

JOB DESCRIPTION

Vacancy reference:	JTR00119
Post Title:	Land Surface Processes Computational Scientist
Grade:	Grade 6
School/Department:	SMPCS & SAGES
Reports to:	Prof Pier Luigi Vidale
Responsible for:	N/A

Purpose

The Land Surface Processes cluster¹ at the University of Reading invites applications for a computational scientist with a strong, demonstrable background in code management and numerical modelling. The post holder will support the University of Reading Land Surface Processes research programme in all aspects of the modelling workflow, improving the overall technical and scientific performance of land surface models such as JULES and C-TESSSEL, including portability, scalability, data handling and analysis, as well as the associated workflow infrastructure.

This activity is part of the University's Environment Theme and relates to a number of research divisions within this theme (e.g. Climate-, Weather-, Environmental Science, and Earth Observation and Space Divisions, as well as a number of cross-cutting research institutes (Walker Institute), centres (Centre for Past Climate Change; Soil Research Centre) and clusters (LandSurfaceProcesses@Reading, Water@Reading). Our staff working in this area utilise and develop world leading numerical models of the land surface, using advanced workstations, cloud computing, as well as the world's most powerful supercomputers. We currently engage internationally in the co-design of modelling systems that span conceptual models all the way to complex numerical models.

Main duties and responsibilities

This 3-year post will be part of a larger team that comprises on average 15 Principal Investigators and related Post-doctoral Researchers, all using Land Surface Modelling methods and tools. More generally, the post holder will be an integral part of Computational Modelling Support at Reading and will cooperate with scientists at the Met Office and at the European Centre for Medium Range Weather Forecasting.

The post holder will:

- Be responsible for setting up and maintaining the current JULES, C-TESSSEL (and CLM) modelling systems via official code management protocols and tools, including documentation on web;
- Be responsible for supporting and carrying out standard simulations, including the production of standard diagnostics and plots;
- Assist PIs in implementing and testing new parameterisations, driver data sets and diagnostic techniques;
- Assist in training new PhD students and Post-doctoral Researchers.

¹ Cutting across the Department of Meteorology, School of Mathematical, Physical and Computational Sciences (SMPCS) and the Department of Geography and Environmental Science within the School of Archaeology, Geography and Environmental Science (SAGES)

Supervision received

The post holder will report to Prof Pier Luigi Vidale (Department of Meteorology) and to Prof Anne Verhoef (Department of Geography and Environmental Science), and will receive further supervision and guidance from the NERC Computational Modelling Support team based at the University.

Supervision given

- Assist in training new PhD students and Post-doctoral Researchers.

Contact

The postholder will be expected to liaise with Academic staff, Post-doctoral researchers, PhD students and technical/IT staff both in SMPCS/SAGES and across the University, especially the land surface researchers and remote sensing specialists in the Departments of Meteorology, and Geography and Environmental Science.

Terms and conditions

This is a fixed term post up to 36 months.

This document outlines the duties required for the time being of the post to indicate the level of responsibility. It is not a comprehensive or exhaustive list and the line manager may vary duties from time to time which do not change the general character of the job or the level of responsibility entailed.

PERSON SPECIFICATION

Job Title	School/Department
Computational Technician – Land Surface Models	Meteorology/SMPCS

Criteria	Essential	Desirable
Skills Required	<ul style="list-style-type: none"> • Scientific programming (mostly FORTRAN, Python, UNIX shell scripting) • Numerical simulation on a range of spatiotemporal scales • Development/use of software for data analysis and visualization • Code management and documentation for large collaborative groups • Management and manipulation (including post-processing) of large datasets: model output, environmental and meteorological observations, EO data • Evidence of strong analytical skills • Evidence of good written and oral communication skills 	<ul style="list-style-type: none"> • Experience in working with land surface, Earth System or climate models • Experience with documentation and standardisation of environmental science data sets • Experience in working with complex computational workflows and their management • Parallel / high-performance computing • Experience with advanced sensitivity analysis • Experience with quantifying uncertainty in model predictions using advanced statistical methods

Attainment	<ul style="list-style-type: none"> • First degree in a numerical or scientific discipline, or equivalent experience, e.g., Computational Science, Physics, Mathematics or Environmental Science 	<ul style="list-style-type: none"> • Postgraduate degree in physical, mathematical, or computational science • A PhD with a focus in a particular field of relevance, such as land surface modelling/monitoring • An appropriate publication record for career level
Knowledge	<ul style="list-style-type: none"> • Numerical methods for physical (process) models • Software development practices. 	<ul style="list-style-type: none"> • Land surface processes, with emphasis on water, carbon and energy balance • Earth System Modelling • Physics of the environment
Relevant Experience	<ul style="list-style-type: none"> • Experience of working with complex environmental simulation systems and their underlying infrastructure • Ability to handle/post-process/analyse large data sets, e.g. as required by/produced by models mentioned above • Proven research capability in a relevant discipline 	<ul style="list-style-type: none"> • Numerical model development • Working with land surface models and atmosphere-land surface coupling • Working with numerical models (radiative transfer, land surface energy, water & carbon exchange) • Broader experience with similar (atmospheric, ocean) numerical models • Experience with data-assimilation procedures
Disposition	<ul style="list-style-type: none"> • Desire to learn new skills • Desire to share knowledge with others • Desire to help others overcome technical issues • Willingness to work in a small team and as a self-motivated individual 	<ul style="list-style-type: none"> • Comfortable working with colleagues with scientific, technical, and administrative roles. • Ability to foster relationships with external project stakeholders
Other	<ul style="list-style-type: none"> • Prepared to travel as 	<ul style="list-style-type: none"> •

	required by the post	
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Completed by: Professor Pier Luigi Vidale	Date: 14 March 2017
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