University of **Reading**

JOB DESCRIPTION

Vacancy reference:	SRF28638
Post Title:	Hydro-JULES Software Framework Scientist
Grade:	Grade 6
School/Department:	SMPCS
Reports to:	Grenville Lister

Purpose

The post holder will be responsible for designing, developing, and implementing flexible interfaces between model components in and between the Hydro-JULES hydrological model and other Earth system model components. The post holder will be also be closely involved in the testing and support of this model in the community, and will collaborate with scientists and computational modellers from partner organisations.

The post will be managed from within the NCAS-CMS group at the University of Reading, where the post holder will be expected to spend one day a week. The remainder of the time will normally be spent at the Centre for Ecology and Hydrology in Wallingford, working as part of the Hydro-JULES core team.

NCAS-CMS provides computational modelling services to the UK Climate and Weather research communities, develops software in-house and is responsible for installing and maintaining world-leading climate modelling systems on the UK's most powerful high-performance computers.

Main duties and responsibilities

- Contribute to the design of the Hydro-JULES software framework
- Take responsibility for the implementation of flexible interfaces between model components and between the hydrological model and other Earth system model components including the Met Office Unified Model (via JULES), models of the shelf seas and coastal oceans, and models of biogeochemistry and terrestrial nutrient transport.
- Assist in the development of protocols for testing, evaluating, and benchmarking the model and its components, and maintain model documentation.
- Contribute to publication of technical reports and scientific papers in highly-ranked peer-reviewed academic journals.
- Contribute to the design of an open access repository to define and store model options and configurations and provide managed access via JASMIN and national HPC facilities.
- Contribute to the process of community consultation and interactions with researchers, stakeholders and users to ensure that the modelling system designed to take account of foreseeable future design requirements.
- Participate in internationally-coordinated hydrological and Earth system model experiments.

Supervision received

The post holder will receive detailed scientific and computational supervision from the Centre for Ecology and Hydrology Hydro-JULES Senior Model Integration Scientist, from Professors Bryan Lawrence and Pier Luigi Vidale at Reading University, with general guidance provided by Grenville Lister at Reading.

Contact

The post will require regular communication with staff within CEH, BGS, NCAS, and at national HPC and data facilities.

Terms and conditions

The post holder will be based at CEH but will be expected to spend one day per week at the University of Reading.

The post is full time for a fixed term of up to 3 years.

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.

Date assessed: March 2019

PERSON SPECIFICATION

Job Title	School/Department
Hydro-JULES Software Framework Scientist	SMPCS

Criteria	Essential	Desirable
Skills Required	• Ability to propose and develop new theoretical approaches and implement them in a high-level scientific programming language • Programming in FORTRAN, C, C++, Python • Strength in modern software engineering practices	• Proven skills in implementing integrated model interfaces in Earth System models • Parallel computing, MPI, OpenMP
Attainment	• A relevant PhD (or equivalent experience).	• Strong track record in publication in the scientific literature
Knowledge	• Knowledge of high-performance numerical simulation and/or coupled models	• A sound understanding of the scientific challenges in one or more of hydrology, land-surface science, terrestrial carbon and nutrient cycles, data sciences. • Earth System component model coupling technologies

Relevant Experience	• Ability in implementing complex computational schemes	• Proven skills in hydrological, atmospheric or land-surface model development, application and evaluation. • Background in hydrology, land-surface modelling or atmospheric science. • High-performance computing platforms •
Disposition .	• An aptitude for working in interdisciplinary research teams • Excellent communication and interpersonal skills	• Desire to develop effective collaborations and share knowledge
Other	• Willingness to work in Reading one day/week, and Wallingford the remainder of the time.	

Completed by: Grenville Lister   Date: March 2019