the post holder will contribute to innovative numerical experiments, model inter-comparison studies, and peer-reviewed papers.

Main Duties and accountabilities

The role is responsible for providing programming and modelling support, including:

- Responsible for downloading and analysing data on forest demography from RED and observational datasets, to support ECCLES.
- Responsible for developing appropriate mathematical analysis and software tools for automated comparison of models and observations, and to identify Emergent Constraints on the drivers of vegetation change.
- Two-way communication with Prof Cox and the rest of the ECCLES team, to ensure that data is available as and when required, and to point-out promising avenues for further research.
- Contribution to key international model intercomparison exercises.
- Software management, with a focus on Open Source statistical, database and website software.
- Provision of guidance and expert advice to management and co-workers or other groups on technical, systems and/or process-related topics.

General role duties will also include:

Service Delivery (Research Support)

- Maintain a high level of service delivery, supporting research and commercial activities where appropriate.
- Respond promptly to requests and ensuring others have the support they need to fulfil their role.
- Provide regular and routine introductions – demonstrating the use of laboratory/workshop facilities and equipment to staff, students and visitors.
- Define guidance, advice and procedures provided to service users by self or colleagues regarding the availability and use of equipment and resources.
- Has responsibility for determining and providing advice at a more senior level with regard to planning the provision of technical support.
- Be a point of contact for colleagues and service users regarding the most appropriate, safe and legitimate use of equipment and resources, explaining detailed risk assessments and critical best practice considerations.
- Train services users, assess their suitability, and authorise access to specialist equipment and facilities in the absence of academic staff.
- Be a recognised authority within the institution for the use of highly specialist tools and instruments for experimental, teaching and research purposes.
- Train authorised users on the use and maintenance of highly specialised tools and instruments for experimental, teaching and research purposes.

Communications

- Receive, understand and convey complex conceptual ideas and information that may be highly detailed, technical or specialist. This may include material that would not be immediately understandable to those outside the area of work, or combines topics drawn from a number of disciplines.
- Provide mentoring to others to assist them in their own learning processes, or to help them develop new and original thought processes to realise projects and pieces of work.
- Provide feedback in a structured manner that will contribute to the informal or formal assessment of learners to a recognised standard.

Teamwork and motivation

- Encourage individuals to contribute to common goals to the best of their ability.
- Create a sense of unity and common purpose.

Liaison and Networking

- Interact at a senior level which influences significant events or decisions across Technical Services.
- Be a member of cross-functional or technical service-wide working teams or groups where the main purpose is to build and develop ongoing relationships to ensure effective communications and effective working.

Decision Making, Processes and Outcomes

- Work in partnership with ALs and research projects PIs to make decisions regarding the allocation of resources such as space and purchase of equipment/consumables.

Leadership, Planning and Organising Resources

- Work in partnership with ALs and research projects PIs to plan, prioritise and organise the work and resources of themselves and others within their unit of activity.
- Responsible for operational planning and organisation that will affect their unit of activity and will involve several teams over an extended period of time: Managing of staff; setting of objectives; monitoring progress and keeping to timescales; planning for the future; and coordinating and monitoring the implementation of plans.
- Communicate effectively and guide others to achieve key objectives within a significant area of resources or project.

- Responsible for planning own work and priorities, and may be involved with planning the work of others.
- Contribute to planning at Department or Service level, alongside academic and Technical Services colleagues.
- Provide guidance and take responsibility for ensuring other team members understand, and are able to apply relevant organisational procedures and policy.
- Receive reports from team members and take appropriate action to rectify solutions, which may involve taking direct action, or escalate the report to a more senior member of staff/line manager where it is of a critical nature.

Initiative and Problem Solving.

- Resolve problems where there is a range of information or diverse, partial and/or conflicting data with a range of potential options available.
- Apply creativity to devise varied solutions, and approach problems from different perspectives. This may include dealing with several complex problems at the same time.

Analysis and Research

- Analyse or research complex ideas, concepts or extensive data from different perspectives; to work out how best to apply existing methodologies according to the overall context, objectives and expectations; and to identify relationships between complex interdependent factors. This may involve integrating concepts and methodologies from different disciplines and/or units of activity.
- Design and adapt test situations and methodologies to achieve a set of research objectives or desired end-points.
- Use, and train others on, a range of complex mathematical and scientific scripts and formulae and conceptual thinking to analyse data.
- Able to make changes and create new research questions to test hypothetical situations.

Sensory and Physical Demands

- Routinely demonstrate dexterity, co-ordination using materials, tools, equipment and machinery in accordance with their work.
- Use physical and sensory abilities and skills to perform complex tasks at a level which would require either knowledge of relevant methods or routines.

Working Environment

- Expected to act rather than refer matters to others.
- Actively contribute to continuous improvement strategies.
- Implement, adhere to and promote relevant work health and safety policies/guidelines
- Take responsibility for carrying out audits of working practices to ensure compliance with H&S guidelines and legislation.
- Report and make recommendations to others with regard to modifications, alternations and actions necessary to ensure safe working practice in the event of an accident or serious incident.
- Regularly liaise with H&S staff within and outside of the organisation to keep up to date with the latest updates and changes to H&S legislation.

Personal and Team Development

- Proactive personal and professional development including completion of mandatory training, skills courses and specialist training.
- Provide training and guide others on specific tasks, issues or activities; giving advice; guidance and feedback on the basis of their own knowledge or experience; and delivering in house training where appropriate. This will occasionally involve coaching and mentoring members of the work team formally or informally.
- Keep up-to-date technically and apply new knowledge.

Knowledge and Experience

- Apply a breadth and depth of experience showing full working knowledge and proficiency of their own area of expertise.
- Act as a point of reference to others.
- Demonstrate continuous specialist development, acquiring and refining skills and expertise in new or related areas through undertaking and encouraging internal and external development activity.

This job description summarises the main duties and accountabilities of the post and is not comprehensive. There is a clear expectation that the post-holder will support other areas of Technical Services and will undertake other duties of similar level and responsibility.

Person Specification

Essential	Desirable
Attainments/ Qualifications	
Educated to first degree in computer sciences or science discipline, provided strong expertise on numerical modelling.	
Skills and Understanding	
Expertise in data analysis and vegetation modelling Expertise in data analysis and software development. Excellent computational and programming skills including FORTRAN, UNIX, Python and scripting Knowledge of High Performance Computing (HPC) and numerical modelling. Ability to communicate effectively, both orally and in writing.	
Prior Experience	
Evidence of experience of working in an IT based problem-solving capacity.	Experience in climate or environmental numerical modeling
Evidence of experience of working on programmes or software development and data handling in a scientific environment.	Experience of working with large, complex software systems and large datasets
Understanding of health and safety legislation	Experience of Open Source database software.
	Experience of data analysis and visualisation software
Behavioural Characteristics	
Excellent analytical skills, including evidence of ability to break down complex problem into a clear structure	
Excellent written and verbal communication skills. Able to communicate material of a specialist or technical nature.	
Able to build contacts and participate in internal and external networks for the exchange of information and collaboration.	
Actively participate as a member of a research team	
Engage in continuous professional development.	
Understand equal opportunity issues as they may impact on areas of research content	

Where appropriate to the role, willingness to undergo training in order to conduct risk assessments	
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Terms & Conditions

Our Terms and Conditions of Employment can be viewed [here](#).

Further Information

Please see our [website](#) for further information on working at the University of Exeter.

Informal Enquiries

Before submitting an application you may wish to discuss the post further by contacting Professor Peter Cox, Professor of Climate System Dynamics, telephone (01392 725220) or email p.m.cox@exeter.ac.uk