

Research Associate in *flood risk assessment*

Project Title: GCRF Living Deltas Hub

REQ200304

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Research and teaching in the School of Architecture Building and Civil Engineering (ABCE) is driven by 63 academic staff, 34 technical and clerical support staff, 40 contract researchers and over 120 doctoral students. The School benefits by having academic staff from a wide variety of backgrounds, with a resulting rich diversity of perspectives.

The undergraduate programmes include Civil Engineering, Construction Engineering Management, Commercial Management and Quantity Surveying, Architectural Engineering and Design Management, Air Transport Management, and Transport and Business Management.

At MRes level we train the next generation of multi-disciplinary researchers in energy demand. At MSc level, we offer programmes in Low Energy Building Services Engineering and Low Carbon Building Design as well as in Water and Waste Engineering, Construction Management, Transport Policy and Business Management. These programmes are all accredited by the Professional Institutions. The EPSRC Centre for Doctoral Training in Energy Demand will support over 50 PhD students.

In all courses the academic content is directly aligned to the needs of the industry and there is a high level of sponsorship in our portfolio of programmes. Our record of graduate employment is second to none and we have been ranked 1st or 2nd in the National Student Survey for the last 6 years.

Further information may be found from - <http://www.lboro.ac.uk/departments/civil-building/>

In the 2014 Research Excellence Framework, the School was ranked fifth in the Architecture and Built Environment Unit of Assessment with 87% of the work judged as either "world leading" or "internationally excellent". Importantly, this was achieved whilst still returning 100% of staff; world class research pervades the School. The research environment was ranked first overall; Loughborough is the best place in which to build a career in energy research.

The international standing of our research is exemplified by our growing portfolio of collaborations with other leading universities and research institutes worldwide. These include: the UNSW Sydney, University of California at Berkeley, MIT, Chongqing, Hong Kong, Iowa State, Oklahoma State, RMIT, Georgia State and Penn State.

We are equally proud of our collaborations with industry where we count organisations such as Willmott Dixon, Electricite de France, The BRE, Honeywell, Anglia Water and Biffa. Built Environment research is increasingly informing government policy through, for example, the Department of Energy and Climate Change and The Committee on Climate Change.

For more on our research go to: <http://www.lboro.ac.uk/schools/cv/research/index.html>

Project Description

This position is recruited to support research for multiple research projects, including the **Web-Based Natural Dam-Burst Flood Hazard Assessment and ForeCasting SysTem (WeACT)** project funded by the Natural Environment Research Council (NERC) and the Department for International Development (DFID) through the Science for Humanitarian Emergencies and Resilience (SHEAR) programme, the **FUTURE-DRAINAGE: Ensemble climate change rainfall estimates for sustainable drainage** project funded by NERC through the UK

Climate Resilience programme and the **GCRF Living Deltas Hub** funded by the UK Research and Innovation (UKRI). In these projects, it is necessary to develop and apply high-resolution hydrodynamic flood modelling tools to simulate or forecast flooding from different sources and assess their risks. The Postdoctoral Research Associate will work closely with multi-disciplinary research teams from the UK and abroad and play a key role to develop the high-resolution flood modelling risk assessment strategies in different geographic contexts to support decision-making.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

Working with multi-disciplinary research teams, the Postdoctoral Research Associate will further develop and apply the Loughborough in-house flood modelling software HiPIMS to develop high-resolution modelling strategies for assessing flood risk from different sources and in different geographic contexts.

Job Duties

Based on the in-house high-performance hydrodynamic flood model HiPIMS, to develop appropriate strategies for assessing flood risk from different sources and in different geographic contexts.

- To develop and apply new approaches to acquire and process data from different sources and address the data-scarcity challenges to support high-resolution hydrodynamic flood modelling.
- To simulate different flood scenarios and develop appropriate approaches to assess flood risks in data-scarce environments.
- To publish high-quality journal papers to report novel research outputs
- Be responsible for conducting the day to day running of the project.
- To formulate detailed plans for the project based on broad guidance from the project team.
- To feed back to the project team on progress, to make recommendations for next steps.
- Write up regular progress reports and present outcomes to all Investigators and Collaborators.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- To support the project team by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.
- To attend and contribute to conferences.
- To contribute to project promotion and public engagement events.
- Contribute ideas for new research and enterprise directions.
- To assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day-to-day supervision and support of other researchers.
- Where appropriate, to deliver teaching, tutorial and laboratory sessions to students.
- Engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.
- Undertake other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to Professor Qihua Liang

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

- 1 – Application
- 2 – Test/Assessment Centre/Presentation
- 3 – Interview

Essential Criteria

| Area | Criteria | Stage |
|----------------------|--|-------|
| Experience | Background in flood modelling and risk assessment. | 1,3 |
| | Research experience of developing and/or applying GPU-accelerated hydrodynamic models for research and application purposes. | 1,3 |
| | Experience of developing and applying hydrological and hydrodynamic models (HiPIMS or similar hydrodynamic flood modelling tools) for flood inundation modelling and impact/risk assessment. | 1,3 |
| | Experience of processing large datasets using GIS tools | 1,3 |
| | Publication of academic articles or papers on engineering or science topics. | 1 |
| Skills and abilities | Ability to undertake the duties and responsibilities of the post. | 1,3 |
| | Proven programming skills in (further) developing and applying hydrological or hydrodynamic models. | 1,3 |
| | Ability to efficiently work with remote sensing datasets from different sources using GIS tools | 1,3 |
| | Excellent written and oral communication skills in English. | 1,2 |
| | Ability to work independently and as part of a team. | 3 |
| Training | Willingness to undertake appropriate further training and to adopt new procedures as and when required. | 1 |
| Qualifications | A PhD in computational hydrology/hydraulics or other relevant areas | 1 |
| Other | Commitment to observing the University's Equal Opportunities policy at all times. | 1,3 |
| | Willingness to travel. | 3 |

Desirable Criteria

| Area | Criteria | Stage |
|----------------------|--|-------|
| Experience | Experience of using GPU high-performance computing languages, e.g. CUDA and OpenCL, to develop models. | 1,3 |
| | Teaching and / or supervision of students in relevant areas. | 1,3 |
| | Writing research proposals for funding from internal/external sources. | 1,2,3 |
| Skills and abilities | Knowledge of catchment-scale hydrological and urban hydrology. | 1,3 |
| | Knowledge of flood forecasting/warning and ability to process numerical weather prediction products. | 1,3 |
| | Ability to work with communities and stakeholders | 1,3 |
| Qualifications | Academic degrees in geography, geomatics/GIS related fields | 1 |

Conditions of Service

The position is **full-time** and for a **fixed-term** period of 46 months to start on 1 June 2020 or as soon as thereafter. Salary will be on Specialist and Supporting Academic (Research) Grade 6 (£30,942 - £40,322) per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for Grade 6 and above staff, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which can be found [here](#).

The University offers a wide range of employee benefits which can be found [here](#).

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: <http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html>)

In addition, the University is supportive, wherever possible, of flexible working arrangements. We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>